HIV/AIDS, Illness, and African Well-Being

EDITED BY TOYIN FALOLA AND MATTHEW M. HEATON

HIV/AIDS, ILLNESS, AND AFRICAN WELL-BEING

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Toyin Falola, Senior Editor
The Frances Higginbotham Nalle Centennial Professor in History
University of Texas at Austin

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To Barbara Harlow, for her indefatigable commitment to African Studies

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Part IV: HIV/AIDS

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With the HIV/AIDS scourge threatening every part of sub-Saharan Africa with no end in sight, and efforts to stem its spread in most regions meeting stilted if any success, it becomes increasingly important to develop a context within which to understand what HIV/AIDS means in African settings and how African communities, governments, and individuals will live with and surrounded by HIV/AIDS for the foreseeable future. Part of understanding this context comes from recognizing that HIV/AIDS does not exist in an isolated disease environment. Many different illnesses threaten life and limb in African environments, among which HIV/AIDS is only the most recent and most alarming. Part of the context is the increasingly global political-economy that has seen African countries fall behind in terms of health facilities and education. Part of the context is also the increasing sociological knowledge that with greater education does not necessarily come significant behavior modification. The chapters compiled in this volume therefore seek to place the HIV/AIDS pandemic within a broader historical and contemporary context, illustrating the overall disease environment in which HIV/AIDS currently wreaks havoc.

The chapters presented here were originally presented at a conference on African Health and Illness held at the University of Texas at Austin from March 25–27, 2005. The conference was international in scope, bringing together more than one hundred scholars from many different disciplines, countries of origin, and countries of academic interest. The diversity of the participant pool allowed us to recognize the many different approaches being taken to understand health and illness in the African context. While HIV/AIDS was, of course, a significant concern addressed by presenters at the conference, we could not help but be struck by the rich contextualization of Africa's disease burden that was discernible through listening and discussing the work of rigorous scholars from a variety of geographical and disciplinary backgrounds. It is this encompassing sense of attitudes, responses, and proposals concerning HIV/AIDS, illness, and African well-being that we hope to capture within this volume.

There are many people without whose help and support neither the conference nor this book would have been possible. We must offer our thanks to the graduate students whose donations of time and labor made the conference

possible (Roy Doron, Tyler Fleming, Ann Genova, Greg Harper, Brandon Marsh, Tricia Pearson), as well as Laura Flack, Jerusha Murugen, Sam Saverance, and Anne Turnbull. We also express our gratitude to the African Students Association from the University of Texas for providing much-needed help and vivacious entertainment during the conference. Finally, we extend our appreciation to the many departments and organizations at the University of Texas that provided funding for the conference. These include the Departments of History, English, Anthropology, and Comparative Literature, as well as the Colleges of Fine Arts and Liberal Arts, and the Schools of Law and Music. The Center for African and African-American Studies, the LBJ School of Public Affairs, the Office of Graduate Studies, the Frances Higginbotham Nalle Fund, the University Co-op, the Texas Cowboys Lectureship, the Louann and Larry Temple Fund, and the Americo Paredes Center for Cultural Studies, also made generous contributions. We owe a debt of gratitude to you all.

Toyin Falola and Matthew M. Heaton
Austin, Texas
January 2007

PART I

Context

OVERVIEW TO *HIV/AIDS, ILLNESS, AND AFRICAN WELL-BEING*

Toyin Falola and Matthew M. Heaton

Part I: Context

The purpose of this volume of collected essays is to bring a novel approach to the understanding of HIV/AIDS in contemporary Africa by placing the HIV/AIDS crisis into the circumstances and debates concerning conditions that give rise to high incidence levels for many different illnesses in Africa. Too often HIV/AIDS is treated as if in a vacuum, a crisis so unique and devastating that to compare it with other illnesses seems valueless. Likewise, many scholars and activists currently stress that HIV/AIDS is primarily a behavioral problem in Africa. To improve the HIV/AIDS outlook in Africa, preventive education must succeed in changing the sexual behavior of Africans. While this is true on some level, it must also be recognized that the environment of globalization and underdevelopment has affected the way in which Africans have responded to disease and illness. The changing developmental circumstances in Africa have been underutilized as factors that help develop the context around which HIV/AIDS and other maladies have distressed African populations. In addition, Africa's relationship with the resource-rich West must be analyzed. By providing multiple perspectives and disciplinary approaches to understanding the relationship of HIV/AIDS to other illnesses in Africa, both historically and contemporaneously, as well as by drawing attention to the economic and environmental circumstances that affect Africans' ability to respond to HIV/AIDS and other illnesses, this book provides a more comprehensive picture of the context of the HIV/AIDS pandemic than is currently available in sources that focus specifically on HIV/AIDS or on a single aspect of the overall disease environment in which Africans struggle to live long, healthy, and happy lives.

We have divided the book into four parts. After an overview, introduction, and introductory chapter dealing with western perceptions of Africa as a "diseased" continent, part II continues with five chapters that provide nuanced case studies of ailments that have afflicted the continent to varying degrees over the last hundred years. The chapters in this section illustrate the extent to which various diseases and illnesses have affected and continue to affect African populations. Part III contains five chapters dealing with the relationships

among illness, environment, developmental circumstances of African populations, and increasingly international efforts to treat illnesses in Africa as well as to curtail their spread. This section illustrates the importance of environmental and developmental factors to the way that Africans can and do respond to illness. Part IV deals specifically with the HIV/AIDS crisis in Africa, having six chapters on issues and debates ranging from the role and responsibility of the international community, governance and policies of international and state agencies concerning HIV/AIDS in African countries, as well as Africans' personal and community understanding of HIV/AIDS. These chapters bring the discussion of HIV/AIDS into concert with the contexts outlined in the first three parts of the book, bringing the discussion full circle.

The first step toward better understanding Africa's disease environment is to understand the preconceived notions that can affect the way we process information about Africa. Iruka N. Okeke's introduction makes several points concerning issues of health and hygiene in Africa that contribute to overcoming Africa's image as infectious and backward. Despite lack of knowledge of the germ theory of disease, Africans inhabited the "infectious" continent for thousands of years, developing effective methods for disease control and prevention. As an example, Okeke discusses chewing sticks, which clean food particles and bacteria from the teeth, promoting good dental hygiene. Chewing sticks have been used in Africa since time immemorial, only to be displaced in recent times by the modern toothbrush. Nevertheless, scientific studies have indicated recently that chewing sticks may actually be more effective than toothbrushes because of the duration of the chewing and the germicidal properties of the roots most commonly used to make chewing sticks.

Not only is indigenous medical knowledge useful in Africa but also western medical techniques have in many cases been more effective than we are led to believe. Okeke illustrates this point through discussion of the significant reduction of river blindness rates in Africa, the positive effects of breast-feeding campaigns on infant mortality, and the global eradication of smallpox, which have all improved the health atmosphere in Africa in recent decades.

Nevertheless, the picture of Africa as an infectious continent persists, due in no small measure to the exponential growth of the AIDS pandemic since the early 1980s. Even with the AIDS pandemic, however, negative and incorrect perceptions of Africa remain commonplace. Sophie Wertheimer (chapter 1) raises many of the salient issues fleshed out throughout the volume. Through her discussion of Canadian newspaper representations of the HIV/AIDS pandemic, Wertheimer illustrates the many ways that Africa continues to be stigmatized as an infectious continent even in the globalizing era of the late twentieth and early twenty-first centuries. Despite the fact that scientific opinions linking the origin of HIV to monkeys in central Africa have been repeatedly debunked, Wertheimer points out the extreme commonality of this etiology in Canadian newspapers between 2000 and 2003. Furthermore, these newspapers perpetuate the idea that most Africans have frequent contact with

monkeys to the extent that the likelihood that HIV was first transmitted from monkey to human in Africa is presented as very high. This attitude refuses to recognize that most Africans do not have regular contact with monkeys, and that western scientists do have regular contact with monkeys from Africa and other places, making the western scientific framework itself a likely vector for the spread of HIV worldwide. Wertheimer further explains the common argument that the African environment is so "unsanitary" and "backward" that there is little hope of arresting the spread of HIV there and, as such, there is little to be gained by providing Africans with the most effective treatments for HIV, because they do not have the discipline, understanding, or infrastructure to adhere to a treatment regimen. The idea that to use antiretroviral drugs partially and haphazardly would result only in drug-resistant strains of HIV even more threatening to westerners is also used as justification for inaction.

Through her analysis, Wertheimer posits many of the questions that remain central to the understanding of the health situation in African countries. How should the African disease environment be presented to western audiences? The situation is obviously not good in many places, but it is not as uniformly bad as is presented in these Canadian newspapers either. To what extent does the West need to recognize itself as an active partner in the improvement of health in African countries, especially in this era so commonly referred to as one of globalization? What are the factors impinging on the health crises in so many African countries and how should they be addressed, with special emphasis on the HIV/AIDS pandemic? Wertheimer's chapter sets the foundation for the overarching attitude taken by the West to Africa's health problems. It is the purpose of this volume to place these health problems in a more holistic context, thereby contributing to the dismantling of the idea of the "infectious" Africa so different from the civilized and cosmopolitan West.

Part II: Illness Case Studies

The chapters in this part take particular illnesses other than HIV/AIDS and contextualize them either historically or contemporarily. The three chapters that take a historical approach illustrate the depth of the problem of disease control and prevention in Africa. Akpen Philip (chapter 2) illustrates the ways that colonial rule in Nigeria in the first part of the twentieth century, far from bringing the civilized ideals of sanitation and cleanliness, actually created a situation in which the incidence of waterborne diseases, such as cholera, typhoid, and dysentery, rose substantially. Focusing on Makurdi, a town in the central eastern part of Nigeria, Philip indicates that the indigenous peoples of the area were able to use natural water sources such as rivers, streams, and wells without contracting waterborne diseases because levels of pollution were low. With the coming of British colonialism to the area, however, Makurdi

became a rapidly urbanizing town on the railway between Enugu and Jos. As a result, slums developed, garbage and waste increased, and the British made little to no effort to improve the sanitation or water supply for the African population. As a result, waterways became polluted and waterborne disease rates increased until 1957, when the Northern Regional Government finally allocated sufficient funds to build a modern waterworks in Makurdi.

The issue of the suppression of indigenous knowledge during colonial rule in Africa is raised by the other two chapters that take a historical approach. Raphael Chijioke Njoku (chapter 4) gives an overarching context of the history of malaria control in the West African littoral. While indigenous populations had developed time-tested approaches to malaria control focusing on community sanitation, swamp-clearing, and traditional herbal remedies, Europeans largely ignored these relatively effective methods, instead focusing on determining the exact cause of malaria and the vector of its transmission to humans. A global endeavor, the scientific search for the cause and vector of malaria made significant strides in many different places, including South America, where cinchona bark was first found to have antimalarial properties; to China, where Patrick Manson isolated the mosquito as the malarial vector; and to Europe and the United States, where malaria became a major discussion point at International Sanitary Conferences throughout the second half of the nineteenth century and first half of the twentieth century. Although scientific discoveries concerning malaria cause and transmission had largely been established by the first decade of the twentieth century, major efforts to eradicate the illness in Africa did not begin until World War II, when chloroquine treatment and DDT were introduced on a large scale. Unfortunately, overuse and underdosing of chloroquine has led to the evolution of resistant strains of malarial plasmodium in recent decades, and the same has been true for newer treatments such as sulphadoxine-pyrimethamine. As a result, western scientists are now searching for new antimalarial drugs and are finding very promising results in examinations of the indigenous herbal treatments that European science had heartily discounted as unscientific hocus-pocus in the nineteenth century.

Kalala Ngalamulume (chapter 3) discusses the ways in which smallpox eradication and vaccination campaigns in colonial Saint-Louis-du-Senegal provoked open skepticism of the methods of western medical practice and brought colonial authorities into conflict with traditional medical practitioners whose time-tested approaches to smallpox control were vilified at best and outlawed at worst. Ngalamulume's chapter raises the interesting issue of the use of western medical knowledge as a tool for Europeans who desired to construct a hegemonic presence in Africa through colonialism. While efforts toward this end failed in the smallpox vaccination campaigns in Senegal, the social baggage associating such practices with the colonial past has persisted in many African environments to the present day.

The two remaining chapters in this part discuss illness in present-day African environments. Cecilia S. Obeng (chapter 5) discusses the perceptions

of epilepsy in an Akan community in eastern Ghana. The data obtained by Obeng effectively complicate assumptions that researchers might be willing to make about traditional perceptions of epilepsy. While a majority of respondents indicated that they believed epilepsy to be caused by spiritual actors, either as repercussion for the sins of one's relatives or one's self, this belief is stronger among older age groups than among younger ones. This, in itself, is not remarkable, as the spread of western ideas, especially among youths, is having impacts on traditional beliefs in many ways. Assumptions that might seem logical based on this information, however, prove to be fallacious in this sample. For instance, it might be assumed that among those who believe epilepsy to be a curse or a spiritual affliction there would be greater stigmatization of epilepsy victims. Obeng's data suggest this is not the case. Younger groups were more likely to consider an epileptic relative an embarrassment worthy of social stigma than older groups who were more likely to feel that their social position was secured regardless of the epileptic status of relatives. On the other hand, older groups were more likely to believe that education for an epileptic would be a waste of resources, since the epileptic would have difficulty finding employment. Younger groups were more willing to believe that epileptics had a right to education, if limited, and that education might provide the opportunity for an epileptic to find gainful employment, land a spouse, or at least contribute to the costs of their medical treatment, thereby showing a more optimistic attitude toward epilepsy than their belief in the stigma associated with epilepsy might suggest. Overall, Obeng's data illustrate that the community as a whole, with the exception of the very elderly, believed that the stigma associated with epilepsy should change in the community, and the sooner the better.

Social stigma also exists around physical disabilities. Gabriel B. Fosu, W. Bediako Lamousé-Smith, Baffour K. Takyi, and Stephen Obeng-Manu Gyimah bring to our attention the pervasiveness of disability in Nigeria (chapter 6). Using government statistics from the 1990s, the authors compile the prevalence of various kinds of disability, from missing limbs, to blindness and deafness. From this data, they are able to illustrate that disability rates are much higher in rural areas than urban areas, that males have an overall slightly higher rate of disability, and that disability has a significantly negative effect on people's ability to find sustainable employment, for both males and females. While these findings may seem unremarkable at first sight, the hard data provided can be very useful in determining where and how health resources should be allocated as well as drawing the attention of scholars to the nonviral and nonbacterial health hazards that abound in sub-Saharan Africa. Thus, the discussion of illness case studies closes by broadening our understanding of how people can become ill and disadvantaged in Africa beyond the main scourge of the day, HIV/AIDS.

Part III: Globalization, Development, and Health

The chapters in this part broaden the view beyond specific illnesses to look at the political, social, economic, and environmental factors that affect the ways in which Africans will perceive their health outlook and live within their disease environments. These chapters make several important contributions to debates on how best to promote health in Africa by explaining the contemporary context within which Africans make decisions regarding their health and health-seeking behavior.

Iruka N. Okeke discusses the problems posed by the growth of antimicrobial resistance in many African countries since 1985 (chapter 7). The problem has become so dire in some places that the most commonly used first-line treatments are no longer capable of treating resistant strains of major killers such as malaria and tuberculosis. This situation also has grave implications for present and future treatment of HIV/AIDS, as the virus is known for its mutability, and the most common and effective treatments currently available are in the form of antiretroviral medications. Okeke argues that the primary causes of the growth of antimicrobial resistance in African settings have been the overprescription of many medications by physicians and the supply and sale of inferior quality medications by local merchants with little or no biomedical training. The result is that patients purchase drugs with too little of the active ingredient present, with the result that the drug is unable to eliminate the infection, and the infection is able to develop resistance to the drug. Okeke argues that governmental efforts to reduce the growth of antimicrobial resistance through such efforts as drug cycling and combination therapies have been largely ineffective because of lax enforcement of legislation outlawing the sale of certain drugs deemed increasingly ineffective in the case of the former, and the high costs involved in the case of the latter. Nevertheless, Okeke suggests that several health-care programs are indirectly affecting the growth of antimicrobial resistance in a positive way. The Integrated Management of Childhood Illnesses (IMCI) program has improved primary health care for children, who often suffer from multiple ailments at once, thereby improving diagnostics and reducing overprescription of vulnerable drugs. Directly Observed Therapy (DOTS) has also improved drug regimens of many patients, thereby more effectively terminating infections and preventing the spread of resistant strains. Finally, vaccination, particularly for *Streptococcus pneumoniae*, has reduced the prevalence of this infection, as well as the secondary infections that often accompany it, once again reducing the overuse of particular resistance-vulnerable medications. Okeke argues that while these indirect approaches are having positive effects, there nevertheless must be more direct action toward preventing the growth of antimicrobial resistance through resistance-control mechanisms.

In a similar vein, Kathryn H. Jacobsen and Melissa K. Van Dyke (chapter 8) provide a unique perspective on the relationship between development and

health in sub-Saharan Africa. While the traditional understanding has been that development is the solution to the rampancy of infectious and communicable diseases in sub-Saharan Africa, Jacobsen and Van Dyke use epidemiological data to illustrate that development in sub-Saharan Africa is increasingly being associated with health implications of its own. Although the spread of infectious disease can be arrested through sanitation of water and public spaces, as well as access to health-care facilities and better nutrition—all things associated with development—greater economic development can also lead to increasing rates of chronic and non-communicable diseases such as heart disease, stroke, cancer, and diabetes. As people with means live longer, the likelihood that they will develop such conditions increases. Therefore, sub-Saharan Africa is now facing a "double burden" associated with uneven development. While development has not occurred on such a level as to eliminate problems with communicable diseases such as malaria, HIV, and cholera, it has occurred in some areas on such a level that increasing cases of chronic and non-communicable diseases are occurring—a situation for which most African countries have not planned. Development can also alter the types of communicable diseases that are transferred or the way that they are transferred from person to person. Jacobsen and Van Dyke point out that newly developed water reservoirs in Senegal have actually provided a new medium through which schistosomiasis vectors have been able to spread into local populations, a situation that did not exist prior to the development of the new reservoir. Thus, Jacobsen and Van Dyke make the important argument that development must not be seen as an end in itself to Africa's health problems. Rather it must be seen as an "epidemiological transition" with its own set of health issues and hazards.

While Okeke and Jacobsen and Van Dyke focus on health circumstances for the continent as a whole, Freek Cronjé and Charity Chenga (chapter 10) narrow the focus to discuss the many factors contributing to poor health among a specific group of people: mining communities in South Africa. Cronjé and Chenga divide their analysis into factors related to the physical environment of the mining community and the social environment of the community. Beyond the hazards to life and limb associated with the dangers of mine labor, mine workers are also at increased risk of tuberculosis due to crowded conditions, silicosis from the mineral components of the mines, and, of course, HIV/AIDS, associated primarily with their migrant status and frequent solicitation of prostitutes. People in the areas around mines are likewise exposed to loud noises that can damage hearing. The bleak economic conditions surrounding mining communities also lead to illnesses related to the social environment, as poverty, boredom, and depression can lead to alcoholism and mental illness. Although mining companies may be improving access to medical facilities for their employees, community members who are not mine employees still suffer from lack of medical resources, and many mine workers do not seek help for illnesses such as HIV or mental illness because of the

stigma associated with these diseases. Interestingly, Cronjé and Chenga note that under such circumstances many miners and community members cannot or do not seek healthier lifestyles despite knowledge that it would be in their best interests to do so. Prostitutes have no alternative means of survival, as mines often discriminate in their hiring practices against women; employees drink heavily despite knowledge that overconsumption of alcohol is a major social ill in mining communities; and community members cannot escape the noise and pollution associated with the mining process.

The economic cost of health-seeking behavior arises as Frank N. F. Dadzie and Gerald M. Mumma (chapter 9) illustrate the economic burden posed to households in Ghana by treating a Buruli ulcer (BU). Dadzie and Mumma calculate both the direct and indirect costs associated with seeking western and traditional treatment for BU and conclude that the costs involved are great enough to prevent many sufferers from seeking any treatment at all. The result is that the illness progresses, ultimately becoming much more dangerous and much more costly to treat. Dadzie and Mumma also discovered that the preponderance of cases of BU are among persons fifteen years of age and under. The long-term risks posed by nontreatment of BU thus mean that the illness could have substantial effects on the long-term earning ability of households by disabling potential workers before their prime. Dadzie and Mumma conclude that the overall economic consequences of BU in terms of both treatment costs and long-term earning ability could be diminished through earlier treatment of BU cases.

To say that sub-Saharan Africa has been left behind by global economic processes is unremarkable. As previous chapters have shown, the economic circumstances of sub-Saharan Africa have in many ways affected the health options of most Africans. Many have argued that bringing Africa more centrally into the global community, both economically and in health-related matters, would be too costly, take too long, and would be unachievable as things now stand. It becomes easy to think that Africa has always been neglected by the global community, but this is not the case. Matthew M. Heaton (chapter 11) provides narrative and analysis on the historical relationship between African health and processes of globalization through an analysis of the West African Pilgrimage Scheme. Initiated by the British colonial government in the interwar years, the West African Pilgramage Scheme, also known as the Nigerian Pilgrimage Scheme, was based on international precedence for pilgrimage control initiated in Europe, the Middle East, and Asia from the mid-nineteenth century. Pilgrimage control was designed originally to protect the health of Europeans and Middle Easterners who were threatened by the spread of cholera from India, but by the twentieth century, overarching concerns for the health and well-being of pilgrims themselves had become part of the mission of pilgrimage control. Despite the fact that the Nigerian Pilgrimage Scheme was plagued by problems of implementation in the short-term, in the long-term the scheme set the precedent for governmental

control of the pilgrimage in Nigeria and has continued to be an issue around which issues of global health have been politicized up to the present day. Heaton's chapter points out a time when it was seen as both humanitarian and economically necessary for Africa to be included in global migration-control processes. Schemes of even greater proportion will be necessary to tackle Africa's greatest public health menace of today: HIV/AIDS.

Part IV: HIV/AIDS

Without HIV/AIDS, Africa's reputation as an infectious continent would be much less gloomy. Currently, to the extent that sub-Saharan Africa is involved in matters of global health, it is mostly on the receiving end of HIV/AIDS initiatives to improve sex and health education and to distribute critically needed drugs. The chapters in this part offer both critical and optimistic approaches for looking at the HIV/AIDS pandemic in sub-Saharan Africa. As in previous sections, issues of economic constraint and public perception weigh heavily in the discussions of how people can, do, and should react to the reality of the HIV/AIDS pandemic. Thus, the chapters in this part provide new insights on how to combat this health risk and tie into issues relevant in the previous sections. The result, we hope, is a more wide-ranging and comprehensive view of African health circumstances, environments, and behavioral responses than can be found elsewhere.

Picking up where Heaton left off in the previous section, but from an international law perspective, Obijiofor Aginam elevates the discourse on the HIV/AIDS pandemic in Africa to the international level in his chapter on the global governance of the pandemic (chapter 12). Using two approaches to understanding the formulation of international law—namely Critical Race Theory (CRT) and Third World Approaches to International Law (TWAIL)—Aginam stresses that the efforts made in recent years toward combating the HIV/AIDS pandemic in Africa have taken international approaches to global challenges to bold new levels but have not been adequately enforced. Aginam focuses on two main international initiatives. The approach taken by the G8 Summit in 2001 to establish the Global Fund to Fight AIDS, Tuberculosis, and Malaria has called upon the forty-eight wealthiest economies in the world to contribute monies in a public–private partnership aimed at the eradication of these diseases in the Third World. While a step in the right direction, to date, almost none of these forty-eight countries have contributed their requisite share to the fund, and there is no mechanism in international law to compel them to do so. Likewise, the World Trade Organization (WTO) reached a revolutionary agreement in the Doha Declaration on the Agreement on Trade-Related Intellectual Property Rights (TRIPS), also in 2001, indicating that the WTO has a responsibility to promote and protect the public health of people

by providing access to essential medicines regardless of intellectual property rights. Since Third World countries mostly do not have the resources to negotiate licensing agreements with the pharmaceutical companies that have rights over essential drugs, the Doha Declaration provides criteria for provision of essential medicines to suffering populations without licensing agreements. Although still in its infancy, the facilitation of the Doha Declaration has been hampered by other issues, including patent laws and import restrictions, meaning that, yet again, despite legal efforts on the international level, little is being done to alleviate the situation on the ground in many African and other Third World Countries. Aginam urges in his conclusion that we learn to look beyond the historical and legal context established over the last one-hundred-plus years toward an understanding of general humanity beyond racial and national barriers.

Keeping with political discourses, Yacouba Banhoro's historical account (chapter 13) of HIV/AIDS policies in Burkina Faso paints the picture of a developing country oscillating between denial of HIV/AIDS, shunning responsibility for the spread of the virus, and ultimately coming to terms with a new pandemic that must be addressed. Banhoro's account illustrates effectively the pressures that African governments faced during the early years of the pandemic. Western pressure groups wanted African governments to be more proactive in their approach toward HIV/AIDS, while most African governments did not have the financial ability, political stability, or, until fairly recently, even the scientific evidence to handle the growing pandemic effectively. Banhoro suggests that the political instability in Burkina Faso between the mid-1980s and the present has affected not only the spread of HIV/AIDS in Burkina Faso but also the ways that data about the pandemic have been collected and analyzed.

Banhoro's chapter raises the interesting topic of HIV/AIDS data, which, particularly in Africa, must be taken as rough estimates rather than precise figures. The question then arises: How should HIV/AIDS data from Africa be analyzed? In his second contribution to this volume, Richard Beilock discusses three new approaches to calculating the effect of the HIV/AIDS pandemic on the economies of African countries (chapter 17). Beilock's formulae are more nuanced than other methods for calculating this difference because of several factors. First, Beilock notes the intrinsic importance of using AIDS-prevalence data rather than HIV-prevalency data in making calculations on the economic effect of the pandemic. Because of the differences in the prevalency rates of HIV and AIDS—one may be rising while the other is falling—Beilock points out that what is really important in terms of calculating economic productivity is not how many people have contracted HIV but how many people are experiencing the actual physical sickness associated with AIDS. HIV-positive individuals can have many healthy years ahead of them because of the long incubation period of the virus. Likewise, countries whose HIV-prevalency rates may be dropping are not necessarily going to see boosts in labor productivity,

as the majority of their HIV-positive citizens have not yet developed the full-blown AIDS that will take them off the job in the years ahead.

Second, Beilock points out that the HIV/AIDS pandemic is not the only factor affecting African economies. To get a sense of how much the pandemic, in and of itself, is affecting economic productivity, other potentially destabilizing factors, particularly war and civil unrest, must be taken into account in the calculations. Beilock's formulae make allowances for regions that see their economic position altered not only by HIV/AIDS but also by political upheaval. He notes that even taking these new approaches does not guarantee an accurate calculation, as both HIV- and AIDS-prevalency rates are extrapolations from existing data and vary widely between low and high estimates. Furthermore, the calculations that Beilock makes provide results that are often only marginally different from those obtained by other methods that do not take into account the factors he stresses. Therefore, Beilock concludes that his approaches must be seen not as better or more accurate indicators of the economic affects of the HIV/AIDS pandemic but rather as new tools to be tested and utilized by future researchers.

On the social level, two chapters attempt to understand the ways that people receive information about HIV/AIDS and the psychological effects of contracting the disease. Mandi Chikombero (chapter 16) discusses the effects of public service announcements on the knowledge base of Zimbabweans concerning HIV/AIDS. Focusing heavily on the role of fear and efficacy in health-related announcements, Chikombero relays the results of focus group discussions with Zimbabweans conducted at the University of Zimbabwe, Harare. While Chikombero discovered that, for the most part, the response groups had a strong knowledge base concerning the nature and transmission of HIV, the respondents reacted negatively to the public service announcements designed to promote this knowledge. Respondents believed the announcements sometimes sent the message that HIV was not a devastating illness by showing HIV-positive people in a positive light. Sometimes they felt the announcements gave incomplete or misleading information, particularly concerning condom use. Respondents indicated that condoms are not 100 percent effective at preventing the spread of HIV, yet announcements do not say this. Similarly, announcements promote condom use but often do not give instructions as to their proper use, thereby reducing efficacy. Finally, some respondents claimed that the announcements were intrusive nuisances easily ignored, once again reducing their efficacy. Despite the high level of HIV-related knowledge among the test groups, knowledge alone does not dictate behavioral change. Male respondents indicated that in certain circumstances they would engage in unprotected sex, despite the fact that they know condoms to be effective at preventing the spread of HIV. Female respondents argued that knowing about how HIV is spread does not protect women, as women often cannot control the sexual activity of their partners, who may or may not be willing to use condoms, remain monogamous, or allow partners or spouses to refuse sex.

While Chikombero's respondents sometimes discussed relative lack of control over sexual encounters, William N. Mkanta's subjects discuss sexual encounters over which they had definite control (chapter 14). Mkanta provides a case study of the factors behind the deliberate transmission of HIV/AIDS in Tanzania. Mkanta and his associates interviewed more than 150 people living with HIV/AIDS (PLWHA) from three districts of coastal Tanzania who were currently seeking counseling services related to their positive serostatus. The results of these interviews indicate that a majority of all respondents deliberately did not disclose their HIV status to their sexual partners, while 33 percent of all respondents admitted to deliberately trying to transmit HIV to another human being. Factors influencing such behavior fell into three categories, according to Mkanta. Many PLWHA interviewed had suffered discrimination from family and friends due to their infection; many believed that they had been deliberately infected themselves; while still others cited not wanting to die alone as a reason for deliberately trying to infect another person with HIV. Most of the respondents had come from family situations in which at least one family member had died of AIDS. Gender also seems to play a role in a person's tendency to deliberately transmit HIV, with a much larger percentage of men admitting to having done so. Mkanta posits that this may have something to do with perceptions of gendered power relations and the fact that a woman may find herself more often forced to submit to the will of men in general, including those who may wish to infect her with HIV. Mkanta argues that the best approach to reducing levels of deliberate transmission seem to be through education programs, such as the counseling sessions from which respondents were culled, which advise PLWHA on how to live positively with the virus.

Although the information in most of the work on HIV/AIDS in Africa comes across as depressing and pessimistic, one chapter in this volume offers a rather optimistic perspective through a set of proactive entrepreneurial ideas that could be both economically fruitful for African businesses and simultaneously helpful to HIV/AIDS sufferers in coping with their illness. Richard Beilock and Kaley Creswell (chapter 15) provide three examples of ways that the private sector could be employed to combat HIV/AIDS in sub-Saharan Africa while at the same time recognizing the epidemic as a development opportunity that could create jobs, offer needed services, and destigmatize the epidemic. Beilock and Creswell suggest private ownership and operation of HIV-testing facilities that would store and provide serostatus data to paying members and a list of member-approved persons. Beilock and Creswell argue that this would provide a service that allows sexual partners to know with certainty if their partners were HIV positive, thereby creating demand for such centers. The second proposed scheme is for milk distribution, which would help to prevent mother-to-child transmission of HIV/AIDS. Finally, Beilock and Creswell suggest the development of a wet nurse program that would test prospective wet nurses for HIV and then pair them with

HIV-positive mothers whose infants test HIV negative. This system would create jobs for many women and would create an atmosphere whereby mothers would have a vested interest in the health and well-being of their wet nurses.

Beilock and Creswell argue that the funding for most of these businesses would probably come from the traditional donors, NGOs and governments (DN&G) that currently fund most HIV/AIDS programs, but these approaches would be fresh because they would be instituted on a franchise model whereby franchisers would ensure that technology, equipment, and quality control were provided along national and international standards, while at the same time allowing for local operations to adapt and meet the needs of local populations. Beilock and Creswell, while not calling for a complete overhaul of the HIV/AIDS-assistance system, suggest that programs such as these, implemented on a franchise basis, could have doubly positive impacts in sub-Saharan Africa: on the one hand, they could potentially contribute to stemming the spread of HIV and to destigmatizing the illness, while on the other hand, they could create a new private-sector industry through which jobs could be created and wealth circulated, thereby addressing another of sub-Saharan Africa's most pressing problems.

INTRODUCTION

THE EVOLUTION OF DISEASE IN AFRICA

Iruka N. Okeke

The etiology of human ailments is of interest to those who strive to cure them, but also to those who suffer as patients, their empathizers, or their dependents. When maladies are not inflicted through physical injury, their source as well as the rationale for victim selection is frequently obscure. Some illnesses arise from within, due to malfunction or wear and tear of aging organs. Other, often more dreaded diseases encroach upon unsuspecting, appropriately situated, and susceptible individuals. External etiologic agents may be natural and artificial chemicals, which can damage organs or induce cancers, or parasitic forms of life. Just as humans have learned to move away from the most obnoxious chemicals, human bodies have necessarily evolved strategies to keep out or destroy small, unseen but disease-causing creatures, collectively called pathogens. A greater diversity exists among these microscopic forms of life than among those organisms that can be sighted by the human eye,[1] and pathogens are continuously and rapidly adapting to existing and new niches. The consequence is that, other than perhaps geophysical disasters, infectious diseases have killed more humans than any other cause of death throughout time. Indeed, until the late nineteenth century, infection was the most common cause of death in virtually every part of the world.

Infectious disease control is pivotal to existence, and humans have long attempted to unravel the etiology of contagious diseases by experiment and by thought. Virtually every culture has at one time embraced the hypothesis that infection arises spontaneously or has a cosmic or nonphysical origin. In the two hundred years following a seventeenth-century Dutch lens grinder's discovery of microscopy, and elegant experiments by Louis Pasteur, Robert Koch, and others, contagion was unequivocally shown to come from without.[2] As specific pathogens were associated with explicit disease syndromes, the spontaneous generation theory became inconsistent with western science and was superseded by the germ theory of disease. With this transition, public health in Europe and North America became a science, and the ensuing response has been described as a "sanitary awakening."[3] Backed by observational and experimental justification, public and donor funds were spent on basic interventions such as the provision of clean water and milk so that the

burden of infectious disease dropped dramatically between the 1890s and 1930s.[4] In developing countries, when such a drop has occurred, it has been later and less pronounced. In Africa, infectious diseases remain the leading causes of illness and death. Furthermore, because infectious diseases cause poverty and are caused by poverty, they lock much of the African subcontinent in a vicious cycle of underdevelopment.

The period during which the greatest strides were made in infectious disease understanding and control was also one in which Europe was enthusiastically "discovering," invading, and apportioning Africa. Similar pursuits elsewhere on the globe had met with massive loss of life due to infectious disease and the prognosis for expatriate survival in Africa appeared to be even worse.[5] Arriving Europeans lacked the natural immunity of indigenous populations. They also proceeded to build roads and railways to connect previously isolated areas, allowing for the rapid spread of diseases, such as sleeping sickness, to which not all African populations had been previously exposed.[6] Consequently, Europeans observed and partook of frightening outbreaks of disease and death in Africa. The fear of African contagion persists to date and, as the chapter by Sophie Wertheimer illustrates, has continued to evolve with disease epidemiology. This fear is in part evidence based but, as expanded on by Wertheimer, in part contrived, and fear was an important barrier to emigration to the colonies before the twentieth century. The germ theory perspective, however, altered the perception of Europeans in their capacity to colonize many tropical areas, particularly those in Africa. It was no longer the temperature and humidity that stood between would-be colonial officials and the conquest of the land, but mere contagion, for which there were now principles for control.[7]

Newfound biological knowledge and successful interventions back home, or in other colonies, convinced European colonialists that they had everything required to combat diseases that they felt Africans had hitherto lacked the power to control. In what is a major, and in many cases, irreparable loss to medical science, colonialists failed to appreciate that in order to reside within the part of the world where the environment was most suitable to *ex vivo* survival of human pathogens, Africans must have evolved passive or active defense strategies. While it is true that infant mortality rates were untenably high and that infectious disease was the major killer of indigenous Africans, it is impossible to refute the obvious: Africans inhabited the infectious continent even though they had no appreciation of germ theory in the western scientific sense. Indeed, enough Africans reached reproductive adulthood to maintain societies on the continent as well as to seed the global workforce conscripted during the slave trade. Furthermore, a significant proportion lived to considerable old age. The ability of Africans to exist in spite of the pathogens around them was conferred in part by biological evolution,[8] but also by indigenous understanding of the environment so that many cultural practices prevented or cured endemic diseases ranging from life-threatening

malaria to the more mundane dental caries. None of these approaches involved microscopy, or drew on conventional western germ and chemotherapy theories, and therefore Europe failed to recognize the existence of an effective knowledge base for infectious disease control.[9]

An illustrative example of the efficacy and longevity of precolonial medicine in Africa is the use of chewing sticks (*miswak* or *meswak* in some cultures) to maintain oral hygiene and well-being. Chewing sticks have been used in Africa and Asia from antiquity. They are highly effective at removing food particles and tooth plaque from the teeth. Although chewing sticks were employed by innumerable generations as a traditional, inexpensive, and easily available oral hygiene tool, it is only recently that their value has been recognized by western practitioners. Not only are these sticks effective at removing oral debris but also they contain antibacterial components that prevent plaque buildup and tooth decay. The antibacterial activity of chewing sticks cannot be attributed to chance. Randomly gathered woods do not show germicidal activity but stems and roots that have been traditionally employed as chewing sticks do. In those sticks that are traditionally used with the bark still attached, active principles have been found to be specifically located in the bark.[10] Extracts from chewing sticks have also been shown to inhibit or kill germs that cause orofacial infections.[11] The World Health Organization (WHO) now recommends chewing sticks as an effective alternative to tooth brushing in maintaining dental hygiene and preventing tooth decay and oral infection.[12] Chewing sticks are only one of several examples from African precolonial ethnomedicine with demonstrated efficacy, whose therapeutic potential remains undervalued. Paradoxically, the deliberate ignorance of local preventive and curative methods coexisted with a notion that Africans were clinically immune to tropical fevers, a justification for limiting their access to western medicine as an outcome of what Watts describes as scientific racism.[13]

Thus, despite a common goal, western allopathic and African ethnomedicine have invariably been practiced in parallel, unconnected corridors. Health-seeking behavior studies suggest that most Africans access preventive and curative methods from both corridors even when this medical pluralism is inimical to cure.[14] Antagonistic outcomes are promoted by tensions and roadblocks arising from a fundamental conception that the two types of medicine are mutually exclusive and cannot be rationalized within each other's frameworks of knowledge. There is a slow but steady acceptance that much of the discord is manmade and that these systems of knowledge can learn from each other. For example, two of the most effective antimalarials of all time—quinine and artemisinin—have their roots in the ethnomedicine of South America and China. Bioactivity-guided fractionation to isolate similar constituents from African herbal pharmaceuticals has been slower, but, as pointed out by Raphael Chijioke Njoku in chapter 4, it is occurring. Slow progress in this area from the region of the world most undermined by

malaria is in part rooted in the concerted efforts by colonialists to undermine the delivery of ethnomedicine. This resulted in mutual mistrust and rivalry among the disparate practitioners as well as the suppression of traditional practitioners. Although less well appreciated but well enunciated in chapter 3 by Kalala Ngalamulume, traditional practitioners very often fought back.

Unaware, or at least unaccepting, of the existence of a body of medical knowledge on the African continent, nineteenth-century Europeans brought with them fresh and validated means for infectious disease control based on then-modern principles of hygiene and chemotherapy. Using principles developed by western science over the preceding three hundred years, they were rapidly able to identify causative organisms, vectors, and preventive as well as sometimes curative strategies for combating the "new" contagions. A new discipline of "tropical medicine and hygiene" emerged and grew rapidly. Its birth was less torturous than the emergence of other scientific disciplines in the past, because it lent itself to immediate evidence-based practice and was richly funded from colonial spoil.

Had the momentum in tropical parasitology and allied sciences generated a century ago been sustained, it is possible that western medicine would have arrived at solutions for many of the diseases endemic in Africa and other parts of the developing world. Unfortunately, as colonialism became less fashionable, so did this type of research. A further, but much smaller, decline in infectious disease burden in Europe and North America following the development of twentieth-century antibiotics and vaccines led to an almost complete abandoning of the sciences allied to the study of infectious diseases in general and tropical ones in particular.[15] In the same era, newly independent African states inherited health systems that were primarily designed to ensure the survival of now-departed expatriates and were based on scientific methods almost entirely practiced in Europe. More effectively than health and technological innovation, cultural practices that served as formidable barriers against endemic diseases were abandoned for trendy, imported customs from abroad.[16] Debilitating disease conditions that have been endemic in parts of Africa but did not afflict the expatriate community have been almost completely neglected by allopathic medical science. The vector and (or) means of transmission of the crippling infection Buruli ulcer remain essentially unknown even though, as chronicled by Frank N. F. Dadzie and Gerald M. Mumma in chapter 9, the physical and economic burden from this dreaded disease within endemic foci is phenomenal. Equally distressing is the impact that occupational risk factors have on disease epidemiology among South African miners outlined by Freek Cronjé and Charity Chenga in chapter 10. That the promise from science has not been fulfilled is perhaps illustrated by the list of Grand Challenges in Global Health (see table I.1).[17] If every one of these recently proposed significant roadblocks to international health and well-being were overcome, the greatest improvement in health would be seen in sub-Saharan Africa.

Table I.1. Grand challenges in global health

Grand challenge number (GC #)	Challenge description
GC1	Create effective single-dose vaccines that can be used soon after birth
GC2	Prepare vaccines that do not require refrigeration
GC3	Develop needle-free delivery systems for vaccines
GC4	Devise reliable tests in model systems to evaluate live attenuated vaccines
GC5	Solve how to design antigens for effective, protective immunity
GC6	Learn which immunological responses provide protective immunity
GC7	Develop a genetic strategy to deplete or incapacitate a disease-transmitting insect population
GC8	Develop a chemical strategy to deplete or incapacitate a disease-transmitting insect population
GC9	Create a full range of optimal, bioavailable nutrients in a single staple plant species
GC10	Discover drugs and delivery systems that minimize the likelihood of drug resistant microorganisms
GC11	Create therapies that can cure latent infections
GC12	Create immunological methods that can cure chronic infections
GC13	Develop technologies that permit quantitative assessment of population health status
GC14	Develop technologies that allow assessment of individuals for multiple conditions or pathogens at point-of-care

Source: Varmus et al., "Public Health. Enhanced: Grand Challenges in Global Health." *Science* 302, no. 5644 (2003): 398–99.
Note: Identified by the scientific community following a call from the Bill and Melinda Gates Foundation, managed by the U.S. National Institutes of Health.

There is room to argue that illness in Africa is too frequently a pessimistic discourse that ignores the few but significant pearls that give cause for optimism and illustrate that, with applicable science, appropriate resources, and sociopolitical commitment, disease control is possible.[18] Exclusive breast-feeding campaigns, by combating malnutrition, diarrhea, and infectious disease susceptibility, are beginning to have an impact on infant mortality.[19] This relatively "new" intervention ironically reinstates an age-old practice that was commonplace in many parts of Africa before the disastrous medicalization and commercialization of infant feeding that came with western medicine.[20]

The positive effects of other interventions have been even more dramatic. Onchocerciasis, or river blindness, a once widespread disabling infestation,

has been extensively controlled in West Africa in as little as three decades. It is estimated that 600,000 cases of irreversible blindness were prevented between 1974 and 2002 due to an effective and focused onchocerciasis control program.[21] Another disabling parasitic disease, Guinea worm, is on the verge of eradication.[22] Expanded programs on immunization have made some headway in preventing deaths due to vaccine-preventable diseases and as a vehicle for the delivery of protective vitamin A and zinc supplements for young infants. These significant achievements are dwarfed in the face of the global eradication of one of the most deadly pathogens—smallpox.[23] Armed with an effective vaccine, and assisted by the ease of diagnosis, the WHO directed a smallpox eradication campaign that was efficient and timely. Notably, the campaign eradicated smallpox from every part of the world, including Africa. If the complete eradication had taken just five more years, it would have overlapped with the clinical emergence of AIDS and the possibility, since AIDS patients cannot be vaccinated, that the entire eradication program could have failed.

Following the success of smallpox eradication, there was new optimism that other scourges, notably malaria, could be similarly thwarted. An ambitious malaria eradication program, however, flopped miserably[24] and the prognosis for more recently instituted control programs remains, at best, uncertain. Other eradication programs—Guinea worm disease and polio—have failed to meet their original targets but there is justifiable optimism that they will be seen through. Some insight into the origin of many African health problems can be gleaned from the challenges facing both programs. War has been a major barrier to implementation of the Guinea worm eradication program in Sudan and has also led to the recontamination of worm-free areas.[25] Farther west, the polio campaign suffered a recent derailment when millions of northern Nigerians boycotted the polio vaccine.[26] The boycott originated from concern for the safety of the vaccine, which was supported by religious as well as government leaders. The entire episode demonstrates a lack of trust in the public health system that is reminiscent and rooted in similar distrust of colonial medicine.[27]

These and countless other public health crises cast a shadow that reminds us there have been too few improvements in the control of major infectious diseases in sub-Saharan Africa and illustrate the precarious nature of health-improving intervention programs in this region. Sufficient time has elapsed, however, for the disease landscape to be altered, layering fresh problems over those that are yet to be solved. As detailed by Iruka N. Okeke in chapter 7, infectious agents that were once susceptible to antimicrobial drugs have evolved resistance. The rate of resistance emergence has outpaced the rate of new antimicrobial development so that the world in general and Africa in particular are on the verge of an age of untreatable infections. With this biological transition has come an epidemiological transition with the influx of chronic, noninfectious diseases—cardiovascular disease, diabetes, and cancers—as

major causes of morbidity and mortality. Omran originally postulated that countries move from the "age of pestilence and famine" to the "age of degenerative and man-made diseases" when infectious diseases decline with development.[28] As expanded on by Kathryn H. Jacobsen and Melissa K. Van Dyke in chapter 8, however, unlike the epidemiological transitions that occurred in other parts of the world, these "new" conditions have appeared before a decline in infections so that the cost of health provision in Africa is set to rise tremendously. This is of particular consequence because most of the resources in Africa are channeled toward infectious disease control. As indicated in chapters 5, 6, and 9, by Cecilia S. Obeng, Gabriel B. Fosu et al., and Dadzie and Mumma, respectively, age-old noninfectious conditions, chronic diseases, and disability have too often been neglected as the burden from these conditions is set to rise.

From the late 1970s, the world began to take notice of "new," emergent plagues and many of these were seen in Africa. Viral hemorrhagic infectious diseases such as Marburg, Ebola, and Lassa fevers are perhaps the most terrifying, most lethal, and most mysterious. However, far more people feel the negative impact from the resurgence of "old" plagues including tuberculosis, malaria, and sexually transmitted bacterial infections (such as gonorrhea and syphilis). If the state of disease in Africa was considered to have reached its depths in the early 1980s, no one was ready for the large and considerable dip in the quality of life and the burden from disease that would come from disseminated HIV. Desowitz has written that, in spite of its almost overwhelming infectious disease burden, Africa was relatively healthy before the arrival of AIDS.[29] The word "relatively," in Desowitz's context, uses comparison with an already deplorable situation to emphasize the unimaginable destruction caused by AIDS. The rapid dissemination of such a deadly disease meant that the landscape, cultures, and peoples of Africa became changed by the disease. With the deadly disease has come stigmatization, local and imported, leading to the resurgence of the idea of an infectious continent. Adverse social responses to the disease ranged from ostracization of the infected to the malicious use of the virus as a lethal weapon as outlined by Obijiofor Aginam in chapter 12 and Yacouba Banhoro in chapter 13.

Initial observations of the rapid spread of HIV in Africa lead to speculations of the existence of Africa-specific *biological* risk factors. Most of this racist pseudoscience has been debunked, and it is generally acknowledged that the possible modes of transmission of the virus do not differ among people of African descent. Unfortunately, the HIV-infected African is more likely to die and die rapidly and less likely to be survived by a community that can maintain the productivity levels attained before his or her absence. Tools for AIDS prevention are less likely to be used, at the population level, in Africa than in many other places. Furthermore, in the absence of a cure, access to supportive treatment or even the opportunity to die with dignity is, in Africa, the privilege of only the most fortunate. Thus, paradoxically, although AIDS was initially

defined clinically in America, the death, devastation, and fear of the disease have been more heavily focused on Africa. With AIDS, a nouveau cultural "decadence" (in actual fact almost entirely spurred by poverty and its stimulation of migrant labor, prostitution, and other risk factors) came to the fore. Societies are marked by a decline in the capacity and indeed the will to care for the less fortunate, for example, those orphaned and widowed by AIDS. The situation is such that any discourse of illness in Africa invariably brings to mind the complex misfortune of AIDS. HIV, a virus that depends on person-to-person transfer for continued survival and for which there is no scientific basis for tropical proclivity, is perhaps the quintessential illustrator of the role of poverty, rather than climate, culture, or genetic differences, as the major determinant of the disproportionately high infectious disease burden in Africa.

It is therefore cheerless but inevitable that this volume concludes with a section devoted to HIV and AIDS in Africa. Although much has been written on the subject, the literature is far from sufficient to bring all of the interwoven problems to the fore or for that matter to present them in a manner that can help to understand them academically or address them effectively. The chapters in part IV of this volume take on the particularly pertinent aspects of sociocultural interactions and the negative effects on economy and development, as well as the global political response, or more accurately, lack thereof. This latest scourge interacts culturally as well as biologically with other infectious diseases so that almost every vital area of medicine and public health in Africa is affected. HIV predisposes infected people to other diseases, making them suitable incubators for pathogens that could infect others. Additionally, inappropriate medical practices, such as the reuse of needles in hospitals and the administration of unscreened blood, were converted, by AIDS, from life-saving practices with significant risk to nosocomial manslaughter. Thus, in spite of the efforts to dedicate a specific section to HIV and AIDS, the virus and the lethal syndrome, being so central to the theme, inevitably rear their ugly heads in many preceding chapters.

Notes

1. Wilson, "The Unexplored Biosphere," in *The Diversity of Life*, chap. 3.
2. A historical overview of the germ theory of disease and subsequent development of medical strategies against infection can be found in Porter's, "From Pasteur to Penicillin," in *The Greatest Benefit to Mankind*, chap. 15.
3. Basch, *Textbook of International Health.*
4. Wolf, *Don't Kill Your Baby*; Perry et al., *Microbial Life.*
5. Watts, *Epidemics and History*; Honigsbaum, *The Fever Trail.*
6. McKelvey, *Man against Tsetse.*

7. It must be acknowledged that the warm, moist tropical climate is conducive for the survival of microbes that infect humans. The climate is also optimal for insect and other vectors, which carry disease. Thus, while there is little to directly connect the climate with disease incidence in expatriates, climatic factors did play a role. For some of the same reasons, disease control interventions that have been successful in cooler, drier climates have been harder to implement in sub-Saharan Africa. See Needham and Canning, *Global Disease Eradication*. Nonetheless, it is simplistic to apportion all the blame to climate, since there are tropical parts of the world, for example in the United States of America, where the infectious disease burden is manageable and controlled.

8. For example, Africans are more likely than people from non-malarious parts of the world to have hemoglobin variants that protect against severe malaria. See Kwiatkowski, "How Malaria Has Affected the Human Genome," 171–92.

9. Although microbes, being invisible, were unknown, the concept of contagion is inherent in many African belief systems. In *Indigenous Theories of Contagious Disease*, Green refers to this knowledge as "indigenous contagion theory." In its various forms, this contagion theory acknowledges external and natural causes of infectious diseases, some of which are even considered to be invisible worms or insects.

10. Ndukwe et al., "Antibacterial Activity of African Chewing Sticks," 1221–33.

11. Ndukwe et al., "Antibacterial Activity of Aqueous Extracts of Selected Chewing Sticks," 86–94.

12. World Health Organization, "Consensus Statement on Oral Hygiene," 139.

13. Watts, *Epidemics and History*.

14. Needham et al., "Socioeconomic, Gender and Health Services Factors Affecting Diagnostic Delay for Tuberculosis Patients in Urban Zambia," 256–59.

15. For example, in 1967, William H. Stewart, the then-surgeon general, told the Association of State and Territorial Health Officers that the book on infectious diseases was all but closed. He recommended that national attention be shifted to chronic diseases. See Stewart, A Mandate for State Action. His recommendation reflected the general opinion of the day—that antibiotics and vaccines would eliminate the threat from infectious diseases. This opinion did not take into account the inherent ability of microbes (and indeed all living things) to alter their genetic material, even though the biological basis for such changes was remarkably well understood at the time. Stewart also ignored the fact that infectious disease remained the major cause of disease and death in developing countries. Even if he had been unconcerned about health on other continents, he failed to appreciate that advances in transportation technology would place the United States at risk of imported infections.

16. Protection from sexually transmitted diseases was not entirely conferred by customs that debarred promiscuity. These can always be subverted, and probably were to an extent, even in ancient times. More critical are those customs that provided economic and other securities, thereby providing passive protection. In the traditional context, Africans sought employment, which supported their basic needs, close to home. The units and currencies that determined wealth and success were largely comprised of present-day intangibles—kinspeople, for example, see Ajayi and Falola, *Tradition and Change in Africa*. With colonization came a need for externally sourced material wealth. Migrant labor, a construct of physical or economic coercion, promoted the spread of sexually transmitted diseases because of the distance barrier it places between committed couples, between whom intercourse is in most cases free. Similarly, many African cultures make provision for the economic support of unmarried

women and widows, making need-motivated prostitution less likely. Other abandoned or modified practices have had important consequences for infectious diseases spread by other means. Breast-feeding provides uncontaminated food for infants and also offers protection against diarrheal, respiratory, and other childhood diseases. The complete or partial replacement of breast-feeding with alternate foods transformed breast-feeding from a public to a private act and ultimately increased the risk of infection for young children. Traditional chewing sticks have been wholly or partially replaced by toothbrushes and toothpaste from the West. The two methods have equivalent efficacy, as has been determined by controlled studies. See World Health Organization. "Consensus Statement on Oral Hygiene," 139. However, as etiquette permits chewing stick tooth cleaning, but not tooth brushing, in public, the former is likely to produce better oral hygiene overall.

17. Varmus et al., "Public Health. Enhanced," 398–99.

18. Levine, *Millions Saved.*

19. Ojofeitimi et al., "Breast Feeding Practices in Urban and Rural Health Centres," 119–25.

20. Most African mothers were not separated from young children and fed them on demand. When it became unacceptable to bring babies to European-devised work places, or to breast-feed them in public, the culture of almost-exclusive breast-feeding became impractical. Attempts to institute powdered baby food introduced costs that were not originally anticipated and the likelihood that the food would be prepared with unsafe water. As baby "formulas" are designed to be carefully measured and African recipes are not, correct preparation could not be informally integrated at the grassroots level. These factors combined to make artificial infant feeding one of the greatest causes of infant mortality in sub-Saharan Africa until the inception of UNICEF's exclusive breast-feeding "Baby-friendly" campaign. See UNICEF, *Take the Baby Friendly Initiative!* The veritable disaster could have been anticipated since it followed a similar catastrophe in North America a century before. See Wolf, *Don't Kill Your Baby.*

21. Levine, *Millions Saved.*

22. Centers for Disease Control and Prevention, "Progress toward Global Eradication of Dracunculiasis, 2002–2003."

23. The World Health Organization deserves much of the credit for mounting this intensive and ultimately successful program. The disability-adjusted life years and health-system savings from smallpox eradication have been described as being sufficient to justify the continued existence of the WHO even if the organization made no further accomplishments.

24. In a large part, the failure arises from the efforts to rigidly implement a program based on successes seen in areas where the prevalence, pathogen type, environment, or vector dynamics were not comparable. The smallpox eradication program was adapted to suit various cultures, and the final successful strategy was not the one initially envisaged. See Needham and Canning, *Global Disease Eradication*; Levine, *Millions Saved.* By contrast, the malaria eradication strategy remained virtually unchanged until it was abandoned. Both eradication programs are reviewed by Needham and Canning in *Global Disease Eradication.*

25. Centers for Disease Control and Prevention, "Progress toward Global Eradication of Dracunculiasis, January–June 2003."

26. Roberts, "Disease Eradication," 1096.

27. Obadare, "A Crisis of Trust," 265–66.
28. Omran, "The Epidemiologic Transition," 509–38.
29. Desowitz, *The Malaria Capers.*

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1

THE INFECTIOUS CONTINENT

AFRICA, DISEASE, AND THE WESTERN IMAGINATION

Sophie Wertheimer

> While Western depiction of Africans as virulent and dangerous is certainly not new, the recent acceleration of economic and cultural exchange has apparently raised the stakes. HIV emerged as a pathogen simultaneously with new anxieties over the risks of other "contagions." And while it may seem clear that one pandemic is painfully literal, the other figurative, they were quickly associated with one another. In fact, economic exploitation, cultural exchange, and disease are interrelated—but Africanness is hardly the deadly pathogen.
>
> Barbara Browning, *Infectious Rhythm*

In the essay "Sexual Cultures, HIV Transmission, and AIDS Prevention," Richard Parker writes that "in little more than a decade the rapid spread of the international AIDS pandemic has profoundly changed the ways in which we live and understand the world."[1] Although I do not wish to question the veracity of Parker's claim, I believe an inversion of terms can also provide interesting insight: the way in which we live and understand the world has profoundly affected the AIDS pandemic and its surrounding discourses. In addition to being an important medical and scientific issue in and of itself, HIV/AIDS has come to constitute a "focal point for many of the social ills that plague modern society,"[2] ills that in many cases long predate the appearance of this particularly malignant virus.

This idea finds itself reiterated in Susan Sontag's *AIDS and Its Metaphors*, where she traces the moral judgments and ideologies that have contributed to shaping understandings and knowledges related to HIV/AIDS. Although she concentrates on this particular pandemic, unique to its time and context, Sontag advances that many of the ways in which we have come to formulate,

address, and act upon HIV/AIDS are symptomatic of ideological paradigms that existed long before this specific case. For instance, Sontag notes "a link between imagining disease and imagining foreignness," one that, "lies perhaps in the very concept of wrong, which is archaically identical with the non-us, the alien. A polluting person is always wrong, as Mary Douglas has observed. The inverse is also true: a person judged to be wrong is regarded as, at least potentially, a source of pollution."[3]

From the bubonic plague of the Middle Ages to the syphilis epidemic of the late nineteenth and early twentieth centuries, through to the more recent Ebola and SARS outbreaks, many, if not most, of the infectious diseases that have marked the course of human history reflect a tendency to use the other as a scapegoat upon whom accusations, suffering, anxiety, and uncertainty can be projected. In relation to HIV/AIDS, it appears that black populations[4] have constituted an ideal contingency upon which to demonstrate and perpetuate this association between illness and the other.

The first few years of the pandemic saw the Haitian community, both in North America and Haiti, particularly affected by the virus. Because at the time seroprevalence was mostly confined within "identifiable" populations, Haitians were soon assigned the attribute of "risk group" and granted a membership in the now infamous 4H club: homosexuals, Haitians, heroin users, and hemophiliacs. While this categorization certainly caused much harm and violence to all the communities included in the list, the Haitian category proved particularly problematic in that "the Haitian people as a whole, marked hereditarily by its ethno-cultural features, found itself, with regards to AIDS, in the same position as other socio-cultural groups with sociologically acquired characteristics: homosexuals or intravenous drug users. The crime of racial discrimination was imminent."[5]

Along with being assigned the nomenclature of risk group, the seroprevalence in certain Haitian communities led many to assume that it was they who were responsible for harboring the disease and bringing it into the western environment in the first place. The opposite was never considered, of course, as "nothing of this sort, it was argued, could have arisen in the germ-free West."[6] Following much mobilization and contestation on the part of Haitian individuals and communities, the Haitian origin theory of the disease was soon dismantled and proved to be false. Alas, much harm had already been done, with the stigmatization and discrimination of Haitian communities throughout the world, as well as in creating an association between HIV and blackness. In keeping with Sontag's remark about the tendency to correlate illness and the other, the initial reaction to HIV/AIDS came to represent but the newest notch in a long history of western musings on health and disease in relation to black populations.

Beginning with European colonial medicine and finding its epitome in the United States in the nineteenth and twentieth centuries, the western medical and scientific establishment has long fascinated itself with black populations.

Often premised on the notion of a hierarchy of races, or at least of a fundamental difference among the races, discourses produced within these disciplines emulated and confirmed ideologies established through colonization and its close-knit sibling of racism. The creation of a correlation between black peoples and illness played a key function in allowing westerners to exert dominance and power over these populations. Tracing the historical, social, and economic conditions underlying the infamous Tuskegee experiments, a prime example of extreme medical and social racism, James H. Jones advances that:

> There was a compelling reason for this preoccupation with establishing physical and mental distinctions between the races, one that transcended the disinterested pursuit of empirical facts. Most physicians who wrote about blacks during the nineteenth century were southerners who believed in the existing social order. They justified slavery and, after its abolition, second-class citizenship by insisting that blacks were incapable of assuming any higher station in life. Too many differences separated the races. And here "different" unquestionably meant "inferior."[7]

In addition to drawing from a history of western conceptualization of disease in black populations, the association of HIV with Haitian communities came to crosscut a tradition of "understanding" and "thinking" of black peoples in relation to sexuality. In *Sexuality: An Illustrated History*, Sander Gilman traces this fascination with black sexuality, noting a persistent effort on the part of the West to link it to pathology and difference. He cites as an example physicians' preoccupation with black women's genitalia, a theme he says "dominates all medical descriptions of the black during the nineteenth century,"[8] and one that contributed to creating an (ongoing) understanding of blacks as sexually "different" from whites, most notably in terms of their "promiscuous appetites."

Of course, the realm of sexually transmitted illnesses, a nascent source of scientific interest at the time, offered a potent domain for the merging of western concerns with both the sexuality and the health of black populations. Multiple layers of racial and racist stereotyping collided and intertwined, further contributing to the construction of the black "infectious other." For instance, while the American syphilis epidemic of the late nineteenth and early twentieth century affected whites and blacks alike, it was nonetheless perceived as doing so differently in black populations, touching them more strongly because of this supposedly "pathological sexuality." As Jones remarks:

> Noting that there had to be a break in the skin for the spirochetes to enter the body, a team of physicians from the United States Medical Corps thought it entirely possible "that the negro's well-known sexual impetuosity may account for more abrasions of the integument [skin] of the sexual organs, and therefore more frequent infections than are found in the white race."[9]

Although the very legitimate outrage created by the publicization of the Tuskegee syphilis experiment, as well as the civil rights and antiracism

movements of the twentieth century, certainly aided in rectifying these profoundly flawed ideologies, the early association of HIV and Haitian populations provided tangible proof that these had not disappeared from the western psyche. As Gilman notes, while "one could no longer as easily localize the source of disease among American blacks, as had been done in the Tuskegee experiment," instead "the source of pollution was seen in foreign blacks, in black Africans (specifically in Rwanda, Uganda, and Zaire) and Haitians, thus assuaging American 'liberal' sensibilities although still locating the origin of the disease within the paradigm of Western racist ideology."[10]

In keeping with this leitmotif, it seemed sadly logical that when the Haitian-origin theory of HIV/AIDS was disproved (and even before), the finger of accusation turned toward an even "blacker" and "other" source instead. As Simon Watney remarks, the "undifferentiated apocalyptic Africa [that the West has imagined] has proved an ideal site in which to find and 'see' disease."[11] Since the advent of HIV/AIDS, Africa has repeatedly been proclaimed the source of origin of the malignant virus by western scientists, researchers, and, of course, the media. Twenty years later, a short, albeit dense, amount of time within the history of the HIV/AIDS pandemic, this trend does not seem to have abated in any way. Quite the contrary, racist and troublesome tendencies continue to mark the cultural products and minds of much of the western world in relation to HIV/AIDS and Africa more generally.

Using a small selection of articles published in mainstream English-language Canadian newspapers between 2000 and 2003, I will further my inquiry into the role played by the long tradition of western imaginings about illness and health in relation to black populations in informing and shaping our current understandings of and responses to HIV/AIDS. I employ critical discourse analysis as my methodological lens, in that it assumes that "media discourse is the main source of people's knowledge, attitudes and ideologies, both of other elites and of ordinary citizens."[12] Tracing the "dominant-hegemonic position" of these texts—that is, the one that operates inside the dominant code and is reflective of wider ideological patterns[13]—I will argue that in painting an image of the African continent as a land where disease not only abounds but can barely be dealt with or contained, these specific texts draw from and perpetuate a tradition of projecting anxieties and blame about illness onto the African other.[14]

Only a few years into the pandemic, Richard and Rosalind Chirimuuta began actively critiquing the extremely racist ideologies that had shaped much of the early scientific research on the HIV virus. For instance, they examined the persistent desire on the part of scientists to prove Africa as being the source of origin of the virus, an area of scientific inquiry that, though prolific, they concluded as proving "to be contradictory, insubstantial or unsound."[15] To this day, no African origin theory has been successfully proved; yet the continued circulation of African origin theories of the virus seems to have persisted with little restraint. Many of the newspaper articles

currently printed in mainstream Canadian newspapers rehash the African origin theory, often assuming it to be a given. For instance, in a *Gazette* article "AIDS Started in 1930s: Study Says," an anonymous author provides details of an American study claiming to have traced the genetic mutation of the HIV virus from a similar virus found in simian species. The article posits that "AIDS evolved from a benign simian infection into a human-killer in the early 1930s, long before it was recognized as a disease, but it stayed in remote Africa until jet travel, big cities and the sexual revolution spread it worldwide."[16]

This assertion finds itself repeated in slightly differing forms in articles published around the same date, namely the *Calgary Herald*'s "Unravelling the AIDS-monkey Mystery: Study Pushes Origin of AIDS Virus to 1930,"[17] as well as the *National Post* article "Social Disruption, Vaccination Boosted AIDS Epidemic: Researchers: 1930s African Origin."[18] Three years later, a series of similar articles resurfaced, this time positing that "One form of the virus that causes AIDS made the jump from animals to people by 1940, a new analysis indicates. HIV-2 didn't become widespread until the 1960s, perhaps spread during a war in the West African country of Guinea-Bissau, where researchers say it originated."[19]

While these articles claim to present the "truths" produced by various scientific studies, the theories advanced are in fact speculations, not definite answers. Certain authors point to this nuance, as is the case with Jeremy Manier of the *Calgary Herald*, who advances that "it is more *plausible* that HIV spread from chimpanzees to people who hunted the animals for food."[20] The *Daily News* article "Scientists Find HIV-like Virus in Wild Chimps," commenting on a similar study, concludes that "this particular type of chimp in Tanzania could not be the source for human AIDS, because the viral strain researchers found is too genetically different." Rather than attributing the failure of this theory to the western biases from which it originates, the author moves on to reaffirm the obvious validity of the monkey-human claim, stating that "the Alabama scientists are beginning the next key step: tracking different chimps in an even more remote part of Africa, where the virus is thought to have jumped from animals to man."[21] And when this theory once again fails, chances are good that scientists will search for yet another chimp, in an even more "remote" part of Africa.

In trying to find a positive twist to this article, one could claim that by virtue of pointing to the failure of this particular HIV-monkey origin theory, the author points to the potential failure of all other such theories. Other authors do not even bother alluding to this important detail, wording their articles in such a way that the speculative qualities of the theories are completely lost, and these are instead stated as fact. For example, in the *National Post* article "Chimp Study Solves Puzzle of AIDS Link," the anonymous author posits that "In the 1990s, scientists showed HIV-1, the most prevalent AIDS virus, was transmitted to humans from chimpanzees in central Africa."[22] This is false.

Furthermore, these series of articles, published between 2000 and 2003, are by no means providing new or groundbreaking information. The theory of HIV having mutated from an equivalent simian strain, then jumping from monkey to African, is a leitmotif that seems to date back to the very beginnings of the pandemic. As Joan Shenton argues:

> By the mid-1980s it had become widely accepted that AIDS originated in Africa. It was Kevin de Cock from the Institute of Hygiene and Tropical Medicine who set the ball rolling by suggesting that AIDS was an "old disease from Africa." Next Robert Gallo, in the company of his colleague Max Essex stepped in and put forward the monkey hypothesis—that an African green monkey virus jumped species infecting humans and subsequently spread throughout the world.[23]

Because the West's "imaginings" of Africa include the notion that Africans live in close proximity with nature,[24] it is commonly believed that animal species like monkeys abound on every part of the continent and are inherent elements of a typical African existence. Indeed, monkeys are not only perceived as constituting a staple in the African diet but also the western mind has been known to accuse Africans of giving dead monkeys to their children as toys or of injecting monkey blood into their pelvic areas for increased sexual pleasure.[25] As the Chirimuutas remind us with much necessity, however, "Most Africans, in fact, have little contact with monkeys . . . and amongst those who regularly hunt monkeys, for example the pygmies of the equatorial rain forests, AIDS is notable for its absence." They go on to remark that westerners can frequently come in contact with monkeys, in that these are "used widely for scientific research. . . . If there is any truth in the hypothesis that HIV originated in monkeys (and African monkeys are not the only candidates) it would seem more appropriate to investigate modern medical research than speculate about the customs and behavior of Africans."[26]

Indeed, the theory that HIV may have been passed on from monkey to human in a western laboratory, and then transported from the West into Africa, is one that has often been considered, certain of its believers going so far as to claim HIV to be a North American laboratory invention. While there certainly are some valid arguments in support of this theory and others like it, Paula Treichler points out:

> It is one not easily incorporated within a Western positivist frame—in part, perhaps, because it often reveals an unwelcome narrative about colonialism in a postcolonial world. The West accordingly attributes such theories to ignorance, state propaganda, or psychological denial, or it interprets them as some new global version of an urban legend, like alligators in the New York City sewer system.[27]

In keeping with these western assumptions, Maggie Fox does not even pause to consider alternatives in the *National Post* article "Social Disruption, Vaccination Boosted AIDS Epidemic: Researchers: 1930s African Origin."

Paraphrasing an AIDS researcher, she advances that "people can catch perfectly harmless viruses from apes and monkeys. For example, the simian foam virus often infects lab workers, but causes no harm."[28] Alas, this glimpse toward the potential theory of a western origin to HIV pales in comparison with the remainder of the lengthy article, where she seeks to demonstrate that HIV was transmitted through the butchering of monkeys, "somewhere in central Africa."[29]

As this particular example seems to illustrate, while western origins of HIV are not even so much as thought about in passing, African origin theories are left unquestioned, used and reused. In addition to being highly problematic and harmful in regards to the ideological assumptions that guide them and are reiterated within them, these theories are further damaging in that as Harlon Dalton comments, "we [black folks] understood in our bones that with origin comes blame."[30] Indeed, this equation of origin with guilt seems to permeate many of the articles currently being published in Canadian newspapers about HIV/AIDS in Africa. Not only do they assign Africa as the source of origin of AIDS but also they hold the continent responsible for having brought the virus into the western environment.

We see this rather well reflected in the *Gazette* article "AIDS Started in 1930s: Study Says," in which after having advanced the SIV mutation theory, the author states: "The disease did not become a worldwide menace, he said, until people left the isolated areas of Africa and *carried the virus around the globe*." The article goes on to posit that, "in more recent decades, an age with easy transoceanic travel and the sexual revolution, millions of people have been in and out of Africa". Moore said campaigns to vaccinate the African population against smallpox and other diseases might even have helped HIV spread, saying, "they weren't using sterilized needles all the time."[31]

Because Africa is highly "uncivilized" or "underdeveloped" according to western notions of civilization and development, an idea this last sentence clearly insinuates, it becomes responsible for the international spread of the virus. Indeed, "the great majority of Western researchers and reporters on Africa present an image of a continent bereft of reasonable medical facilities, competent doctors or governments capable of dealing with serious public health issues"[32] and in all its imagined inferiority, instability, and dirt, Africa becomes a breeding ground for disease.

In the *Edmonton Journal* article "Health Catastrophe Bringing a Continent to Its Knees," Paul Salopek paints a picture of Africa as a place where even political and economic conditions are ill: "*Chronic* wars, unrelieved poverty, rapid urbanization and corruption are still the traditional villains in the *sickening* of Africa." He goes on to describe a recent outbreak in the Sudan of a virus that causes "sleeping illness":

> The slow killer is the culprit in Sudan's hot zone, Western Equatoria province. Not coincidentally, the conditions that exist today in the area are so *primitive* they mimic

> the tsetse killing grounds of *pre-industrial Africa*. Years of civil war between the Arabic north and rebels from black Christian and animist south, where many believe everything in nature has a living soul, have turned the province into one of the *most backward places on Earth*. A few dust roads swallowed by elephant grass are the only tangible legacy of British rule, which ended in 1956. There is not a single working phone, flush toilet or paved road—much less a modern hospital.[33]

After reading this paragraph, one is left to wonder who exactly the "culprit" is: perhaps the virus, but most probably Africa itself, for not having been able to "keep up with the times," to profit from the colonial presence of the Europeans. Obviously, a place that isn't even "civilized" or "hygienic" enough to have a flush toilet will be "infested with devastating illnesses," this too being an idea that exists within a tradition long predating the HIV/AIDS pandemic. In fact, it seems to allude quite directly to notions put forth through colonization, as we see reflected in Barbara Browning's assertion that

> Expansionist Western medical discourse in colonizing contexts has been obsessed with the notion of contagion and hostile penetration of the healthy body, as well as of terrorism and mutiny from within. This approach to disease involved a stunning reversal: the colonized was perceived as the invader. In the face of the disease genocide accompanying European "penetration" of the globe, the "coloured" body of the colonized was constructed as the dark source of infection, pollution, disorder, and so on, that threatened to overwhelm white manhood (cities, civilization, the family, the white personal body) with its decadent emanations.[34]

What is worse, of course, is that with the increasingly permeable borders of globalization, Africa can no longer be as easily "contained," and the infectious continent becomes an even more significant menace to the West. As Salopek so very subtly states, "For the Western public, the fear of Africa's emerging, elusive 'doomsday bugs' is visceral, literally: Viruses such as ebola and Marburg liquefy the internal organs, causing some victims to bleed even from their pores."[35] The notion of Africa presenting a threat to the well-being of westerners also finds itself reiterated in the *National Post* article "AIDS Crisis Threatens UN Peacekeepers in Africa," in which Stewart Bell posits that the high incidence of HIV in the African military puts Canadians at risk. Not only does it threaten the peacekeepers working on the continent (exactly how they are contracting HIV is of course left unmentioned) but Canada as a whole: "As business and migration links between Canada and Africa have increased, so has the risk that diseases such as HIV will be imported. . . . As well as putting Canadian troops at risk, it threatens to undermine Western attempts to stabilize the region through peacekeeping, investment and development assistance, says the report."[36]

Similarly, the *Daily Times* article "NGO Working to Save Lives: Improving Conditions in Africa Doesn't Come Without Risks," recounts medical student Megan Miller's bout with malaria upon returning to Canada after a two-month

internship in Gambia. Her personal story, of questionable newsworthiness might I add, is intertwined with statistics regarding various diseases in Africa. Miller's predicament thus comes to be understood not as an isolated example but as one of the direct and obvious consequences of having ventured onto the infectious continent.

Recent years have witnessed rising concern over the strict nature of the HIV/AIDS medication regimen, in that missed pills can lead to the development of new drug-resistant strains of HIV. Although this is a concern that probably affects westerners more so than Africans, in that the former have much more access to these therapies, this issue is often taken up by the media solely in relation to African populations. Joanne Laucius makes this very point in the closing sentences of the *Gazette* article "Canada Coaxed to Battle AIDS: Funds Needed. Carnage Feared in Africa and Asia":

> Only two weeks ago at a prestigious conference in Paris, another famous scientist suggested an infusion of HIV-fighting drugs into sub-Saharan Africa could be dangerous. Dr. Robert Gallo [notable for his African green monkey HIV origin theory in the 1980s], the U.S. scientist who discovered HIV in 1983, warned unsupervised use of HIV drugs in sub-Saharan Africa could create "multi-drug resistant mutants."[37]

The *Calgary Herald* article "New Strains of HIV Feared in Africa: Interrupted Treatments Blamed for Mutation" devotes itself to exploring this question of drug compliance, noting that "doctors and researchers in Ivory Coast say few patients are managing to stick to the strict pill-taking regimes without interruption—if they can afford them at all." The author goes on to state in the same piece that "in the United States, researchers have reported an abrupt upswing over the past two years in the prevalence of resistant forms of the virus in newly infected people. Even when the drugs are taken correctly, sometimes the virus can still mutate to become resistant."[38] Issues of drug compliance and the potential for mutated virus strains are therefore not unique to Africa. Regardless of the fact that most of the people with HIV/AIDS who are on these drug therapies are concentrated in the West, it seems that only in the African context does this question become a source for concern. The title of this *Calgary Herald* article, "New Strains of HIV Feared in Africa," certainly seems to convey this point.

Susan Martinuk reiterates it rather paternalistically when she posits, in relation to Africans only: "taking AIDS drugs isn't as easy as tossing back some Aspirin. AIDS drugs must be taken as part of a strict and complicated regime that involves diet and drugs. The possibility of success is greatly reduced when a majority of the patients are illiterate and unable to set a daily routine that centres around drug-taking."[39] Yet as Cathy Cohen reminds us:

> The question of which patients or people with AIDS have "enough discipline" to receive these new therapies is now a central part of a new generation of AIDS reporting.

> Journalists are openly discussing and writing about who should be allowed such treatment. These decisions move us disturbingly close to the rationing of life-saving treatments, based not only on limited financial resources, but also on the marginalizing myths attached to ascribed group traits and behaviors that have nothing to do with individual behavior.[40]

Furthermore, in this sense, Africans are not only held responsible for having infected the West with HIV in the first place, but through their persistent incompetence and underdevelopment, implied in Martinuk's comment on illiteracy and the inability to stick to the demands of AIDS therapy, they continue to threaten the West, this time with new "multi-drug resistant mutants."[41]

Just as it did during times of colonialism and slavery, this western imagination of Africa as diseased and dangerous still seems to serve important functions within the western psyche. First, while the West is undoubtedly a site where diseases can also proliferate and affect considerable portions of the population, the construction of this infectious Africa allows the West to absolve itself from any responsibility in relation to the international spread of HIV/AIDS. In "The Anthropology of AIDS in Africa," Bond et al. argue that

> HIV exists in a world which has become increasingly global in the movement of both capital and labor. Labor migration to and from the Caribbean to the United States has been a major factor in the migration of HIV infection. Similarly, the development of tourist industries, frequently based on U.S. capital as a replacement for the decline of profits from older colonially established sources such as sugar cane, has also traced the routes for HIV to follow.[42]

As the authors clearly state, western traditions and practices have had and obviously continue to have an impact on the spread of HIV within postcolonial states. Instead of acknowledging this, and by extension its own accountability, it seems far easier for the West to "blame the victim" instead. Again, this phenomenon is not particularly new or unique, but instead one that William Ryan claims:

> is applied to almost every American problem. The miserable health care of the poor is explained away on the grounds that the victim has poor motivation and lacks health information. The problems of slum housing are traced to the characteristics of tenants who are labeled as "Southern rural migrants" not yet "acculturated" to life in the big city. The "multiproblem" poor, it is claimed, suffer the psychological effects of impoverishment, the "culture of poverty," and the deviant value system of the lower classes; consequently, though unwittingly, they cause their own troubles.[43]

Following this logic, if the origin of HIV is blamed on Africans, not only does the West avoid the unpleasantness of guilt but also it can remain comfortably complacent and abstain from providing significant help, since, after all, Africans "brought it upon themselves."

Furthermore, the construction of Africa as the site of origin of HIV and as a continent completely devastated by the pandemic can legitimate certain western practices of questionable ethical value, for example, the testing of AIDS vaccines and medications within Third World settings. As the Chirimuutas note, "if Africans are supposedly dying by the millions, then it becomes politically acceptable to use them as a vast human laboratory for testing an AIDS vaccine."[44]

Because, in the eyes of the West, if the situation is so very critical in Africa and yet Africans don't seem to be doing anything about it, then the testing of western-developed therapies comes to represent one of the only forms of "salvation" available to Africans affected by HIV/AIDS. African nations and other countries from the Third World can thus freely "become a projective screen or laboratory for performing ideological or real (vaccine trials?) procedures that solve the master countries' internal epidemic or absolve their responsibility for the devastation occurring outside the collective Euro-American borders."[45]

Additionally, this infectious Africa, where all are ill and where everything is different from in the West, allows for a distancing from disease. Sander Gilman encapsulates this idea rather precisely when he states:

> It is the fear of collapse, the sense of dissolution, which contaminates the Western image of all disease. . . . But the fear we have of our own collapse does not remain internalized. Rather, we project this fear onto the world in order to localize it and, indeed, to domesticate it. For once we locate it, the fear of our own dissolution is removed. Then it is not we who totter on the brink of collapse, but rather the Other. And it is an Other who has already shown his or her vulnerability by having collapsed.[46]

The representation of the HIV/AIDS situation in Africa thus provides what Chinua Achebe has called a "proverbial mirror" upon which the West can compare and admire itself.[47] Because the situation is much worse "there" than it is "here," obviously "we" must be doing something right; we are still in control. "However bad your own problem, it pales into insignificance when compared with Africa's. Recently, millions were starving, now millions are dying of AIDS."[48]

Of course, western populations too continue to be infected and affected by HIV, they too develop drug-resistant strains to HIV, they too continue to be scared of this virus about which so little is known. By projecting these fears onto the African continent by comparing the western state of affairs with that of the African people, without acknowledging any of its responsibility in making the world what it is, the West creates the illusion that it is still in control. As long as African victims continue to die from AIDS at a speed that surpasses the infection rates in more developed countries, westerners can provide dismal help to satisfy their "benevolent" nature and tend to their daily occupations with the comfort of knowing that it is the other who suffers, the other who is ill and infected.

But, as was noted earlier, the other is not as easily dominated and containable as he was in the past. Through globalization, people have become increasingly mobile and borders growingly permeable. As Susan Sontag notes:

> Heightened, modern interconnectedness in space, which is not only personal but social, structural, is the bearer of health menace sometimes described as a threat to the species itself; and the fear of AIDS is a piece with attention to other unfolding disasters that are the byproduct of advanced society, particularly those illustrating the degradation of the environment on a world scale. AIDS is one of the dystopian harbingers of the global village, that future which is already here and always before us, which no one knows how to refuse.[49]

In keeping with Sontag's views, I would even go so far as to argue that the West's understanding and construction of Africa as infectious is also a product of the fear of the unknown, the uncertain, the undefined that seems to characterize globalization and the current world order. John Gabriel advances in *Whitewash*:

> [Globalization is] used to refer to the interdependence witnessed in the growth of global institutions and trading blocs, migration on a scale never witnessed before, the rise of new satellite and digital media and information technologies and the dominance of transnational corporations. Together, these new global conditions have served to mobilize white fears and anxieties which have expressed the re-assertion of old identities often based on racialized ideas of the nation.[50]

Although the fears and anxieties brought on by globalization as well as HIV/AIDS and other social issues may be new and ever changing, it seems easiest to fall back on the age-old pattern of externalizing these "at the expense of the other, by projecting and blaming these fears onto the other."[51] Following a long tradition of colonialist and racist thought, the West continues to imagine the other, in this context Africa, as so different and so utterly wrong that it becomes not only the reason but also the depository for these fears.

Of course, I do not wish to deny the suffering and loss that African peoples and communities have incurred as a result of the HIV/AIDS pandemic; however, it is my strong contention that western texts such as the articles surveyed above provide a very biased and inaccurate account of the effects of and responses to the HIV/AIDS pandemic on this rich, vast, and diverse African continent. Quite the contrary, these texts continue to reflect and produce western imaginings of Africa based not on an actual reality but rather on extremely colonialist and racist precedents, in the process contributing to a perpetuation of ideological, institutional, and social racism. If we accept Browning's assertion that "Africanness is hardly the deadly pathogen,"[52] and pause to consider the violence and prejudice communicated in these media texts and the wider ideologies that inform them, it becomes worthwhile to ask

who exactly presents the biggest threat and is causing the most harm within these dynamics.

Acknowledgments

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Notes

1. Richard Parker, quoted in Dennis Altman, *Global Sex* (Chicago: University of Chicago Press, 2001), 68.

2. Ken Morrison and Allan Klusacek, *A Leap in the Dark: AIDS, Art and Contemporary Cultures* (Montréal: Véhicule Press, 1992), ix.

3. Susan Sontag, *AIDS and Its Metaphors* (New York: Farrar, Straus and Giroux, 1988), 48.

4. A note on language: The term "black" is used in reference to the wider experience of African and African diasporic populations, racially marked by their darker (different shades of blacks and browns) skin tone. I realize black is a homogenizing term, one that finds its roots in a history of colonialism and racism, but through its reappropriation on the part of African and African diasporic populations, the fact that it is a common term within the literature that informs my work, and because it shapes and informs so much of our understanding of race and racism, I feel its use is thus legitimated.

5. Jacques Leibowitch, quoted in Paul Farmer, *AIDS and Accusation: Haiti and the Geography of Blame* (Berkeley: University of California Press, 1992), 212.

6. Cindy Patton, *Inventing AIDS* (New York: Routledge, 1990), 83.

7. James H. Jones, *Bad Blood: The Tuskegee Syphilis Experiment* (New York: Free Press, 1981), 17.

8. Sander Gilman, *Sexuality: An Illustrated History* (New York: John Wiley and Sons, 1989), 293.

9. Jones, *Bad Blood*, 25.

10. Gilman, *Sexuality*, 323.

11. Simon Watney, "Missionary Positions: AIDS, 'Africa,' and Race," in *Practices of Freedom: Selected Writings on HIV/AIDS* (Durham, NC: Duke University Press, 1994), 118.

12. Teun van Dijk, "New(s) Racism: A Discourse Analytical Approach," in *Ethnic Minorities and the Media: Changing Cultural Boundaries*, ed. Simon Cottle, 36 (Buckingham: Open University Press, 2000).

13. Stuart Hall, "Encoding-Decoding," in *Culture, Media, Language: Working Papers in Cultural Studies, 1972–79*, ed. Stuart Hall, Dorothy Hobson, Andrew Lowe, and Paul Willis, 136 (London: Routledge, 1980).

14. This chapter is drawn from a wider research endeavor in which I employed critical discourse analysis to analyze forty-six articles drawn from mainstream Canadian newspapers published between 2000 and 2003 on the topic of the HIV/AIDS pandemic in Africa. While the corpus has been reduced in size for the purpose of the present chapter, the wider study followed a similar structure, where the articles were used to illustrate the dominant ideologies about Africa produced and circulating in the western environment, both currently and historically. While I have tried to provide as much information as I feel is necessary, I realize that because it is part of a much larger project, certain gaps may exist within the present piece.

15. Richard Chirimuuta and Rosalind Chirimuuta, "AIDS from Africa: A Case of Racism vs. Science?" in *AIDS in Africa and the Caribbean*, ed. George Bond, John Kreniske, Ida Susser, and Joan Vincent, 165 (Colorado: Westview Press, 1997).

16. "AIDS Started in 1930s: Study Says," *Gazette* (Montreal), June 9, 2000.

17. Jeremy Manier, "Unraveling the AIDS-monkey Mystery: Study Pushes Origin of AIDS Virus to 1930," *Calgary Herald*, February 5, 2000.

18. Maggie Fox, "Social Disruption, Vaccination Boosted AIDS Epidemic: Researchers: 1930s African Origin," *National Post* (Don Mills), February 9, 2000.

19. "HIV Origins Go Back to 1940s," *Gazette* (Montreal), May 13, 2003.

20. Manier, "Unravelling the AIDS-monkey Mystery."

21. "Scientists Find HIV-like Virus in Wild Chimps," *Daily News* (Halifax), January 20, 2002.

22. "Chimp Study Solves Puzzle of AIDS Link," *National Post* (Don Mills), June 13, 2003.

23. Joan Shenton, *Positively False: Exposing the Myths around HIV and AIDS* (London and New York: I. B. Tauris, 1998), 158.

24. See Paul Bohannan and Philip Curtin, *Africa and Africans*, 3rd ed. (Long Grove, IL: Waveland Press, 1988), 7.

25. See Richard Chirimuuta and Rosalind Chirimuuta, *AIDS, Africa and Racism* (London: Free Association Press, 1989).

26. Chirimuuta and Chirimuuta, "AIDS from Africa," 169–71. I also wish to add here a particularly pertinent comment made by a student during a lecture I gave on the present topic. She related the HIV monkey theories to the recent outbreak in "mad cow disease," noting that while westerners are quick to judge Africans for eating monkeys, we do not even question our own carnivorous habits or the possibility that these too may be providing us with more than mere calories.

27. Paula Treichler, *How to Have Theory in an Epidemic: Cultural Chronicles of AIDS* (Durham, NC: Duke University Press, 1999), 104.

28. Fox, "Social Disruption, Vaccination Boosted AIDS Epidemic."

29. Ibid.

30. Harlon L. Dalton, "AIDS in Blackface," in *The AIDS Reader: Social, Political, Ethical Issues*, ed. Nancy F. McKenzie, 128 (New York: Meridian, 1991).

31. "AIDS Started in 1930s." Emphasis mine.

32. Chirimuuta and Chirimuuta, *AIDS, Africa and Racism*, 109.

33. Paul Salopek, "Health Catastrophe Bringing a Continent to Its Knees: Ailing Africa," *Edmonton Journal*, January 23, 2000. Emphasis mine.

34. Browning, *Infectious Rhythm*, 154.

35. Salopek, "Health Catastrophe Bringing a Continent to Its Knees."

36. Stewart Bell, "AIDS Crisis Threatens UN Peacekeepers in Africa: Report: Canadian troops at Risk: Infection Rates in Some African Armies as High as 90%," *National Post* (Don Mills), September 27, 2001.

37. Joanne Laucius, "Canada Coaxed to Battle AIDS: Funds Needed. Carnage Feared in Africa and Asia," *Gazette* (Montreal), July 30, 2003.

38. "New Strains of HIV Feared in Africa: Interrupted Treatments Blamed for Mutation," *Calgary Herald*, June 19, 2001.

39. Susan Martinuk, "Free Drugs Won't Halt AIDS," *Calgary Herald*, March 7, 2001.

40. Cathy Cohen, *The Boundaries of Blackness: AIDS and the Breakdown of Black Politics* (Chicago: University of Chicago Press, 1999), 184.

41. Laucius, "Canada Coaxed to Battle AIDS."

42. George Bond, John Kreniske, Ida Susser, and Joan Vincent, "The Anthropology of AIDS in Africa," in *AIDS in Africa and the Caribbean*, ed. George Bond et al., 7.

43. William Ryan, *Blaming the Victim* (New York: Vintage, 1976), 5.

44. Chirimuuta and Chirimuuta, *AIDS, Africa and Racism*, 140.

45. Cindy Patton, "Queer Peregrinations," in *Acting on AIDS: Sex, Drugs and Politics*, ed. Joshua Oppenheimer and Helena Reckitt, 237 (London: Serpent's Tail, 1997).

46. Sander Gilman, *Disease and Representation: Images of Illness from Madness to AIDS* (Ithaca, NY: Cornell University Press, 1988), 1.

47. See Chinua Achebe, "An Image of Africa: Racism in Conrad's *Heart of Darkness*," in *Postcolonial Discourses: An Anthology*, ed. Gregory Castle, 209–20 (Oxford: Blackwell Publishers, 2001).

48. Chirimuuta and Chirimuuta, *AIDS, Africa and Racism*, 90.

49. Sontag, *AIDS and Its Metaphors*, 93.

50. John Gabriel, *Whitewash: Racialized Politics and the Media* (New York: Routledge, 1998), 37.

51. Sander Gilman, *Difference and Pathology: Stereotypes of Sexuality, Race, and Madness* (Ithaca, NY: Cornell University Press, 1985), 35.

52. Browning, *Infectious Rhythm, Metaphors of Contagion and the Spread of African Culture* (New York: Routledge, 1998), 7.

PART II

Illness Case Studies

2

WATERBORNE DISEASES AND URBAN WATER SUPPLY IN MAKURDI, NIGERIA, 1927–60

Akpen Philip

This chapter examines the origins, dimensions, and problems associated with waterborne diseases and water supply in Makurdi, Nigeria, during the period of British colonial administration. Efforts are made as well to examine the nature of water supply during the precolonial period. The various methods used in preventing the outbreak of waterborne diseases, such as cholera, dysentery, paratyphoid fever, typhoid, giardiases, and schistosomiasis, will be discussed. During the precolonial period, the people in Makurdi continued to depend on undeveloped sources, such as rivers, streams, spring, wells, ponds, and direct rainfall, for their water supply. The water supply during this period was safe from all forms of pollution, and this meant that it was easy to mobilize the people for public work, such as clearing and cleaning in and around these sources of water. The people equally practiced their traditional method of "waste disposal."[1] Environmental hazards were dealt with appropriately.

The introduction of colonial rule, however, brought modern ideas of water supply, which remained the most dominant characteristic of Nigerian cities under the colonial government's town ordinance.[2] These towns "were marked by segregations: The British officials lived in the best parts—the Government Reservation Areas—with exclusive clubs, recreation centers, hospitals, and other facilities, while indigenes lived in less comfortable places."[3] If the provision of water is about health, maintaining high-level sanitation, and improving the human condition, then several questions must be posed concerning colonial water supply methods: Did the British colonial authority introduce modern water supply to care for the health of the African population in Makurdi? What was the philosophy behind the provision of modern and clean water? Even if the British provided water to the people through standpipes, as

claimed, what was the quality of the water as compared with that which was supplied to the government reservation areas of Nigeria? What was the response of the British colonial authority in intervening in the problem of waterborne diseases and urban water supply? The supply of modern water was supposed to cater to the European in the urban centers. The health of the European was generally good; that of the Africans was not considered seriously. Most of the Africans in Makurdi were suffering from intestinal problems due to poor and unhygienic water.

Precolonial Water Supply in Makurdi: Sources, Uses, and Treatment

Before the establishment of a modern system of water supply, rainfall was an important source of water. During rainy season, rainwater was collected and stored in containers (*zwar*) for drinking and cooking. Rainfall in the area encouraged agricultural activities, which accounted for more than 90 percent of the water supply.[4] Rainwater was used not only for domestic and agricultural purposes but also for medicinal purposes and other cultural activities such as oath taking and swearing.[5] The water collected from rain was not treated unless it was exposed. Even then, only simple filtration was required to purify it.

The Benue River and other smaller streams constituted the major sources of water in the Makurdi area. These smaller rivers included the Mu, Ukoughur, Akper, Tyotsar, Ankpaka, Adeke, Gandembastav, and Gwer. The Benue River, with its tributaries, provided water for the domestic and agricultural needs of the people. For instance, the upland streams of the Benue River were used for drinking, cooking, and the brewing of local beer. In most cases, the water collected from this source was naturally pure and required no treatment. The downland streams of the Benue River were used for other activities, such as laundry and washing. Other activities, such as fishing and irrigation, took place at the downland streams. Water from the downland streams was effectively treated through traditional methods.[6]

Wells were another source of water. There were two types of wells: hand dug wells and natural wells (springs) or water holes. Access to a well or spring was not restricted to any particular house or family. The Tiv people believe that such things as water holes belong to no one and are for the use of the entire community without any discrimination.[7] Each compound had a pool in a stream from which the women normally fetched water. These springs were occasionally protected with *akombo* (witchcraft), especially during the dry season. The practice of protecting the spring with *akombo*, however, was not intended to stop people from taking water from the spring but only to prevent anyone stepping in or bathing in the spring, particularly when seepage was slow. Several hours could be required for it to settle and clear.[8] The people

were conscious of their health and sanitary conditions; therefore water from this source was effectively filtered and treated to avoid cases of waterborne diseases and other intestinal infections.

The water obtained from rivers, springs, pools, and wells was neatly filtered and preserved in large jars. During precolonial times, these jars were deposited at the marketplaces for those coming from distant areas to trade.[9] Apart from the markets, water was also served during farming activities and hunting expeditions.

Quality of water remained one of the top priorities during the precolonial period in order to preserve the health of the Africans who were living around the Makurdi area. The use of water from these sources continued up to the colonial period, when modern methods of water supply were introduced. The introduction of modern water supplies never eliminated the use of water from these sources. Even in the more developed urban centers, such as Lagos, Abuja, Kaduna, Kano, and Jos, people still continued to drink water from nonpotable sources, often leading to the contraction of waterborne diseases. Even with the introduction of modern water supply, many people have never been able to afford to have running water in their homes. Rainfall is still very important today among the people living in the rural areas and even urban centers where there is a lack of water.

Origin, Dimensions, and Problems

In Makurdi, the prominent waterborne diseases include cholera, dysentery, typhoid, and schistosomiasis. During the colonial period, the British recognized the role that an improved source of water supply could play in solving the problem of waterborne diseases. The supply of water in Makurdi became very necessary to ensure healthy living as well as freedom from attacks and untimely death resulting from waterborne diseases.[10] This idea was based on the importance of water as specified in the Water Works Ordinance passed in 1911 to deal with the problems associated with waterborne diseases.[11] It was argued that waterborne diseases and other problems associated with drinking water from a non-potable supply greatly informed the construction of waterworks in Makurdi and in Nigeria at large.[12]

In Makurdi, the program for water supply began in 1927, when Makurdi became the provincial headquarters, and was commissioned in 1928.[13] The supply from the railway waterworks was streamlined to a few areas. The water was pumped from the railway waterworks to the public works department treatment center situated in the hills around the European residential areas. The water was then distributed to the government residential area, provincial buildings, clerk quarters, European hospital, prison and warders' line, police lines, marine workshop/vessels, and government offices. Other beneficiaries

of the treated sources of water included commercial or trading companies, such as John Holt, the United African Company (UAC), Societé Commerciale de l'Ouest Africa (SCOA), and the Bank of British West Africa (BBWA).[14]

The British Colonial Authority appeared to be concerned with water supply because of the health implications associated with drinking water from an untreated source. They regarded this non-potable water supply as a source of infection from waterborne diseases among the Europeans. They argued that the water supply meant for the Europeans should be treated, filtered, and heavily chlorinated before distribution. It should be pointed out that this method was only applicable to the water supplied to the Europeans because, the British claimed, the Africans were accustomed to drinking water from the non-potable sources, which did them no harm.[15]

The British failed to recognize that during the precolonial period, the Africans obtained their water from what were now considered non-potable sources because there was less pollution. But during the colonial period, these sources of water were contaminated by poor drainage systems, poor waste disposal, and refuse. All these posed a grave danger not only to the environment but also to the water supply. The wells that were hand dug by the plot holders, in most cases, became polluted, particularly during the rainy season. When those wells dried up during the dry season, the streams, smaller rivers, and the Benue River continued to be the only source of water for the Africans in Makurdi. These streams and the Benue River were unhygienic, because they were areas where waste was disposed, and some of them became excreta points for many people. It is therefore not surprising that the Africans in Makurdi suffered from the problems of waterborne diseases. The situation in the Makurdi slums was worse than that of the Makurdi government residential area, which continued to have good potable water. The drinking water from this area was supplied from the railway department water works constructed in 1928 (table 2.1). It was based on the consideration that waterworks were constructed as part of the post–World War I development program. Yet, as indicated in table 2.1, the quantity of water supplied was insufficient for the population of Makurdi.

It could be argued that the water supplied to Makurdi, as indicated in table 2.1, was far below the water requirement of 170,000 gallons per day, as shown in table 2.2.[16]

Given the above numbers, we must conclude that the population of Makurdi was concentrated at Makurdi south, Makurdi north, and the Welamayo area. The water distributed to the native residential areas conformed to no health standard, because it was pumped straight from the railway waterworks without proper treatment. The continuous drinking from non-potable sources resulted in outbreaks of cholera, typhoid, dysentery, and other intestinal illness.

Between 1929–39, the water supply situation was compounded by the Great Depression originating in the United States, but reaching out to affect earlier plans made by the British Colonial Authority for the planning, organization,

Table 2.1. Waterworks constructed under post–World War I development, 1925–40

Town	Source	Capacity or Use (thousand gallons per day)	Treatment	Plant	Built
Enugu	Spring	700	Aeration and chlorination	Gravity	1925
Lokoja	Spring	17	Slow sand filter	Gravity	1925
Ijebu Ode	Spring	300	Partial	Diesel	1927
Oyo	Impounded	100	Chlorination	Diesel	1928
Aba	Well	173	Nil	Steam	1928
Makurdi	River	16	Nil	Railway	1928
Onitsha	River	210	Aeration pressure filter and chlorination	Steam	1928
Kano	Well	686	Aeration pressure filter and chlorination	Electric	1929
Kaduna	River	387	Sedimentation rapid gravity filter and chlorination	Electric	1930
Akure	Well	7	Nil	Diesel	1931
Ife	Impounded	120	Chlorination	Steam	1934
Benin	Borehole	400	Chlorination	Steam	1934
Iseyin	Spring	120	Partial	Diesel	1936
Calabar	Spring	309	Aeration chlorination	Gas	1936
Okene	Impounded	64	Nil	Gas	1937
Ilorin	Well	22	Pressure filter and chlorination	Diesel	1937
Port-Harcourt	Borehole	319	Nil	Electric	1937
Yola	Tube well	30	chlorination	Steam	
Jos	Impounded	147	Pressure filter and chlorination	Gravity	1939
Ogbomosho	Impounded	250	Aeration chlorination	Diesel	1939
Zaria	Well	357	Aeration pressure filter and chlorination	Electric	1939
Ilaro	Spring	50	Nil	Diesel	1940

Source: Francis Jaekel, *The History of the Nigerian Railway*, vol. 2 (Ibadan: Spectrum Books, 1997), 182.

Table 2.2. Water requirements in Makurdi

Location	Usage per day (in thousand gallons)
Makurdi south, Makurdi north, and Welamayo	100,000
Railway station and quarters	60,000
Thirty European households	3,000
Clerks quarters and public buildings	2,000
Makurdi hospital	5,000
Total daily gallons used	170,000

Source: National Archives Kaduna (NAK)/Makurdi Provincial Office (MAKPROF), 1588, "Makurdi Water Supply, 1932."

and funding of social services for Nigeria. The railway was the only treated source of water and was mainly supplied to the Europeans in Makurdi.[17]

At this time, the emphasis of the colonial authorities was on agricultural production. Some of the water schemes that were commissioned in the 1930s were those whose construction had started after World War I. For example, Kaduna's waterworks was commissioned and opened for public use in 1930.[18] The funds for the construction were allocated before the Depression. In Jos, even though the plans and proposals for water supply construction started at the same time as Kaduna, the waterworks was commissioned in 1939. Costly expenditures caused the delay and were later reviewed.[19]

The same was applicable to Zaria's waterworks. The original scheme as drafted was estimated to cost £126,125 with an annual cost of compensation, interest, and sinking funds of £14,454. Because of the Depression, this cost was considered too high and thus it became necessary to make cuts. The revised estimate was £77,000 with an annual recurrent cost of about £8,000. It was commissioned and opened to public use in 1939.[20]

In view of the financial situation in Nigeria during the Depression, funds for water supplies were canceled, suspended, or reviewed.[21] The British suspended all capital projects during the Depression, while other projects had their expenditures cut.[22] During this period, the British introduced the policy of "imperial preferences,"[23] which greatly affected most of the existing waterworks and even plans to establish new ones. The implication was to force the British colonies, such as Nigeria, to purchase their required spare parts and high-powered generators used for pumping water from the British manufacturing industries, instead of cheaper generators from other industrialized countries such as Germany, United States, France, and Japan.[24]

During the Depression, a proposed government potable water scheme of £10,000 was recommended for Makurdi.[25] However, because of the economic constraints, the money was not expended for the construction of the scheme.

During this same time frame, the medical department reported the outbreak of waterborne diseases such as typhoid, dysentery, cholera, and schistosomiasis.[26] This forced the British to provide potable water but even then only through public standpipes, while the Europeans and other officials received their supply in their respective residences. The British further emphasized that water meant for European consumption should be treated, filtered, and boiled before its distribution. It should be noted again that this method was only applicable to the water supplied to the Europeans because—as claimed by the British—the Africans were accustomed to drinking water from the untreated and non-potable sources.[27]

During World War II (1939–45), efforts concentrated mainly on the transport networks in the colonial territories, the encouragement of the production of cash crops, and the requisitioning of food to supply workers in the mines and to feed soldiers at the war fronts. This, of course, caused the British to neglect the urban water supply and the general welfare of the people. Consequently, the issue of waterborne diseases continued unresolved in Makurdi.[28]

The poor state of the water supply in Makurdi and Nigeria was observed by one European visitor who maintained that:

> I have been very unfavorably impressed indeed since coming to Nigeria at the apparent apathy exhibited in connection with water supplies and to find that large populations (including even hospitals where government is spending large sums of money on the cure of the sick) are supplied with fluid which is very obviously polluted and potentially dangerous to life.[29]

This reality was noted during a geological survey conducted by the public works department to solve the problem of waterborne diseases and the urban water supply.[30] In spite of the realization of the very poor state of water supply conditions in Nigeria, the British Colonial Authority paid little or no attention to the problem of waterborne diseases and the urban water supply, particularly in Makurdi. The attention and efforts of the British government were more focused on the war, which ranged from the exportation of foodstuffs to agricultural and mineral production.

During the war, Makurdi was a collecting center for agricultural products such as beniseed, palm products, cotton, groundnuts, soybeans, and other products.[31] As such, the British Colonial Authority continued to neglect the water supply in Makurdi, which they viewed as a railway terminus and not important enough to be provided with an expanded water supply. To the Colonial Authority, Makurdi was nothing but a railway connection between a coal city (Enugu) and a tin city (Jos). Thus, the only water supply was restricted and streamlined to European residential areas, which forced most of the people living in Makurdi to continue obtaining their water from the non-potable sources, that is, the Benue River, other smaller streams, and a few hand-dug wells that were already contaminated. Pollution during this period

became endemic due to colonial activities such as the construction of the Makurdi bridge (1928–32),[32] railway construction, and—more importantly—the lack of an efficient sewage disposal system. The British policy of segregation encouraged the development of slums inhabited by the African natives. These slums lacked basic facilities, such as toilets and clean water. The British Colonial Authority failed to safeguard the health and sanitary conditions of the people in Makurdi. They also failed to maintain sanitary conditions in the houses around Welamayo, Makurdi south and north, as well as other areas, such as the Hausawa quarters.

The dangers arising from the substandard living conditions in the slums; poor drainage, sewage, and solid waste disposal systems; and human waste going out of the system into the rivers from which many people collected their drinking water, resulted in outbreaks of waterborne diseases in Makurdi town. The waste disposal system was not closely monitored in Makurdi. There was an indiscriminate disposal of municipal waste such as fruits, pills, paper, wood, tin, and plastics as well as garbage of all sorts, particularly around the railway station. During the rainy season, all these drained into the streams, wells, and the Benue River with grievous environmental effects, resulting in all forms of illness. The European quarters, however, were maintained at a high level of sanitation.

Thus, between 1939 and 1945, Makurdi and other towns like Lokoja, Okeene, Bida Gusau, Yola, and Kazauri continued to witness a period not only of waterborne disease outbreaks but also a period of economic boom.[33] During the war, commercial activities in Makurdi were intensified and resulted in an increased influx of more expatriates and the movement of people in "rural to urban" and "urban to urban" migrations.[34] The development and growth of Makurdi led to an increased and dire need to provide a potable water supply as a way of fighting waterborne diseases. This was vital to keeping the Nigerian labor force healthy and living, which in turn was important in sustaining and maintaining the colonial economy.[35] This was to be done through "activities that prevent the transmission of diseases and ensure public health."[36] However, the recommendations made earlier by the medical officials were still not implemented.

The attitude of the British Colonial Authority toward the urban water supply in Makurdi became obvious following the launching of the ten-year development plan from 1946–55.[37] For example, out of the total sum of £24,000 estimated for water supply, only 8.33 percent—that is, £2,000—was expended on the water scheme in Makurdi.[38] In fact, the allocation to the water supply made under the colonial development welfare plan for the period 1946–55 compared with the actual expenditure incurred for some towns in northern Nigeria was grossly inadequate (table 2.3).

Table 2.3 clearly demonstrates that of the total sum of £430,000 allocated for the various towns, only 19.3 percent was actually spent on the water supply. This amount was too meager to make any significant impact in tackling the problem of waterborne diseases and the urban water supply in northern Nigeria generally.

Table 2.3. Allocation of funds for water supply in the Colonial Development and Welfare Act, 1946–55

S.No	Urban water supply undertakings by town	Estimated total cost (in £)	Total funds issued (in £)
1	Urban water supply, Yola	20,000	3,000
2	Urban water supply, Bauchi	10,000	8,000
3	Urban water supply, Gombe	15,000	8,000
4	Urban water supply, Makurdi	24,000	2,000
5	Urban water supply, Maiduguri	50,000	10,000
6	Urban water supply, Ilorin	50,000	21,000
7	Urban water supply, Lokoja	42,000	8,000
8	Urban water supply, Katsina	30,000	5,000
9	Urban water supply, Gusau	24,000	10,000
10	Urban water supply, Kaduna	7,000	4,000
11	Urban water supply, Zaria	20,000	2,000
	Unallocated funds	138,000	=
	Jos extension		1,500
	Sokoto extension		500

Source: NAK/MAKPROF, 4767E, "Colonial Development and Welfare Estimates."

It is worth noting that during the 1948–49 fiscal year, the sum of £57,561 accrued to the colonial treasury from Benue province, particularly in the Tiv Native Authority treasury, through a general tax.[39] This amount did not include funds realized from the tax and duties on their agricultural and trade products, which combined amounted to millions of pounds.[40] Yet the British complained of a lack of funds and allocated a very meager sum of £24,000 to the urban water supply in Makurdi. Even then, only £2,000 out of the total allocation was expended.

The importance and significance of water was enshrined in the amended Water Works Ordinance of 1929, section (2) article (2), which maintained that "Domestic supply means water from the water works used in any tenement for drinking, washing, cooking or for baths or any other purpose of domestic life."[41] By implication, water distributed for domestic purposes was to be free from all forms of contamination. For example, the deaths recorded and registered in the African hospital in Makurdi between 1949–59 showed that about 300 people died of waterborne diseases such as typhoid, dysentery, and cholera.[42] This figure excluded those who died of similar illnesses without seeking medical care.[43] The contradiction continued to generate questions as to whether the British Colonial Authority provided water in Makurdi through the railway to cater to the health of Africans living in Makurdi. The answer is certainly not, because, as earlier mentioned, the Colonial Authority maintained that the provision of amenities, such as a water supply, was of "great pride to the colonial regimes."[44] The philosophy behind the introduction of a water supply as an urban amenity was

for the European workers. This further explained why these services were amazingly small in quantity. The limited distribution of the water supply in Makurdi during colonial times reflected the philosophy and idea behind its introduction.[45] In fact, it was introduced against the background that the white settlers and expatriates in Nigeria, and indeed in Makurdi, wanted to maintain similar standards of living with their European counterparts of the metropole.[46] Such amenities were not provided to the Africans, but only to the white minority to afford themselves leisured and enjoyable lives.[47]

The problem of the water supply in Makurdi continued to persist. From 1939–60, there were frequent shortages in supply from the railway waterworks. The likely reasons for these shortages stem from World War II, when the importation of spare parts and other machinery needed for the running of waterworks in Nigeria—including that of the railway in Makurdi—practically ceased. This also explains why the British Colonial Authority could not provide adequate funds for the purpose of urban water supply, which further reveals the reason for the limited number of gallons per day supplied to various urban centers in Nigeria and Makurdi (see table 2.1).

In Makurdi, recall that the distribution was twofold: First, the supply system was channeled to government quarters and the European reservation areas through a treatment center situated on the rocky hills of the government residential areas. The second supply system was distributed to the general public through "public standard pipes."[48] The water from this point was "not completely pure by Western standards, and it [was] desirable both to boil and to filter it before use."[49] The water from the public standpipes, apart from not conforming to all health standards, experienced frequent stoppages that were the result of the following problems.

- Inefficient pumping staff that often failed to maintain sufficient steam pressure in the boilers because the attendants had at times been found asleep on duty.
- Although each plant was idle during alternate weeks, there was no systematic inspection and overhaul of pump valve leather and other maintenance processes during that period.
- If the point in operation failed, the idle plant was not immediately put into operation.
- Lack of frequent supervision due to the fact that the closest engineering crew was located in Enugu, not Makurdi.[50]

The British Colonial Authority made no effort in training the local staff working at the waterworks. This development created a situation whereby the few natives that were trained to handle the water-supplying machines ended up being terminated from their appointments because they were not provided with the needed training to perform the job properly. In essence, their training was done just to enable them to assist the British technical staff.

Other political reasons and problems continued to affect Makurdi's water supply after World War II, especially following the death of Audu Dan Afoda.[51] In 1946, the Tor Tiv institution was created and its headquarters was moved to Gboko. Consequently, Gboko was prioritized ahead of Makurdi in terms of development and provision of amenities, such as water and electricity.[52] Yet the water supply continued to receive the attention of both the federal and regional governments, for example, through their development programs and policies.

The state of the water supply remained the same until in 1957 when the first major waterworks was constructed in Makurdi by the then Northern Regional Government under the premier of the Northern Region, Sir Ahmadu Bello, the Sarduna of Sokoto, on May 27, 1963.[53] Consequently, there was a significant improvement in the number of gallons of water supplied daily. In Makurdi, about 270,000 gallons were supplied in the 1962–63 fiscal year and 192,000 gallons in 1965–66[54] (see table 2.4 for a comparative difference and details). Between the 1962/1963 and 1963/1964 fiscal years, the Northern Regional Government devoted more funds for the construction and extension of waterworks in northern Nigeria with the aim of improving the quality of the water supply. For example, between 1962 and 1964, the Northern Regional Government spent a total of £9,757 for Makurdi's water supply.[55]

The water supply in Makurdi during the precolonial period was not restricted to a particular group of people. The people continued to enjoy water from the Benue River and other smaller streams with little or no treatment, without being infected with waterborne diseases. Cases such as cholera, dysentery, and typhoid were effectively treated with traditional medicines. Because there were few people in Makurdi area during the precolonial period, it was a simple matter for the people to mobilize and keep the water sources clean and safe for drinking and other uses.

During the colonial period, Makurdi became a railway labor camp. As such, no significant development in terms of provision of social amenities, such as the water supply, was made. During the early stages, progress in Makurdi was limited to proposals and recommendations without any action or intervention from either the Native Authority or central government, despite the fact that urban centers in other parts of the country were developing water supplies.

During 1927, Makurdi became a provincial headquarters, and, in 1928, the railway corporation constructed a mini-waterworks for Makurdi, however, the problem of waterborne diseases continued to exist in Makurdi. Between 1929 and 1939, the Depression compounded the problem of water supply because the British Colonial Authority withdrew all funds meant for capital projects. In fact, it delayed the earlier plan to provide water in Makurdi. During World War II, the importation of spare parts came to a standstill. This situation lasted until 1957, when the Northern Regional Government intervened and improved the urban water supply of Makurdi.

Table 2.4. Urban and semi-urban water supply by province and waterworks, 1962–65/66

Province	Water-works location	Control-ling authority[1]	Source	Treatment	Water supply (in thousand gallons per day)[2]			
					1962/63	1963/64	1964/65	1965/66
Northern Nigeria	(49 water-works)				10,531	12,123	10,014	13,906
Kaduna Capital Territory	Kaduna south	G	River	Full	2,600	3,000	350	—
	Canton-ment	G	River	Full	250	300	180	—
	Kaduna North	G	River	Full	—		—	3,520
Kano	Kano challawa	NA	River	Full	2,000	3,000	3,500	4,000
	Gumel	G61	Boreholes	Chlorination	51	52	66	—
	Hadejia	G62	Boreholes	Chlorination	34	42	—	—
	Kaura	NA	Boreholes	—	15	—	—	—
	Kazaure	G62	River	—	30	30	—	—
	Malla-Maduri	G62	Boreholes	Chlorination	20	21	—	—
Katsina	Katsina Town	N.A	Boreholes	—	100	—	—	—
	Katsina GRA[4]	G	Boreholes	—	22	20	25	27
	Daura	G	Boreholes	Chlorination	80	80	82	133
Sokoto	Sokoto	G61	River	Chlorination	305	299	301	452
	Birnin	G	Boreholes	Chlorination	—	—	—	197
	Gusau	G	River	Chlori	150	171	194	206
	Yelwa	G	River	Full	56	51	55	72
Borno	Maiduguri	G	Boreholes	Chlorination	750	600	740	877
	Biu	G62	Boreholes	—	90	84	68	68
	Bornu	G	River	Chlorination	—	—	—	200
	Potiskum	G	Boreholes	—	48	30	—	—
	Gashua	G	Boreholes	Chlorination	—	—	—	160
Bauchi	Nguru	G	Boreholes	Chlorination	169	180	165	150
	Bauchi	G	Boreholes	Chlorination	220	219	219	222
	Gombe	G62	Boreholes	Chlorination	220	436	185	220
	Tula	G62	Spring	—	25	35	35	14
Plateau	Jos	G	Dams	Filtration and Chlorination	484	656	750	730
	Makeri	G	Boreholes	Chlorination	18	20	20	—

Table 2.4. (*continued*)

Province	Water-works location	Control-ling authority[1]	Source	Treatment	Water supply (in thousand gallons per day)[2]			
					1962/63	**1963/64**	**1964/65**	**1965/66**
Zaria	Zaria	G	River	Filtration and Chlorination	877	822	771	116
	Kafanchan	G62	Spring	—	20	—	—	—
Niger	Bida	G	River	Full (1962)	133	133	151	230
	Abuja	G61	River	—	20	—	—	—
	Minna	G	River & Dam	Full	225	165	248	286
	Kontagura GRA[4]	G	Boreholes	—	4	4	4	4
Sardauna	Mubi	G	River	Chlorination	82	68	96	93
Adama	Jimeta	G	Boreholes	Chlorination	151	199	144	126
	Yola	G62	Boreholes	—	76	76	46	45
	Jalingo	G62	River	Chlorination	64	56	56	55
	Numan	G	Boreholes	Chlorination	90	77	61	93
Benue	Makurdi[c]	G	River	Full	270	169	200	192
	Gboko	G62	Boreholes	—	25	28	—	—
	Keffi	G	Spring	Full (1962)	78	151	123	100
	Otukpo	G62	Spring	Chlorination (1962)	52	72	128	128
Kabba	Kabba	G61	River	Full	42	43	93	—
	Idah	G62	Boreholes	—	100	100	90	112
	Koton-Karfi	G62	Spring	—	—	—	—	17
	Lokoja	G61	River	Full	233	233	202	171
	Okene	G64	Dam	—	—	—	195	—
Ilorin	Ilorin	G	Dam	Full	219	366	435	550
	Pategi	G62	Spring	—	33	35	36	—
	Offa	G	Dam	Full	—	—	—	340

Source. *Northern Nigeria Statistical Yearbook* (Kaduna: Ministry of Economic Planning, 1966), 160.

[1]G = Regional Government.

G/61 or G/62 = taken over by Regional Government from the Native Authority.

NA: Native Authority

[2]Estimated approximate daily supply.

[3]Makurdi's water works was constructed by the northern regional government and was launched in 1963/1964 financial years.

[4]G.R.A.: Government Residential Area.

Notes

1. Toyin Falola, "The Cities," in *Nigeria since Independence: The Society*, vol. I, ed. Y. B. Usman (Ibadan: Heinemann Educational Books Ltd., 1989), 214.

2. The Township Ordinance classified Nigerian cities and towns into three categories. The first-class townships were administered by a town council, the second class was administered by officers who were appointed by the government, while the third class townships were regarded as government stations with a small but mixed population. In terms of medical facilities, such as hospitals, clinics, and other vital amenities (such as water and electricity), the first- and second-class townships had more because they had more European expatriates. For a detailed analysis on this, see Falola, "The Cities," 217; and Ayodeji Olukoju, "Nigerian Cities in Historical Perspectives" in *Nigerian Cities*, ed. Toyin Falola and Steven J. Salm (Trenton, NJ: Africa World Press, 2003).

3. Falola, "The Cities," 217. For further information on all forms of segregation and discrimination in colonial Nigerian cities, see Ayodeji Olukoju, "The Segregation of Europeans and Africans in Colonial Nigeria," in *Security Crime and Segregation in West African Cities since the 19th Century*, ed. Laurent Fourchard and Isaac Olawale Albert, 263–86 (Ibadan: IFRA, Institute of African Studies, University of Ibadan); E. O. Oyedele, "Colonial Urbanisation in Northern Nigeria: Kaduna, 1913–1960" (PhD diss., Ahmadu Bello University, Zaria, 1987); A. V. Dhliwayo, "A History of Sabon Gari, Zaria, 1911–1950: A Study of Urban Colonial Administration" (PhD diss., Amadu Bello University, Zaria, 1986).

4. A. K. Biswas, ed. *United Nations Water Conference: Summary and Main Document* (Oxford: Pergamon Press, 1988), 128.

5. Certain kinds of ailments, such as typhoid, cholera, dysentery, and other diseases were treated with certain kinds of herbs that must be mixed with rainwater. It is believed that the rainwater is pure and spiritually clean enough to expedite the healing process. This information was collected during my interview with elders in the High Level Ward of Makurdi town (October 12, 2004).

6. People in Makurdi used varying methods to treat their water. These included filtration and chlorination with a chemical called alum. Others simply allowed their water to settle, after which the settled particles would be poured away. Interview with Baver Agah, 81 years old, in Wadata Ward, Makurdi (November 11, 2004).

7. P. Bohannan and L. Bohamman, *Tiv Economy* (London: Longman, 1968), 110.

8. Ibid.

9. Interview with Tume Gbeleve, 91 years old, in Wulukum area of Makurdi (November 13, 2004).

10. Nigerian National Archives, Kaduna (hereafter NAK)/Secretary of the Northern Provinces (hereafter SNP), K.6668, vol. II, "Water Supply Schemes in Northern Provinces"; NAK/MAKPROF, "Schistosomiasis in Northern Nigeria."

11. The waterworks ordinance stipulated that water should be safe for cooking, drinking, washing, or bathing, and any other purpose of domestic life. It further stipulated that water supplied from any waterworks should be free of pollution. See also NAK/SNP, 8067/S1, "Water Works Ordinance 1929, Amendments to 1930."

12. Akpen Philip, "A History of Electricity and Water Supply in Makurdi Town" (master's thesis, Bayero University, Kano, 2004), 62. See also J. O. Oyebanji, "Health, Water and Housing Conditions," in *Nigeria: A People United, A Future Assured*, vol. I, *A*

Compendium, ed. H. I. Ajaegbu et al., 281–90 (Abuja: Federal Ministry of Information, 2000).

13. Francis Jaekel, *The History of the Nigerian Railway*, vol. II (Ibadan: Spectrum Books Ltd., 1997), 182.

14. NAK/SNP, K.6508, vol. I, "Makurdi Water Supply Fixing of Rates from 1928–1946."

15. NAK/MAKPROF, K.6508, vol. I.

16. NAK/MAKPROF, 1588, "Makurdi Water Supply 1932."

17. NAK/SNP, K.6508, vol. I.

18. Ibid.

19. Ibid.

20. Ibid.

21. Ibid.

22. M. S. Abdulkadir, "An Economic History of Igalaland: 1896–1939" (PhD diss., Bayero University, Kano, 1990), 414–49; Ochonu Moses, "Depression, Colonialism and Grassroots Struggle in Northern Nigeria: (1930–1939)" (PhD diss., University of Michigan, forthcoming), 3.3.

23. The policy was introduced following a conference held in Ottawa in 1932. This policy was designed to force British colonies, such as Nigeria, to purchase their heavy machinery, such as water-pumping machines, from Great Britain. For detailed analysis on the "Imperial Preference," see P. J. Shea, "Making Money in Northern Nigeria: The Colonial Currency Regime, 1899–1963" (Paper presented at the International Conference on the Transformation of Northern Nigeria, 1903–2003, organized by Usman Dan Fodio University, Sokoto, and Arewa House, Ahmadu Bello University, Kaduna, 27–29 March 2003, p. 16); M. S. Abdulkadir, "Financial and Marketing Crisis in Northern Nigeria during the Great Economic Depression: 1929–1935," *Kano Studies: A Journal of Savannah and Sudanic Research* 1, no. 1 (2000): 37–40.

24. A. S. Milward and S. B. Saul, *The Economic Development of Continental Europe: 1780–1870*, 2nd ed. (London: George Allen and Unwin, Ltd., 1973), 208, 213, 498, 499.

25. NAK/SNP, K.6668, "Electricity and Water Supply Schemes 1938."

26. NAK/MAKPROF, 426.

27. NAK/SNP, K.6508.

28. Philip, "A History of Electricity and Water Supply in Makurdi Town."

29. NAK/SNP, 27857, "Public Water Supplies—Purification of 1937."

30. Ibid.

31. D. D. Gbande, "Trade and Settlement in the Middle Benue Basin 1850–1960" (master's thesis, Ahmadu Bello University, Zaria, 1983), 214.

32. The contract for constructing the bridge was awarded on 3 December 1927 by the Crown Agents for the Colonies to Sir William Arrol and Company, Limited. This clearly shows the choices of the British in Makurdi. The British believed that funds meant for the construction of infrastructure to aid economic exploitation could not be divided or simply transferred to areas of little interest. The example from the bridge has further shown that emphasis during this period was more on transportation infrastructure than on water supply. This also explains the backwardness of Makurdi in terms of water supply during the colonial period. For detailed information on the bridge, see NAK/SNP, K.340, vol. I "Benue Bridge Construction General Arrangement (1926–1928)"; NAK/SNP, 3401, vol. II, "Benue Bridge Construction General

(1930–1932)"; NAK/SNP, K.3401, vol. III, "Benue Bridge Construction General Arrangement (1932–1936)."

33. Philip, "A History of Electricity and Water Supply in Makurdi Town."

34. Falola, "The Cities," 214.

35. Ibrahim W. Abubakar, "Health under Colonialism: A Study of the Impact of British Colonialism and its Health Policies in Bauchi Province, 1900–1960" (master's thesis, Ahmadu Bello University, Zaria, 1994).

36. Rufus Akinyele, "Health and Sanitation in Colonial Abeokuta," in *Nigerian Cities*, ed. Toyin Falola and Steven J. Salm (Trenton, NJ: Africa World Press, 2003), 294.

37. P. N. C. Okigbo, *National Development Planning in Nigeria 1900–1992* (London: James Currey, 1989), 18–29. See also NAK/MAKPROF, 4767E, "Colonial Development and Welfare Estimates."

38. Ibid.

39. NAK/MAKPROF, 4241D, vol. II, "Tiv Native Treasury Estimates 1948–1949."

40. Beeswax and other products, for instance, were imported into Makurdi from Ibi, Kano, and other prominent markets in Nigeria, since Makurdi was a buying center. These products were purchased and exported to Europe. For detailed information, see NAK/SNP, 25720, "Benue Province—Annual Report"; and Kwaghkondo S. Agber, "European Commercial Enterprises and Underdevelopment in Tivland: 1900–1960" (PhD diss., University of Jos, 1994).

41. NAK/SNP, 8067/S.1, "Water Works Ordinance 1929, Amendments to 1930."

42. NAK/MAKPROF, BSV/5, "Makurdi Hospital 1949–1959."

43. Afoda Yerima Bawa, who was a sanitary worker (83 years old), maintained that many people died as a result of drinking water from non-potable sources. This has further shown that during this period there was an increase in the level of water pollution because of urbanization processes, which became highly intensified as a result of colonial activities. These sources of water, which had been regarded as safe in precolonial times and needed little or no form of treatment, required high-level treatment during the colonial period.

44. J. F. A. Ajayi and Michael Crowder, "West Africa, 1919–1939: The Colonial Situation," in *History of West Africa*, vol. II, ed. J. F. A. Ajayi and Michael Crowder (London: Longman Group, Ltd., 1974), 532.

45. Walter Rodney, *How Europe Underdeveloped Africa* (1972; repr. Enugu: Ekenga Publishers, 1982), 227.

46. Ibid.

47. Ibid.

48. K. M. Buchannan and J. C. Pugh, *Land and People in Nigeria* (1955; repr. London: University Press, 1969), 226.

49. Ibid.

50. NAK/MAKPROF, 1612, "Water Supply in Makurdi since 1940."

51. Audu Dam Afoda was the first appointed Sarkin of Makurdi. He was appointed in 1914 and died in 1945. In 1946 the Tor Tiv institution was created, and an ex-service man in World War II, Mr. Makir Zakpe, was crowned the first Tor Tiv with his headquarters at Gboko. For detailed information on this, see J. I. Tseayo, *Conflict and Incorporation in Nigeria: The Integration of the Tiv* (Zaria: Gaskiya Corporation, Ltd., 1975), 40–41; and Apegba Ker, *Tiv Poetry and Politics: A Study of Tarker Golozo* (Abuja: Akia Books, 2002), 10–11.

52. Philip, "A History of Electricity and Water Supply in Makurdi Town," 77–78.

53. Ibid.

54. Northern Nigerian Government, *Statistical Year Book* (Kaduna: Ministry of Economic Planning, 1966), 160.

55. Northern Nigerian Government, *Capital Estimates of Northern Nigeria 1960–1965* (Kaduna: The Government Printer, 1966), 22.

3

SMALLPOX AND SOCIAL CONTROL IN COLONIAL SAINT-LOUIS-DU-SENEGAL, 1850–1916

Kalala Ngalamulume

Almost two decades ago, in his seminal review article of the literature on disease and medicine in Africa, Stephen Feierman noticed that although scholars had explored the relations between colonial powers and healers in the period after colonial conquest, there were no systematic studies on the actual conquest, that is, "the battle for a medical monopoly," including the assault on the institutions of health and the persecution of the healers.[1] A decade later, he revisited the topic, drawing on the evidence from the Great Lakes region (eastern DR Congo, northern Rwanda, and southern Uganda), and shed some light on the resistance battles led by the Nyabingi spirit mediums and diviners against European colonial rule that ended in the healers' defeat, the execution of some, and jail time or deportation for others.[2] It was that disempowerment of African healers that paved the way for the establishment of health hegemony, in a Gramscian sense, through the mediation of indigenous agents and middlemen or cultural translators, and in the practice of mission medicine rather than directly by European medics, as scholars such as W. G. Clarence-Smith, Deborah Gaitskell, Megan Vaughan, Marynez Lyons, Richard Rathbone, David Anderson,[3] Nancy Hunt,[4] and John Iliffe[5] have shown. The available evidence discussed in these studies highlights coercion, resistance, or consent as the main outcomes of the interaction between the colonizers and the colonized. However, we still do not have the full picture of the "ideological contest," to borrow Myron Echenberg's words,[6] which colored the colonial and missionary discourses of rationalist modernity.

This chapter partially fills the gap in the literature by exploring the hegemonic strategies used by the French colonial health officers to establish the legitimacy of western medical practice concerning smallpox vaccination and

to eliminate the practice of *variolation* (traditional inoculation), and the selective responses and initiatives of the people affected by the medical measures, especially the local healers who sought to ensure the continuity of healing beliefs and practices that were features of the African culture.[7] The study of smallpox thus raises specific questions about the significance of medical innovations, including vaccination, in reducing mortality and morbidity and broader questions concerning the role of medicine as an institution of social control in the context of the medicalization of the colonized, the medical profession as its agent, and medical knowledge as a discourse among competing discourses. The failure of compulsory vaccination to prevent further outbreaks of smallpox epidemics or to reduce smallpox mortality had to do not only with the resistance against or "indifference" of the indigenes and their healing experts toward western medicine but also with the ineffectiveness of the vaccination programs and the lack of potency of the vaccine itself.

Smallpox, Vaccination, and Variolation

Saint-Louis was founded in 1659 by a group of French merchants on an island located at the mouth of the Senegal River. By the mid-nineteenth century it had developed into a prosperous trading post and the spearhead of French expansion into West Africa. State officials were well aware, however, that lingering superstitions and prejudices were obstacles to the acceptance of western medicine. Native populations were, indeed, reluctant to go forward for health care, and those who sought medical attention did so for conditions that were not treated with satisfaction by the healers, including gastrointestinal infections and malaria during *hivernage* (rainy season), flu and pulmonary infections during the cold season, and eye infections, wounds, and venereal diseases (especially syphilis) year-round. Physicians attributed the slow progress of "civilization" to the high cost of health care for those who could pay for it, the long bureaucratic procedure for the indigents, the lack of *maîtres de langue* (interpreters) at the hospitals and dispensaries who could mediate the interaction between physicians and patients, as well as the "subversive activities" of the indigenous healers. The French medical authorities had assumed that in time more Africans would abandon their indigenous medicine and embrace modern biomedicine. But the recurrence of outbreaks of smallpox in the city proved their assumptions to be wrong and provided the authorities with an opportunity to force the indigenes to go for vaccinations and to abandon the practice of variolation, which involved the transfer of smallpox matter from an infected person to the nonimmune susceptible through incision as a preventive measure against smallpox infection. Besides the discrete events taking place during various epidemic outbreaks, the struggle for smallpox control was what set in motion a fierce competition between the indigenous healing experts and

French health officers. Hospitals and dispensaries became the power center in which French physicians and nurses mobilized to spread western conceptions of health, disease, and medical practices.

The date of introduction of smallpox vaccination in Saint-Louis is not known with accuracy. From the available evidence, it appears that the earliest attempts at creating and maintaining an efficient vaccination program date from February 1852, when the medical authorities initiated a voluntary smallpox vaccination program in Saint-Louis. The authorities intended to immunize all unvaccinated children and to vaccinate and revaccinate the entire older population in the city. A smallpox vaccine was made available to city residents every day between three and four p.m.

Official correspondence reveals that the majority of residents showed little interest in the vaccine, despite the pressure health officials put on the mayor to persuade his constituencies to have their children vaccinated.[8] There was suspicion that the "indifference" of the urban poor was justified in part by the widespread use of the competing technique of variolation, which caused milder infection and produced some deaths but conferred temporary immunity. In some circumstances, variolation could produce smallpox epidemics. This was the same problem medical practitioners had faced half a century earlier across Europe when they tried to overcome the public's distrust of smallpox vaccination. While in Europe the acceptance of vaccination took a decade to complete, in West Africa, by contrast, there was a crisis of confidence, as the process of medicalization went hand in hand with the consolidation of colonial rule.

Faced with the indifference of the native residents toward vaccination, Dr. Chassaniol, head of the Health Service, limited the vaccination program to Fridays between eight and ten a.m. at the Military Hospital and appointed the health officers to supervise the operation. The mayor, whose assistance was indispensable for the success of the vaccination campaign, was required to notify the urban residents through the linguist about the place and time for vaccination.[9] Soon, the medical authorities became irritated by the lack of eagerness shown by city residents for vaccination, given that recurrent smallpox epidemics affected mostly the urban poor. Physicians were convinced that the only viable solution was to make smallpox vaccination compulsory for civil servants, the European populace, pupils, and the indigenes employed by the elite. Chassaniol recommended that Christian and Muslim pupils as well as new recruits among the Senegalese troops be required to present evidence of smallpox vaccination before being admitted to school or recruited into the army. He hoped that half of city residents would be reached that way.[10] In the medical circles the consensus was that, given that the creoles controlled city government, only the mayor could do more to encourage city residents to get vaccination. At the same time, there was real concern that "the vaccine we have in Saint-Louis did not seem to present the desirable conditions leading to a good vaccination."[11] Thus, the evidence suggests that two factors

hindered early efforts to fight smallpox: that is, the poor state of vaccine and noncompliance on the part of the public.

In 1864, smallpox posed a credible threat to the city's health because of an influx of countrymen affected by drought and famine. In addition to facilitating the importation of the virus, the newcomers contributed to an urban population of the size required to sustain smallpox. Soon, individuals with pustules and crusts on their bodies were seen "circulating freely" in the city streets. Dr. E. M. Villette urged the administration officials to seek the intervention of the police to prevent the disease from spreading from the local population to the Europeans and the troops by requiring the suspects to isolate themselves in their own homes until cured or to be admitted at the Civilian Hospital.[12] The authorities sent a clear message that they were willing to use force to obtain compliance. From the available data, it is not possible to assess how successful public health authorities were in containing the disease. But requiring families to keep their patients at home without daily surveillance of their close contacts was a flawed strategy in that it did not end the transmission chain. The virus continued to spread, remaining largely a children's disease, which explains the emphasis the medical authorities placed on the vaccination of school-age children. In reaction to the perceived urban poor's disregard for smallpox vaccination, the authorities extended to all school-age children the control measures that were initially enforced for only Muslim children. All students were required to present a certificate showing evidence of smallpox vaccination.[13] But in the absence of reliable statistics on the annual number of smallpox deaths for the decade between 1870 and 1880, it is difficult to assess the effectiveness of the compulsory childhood vaccination program in reducing smallpox morbidity and mortality. We can rely only on the periodic frequency of smallpox epidemics to make such an assessment.

Evidence supports that the authorities had learned some lessons from the 1878 and 1880–81 yellow fever epidemics in terms of disease preparedness. Thus, in 1883 when cases of smallpox were reported among children in the city, the sick children were isolated and uninfected children were immediately vaccinated.[14] But a new health structure was needed to deal with increasing threats to the colony's health. In this context, a decree, issued on August 29, 1884, reorganized the sanitary service in Senegal and created sanitary commissions in Saint-Louis, Gorée, Dakar, and Rufisque to tackle the contemporary believed causes of epidemics.[15] The Saint-Louis Sanitary Commission included the representatives of the colonial administration, of commerce, and of local interests, as the following membership list for 1887 indicates:

1. Interior Director, President.
2. Auguste de Bourmeister, Mayor.
3. Dr. Martialis, *Médecin en Chef*, Head of the Health Service.
4. Noble, Superior Troops Commander representative.

5. Terrat, Capitaine de frégate, Navy Commander.
6. de Montfort, Navy Commissar.
7. Sullenae, Public Works Service Director.
8. Jeauteu, Head of Customs Service.
9. Quemel, Port Captain.
10. Gandambert, Head of Navy Pharmacy Service.
11. Dr. Reynaud, Navy *Médecin 1st Class.*
12. Dr. Carpot, Civilian (Municipal) Physician.
13. Lenoir, Veterinarian.
14. Aumont, Municipal Council member.
15. Descemet, Chamber of Commerce President.
16. Agaisse, Hygiene and Public Sanitation Council member.
17. Crespin (Jean Jacques), Notable *Habitant*, General Council member.
18. André Michel, Notable *Habitant*, General Council member.

The Saint-Louis Sanitary Commission met at least six times a year, in addition to special meetings. The responsibilities of the commission members were defined as follows:

> to supervise the activities of the Sanitary Service, to advise the Commission's president on the specific sanitary and medical measures to be adopted in case of invasion or threat from any reputed imported disease, to follow-up on the implementation of general and local regulations related to sanitary police and, if necessary, to alert the governor about the violations or omissions.[16]

The new health structure gave impetus to the efforts conducted by the medical authorities focusing on disease surveillance, in general, and anti-smallpox measures, in particular.

Smallpox was already endemic along the railroad and waterways, however. Smallpox cases were reported in the Pointe Nord quarter of Saint-Louis and an epidemic struck Algerian and Indo-Chinese workers who were operating along the Senegal River in the framework of French expansion in Mali. The new development forced the authorities to establish a comprehensive program to contain the spread of smallpox in the countryside as well as in urban areas. The program involved the creation of disinfection units in the ports and train stations to fumigate the merchandise.[17] An effective fight against smallpox would have required, in addition to the vaccination campaign, the notification of the authorities and the identification and quarantining of the sick in a separate medical facility. But the infrastructure was inadequate because of financial constraints.[18] In addition, the vaccination campaign was often hampered by the shortage of vaccine, which was imported from Bordeaux and Lille, and its ineffectiveness. Even when vaccine was available, the only city residents who went to the Military Hospital for vaccination were the members of Saint-Louis's elite, pupils, and the Moors visiting the city.[19]

The majority of the urban poor continued to rely on variolation that was practiced by local healers. Additional importation of the vaccine from Bordeaux and Lille did not seem to make any difference.

At the beginning of the second smallpox epidemic in May 1888, Navy physician Pierre-Adolphe Doué was able to vaccinate only 2,600 *négociants*, soldiers, and pupils out of a total population of around 20,000, using locally produced cowpox matter to produce temporary immunity against the disease. Students were denied access to school if they did not carry a medical certificate issued by the chief medical officer, Dr. Mérault Martialis, testifying that they had been vaccinated or had previously contracted measles and that they had no infectious or organic diseases.[20] The authorities clearly defined school as the prize and vaccination as the action to take to merit it. Such a measure made sense in light of the indifference to the health initiatives of the authorities shown by the indigenes, as Doué was even prepared to produce more cowpox matter "if the indigenous population responds to our appeal."[21] By June, doctors reported that the "South" quarter of Saint-Louis was "completely invaded" by the smallpox epidemic and that "there were smallpox deaths every day."[22] But according to official records, the smallpox outbreak produced eighteen deaths out of sixty cases identified in Sor, ten deaths out of twenty-four cases in Ndar Toute, and two out of thirty-six in Guet Ndar.[23] The disease continued to spread in the city and the countryside. The lack of special isolation wards for smallpox patients prompted state officials to seek funds from Paris. The cost of one isolation ward was estimated at 5,000 francs.[24]

Between January and April 1889, the third smallpox epidemic swept through the city and affected "indistinctly" all the quarters of Saint-Louis as well as the slums of Guet-Ndar, Ndar-Toute, and Sor. The medical officials organized a vaccination campaign of susceptible troops and school children and the revaccination of those who had received a primary vaccination. Eight hundred residents were vaccinated in one single day.[25] Orders were given to deliver to ships leaving Saint-Louis the bills of health with the mention "Smallpox exists in Saint-Louis and in its *faubourgs*."[26] The seriousness of the threat was such that the officials felt the need for building a special ward for the isolation of smallpox cases. But given that the authorization for the expense had to come from Paris, the authorities opted for an alternative temporary solution, that is, to transform the central dispensary that was attached to the hospital into an isolation ward for smallpox cases.[27] By April, smallpox had killed 199 victims, including two Europeans (one adult and one child) and an undetermined number of the urban poor.[28] In October 1889, the sanitary situation in Saint-Louis was described as "improved," thus making the issuance of unclean bills of health unnecessary.[29] The disease subsided but did not disappear.

The fourth smallpox epidemic struck the city in January 1895 and produced sixty-three deaths between February 21 and April 6. Dr. Charles Carpot, from one of the leading Creole families, succeeded in vaccinating or revaccinating

803 residents between January and May. He affirmed that the 1895 smallpox epidemic was "the strongest epidemic I have ever witnessed" and attributed the spread of the disease to the expansion of Islam and the "disastrous method" of *variolation* that accompanied it. Having explained the mode of propagation of smallpox, he went on to identify the targets. "This method," he affirmed, "was vulgarized by the so-called marabouts who address the fanatics (and make them) believe that by using this means they would protect themselves against the disease." He found the method of *variolation*, which consisted in "taking with a knife smallpox matter from a pimple and placing it in direct contact with the small wound [incision]," repulsive because it did not take into account the principles of asepsis and antiseptics.[30]

The recurrence of smallpox epidemics underlined an open conflict between doctors and healers, the former blaming the latter for threatening the health of the city residents by relying on a "false science" and its "dangerous technique." Carpot became convinced that only the availability of potent vaccine would reduce or eliminate the attraction that healers exercised on the public imagination. He recommended the opening of a line item of 500 francs on the municipal budget to be devoted to the municipal vaccination service, which later became permanent. The smallpox vaccine would be imported from the Vaccine Office of the Faculty of Bordeaux and from the municipality of Bordeaux.[31] By September there were reports indicating that two-thirds of city residents remained indifferent to vaccination and that only 721 out of 2,000 students attending the Koranic schools were vaccinated.[32] Thus, the geography of smallpox still indicated the nature of its class base; it mostly affected the urban poor.

In any case, while the authorities were convinced that the sanitary situation was under control,[33] smallpox continued to spread in the city. It erupted into the fifth epidemic in February 1897 in Guet-Ndar, spread to other quarters of Saint-Louis, including the garrisons, and produced "a considerable number of patients" and "many deaths."[34] Medical authorities implemented the prophylactic measures previously interrupted for lack of resources and extended them to Dakar and to other military garrisons.[35] They succeeded in vaccinating or revaccinating 1,097 susceptible young children and adolescents less than fourteen years of age between March and July.

Physicians attributed the epidemic to the "culture" of the urban poor, especially the "promiscuity of the natives' " huts, their "lifestyle," and their "fear of admission to the hospital," which explained why they hid smallpox cases, thus making the notification of new cases more difficult. But, on a positive note, health officers also claimed to have noticed a net reduction in the practice of *variolation* in the city. Carpot prided himself that "Blacks, better advised and especially more open to the Mayor's constant warnings and advices, either stopped practicing or did so little variolation that nobody ever heard about it again." In his perspective, the "so-called indigenous specialists" (healers and marabouts) were losing ground, prompting "the indigènes to rush en masse to my office in

order to get their children vaccinated."[36] Carpot's statement clearly points to the intensity of the ideological contest between physicians and healers.

The following year, smallpox subsided, the epidemic phase giving way to the endemic phase. The number of vaccinations also dropped to 161 residents. For Carpot, however, the 2,220 cases of vaccination or revaccination in four years—including 1,374 successful cases, 626 unsuccessful cases, and 220 cases with unknown outcome—represented a real success and meant that "the vaccination has penetrated the customs of the black population" in Saint-Louis. He suggested additional preventive measures that, he believed, would stop the spread of smallpox. These measures comprised disinfection, free hospitalization, and the closing of the Koranic school and dismissal of *talibés* or Muslim students.[37] Actually, in the absence of the breakdown of statistics of the vaccinated individuals by race, class, and age, Carpot's claims that medical officials had succeeded in persuading the urban poor to have their children vaccinated should be taken with a grain of salt. Many children under the age of five in the city, including those born after the last epidemic, were still at risk of contracting smallpox.

As smallpox was constructed as a disease of the urban poor, who were "maladjusted" to the requirements of modern city life, the proposed sanitary and health measures were aimed at eliminating the perceived causes of resistance to biomedicine that made the identification of the sick extremely difficult in the *faubourgs* (slum areas) where the sick ran away before the arrival of search parties. But the authorities ignored the empirical observations made by the natives concerning some healthy individuals who were vaccinated at the hospital but who later became ill and others who died. Doctors' own reports indicated that the success rate of vaccination was only 66 percent. But it should be emphasized that these prophylactic measures were never fully implemented for lack of resources.[38]

At the turn of the century, smallpox was endemic along the railroad between Dakar and Saint-Louis, especially in Tivaouane, a commercial center that attracted thousands of people every year.[39] In 1902, smallpox reached epidemic proportions in Saint-Louis. The administration was able to locally produce 900 tubes of vaccine per year, thanks to the recently created Vaccine Service, and to vaccinate 1,072 residents. But health officials had no way of verifying the effectiveness of the vaccine simply because vaccinated individuals "very often neglected to come back for a control visit."[40]

Intervening in the aftermath of the 1900 yellow fever epidemic, the latest smallpox epidemic revealed the anxiety that the medical authorities felt about Senegal, a colony that was afflicted "every year by a disaster more deadly than the war." The authorities blamed the urban poor, referred to as the "unenlightened masses," for the spread of disease in Saint-Louis, claiming, "The parades of the blind that stroll about in Saint-Louis' streets," wrote the chief medical officer, "are there, moreover, to remind us that the endemic disease is at our doors, if, because of selfishness or indifference, we were tempted to forget about it."[41]

The urban poor's "indifference" to the smallpox vaccine convinced the authorities to accelerate the "penetration among the ignorant masses of the benefice of the immortal discovery," that is, smallpox vaccine. The *Médecin Inspecteur* viewed the smallpox campaign as part and parcel of the "great philanthropic movement," or the *civilizing mission*.[42] He recommended a more aggressive approach to disease prevention. The main targets were school children and the healers.

Convinced that smallpox was, above all, a children's affliction, and that children formed the most vulnerable section of the population, the governor of Senegal issued, on March 18, 1904, a decree aimed at preventing and combating the epidemics in elementary schools. The decree required that schools be provided with clean drinking water (filtered or boiled) and that classrooms and toilets be kept clean. Other measures concerned the permanent ventilation of the classrooms, the elimination of empty, discarded cans, the education of the children regarding sanitation (clean clothes, bath, and hygiene), the compulsory vaccination of the children, and the isolation of the sick. The school personnel were included in the machinery of social control. Indeed, teachers were required to inspect pupils' clothes and to cultivate in them the "taste of cleanliness." School admission was predicated on the presentation of a medical certificate showing evidence of recent vaccination (less than one year) or that the pupil had contracted smallpox. Students suffering from leprosy, pulmonary tuberculosis, conjunctivitis, eye infection, and trachoma were denied access to school.

The decree also had provisions concerning the compulsory declaration of infectious or epidemic diseases. The school principal was required to urgently report new cases of disease to the municipal physician and the head of the education department, who would contact the governor and suggest the appropriate sanitary measures to be taken. Students with "fever" would be sent home or, in the case of boarding school, to the dispensary, and prevented from attending school. Students with contagious diseases as well as their brothers and sisters or other children living in their homes were not allowed in school. Classrooms would be disinfected either between classes or in the evening after the students had left school. Teachers were required to provide the parents of the sick students with medical information concerning the precautions to be taken to prevent the spread of the infection, such as bathing, disinfecting clothes, and destroying textbooks and notebooks. The readmission of the convalescent students was dependent on the presentation of a medical certificate. Table 3.1 indicates the duration of eviction from school of students infected with smallpox compared with those suffering from other diseases.

Consideration of the data suggests that medical authorities were now concerned with all the diseases affecting the children, not just smallpox, however, smallpox continued to attract the authorities' attention. Indeed, the decree of April 14, 1904, related to the protection of public health in French West Africa, had provisions for compulsory anti-smallpox vaccination of nonimmune

Table 3.1. Duration of the eviction of sick students

Diseases	**Duration of eviction**
Smallpox	40 days and destruction of books
Scarlatina	40 days and destruction of books Dismissal of students if more cases observed
Measles	16 days and destruction of books Dismissal of children less than 6 years old
Chicken-pox	Successive eviction of the sick
Ear infection	10 days
Diphtheria	40 days
Whooping cough	21 days
Eye infections	Eviction until patient cured

Source: *Journal Officiel du Sénégal et Dépendances*, March 26, 1904, 164–65.

residents, especially children aged one year, and the revaccination of individuals who had lost their immunity following primary vaccination, especially individuals who had reached eleven and twenty-one years of age.[43]

Governor-General Emile Roume provided specific guidelines for the vaccination and revaccination operations, including an eight-day-advance notice to the population and the responsibility of the parents and guardians in sending children to the vaccination office. For those who contravened the vaccination legislation, the decree imposed fees, ranging from 1 to 5 francs, 100 to 500 francs for recidivists, and 500 to 1000 francs for those who would obstruct the work of the mayors, administrators, *Commandants de Cercle*, and members of the hygiene commissions who were in charge of implementation of the law.[44]

Besides issuing the legislation, the authorities reorganized the bacteriological laboratory of Saint-Louis, appointed *Médecin-major* 1st class Thiroux as the head of the service, and attached the Vaccine Production Center to the laboratory with the mission of supplying the vaccine to several centers in French West Africa, including Dakar, Thiès, Kaolack, Tivaouane, Dagana, Louga in Senegal, Koroko in Côte d'Ivoire, and Kayes in Guinée.[45] In addition, the authorities took special sanitary measures to prevent contamination by sea.

By 1909, the laboratory in Saint-Louis could produce 2,631 tubes of vaccine using forty-seven heifers, that is, enough to immunize 105,240 people in French West Africa. But in Saint-Louis they vaccinated only 2,631 residents,[46] mainly the European community, the creoles, and their employees who complied with the new health measures. The majority of indigènes remained "indifferent" to the vaccination program.

The evidence shows that the colonial administration used medicine as a means of social control. In the hands of colonial officials, the school system became a "technology of control," to borrow Michel Foucault's expression,[47]

that could force important segments of the city residents to go forward for vaccination. From the Muslim residents' perspective, the authorities were setting blocks on the road leading to social mobility. Muslims were already hesitant to send their children to the French school for fear that they would be converted to Christianity;[48] the imposition of smallpox vaccination as a condition to attend not only the French school but also the Koranic school provided them with an additional reason to keep their children at home after the completion of the Koranic school and to continue to resist the vaccination program.[49] But vaccination was only part of a bigger problem: that is, the limited progress made by biomedicine among the indigenes, despite the advent of the germ theory; improved diagnosis of diseases in the microbiology laboratory, installed in Saint-Louis in 1896; and the shift in emphasis after 1897 from military concerns to the public health of all the colonial citizens and subjects.

In addition to the imposition of smallpox vaccination, other strategies were designed to deal with both the indifference to the vaccination program and the challenge posed by local healers. These strategies included training Africans for the propagation of western medicine, demonstrating the superiority of European medical technology, and promoting health education for the youth.

The authorities had hoped that integrating the native auxiliary agents into the structure of colonial health service would help reduce the natives' reluctance to seek medical attention. In the framework of the *Assistance Médicale Indigène*, a kind of poor relief service created in 1905, the authorities recruited and trained auxiliary agents, called *aides-médecins indigènes* (physicians' aides), who were expected "to penetrate in the intimate life of the indigènes, to gain their confidence and to exercise on them the influence we plan to rely on in order to introduce among the black populations the notions of hygiene."[50] More specifically, their mission was defined as follows:

> They will participate in the delivery of health care to the *indigènes*; they will be the agents of penetration and precious information. They will help their supervisors to fight the practices of the *marabouts* or the fetish-makers; they will spread their influence and will become the number one propagandists of the civilizing ideas that we try to promote in Africa.[51]

The administration's initiative provides insights into the construction of a hegemonic process in the health sector: the structures involved, the strategies adopted, and the identification of the contestants or "enemies" to combat.[52] The declared intention was to take followers and allies away from the competitors (marabouts, healers, and midwives) and to undermine their political and social credit. The new "agents of penetration" and "propagandists" of the civilizing mission were recruited from among individuals with differing backgrounds: the civilian nurses who had served at least three years in the hospitals, the military nurses who had been relieved after three years of service in

the unit reserved to the indigenous nurses, the discharged soldiers who had undergone the necessary training in the hospital and been granted the statutory certificate, and the young graduates from the schools opened in the colony who were at least sixteen years old. To be recruited, the candidates were required to speak and write French fluently.[53]

Any gains made by the native physicians' aides could be irrelevant if western medicine had continued to exhibit the kind of shortcomings seen in smallpox vaccine or anti-yellow fever therapies. Thus, the authorities decided to make dispensaries more useful by equipping them with at least six to eight beds and effective drugs. The intended objective was "to provide the patients with the type of health care that would produce important and impressive medical or surgical cures that would have a resounding echo among the indigènes, detach them from the marabouts and indigenous midwives, and get them to come forward to the dispensary [for biomedicine]."[54]

This statement underlines the importance of dispensaries, as primary health-care providers, in the eyes of state authorities as well as in the eyes of the Catholic sisters, who were in charge of running three dispensaries in Saint-Louis and had their own separate agenda. Indeed, the *Soeurs hospitalières*, or nun nurses, saw the dispensary as "a way by which we enter in contact with the Africans whom we must evangelize, and we gain their confidence."[55]

How successful the auxiliary agents were in promoting western medicine is not known. But by 1913 it was clear that indifference and resistance to western medicine were widespread. The evidence suggests that healers and some marabouts in Saint-Louis did not follow the "paths of accommodation," an expression used by David Robinson,[56] leading to the consolidation and legitimating of the French colonial rule in Senegal; rather, they encouraged the popular masses to resist all attempts made by the French health authorities to promote biomedicine. Convinced that the indigenes were indifferent to biomedicine, the French administrators combined coercion with a policy of surveillance, confrontation, and subversion of the marabouts and healers to reduce their "disastrous and deadly" influence.[57] So the French colonial authorities, far from underestimating their competitors, instead acknowledged the formidable challenge at hand, which they described as follows:

> Our most irreducible adversaries for the extension of our influence in Senegal are the Marabouts healers who perceive us as formidable competitors and correctly apprehend that the adoption by the indigènes of our therapeutic procedures would definitely consecrate the ruin of their lucrative industry.[58]

Having defined the grammar of the resistance, as they understood it, state officials proceeded to give repeated warnings to the patients with whom they entered into contact against the "fraudulent and deadly" practices of the indigenous healing experts, whom they portrayed as "dangerous malefactors" and "dangerous trouble-makers." The tactics used by the healers to maintain control

over their followers were well known. They were making "a lot of money" by exploiting the credulity of their "clients," especially women.[59] They repeatedly intimidated the indigenes who would dare to consult the French physicians and nurses by threatening to use persecution, *mauvais sorts* (curse), and poison against them. The sharpness of the attacks directed against the healers by the missionaries and colonial administrators suggests that healers were very active and had an important following. The identification of the marabouts and healers as enemies provided the colonial government with a justification for persecuting them. The authorities' reasoning was simple: by using the "wrong" tactics, local healers did not know how to compete; therefore, their persecution was justified. The marabouts appeared in the eyes of the French colonial authorities as the last obstacle to the accomplishment of the civilizing mission. Even sorcery became known as *maraboutage*, which appeared to the missionaries as "the most common form of superstition in Senegal"[60] and the "remnants of savagery."[61] As late as 1913, the "marabout problem"—far from being resolved—was instead treated as an undecipherable and resistant text.[62]

Making Sense of Resistance

As the historical evidence presented here shows, the French encounter with the natives in Senegal took the form of a clash between the discourse of Enlightenment, or European rationalism, and the rationality of the "Other," constituted as the indigene who had to be forced to assimilate western conceptions and practices. The latter responded to the hegemonic process with counterhegemonic strategies ranging from resistance to accommodation and selective adhesion.

The resistance to western medicine was rooted in African cultural history, including a series of events, processes of invention, innovation, borrowing, and symbols from the past that had continued to have significance in the present, not only because those who experimented them were their "ancestors" but also because of the perceived coherence of their medical conceptions, the scope of life events covered, and the relative efficacy of some drugs and other potent objects. In this context, it is possible to understand and explain the reasons why the missionaries were puzzled that even some members of the civil society, especially traders and *signares* (elite women), consulted the marabouts and healers to secure protective *gris-gris* and talismans worn by the traders during their business trips along the Senegal River. In 1900, there were reports that "the marabouts enjoy a considerable influence, to which do not always escape even the most Catholic families. Thus, the latter willingly maintain some practices, some more or less superstitious customs."[63]

This expression of frustration and disappointment highlights the problems inherent in the construction of hegemony, especially its failure to consider

other types of articulation, or configurations that drew knowledge into the realm of useful endeavor. Indeed, as Patrick McNaughton pointed out:

> Some [configurations] are employed to diagnose and cure illness. Others help secure success in a business venture or a marriage. Others can be used to assassinate people. Still others provide the conceptual templates for the manufacture of amulets. . . . or any of the things that blacksmiths produce.[64]

Various specialists were involved in these activities, including healers, marabouts, diviners, blacksmiths, rainmakers, and hunters. The French did not try to understand the multicausality of the African disease theory or the complexity of the decision-making process in the quest for therapy, as John M. Janzen has explained.[65] Thus, even if the technique of *variolation* was imported in the framework of the expansion of Islam and commerce, it was in a certain way "naturalized" before the imposition of the formal colonial rule. The indigenes' resistance to smallpox vaccination must be understood against this background of indigenous worldviews, including the principles of medicine and occult power.

The French colonial government efforts to introduce smallpox vaccination among the local populations were met with fierce resistance from the marabouts, healers, and midwives, and with selective compliance from their followers. Although the authorities interpreted noncompliance with smallpox vaccination or low admission rates in dispensaries and hospitals as a rejection of biomedicine, the evidence points to the fact that the urban poor's responses were based not only on the pressure from the marabouts and healers but also on their own understanding of the scope and possibilities of smallpox vaccination, on the one hand, and the limits of the indigenous healing practices on the other. As a matter of fact, cases of noncompliance with smallpox vaccination were also reported among the French residents, but physicians explained them away in terms of "negligence," while defining the urban poor's noncompliance as "inertia" and "bad faith."[66] These ontological and epistemological issues help explain why for many patients the hospital was not the first choice in their quest for therapy, and why the marabouts, *guérisseurs* (healers), and midwives were still in competition with the physicians for patients as late as 1916.

Notes

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3. Dagmar Engels and Shula Marks, eds., *Contesting Colonial Hegemony: State and Society in Africa and India* (London: I. B. Tauris, 1994). For Africa, see William Gervase

Clarence-Smith, "The Organization of 'Consent' in British West Africa, 1820s to 1960s," in Engels and Marks, eds., *Contesting Colonial Hegemony*, 55–78; Deborah Gaitskell, "At Home with Hegemony? Coercion and Consent in the Education of African Girls for Domesticity in South Africa before 1910," in Engels and Marks, eds., *Contesting Colonial Hegemony*, 110–28; Megan Vaughan, "Health and Hegemony: Representation of Disease and the Creation of the Colonial Subject in Nyasaland," in Engels and Marks, eds., *Contesting Colonial Hegemony*, 173–201; Marynez Lyons, "The Power to Heal: African Auxiliaries in Colonial Belgian Congo and Uganda," in Engels and Marks, eds., *Contesting Colonial Hegemony*, 202–23; Richard Rathbone, "Law, Lawyers and Politics in Ghana in the 1940s," in Engels and Marks, eds., *Contesting Colonial Hegemony*, 227–47; David M. Anderson, "Policing the Settler State: Colonial Hegemony in Kenya, 1900–52," in Engels and Marks, eds., *Contesting Colonial Hegemony*, 248–64.

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8. *Médecin* to *Commandant*, February 3, 1852, Archives Nationales du Senegal (ANS)/H1.

9. *Médecin en Chef* Chassaniol to Mayor, April 12, 1859, ANS/H2/AOF/1.

10. *Médecin en Chef* to Governor, April 15, 1862, ANS/H2/AOF/53; see also Ordinance of May 1, 1862, ANS/H2/AOF/53.

11. *Médecin en Chef* to Governor, s.d., ANS/H2/AOF/32.

12. *Médecin en Chef* to *Ordonnateur*, May 30, 1864, ANS/H2/AOF/121; *Médecin en Chef* to *Ordonnateur*, October 30, 1864, ANS/H2/AOF/167.

13. Governor's Ordinance of February 28, 1870, ANS, *Bulletin Administratif*, 1870, 77; see also ANS/H7/AOF/20.

14. Sanitary Commission meeting, March 30, 1883, ANS/H22/Senegal.

15. Decree on the reorganization of the Sanitary Service in Senegal, August 29, 1884, ANS/H2/Senegal.

16. Decree on the reorganization of the Sanitary Service in Senegal, art. 106.

17. Sanitary Commission meeting records, November 29, 1887, ANS/H37/AOF/15.

18. Head of Public Works Service to Interior Director, no. 162 of March 27, 1888, ANS/H22/Senegal.

19. Dr. Laffont to Interior Director, April 13, 1888, ANS/H2/Senegal.

20. Acting Interior Director, L. Turquet, to Mayor, no. 80 of May 26, 1888, Archives Municipales de Saint-Louis, 2 B 20.

21. Dr. Doué to governor of Senegal and Dependencies, May 18, 1888, ANS/H37/AOF/26, 2; *Médecin en Chef* to Governor, no. 244 of May 28, 1888, ANS/H39/Senegal.

22. Dr. Doué to Governor, June 1, 1888, ANS/H37/AOF/35.

23. Deputy Police Chief Pellissier to Interior Director, no. 72 of June 13, 1888, ANS/H39/Senegal.

24. Artillery Director Delcourt to Administration Service Chief, no. 147 of January 11, 1889, ANS/H37/AOF/65.

25. *Médecin en Chef* (Navy and Colonies) to Governor, February 21, 1889, ANS/H37/AOF/64.

26. Health Director to Governor, no. 609 of February 24, 1889, ANS/H37/AOF/61.

27. Colonel Dodds to Governor, March 10, 1889, ANS/H37/AOF/59.

28. Police Chief to Interior Director, May 4, 1889, ANS/H44, Senegal.

29. Dr. Doué to Governor, October 21, 1889, ANS/H37/AOF/38.

30. Dr. Carpot, municipal physician, "Rapport sur la variole et les vaccinations in the commune of Saint-Louis," December 12, 1898, ANS/H38/AOF/21, 3.

31. Ibid., 4–5.

32. Rapport medical, September 1, 1895, ANS/H109/Senegal.

33. ANS/H37/AOF/38.

34. "Rapport sur la variole," ANS/H38/AOF/21, 6.

35. Colonel Pujol to Governor General, April 6, 1897, ANS/H38/AOF/12; Colonel Pujol, to Governor General, no. 477 of April 6, 1897, ANS/H38/AOF/13.

36. Dr. Carpot, "Rapport sur la variole," December 12, 1898, ANS/H38/AOF/21, 6, 9, 11.

37. Ibid., 12, 13, 14.

38. Colonel Lujal, *Commandant Supérieur des Troupes du Sénégal*, to Governor General, April 6, 1897, ANS/H38/AOF/12.

39. Extrait du rapport du président de Yang-Yang, Februrary 1903, ANS/H12/28.

40. Dr. Massiou, "La Vaccine à Saint-Louis (Sénégal)," *Annales d'Hygiène Coloniale* 7 (1904): 18.

41. *Médecin Inspecteur des Services Sanitaires Civils* to Governor General, November 10, 1903, ANS/H39/AOF/50; the letter accompanied a fifteen-page report on the smallpox campaign entitled "Mémoire sur la prophylaxie antivariolique en Afrique Occidentale Française."

42. Ibid.

43. Anti-smallpox campaign, decree of April 14, 1904, related to the protection of public health in French West Africa, ANS/H38/AOF/56.

44. Decree of June 10, 1905, ANS/H38/AOF/56.

45. Decree of April 3, 1905, ANS/H38/AOF/56.

46. Anti-smallpox campaign by Dr. H. Gallay, Inspector of Civilian Sanitary Services, 1909, ANS/H38/AOF/59, 2, 7.

47. Michel Foucault, *History of Sexuality*, vol. 1, *An Introduction*, trans. Robert Hurley (New York: Vintage, 1978), 126.

48. Interview with Omar Sarr in Saint-Louis, 1994.

49. Dr. Huot to Governor, no. 158 of May 6, 1913; no. 156 of March 7, 1914; no. 55 of January 22, 1914, ANS/H11.

50. Rapport au Gouverneur Général de l'Afrique Occidentale Française suivi d'un arrêté portant création d'aides-médecins indigènes de l'Assistance Médicale Indigène de l'Afrique Occidentale Française, ANS, *Bulletin Administratif 1906*, 55–56.

51. Ibid., 56. The ordinance creating the new category of agents working in the framework of the *Assistance Médicale Indigène* was issued on January 7, 1907.

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55. *Annales*, 51–52; see also *Bulletin de la Congrégation de Saint-Joseph de Cluny (1885–1904)*, XIII, 636.

56. David Robinson, *Paths of Accommodation: Muslim Societies and French Colonial Authorities in Senegal and Mauritania, 1880–1920* (Athens: Ohio University Press, 2000).

57. Chief Administrator of Cayor in Tivaouane, May 12, 1913, ANS/H11 Senegal.

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59. *Echo de Saint-Louis* (May–June 1979), 6.

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61. *Echo de Saint-Louis*, 3 (September 1909), 1–2.

62. For more on the enigma of otherness, see William E. Connolly, *Identity/Difference: Democratic Negotiations of Political Paradox* (Ithaca, NY: Cornell University Press, 1991).

63. Archives of the Congrégation du Saint-Esprit, Chevilly-la-Rue, *Bulletin de la Congrégation, 1899–1900*, 217.

64. Patrick McNaughton, *The Mande Blacksmiths: Knowledge, Power, and Art in West Africa* (Bloomington: Indiana University Press, 1993), 43.

65. See John M. Janzen, *The Quest for Therapy: Medical Pluralism in Lower Zaire* (Berkeley: University of California Press, 1978).

66. Dr. Huot to Governor, May 6, 1913; January 22, 1914.

4

POOR MAN'S TROUBLE, RICH MAN'S GRAVEYARD

A STUDY OF MALARIA AND EPIDEMIOLOGICAL SCIENCES SINCE THE NINETEENTH CENTURY

Raphael Chijioke Njoku

Most tropical regions of the world, including sub-Saharan Africa, South Asia, and South America, are susceptible to malaria epidemics. The West African littoral, however, branded the "fever coast" in colonial parlance, is more closely associated with malaria than other regions. As Raymond Durnett noted in a 1968 seminal essay, the peculiar climatic conditions in the areas neighboring the West African Gulf of Guinea make it one of the most dangerous environments for health. The area's high temperature range, relative humidity, and generous monthly distribution of rainfall help breed the species of malaria parasite, *Plasmodium falciparum*, and its vector, *Anopheles gambiae*, which, by living on both animal and human blood, passes the malaria parasite into humans.[1] After a period of between ten and fourteen days of incubation in the body, the mosquito parasite attacks the victim's blood cells and liver, resulting in an enlarged, hard spleen (splenomegaly), which is one of the signs and symptoms that help physicians reach a diagnosis of the malarial illness.[2] Among other symptoms, the general effect to health manifests in chills, high body temperature, prostration, delirium, and a rapid heartbeat—all of which culminate in a feverish condition that causes damage to the victim's physiology. If uncontrolled, the complications (including diarrhea, vomiting, concussion, anemia, severe headache, and multi-organ system failure) could easily result in possible brain damage and death.

Despite a wide-ranging search on its control and eradication, malaria remains a disturbing health hazard that claims more than a million African lives annually. Worldwide, the mortality rate is estimated at between 2 and

3 million, with an additional 300–500 million illnesses.[3] Although both adults and children are at risk, most victims of malaria-related deaths are children, especially those below the age of five. Adult death rates are lower because older people tend to gradually develop certain kinds of partial resistance or tolerance against the scourge—an attribute lacking in children, as well as in foreigners, to the malaria-endemic regions. Additionally, between 30 and 40 percent of West Africans carry the mutant gene (a relatively permanent change in hereditary material involving a change in chromosome relations) for sickle-cell anemia, a disease of the blood, which can provide a measure of protection against malaria.[4] Another genetic factor (distinct from but correlated with race) that can contribute to immunity is the Duffy antigen—which is capable of stimulating an immune response. The Duffy antigen is a kind of enzyme derived from certain sources of protein and carbohydrates.

In his erudite essays, Philip Curtin has dwelled much on one of the most widely held stereotypes about malaria. Until recently, it was erroneously believed that while "Negroes were peculiarly immune to the effects of a hot climate," which is also synonymous with the disease of malaria, "Europeans seemed peculiarly liable to death in the climate of the West Indies or the 'white man's grave' of the Gulf of Guinea."[5] While recognizing the minor genetic differences between the West African and other peoples, the truth of the matter is that racial origin has little to do with immunity to any particular disease. Humans build up immunities to certain kinds of diseases in relation to pathogens found in their local environment. It is therefore typical that Africans born and raised in the malarial regions naturally develop a measure of tolerance to the malarial strain over a period of time. Doubts are increasing, however, as to whether this is true with the dangerous *Plasmodium falciparum* strain of the malaria parasite.[6]

Given the enormous health hazard that malaria still presents for people in the tropics, one may be curious to know about how the Africans understood the occurrence, circulation, and control of malaria and maintained a healthy population over the centuries preceding colonialism and the introduction of western medical services. This inquiry is important in order to understand the overlapping phases of African health-care services, tracing the development from the indigenous to the western, and underscoring their attendant cross-currents. More important, this perspective illuminates an understanding that the recent advances in the search for a cure for malaria have built upon the preexisting indigenous strategies for combating malaria and other tropical illnesses, leprosy, yellow fever, Guinea worm, tropical ulcer, dysentery, yaws, and sleeping sickness.[7] Thus, in view of the contributions of western-oriented medical systems in the improvement of tropical health care, the question arises as to how the indigenous African healers understood the cause(s) of malaria and developed ways to combat the epidemic independent of western medical knowledge. In other words, what is the overlap between indigenous and western medical systems?

Indigenous Approaches to Malaria Illness

Insight into the indigenous understanding of the causes of malaria and the approaches to its cure holds the key to grasping the link between ethnomedical systems in Africa and the western-style medical advances in the treatment of the disease. Ethnomedicine or ethnopharmacology is an emerging field of intellectual inquiry focusing on "the study of how members of cultures think about disease and organize themselves toward medical treatment and social organization of treatment itself."[8] Notwithstanding the significant number of extant studies on ethnomedicine, the African indigenous approaches to curative disease control are still masked in controversy. This controversy stems in part from the reported instances of poisoning attributed to traditional remedies. Indigenous medicine makes use of multiple combinations of plants and herbs whose toxicity profiles are not clearly established and whose long-term effects are still unclear.[9] More controversial is the indigenous knowledge system that links disease and illness with religious belief systems, cultural symbolism, and aspects of rituals and ancestral worship.[10] Toyin Falola explains that in indigenous societies, the health-care system, among other things, emphasizes that "disease could come about through preternatural and supernatural causes (that is the machinations of enemies, the wrath of gods and witches)."[11] Therefore, cures are supposed to deal with both the patient and the supernatural agencies. The rationale for this double approach (i.e., the considerations for both physical and spiritual manifestations) is to offer the patient "holistic" relief from the illness. In essence, the precolonial African healers were more than medical specialists: they were also spiritual advisors, legal and political consultants, marriage counselors, and social workers. They combined divination with the use of herbs and potions prepared from animals, insects, and birds for healing.[12]

Charles Good provides a summary of what an ethnomedical system encompasses. (1) Folk knowledge and beliefs in laypersons with specialized knowledge; (2) traditions, symbols, and values related to health, illness, and disease; (3) a society's causal theories and taxonomies of sickness; (4) supportive social institutions and organizational arrangements (e.g., therapy-managing groups, extended family, dispensaries, hospitals); (5) recognized specialists (including traditional medical practitioners, traditional midwives, and more recent actors such as medical assistants, nurses, and biomedical doctors); and (6) the spatial arrangement and interactions among various physical settings where various elements and phases of illness and therapy are determined, evaluated, and administered.[13] In general, the entire indigenous African society involved itself in health-care delivery by augmenting expert diagnosis with personal knowledge and experiences. As much as possible, work and play were clearly defined, and the people were involved in "sanitation, planning and location of residential houses, markets, segregation and reintegration of patients suffering from communicable diseases."[14]

The apparent combination of the spiritual and the secular or scientific methods in ethnomedical systems appears to be in disagreement with the modern western knowledge system, which since the Enlightenment has tried to separate the field of science from the spiritual realm. This conflict of methodological approaches has resulted in European mistrust of ethnomedical systems; their erroneous perception of African indigenous medical practices as ineffective, primitive, and underdeveloped; and their degradation of practices of magic and witchcraft. Such ideas are largely rooted in the grand Eurocentric denial of African history and cultural practices aimed at justifying colonial domination.[15]

Since the end of colonial rule, many of these biases and prejudices have been corrected, and with the increasing globalization of knowledge, African customs and culture are now gradually rescued from the subaltern confines of racial prejudices. The fact can no longer be denied that traditionally Africans have been able to maintain a healthy population, curing their common ailments with the local herbs and roots nature made available in their environment. As many scholars have emphatically noted, "ethnomedical knowledge of plants by indigenous people across societies has long served as crucial sources of medicines either directly as therapeutic agents, as starting points for the elaboration of more complex semi-synthetic compounds or as synthetic compounds."[16]

With regard to malaria treatment, Africans have used a wide variety of remedies including practices that are undoubtedly corroborated by microbiological and epidemiological sciences. This is despite the shortcomings of their initial belief that malarial fevers were contracted from "poisonous vapors emitted by the action of strong sunlight or heavy rains upon decaying vegetable matter in swamps."[17] Along this line of causality, the indigenous approaches to combating malaria involved two major strategies: (1) control of the source of the disease through maintenance of a healthy environmental sanitation system, including the extermination of the vectors that are bred in swampy environments, and (2) diagnosing and treating malaria with indigenous herbs, roots, and leaves, prepared and administered orally by skilled and knowledgeable healers.

Environmental sanitation had been an integral part of African epidemiological practices long before the late-nineteenth-century scientific discovery linking certain species of mosquitoes with the spread of malaria. As several studies have shown, Africans living in the malarial littoral have traditionally used the physical annihilation method to combat its spread. This involved ordinary swamp drainage, bush burning, proper garbage disposal, and other aggressive forms of observing household, village, and town sanitation. Also, since the common belief was that strong sunlight brought about the illness, people were advised to stay away from excessive exposure to sunshine. While the healthy environmental sanitation approach has remained useful even today, the issue continues to be one of no effective means to control infested

visitors from visiting mosquito-free areas, hence, the arrival of an infested visitor reenacts the cycle of infestation and poses a health risk to others. Additionally, there is the problem posed by long-distance travelers and visitors who may bring the disease from outside. Therefore, the ignorance over the role of the vector, *Anopheles gambiae*, in the transmission of malaria substantially hampered its effective treatment and control measures. This misunderstanding of microbiological knowledge about the nature of the disease was one of the initial problems that caused the Europeans a great number of lives in the age of European discovery, missionary evangelism, and colonial activities in West Africa.

Meanwhile, the indigenous methods used by African healers in the treatment of malaria with local herbs, roots, leaves, and other oral solutions are diverse, covering an extensive terrain. These are based on expert knowledge of the medicinal and non-synthetic chemical properties of the plants used, as well as the skill to diagnose the illness through proper identification of the symptoms and extensive questioning of the patients. Until recently, Europeans have denied the efficacy and usefulness of African indigenous health-care system. However, the results of more objective recent studies in the field of ethnopharmacology are gradually rehabilitating the potential benefits of indigenous medical knowledge systems in solving present health problems in Africa. In the West African nation of Burkina Faso, for instance, such indigenous plants as *N'Dribala* (or *Cochlospermum planchonii*), *Iseketu* or *esoketu* in Yoruba (or *Sida acuta Burm* [Malvaceae]), and *Pterocarpus erinaceus* Poir (Fabaceae), among others, are used by local healers to provide patients with effective curative solutions to the scourge of malaria. In a very educative study of 2003, a team of six western scientists compared the efficacy of the local remedy, *N'Dribala*, with chloroquine ($C_{18}H_{26}ClN_3$)—until recently the most successful of all western medicines for the treatment of malaria (administered as the bitter crystalline diphosphate). The research, which included eighty-five patients, suggests that the *N'Dribala*, which is also widely used by traditional healers in other parts of West Africa against malaria, is not only more effective than chloroquine but also can combat the strains of chloroquine-resistant and chloroquine-sensitive *Plasmodium falciparum*. While extracts from the bark and leaf of this local plant were found to demonstrate potent antimalarial activities in an *in vitro* system (medical jargon for artificial curative solutions that are not originally part of the living body), the roots of the *N'Dribala*, which is the part mainly used by the African local healers, presents the most satisfactory result of the study.[18]

In other cases, African scientists working with their foreign colleagues have continued to experiment with diverse genres of indigenous plants that have been in use for curative medicine in an attempt to better understand their antimalarial properties. Among other plants, these studies have involved *Combretum micranthum, Khaya senegalensis* (known as *aganwo* in Yoruba and *mali* in Hausa and widely available across the West African region), *Pterocarpus*

erinaceous, Sida acuta, Cassia singueana (known as *Abo-rere* in Yoruba and *Rinji* in Hausa [Syn: *Cassia goratensis* Fresen] [Fabaceae]), *Cassia occidentalis* (Caesalpiniaceae) leaf, *Euphorbia hirta* (Euphorbiaceae) whole plant (also known variously in Yoruba as *Egele or Emi-lle, Nonan Kurchiya* in Hausa, and *Udani* in Igbo), *Garcinia kola* Heckel (Clusiaceae) stem bark (or *Orogbo* in Yoruba and *Akilu* in Igbo), *Morinda morindoides* (Baker) leaf, *Phyllanthus niruri* (Euphorbiaceae) whole plant, *Tetracera poggei* Gilg (Dilleniaceae) leaf, *Vernonia amygdalina Del* (Asteraceae) leaf, and many others. Damintoti Karou and others have experimented with *Combretum micranthum, Khaya senegalensis, Pterocarpus erinaceus*, and *Sida acuta*, with the results showing that *Sida acuta* "has a significant activity ($IC_{50} < 5$ ug/ml)" (i.e., inhibitory concentration of a compound measured up to 50 percent and capable of killing the parasite in the blood), which indicates its efficacy against malaria and other related illnesses.[19] These studies, in retrospect, demonstrate the expertise of African indigenous healers in the treatment of malaria and other illnesses.

Recent studies in Nigeria, Democratic Republic of Congo (DRC), and other parts of sub-Saharan Africa further illustrate the extensive knowledge of diverse genres of local plants and curative substances by African traditional healers as used to combat malaria and other related illnesses. According to Bulus Adzu and co-researchers, the methanol extract of the roots and bark of *Cassia singueana* (Fabaceae), known locally as *pambisuma* (Margi) and *rumfu* (Hausa), are used in the Adamawa area of northern Nigeria for the treatment of acute malaria and relief of other complications such as pains and body ache that often come with the illness. The extracts "exhibited significant antinociceptive, antipyretic and antiplasmodial activity in all the models used" in the study.[20] Also T. O. Elufioye's and J. M. Agbedahunsi's study has revealed that *Tithonia* and *Crossopteryx febrifuga* hold promise for the treatment of various stages of animal malarial illnesses. Although these plants did not establish a satisfactory result in the treatment of the *Plasmodium berghei* var *Anka I* (animal malaria) parasite used for the tests, the study did show that this strain would require a multidrug cocktail to combat in animals.[21]

In another study involving a team of Congolese scientists who experimented with extracts and fractions from several medicinal plants, the result revealed that these sub-Saharan African plants, which have been used by local healers for centuries in the treatment of malaria and other related illnesses, contain active ethanol (ETOH) extracts ($IC_{50} < 3$ ug/ml). Their petroleum ether soluble fractions—that is, a light volatile flammable liquid $C_4H_{10}O$ used chiefly as a solvent and anesthetic—also exhibited an antiplasmodial activity with $IC_{50} < 3$ ug/ml. While extracts from other species of plants like *Vernonia amygdalina* leaves, *Tetracera poggei* leaves, and *Morinda morindoides* leaves contained less antiplasmodial activity, their petroleum ether fractions showed high antiplasmodial activity.[22]

At this juncture, it is imperative to stress that although the underlying indigenous knowledge of how the malaria parasite is passed into humans was

inadequate, African healers used the most relevant methods of control and treatment for combating the illness. Although the toxicity of some of these compounds has not been well established, the advances made in the colonial and postcolonial periods have continued to build on the African traditional epidemiological practices involving environmental sanitation, as well as expert knowledge and use of plants in the preparation of remedies for malaria.

Colonialism and the Globalization of the War against Malaria

Globalization was an ongoing phenomenon long before the modern European voyages of discovery in the late fifteenth century. Peoples from various parts of the world have exchanged religious ideas, economic goods, luxury items, gifts and curiosities, as well as communicable diseases. However, as soon as the European advances culminated in colonial claims—which, among other things, meant creating European settlements in the Americas, Africa, and Asia—tropical diseases became a source of global concern. From this perspective, Obijiofor Aginam, an expert on global spread of infectious diseases, argues that "globalization combines with the power of nature, complacency and the breakdown of surveillance capabilities, and the socioeconomic and environmental degradation to intensify human vulnerability to disease."[23] Indeed, for the Europeans, malaria demonstrated the most deadly challenge to imperial interests in sub-Saharan Africa.[24] Thus, one may begin to appreciate the welcome relief to the Europeans following the groundbreaking discovery of the malaria pathogen by Alphonse Laveran in 1880. Soon after, results of studies by British scientist Ronald Ross, who served in India between 1897 and 1898, established a link between the spread of human malaria to the Anopheles mosquito.[25] In a reaction to these developments in 1897, Dr. Patrick Manson of the St. George's Hospital, London, welcomed Ross's accomplishment as the most important of the great nineteenth-century advances in medical science.[26]

These breakthroughs came on the heels of colossal losses of European lives in Africa, which in 1865 prompted the famous Parliamentary Select Committee to recommend eventual British withdrawal from all of West Africa with the exception of the colony of Sierra Leone.[27] The committee's verdict mirrors the anxiety arising over the high death tolls suffered by European missionaries, traders, soldiers, colonial administrators, and adventurers.

The Malaria Service (MS), established under colonial rule to coordinate researches across the various dominions and the metropolis in Europe, launched a modern search for a cure for malaria. In Nigeria, Gold Coast, Gambia, and Sierra Leone, this establishment was charged with the task of research and epidemiological inquiry, including the study of how the malaria

parasite acts on the human body; the study of malaria mosquitoes; the drugs that suppress, prevent, or treat malaria; insecticides to kill mosquitoes; and the equipment best suited to disperse suitable insecticides. At this point, malaria was no longer a tropical African concern but rather a disturbing global health hazard, as the colonial officials took the initiative in globalizing the search for more effective remedies to malaria. Aginam has described this European initiative, which also included policies aimed at controlling other diseases such as smallpox and cholera, as "the nineteenth-century colonial fingerprints on public health diplomacy."[28] The colonial global regime on disease control generally involved the same ideas already operating in the local health systems: (1) good sanitary habits including physical annihilation of the mosquitoes, and (2) diagnosing and curing patients infected with the parasite.

It is important to reiterate that initially Europeans lacked an appreciation of tropical medicine, as was reflected in the earlier measures taken by the Europeans in combating malarial attacks. These measures included recommendations for good diet, fresh water, flannel clothing, temperance in the use of alcohol, shading domiciles, and plenty of exercise, sleep, and fresh air.[29] While the colonial sanitary policies were quite familiar to the local people, the Europeans brought tropical health issues into the worldwide international conferences first held in 1851 in France. From 1851 to the end of the nineteenth century, ten such international events were organized, and eight sanitary conventions were held "on cross-border spread of cholera, plague, and yellow fever across the geopolitical boundaries of nation states."[30] The existing records have shown that from this moment onward, the search for a cure for malaria became a study in trial and error. Efforts largely involved a number of European scientists spread throughout several countries in Europe, America, Asia, and Africa. These scientists were engaged in conducting a long process of observation and experimentation in an attempt to systemically unravel the mystery of malaria causation. This aspect of medical history deserves more than a superficial look.

Until 1820, the main antimalaria option for Europeans had been cinchona bark, a tropical plant that contains about forty species of trees. After a pair of French scientists, Pierre Joseph Pelletier (1788–1842) and Joseph Bienaime Caventou (1795–1877), succeeded in extracting its active ingredients, which they named quinine, the substance became the most successful remedy for malaria in both Europe and the New World.[31] Meanwhile, the apparently limited potency of the drug in the West African coast necessitated a continued search for a successful remedy. By the late 1840s, a number of medical scientists had observed black or reddish pigments in crystallized globules present in the red corpuscles of malaria patients. It was not until 1880, however, that Alphonse Laveran of the French regiment noted that the pigmented bodies were in fact living parasites (soon named plasmodium), which went through several stages of development in the human bloodstream. Around 1890, Italian health experts identified three species of malaria parasite: *Plasmodium*

vivax, P. malariae, and *P. falciparum*. Each of these genetically distinct isolates represents a strain, which the Italians linked "with the three most common types of malarial fever, benign tertian, quartan, and malignant tertian."[32] Despite all these remarkable advances, the puzzle persisted as to how the malaria parasite was transmitted to humans.

This knowledge is today credited to Patrick Manson, a British physician serving in China in the late nineteenth century. In 1877, Manson discovered that the worm responsible for the disease of filariasis could be extracted from infected humans by the bite of a mosquito. This was the first scientific proof that a blood-sucking insect could act as the intermediate host of a human blood parasite. Consequently, the discovery opened a new field of inquiry into the role of arthropods (invertebrate animals, including insects, arachnids, and crustaceans) as vectors of human disease. It was no surprise therefore that Manson was widely acknowledged as the "father of tropical medicine," even though he "had supposed, however, that humans contracted malaria directly by drinking water contaminated by dead malaria-carrying mosquitoes."[33]

Two decades later, Ronald Ross further expanded on Manson's work in discovering that mosquitoes were the true vectors of human malaria by transmitting the disease from host to victim through inoculation. In August 1897, Ross found that "plasmodium cells drawn from man would reproduce on the stomach cells of a new kind of brown, dapple-winged mosquito, substantially identified as a species of the genus *Anopheles*."[34] By 1898, it was established through the separate experiments of Ross in India and W. G. McCallum in the United States that the plasmodium had a double cycle of development involving a sexual phase inside the mosquito and an asexual phase in the body of the human host.[35]

The unraveling of the mystery of mosquito causation saw the dawn of a new era in the study and treatment of tropical diseases, including the use of chemicals in sanitation as a means of combating malaria. In the next decade, European deaths resulting from malaria were drastically cut from 43.7 percent in 1891–98 to 8.1 percent in 1907. However, this success was more a result of aggressive sanitation measures taken by some colonial administrators than a result of any major breakthroughs in the development of new medicine for malaria. The available colonial records show that while research into new drugs continued, aggressive mosquito abatement campaigns were intensified across the British West African colonies of Sierra Leone, Gold Coast, and Nigeria.[36]

Recent Advances, 1940s–present

Until the eve of World War II, no major gain was made in the field of medicine for malaria. During 1937, however, German scientists started testing a

new antimalaria medicine in North Africa, first known as Resochine. The drug, which was later called chloroquine, proved efficacious in the treatment of both *Plasmodium vivax* and *Plasmodium falciparum*.[37] With initial fears of high toxicity cleared, chloroquine (CQ) emerged as one of the most efficient and widely trusted remedies for malaria and has remained so, together with sulphadoxine-pyrimethamine (SP or Fansidar), until recently. Chloroquine has been also found useful in the treatment of rheumatoid arthritis, arthritis in children, high levels of calcium in the blood associated with sarcoidosis, systemic lupus erythematosus (lupus or SLE), and some skin disorders.[38]

In the ten years following the development of CQ, the World Health Organization (WHO) launched a steering scheme for the global eradication of malaria. Worldwide, this project saw an aggressive use of the pesticide DDT in combating the sources of malaria. Shortly after WHO expressed the optimism that malaria would be completely eradicated, the first CQ-resistant strains of *Plasmodium falciparum* were reported early in the 1950s.[39] The resistant strain emerged as a result of both the overuse and the underdosage of CQ—a situation that now portends enormous danger for the malaria regions of the tropics. Besides, the side effects of chloroquine—vomiting, upset stomach, cramps, loss of appetite, diarrhea, tiredness, weakness, and headache—have combined to make it a less-trusted compound for the treatment of malaria. People living in most parts of sub-Saharan Africa have been able to avoid a dramatically high mortality rate more as a result of natural resistance than the efficacy of any drug in treating CQ-resistant strains of the disease. The same problem has been encountered with other existing antimalarial drugs, including SP.[40] To date, sulphadoxine-pyrimethamine has been useful in treating chloroquine-resistant malaria, but the SP-resistant strain of malaria has also appeared. Although it is not very effective in curing fevers, the cheap and convenient single-dose SP also causes vomiting and skin rashes. Some other inexpensive drugs like artemisin, used in the treatment of uncomplicated malaria, provide the most rapid relief with the fewest side effects. Unfortunately, none of the present drugs available in the market has been completely satisfactory in the treatment of malaria and its complications.

The emerging scenario demonstrates the urgent need for new antimalarial drugs "that must meet the requirements of rapid efficacy, minimal toxicity and low costs."[41] In this regard, WHO has taken steps since the 1990s to coordinate funding and research for the development of new genres of cheap but highly effective drugs that will meet the desired standards. These initiatives include the Roll Back Malaria Initiative (RBMI) and the Medicine for Malaria Venture (MMV), officially launched on November 3, 1999. Founded to provide funds for and to manage the discovery, development, and registration of new medicines for the treatment and prevention of malaria, the MMV has been collaborating with different research institutions and universities across the world in the search for new cost-effective drugs. While the expected goals of the new initiative may take time to materialize, the main focus is tending to

the need for drug combinations in fighting malaria. As David Fidock et al. have noted, "There is a growing consensus that drug combinations are essential to the optimal control of malaria in developing countries."[42]

From an African perspective, the search for viable drug combinations has also embraced research into African traditional remedies for malaria. The curative promises held by some African plants is increasingly vindicating the contention of local healers for due recognition. For instance, a recent experiment with rabbits by S. V. Nwafor and co-scientists has shown that a concurrent administration of chloroquine with the aqueous leaf extract of *Azadirachta indica* (Meliaceae) resulted in a "significant decrease in serum concentration, slower absorption and elimination as well as longer half-life of chloroquine sulphate."[43] Similarly, some modern African scientists like C. Nwabuisi and others are experimenting on a multi-herbal combination for the treatment of malaria. In one of these experiments involving *Agbo-Iba*, a local herb commonly found in the African tropical rainforest, the result reveals that " 'Agbo-Iba' extract has some prophylactic action against malaria induced in mice with no apparent significant side effect."[44] The expected benefit of the drug combination approach lies in the higher possibility that an active agent would most likely survive at the setting in of drug resistance. In Uganda, where resistance to both amodiaquine and SP is widespread, a combination of varieties of inexpensive agents has demonstrated the existence of a potent remedy for malaria. In Thailand, the combination of an artesunate and mefloquine has also demonstrated great success against malaria.[45]

As drug combinations now seem to hold better promise for combating malaria, the quest for developing a vaccine for malaria still remains the most viable route to a permanent cure for malaria. The urgency for a vaccine against malaria feeds off the growing fear that combination procedures that rely on synergy might not offer as much protection against the selection of resistance as expected. This is because resistance to either component of the combination could lead to a marked loss of efficacy.

This chapter focused on the disease control approach, highlighting the recent advances in the search for a cure through western-oriented scientific methods. It stressed the need to understand that the recent achievements made in the field of molecular biology are intricately linked with the indigenous African treatment of the ailment, which also involved the application of a plurality of indigenous epidemiological knowledge. As the recent research has demonstrated, the continuing search for a more effective cure for malaria must embrace African indigenous remedies for tropical diseases. In the past, the erroneous European bias against ethnomedicines of Africa constituted a serious obstacle to a much-needed cooperative endeavor to effectively combat the illness. Now that some of these barriers are coming down, there is ample opportunity for a new stage in the development of tropical medicine. As Solomon Nwaka of Medicines for Malaria Venture appropriately notes, since

a very significant percentage of Africans still rely on the indigenous remedies for malaria, it is therefore propitious for scientists to establish a clear criteria for accessing the indigenous drugs.[46]

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Notes

1. Raymond E. Durnett, "The Campaign against Malaria and the Expansion of Scientific Medical and Sanitary Services in British West Africa, 1898–1910," *African Historical Studies* 1, no. 2 (1968): 153. See also Cardigan C. Francis, *Malaria: A Threat to One-Third of the World* (Bangkok: South-East Asia Treaty Organization, 1967), 3.

2. See Marstom Bates, *The Natural History of Mosquitoes* (New York: Macmillan, 1954), 36; Paul Farr Russell, *Malaria: Basic Principles Briefly Stated* (Oxford: Blackwell, 1952), 77. For a recent study on this, see Dennis L. Doolan, ed., *Malaria: Methods and Protocols* (Totowa, NJ: Humana Press, 2002).

3. The mortality estimate for Africa may be very conservative judging by the figures for 1984–86, which put the average death rate in Nigeria alone at 1.2 million. See Federal Republic of Nigeria, *Health Profile, 1986* (Lagos: Federal Ministry of Health, 1986). For other statistics, see World Health Organization (WHO), *Division of Control of Tropical Diseases Progress Report* (Geneva: WHO, 1996), 15–18. See also V. K. Dua, V. P. Ojha, R. Roy, B. C. Joshi, N. Valecha, C. Usha Devi, M. C. Bhatnagar, V. P. Sharma, S. K. Subbarao, "Anti-malarial Activity of Some Xanthones Isolated from the Roots of *Andrographis paniculata*," *Journal of Ethnopharmacology* 95 (2004): 247–51.

4. For a cutting-edge study on chromosomal forms found in Cameroon, central Africa, and its relevance for fighting malaria, see A. Cohuet, I. Dia, F. Simard, M. Raymond, F. Rousset, O. Antonio-Nkondjio, P. H. Awono-Ambene, C. S. Wondji, and D. Fontenille, "Gene Flow between Chromosomal Forms of Malaria Vector *Anopheles funestus* in Cameroon, Central Africa, and Its Relevance in Malaria Fighting," *Genetics* 169, no. 1 (January 2005): 301–11.

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8. For this definition, see Horatio Fabrega Jr., "The Need for Ethnomedical Science," *Science* 189 (September 1975): 969. See also Horatio Fabrega Jr., "The Scope of Ethnomedical Science," *Culture, Medicine and Psychiatry* (1977): 1, 9–23; and also Horatio Fabrega Jr., *Disease and Social Behavior* (Cambridge: Massachusetts Institute of Technology Press, 1974).

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30. See Obijiofor Aginam, "International Law and Communicable Disease," *Bulletin of World Health Organization* 80, no. 20 (2002): 946–52.

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32. Meanwhile, the fourth species of malaria parasite known today as *Plasmodium ovale* was identified in 1922. See Henry Harold Scott, *A History of Tropical Medicine* (based on the Fitzpatrick lectures delivered before the Royal College of Physicians of London, 1937–38) (London: E. Arnold and Company, 1939), 1, 154, 157; Paul Farr Russell, *Man's Mastery over Malaria* (Oxford: Oxford University Press, 1955), 35–36.

33. Durnett, "Campaign against Malaria," 159.

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5

PERCEPTIONS OF EPILEPSY IN A TRADITIONAL SOCIETY

AN AKAN (GHANA) FAMILY'S EXPERIENCE

Cecilia S. Obeng

Epilepsy is one of the most misunderstood diseases in most African communities. In these communities, there are beliefs that epilepsy results from possession by an evil spirit;[1] the sins committed by the diseased individual's parents, grandparents, any older relatives; and, in some cases, by the sins of the victim himself or herself.[2]

It is not uncommon for very rich members of a lineage to be blamed for certain diseases—especially seizures—because excessive wealth is often viewed as having been acquired with the aid of evil spirits. Such evil spirits, if not constantly pacified, turn their anger on relatives of the wealthy individual. Sometimes, it is believed that the more harm the evil spirits can cause, the wealthier the rich individual becomes. People are therefore suspicious of "unexplained" wealth.

In rural Africa, a child who has epileptic seizures may be rejected by some societies, and people may even stay away from the house where such a patient lives. Given the fear of the disease and the stigma attached to it, it is not uncommon for families to resist acknowledging that the child has the disease. As much as possible, people avoid the embarrassment associated with it. For people who accept or acknowledge that a member of the family has the disease, the tendency has always been to isolate the diseased individual.

In some communities, parents whose children are diagnosed with epilepsy are shunned, and in extreme cases, people do not even marry into the family for fear of getting the disease. Although there is no scientific evidence to support the above claim, the myth continues to exist in some African societies.

Asuni, Schoenberg, and Swift note that in some other African cultures, however, especially among the Baganda in Uganda and surrounding areas, epilepsy is not measured as disease, and treatment is not important.[3]

This chapter is about a young Akan girl who battled epilepsy and how her parents and relatives perceived and dealt with it. In particular, I examine how cultural beliefs create the boundaries that define epilepsy and how the definition affects diseased individuals at home and in the community, as well as how such perceptions influence the management of the disease. The chapter is prefaced by a brief discussion about the Akan followed by the data and method of analysis.

The Akan

The Akan make up nearly 50 percent of Ghana's population. They live in Ghana's eastern, central, Ashanti, Brong Ahafo, and western regions and in some parts of the Volta Region. They are predominantly farmers and fishermen and plant mostly cocoa, plantain, cassava, and cola nuts. In the Ivory Coast, the Akan are referred to as Abron or Appolonia. Politically, the Akan are matriarchal and practice the matrilineal system of inheritance.

Given the communalist-collectivist nature of the Akan society, children are viewed as belonging to the entire extended family not "the child" of his or her parents only. This, by implication, suggests that words such as cousin, uncle, and aunt are either nonexistent or have completely different cultural meanings. The extended family plays a significant role in children's upbringing and, more especially, in the management of disease.

Regarding their concept of personhood, the Akan believe that every individual is made up of spirit (received from the father), soul (received from God), and blood (received from the mother).[4] It is these categorizations that determine if an illness is linked to the physical (that is, connected to the blood) or associated with the spiritual.[5] Any sickness warrants a deep investigation to determine which of the three components of the diseased individual is troubled or affected and which curative or healing measures are appropriate. Any hasty investigation could lead to a misdiagnosis and could result in treatment failure or a fatality. Orthodox medicine practitioners are often viewed as incompetent since they "ignore" the spiritual aspect of disease management.

Children born with a chronic or debilitating disease bring untold hardship on both the nuclear and extended families, as this sometimes leads to the selling of family property such as land, cocoa farms, or any valuable property to pay for the healing. For this reason, every effort is made to protect the members of a family spiritually because it is believed that spiritual diseases are the most expensive to manage. It is for this reason that any discussion of disease

management that ignores the cultural basis of disease is doomed to fail. Generally speaking, Akan cultural beliefs—due to ignorance, misinterpretation, or non-interpretation—tend to instill a mentality that comprises fear and mistrust of orthodox medicine and western-based hospitals.

Systemic poverty, illiteracy, and ignorance compounded with a lack of adequate health-care services in some rural communities in Ghana, in particular, and in Africa and other parts of the developing world, in general, are contributing factors to the poor health of rural and urban communities. The lack of an accessible health-care system leads people to depend on themselves for the diagnosis of diseases and to the prescription of dangerous medication for those diseases.

Method

Information for this pilot study was collected in a small village of about two hundred inhabitants in the Kwaebibirim District in Ghana's eastern region between 1991 and 1994. The adult population of the village numbered about seventy-five and data were collected from sixty out of the seventy-five adult members. The family that formed the basis of this research was made up of husband and wife, six children, and several cousins and other extended family members. Given the smallness of the village, everybody was related to one another either through consanguinity, affinity, or collateral relationship. Thus, there was a close link between the nuclear and extended family members with the extended family being closely knit. Data consist of personal interviews with relatives (both nuclear and extended) of an epileptic individual. Attention was paid to the consultants' knowledge of the disease as well as their beliefs, and the curative measures used to treat the epilepsy are explored.

The subject is explored within a quantitative framework. Specifically, it involves finding raw totals and percentages of various variables and variants. Some of the variables include age, gender, healing type, education, and attitude toward epilepsy. In *The Relevance of Gender and Education in Attitudes and Perceptions about Epilepsy in Akan Society of Ghana*, I examine the relevance of gender and education on perceptions about epilepsy. In this chapter, however, I present the results and analysis of the relevance of age on how epilepsy is perceived by the Akan family. I considered the respondents' age profile as important given the close relationship between age and social role in the research area. My knowledge of the area played a significant role in establishing the age profile: People aged between 14 and 25 may be termed "young people" and those between 26 and 40 are referred to as "youth." People who are aged between 41 and 50 are described as "young middle aged," those between 51 and 65 are viewed as "quite old," whereas persons over sixty-five

are referred to as "very old" or as "elders." The above age structure may sometimes be fluid. A person's socioeconomic status and educational background, as well as his or her physical appearance may place him or her in a higher or lower age group. In some Akan communities, for example, the head of a youth association could be as old as sixty.[6]

Following Van Maanen's ethnographic impressionism,[7] I allow the voices of some of the respondents to be heard by citing excerpts from the interview data to support the statistical data. In the analysis, therefore, I avoid premature theorizing and instead allow the participants' own interpretations of the disease and the management strategies to form the basis of the analytical claims. This strategy gives credence to the participants' knowledge of the disease, their culture, and any specific or unique situations. It also helps to prevent a case in which I (the analyst) might think that I know more about the disease than the respondents, and by that, impose my opinion on any objective categories. Thus, based on my analytical model, I refrain from making statements that portray my respondents as having no knowledge about the cause or nature of the disease. Strong and close attention are paid to culture and context given their significance in the perception and management of an illness and in the healing processes employed by the research consultants. I have protected the identity of the research participants through the use of pseudonyms. It is important to emphasize that the claims made and the conclusions drawn in this chapter have no universal validity, being relevant only to the small community that was studied.

Results and Discussion

In this section we ask the following pertinent questions:

- What causes epilepsy?
- What kind of healing should be recommended for it?
- Will/Did you tell friends that you have an epileptic relative?
- Will/Did you tell someone who has asked for your hand in marriage or whom you are asking to marry you that you have an epileptic relative?
- Will/Did you attend social gatherings with an epileptic relative?
- Will/Did you feel embarrassed if/when your epileptic relative had a seizure in public?
- How will/did you feel if your epileptic relative passes/passed away?
- Will/Did you allow your epileptic relative to have formal education?
- What level of education is/was considered enough for someone suffering from epilepsy?
- Should society's attitude toward epilepsy change?
- When should the change in attitude take place?

Table 5.1. What causes epilepsy?

Causative agent	14–25 CHN	26–40 Youth	41–50	51–65 Middle aged	Over 65 Old	Total
Evil spirit	7	8	3	4	7	29
Curse	3	3	3	4	2	15
Natural causes	1	3	1	0	0	5
Sins of relatives	1	1	2	1	1	6
Sins of victim	0	0	1	1	1	3
Other	0	0	2	0	0	2
Total	12	15	12	10	11	60

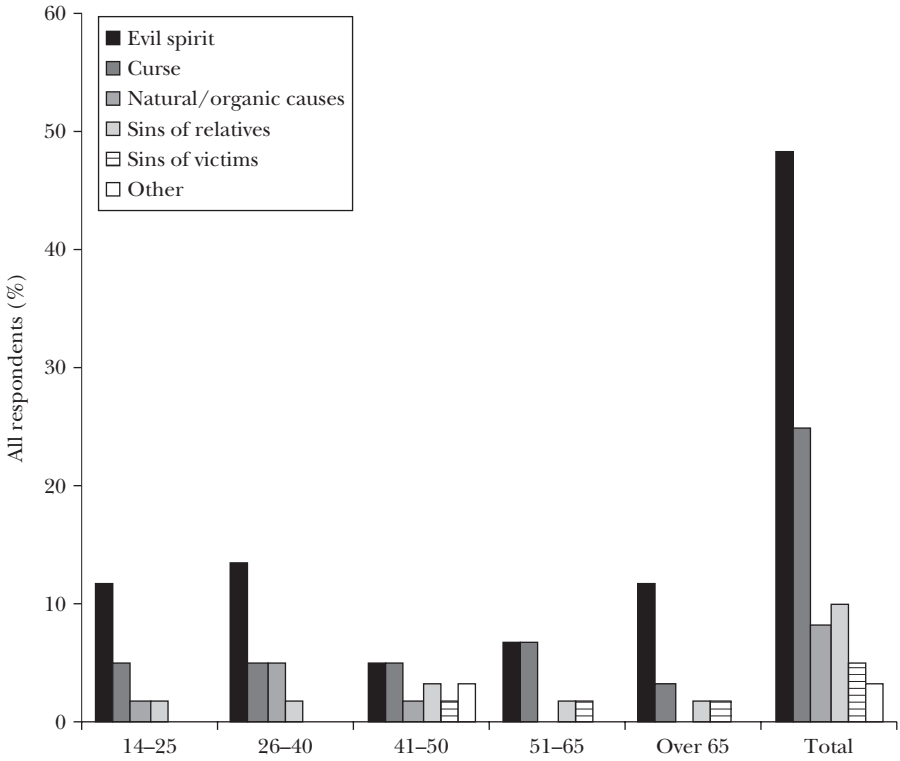

Figure 5.1. Causes of epilepsy. Chart by Cecilia S. Obeng.

We observe in table 5.1 and figure 5.1 that most of the respondents view epilepsy as a non-organic-caused or as a spirit-caused disease. Only 8.33 percent of the respondents viewed epilepsy as an organic-caused disease, whereas 48.33 percent of the respondents saw evil spirits as the leading cause of the

disease and 25 percent viewed it as a disease caused by a curse. Fifteen percent of the respondents said that epilepsy is caused by punishment for one's sins or the sins of one's relatives.

Of the nine respondents who said epilepsy is caused by punishment for committed sins, six indicated that the sins of the epileptic's relatives are the cause of the disease whereas three (representing 5 percent of the total number of respondents) said that it was caused by the epileptic's own sins.

The age group 41 to 50 is the only group from which some members (two) speculated that epilepsy might be caused by an agent that is neither physical nor spiritual. The word used by the two respondents to describe the causative agent they termed "other" is *biribi* or "something." This word involves vagueness and avoidance.

Close examination of table 5.1 reveals that of the five respondents who viewed epilepsy as an organic-caused disease, none was over 50 years old. This may provide an indication regarding the relevance of age on perceptions about the disease. Specifically, it may point out that although the society still believes epilepsy is spirit-caused, individuals are beginning to pay attention to other possible causes. Furthermore, the fact that most of the respondents who viewed epilepsy as organic-caused are in the 26 to 40 age group (the group made up of college students) suggests that education might be having some impact on perceptions about the disease.

On the kind of healing the respondents would recommend, 75 percent chose spiritual healing over herbal, orthodox, and other forms of healing. The overwhelming preference for spiritual healing gives further credence to their perception of epilepsy as a spirit-caused disease.

Close attention to the data in table 5.2 shows the age groups with the highest preference for spiritual healing are the 14 to 25 (91.7 percent) and the over 65 (90.9 percent). An important observation is that despite the fact that only five (8.33 percent) of the respondents (table 5.1) viewed epilepsy as an organic-caused disease, we observe in table 5.2 that 12 (20 percent) of the respondents are willing to accept orthodox medicine in the management of the disease (see fig. 5.2). This observation points out that perceptions about the disease may not be the sole factor determining the choice of healing

Table 5.2. What kind of healing will you recommend?

Kind of healing	**14–25**	**26–40**	**41–50**	**51–65**	**Over 65**	**Total**
Spiritual healing	11	10	7	7	10	45
Herbal healing	0	1	1	0	0	2
Orthodox	1	4	3	3	1	12
Other	0	0	1	0	0	1
Total	12	15	12	10	11	60

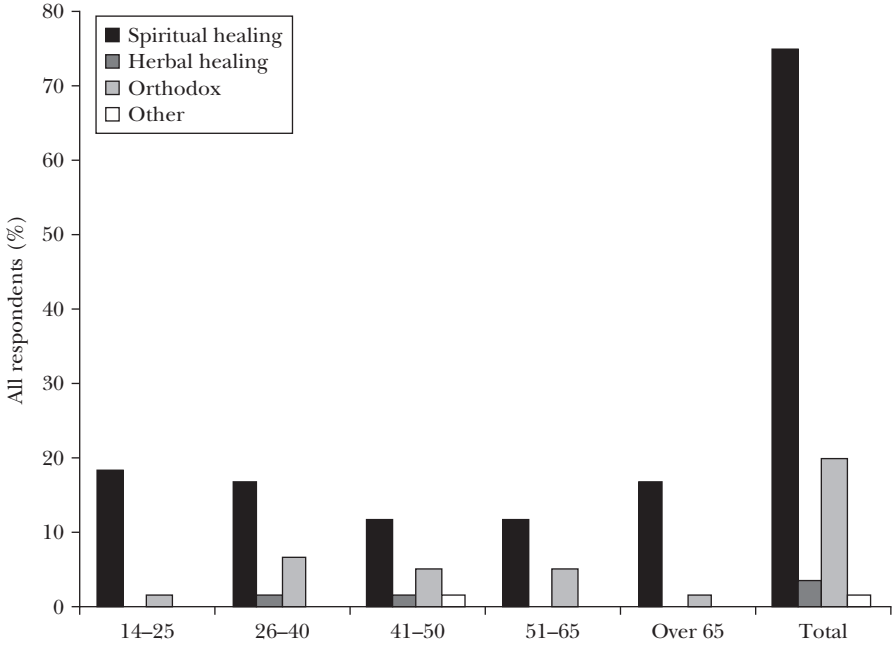

Figure 5.2. Kinds of healing recommended for epilepsy. Chart by Cecilia S. Obeng.

Table 5.3. Will you tell friends that you have an epileptic relative?

Answer	14–25	26–40	41–50	51–65	Over 65	Total
Yes	2	3	6	7	9	27
Maybe	3	3	5	3	2	16
No	4	5	1	0	0	10
Never	3	4	0	0	0	7
Total	12	15	12	10	11	60

method. The respondents most likely to opt for orthodox medicine are those aged 26 to 65. During my interaction with some members of this group, I learned that it is members of this age group who pay the medical bills for the patient. They explained that spiritual healing is more expensive than the other forms of healing, and this may have played a significant role in their consideration of orthodox healing as a possible choice.

Data in tables 5.3–5.9 examine various attitudes and perceptions about the disease as well as about people who suffer from it.

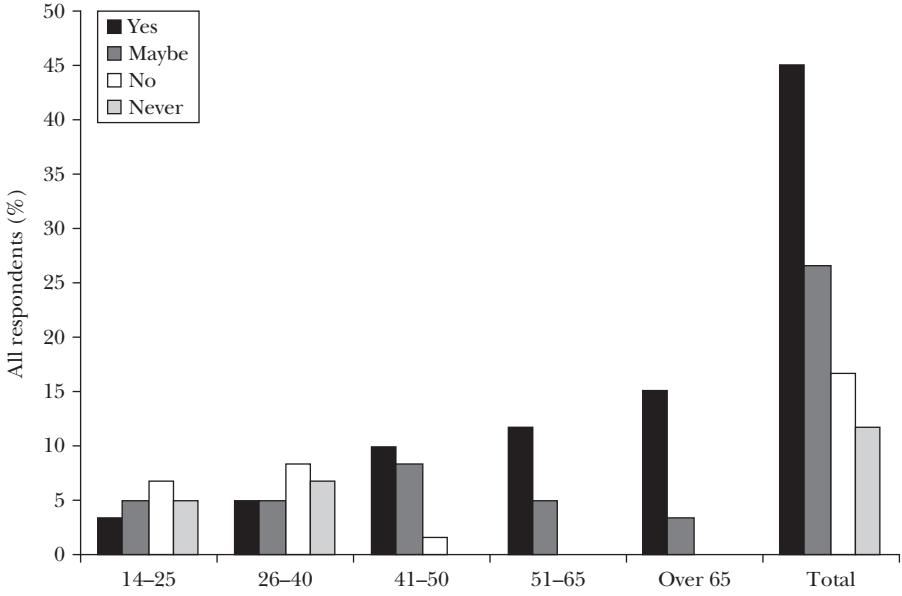

Figure 5.3. Informing friends about epilepsy. Chart by Cecilia S. Obeng.

From figure 5.3, we observe that most respondents in the age groups 14 to 25 and 26 to 40 will not tell their friends that they have an epileptic relative. An overwhelming majority of respondents aged 41 and older said they would inform their friends about an epileptic relative. This trend suggests that the older one grows, the less likely one is to be either ashamed of or embarrassed by the disease. It may also point to the fact that as people get mature, they view it as less important to hide certain types of information away from their friends. It may even point to the fact that with age comes confidence because, as one of the informants, Aba, told me: "At 57, it would be foolish for such a friend to stop being my friend because I have a sick relative. We have been friends for over thirty years and, at our age, our friendship is immune from things that happen to our relatives."

More than 66 percent of the respondents aged 14 to 25 and 11 out of 15 (73.33 percent) of those aged 26 to 40 indicated they would not tell someone who has asked for their hand in marriage or someone whom they are asking to marry that they have an epileptic relative. Reasons given for their decision not to tell included: "She may cancel the impending marriage"; "He may change his mind about the marriage"; "Her parents may ask her not to marry me"; "He may give an excuse in order to either indefinitely postpone the marriage or terminate the friendship/marriage."

Table 5.4. Would you tell someone who has asked for your hand in marriage or whom you are asking to marry you that you have an epileptic relative?

Answer	14–25	26–40	41–50	51–65	Over 65	Total
Yes	2	2	7	6	8	25
Maybe	2	2	5	4	3	16
No	6	7	0	0	0	13
Never	2	4	0	0	0	6
Total	12	15	12	10	11	60

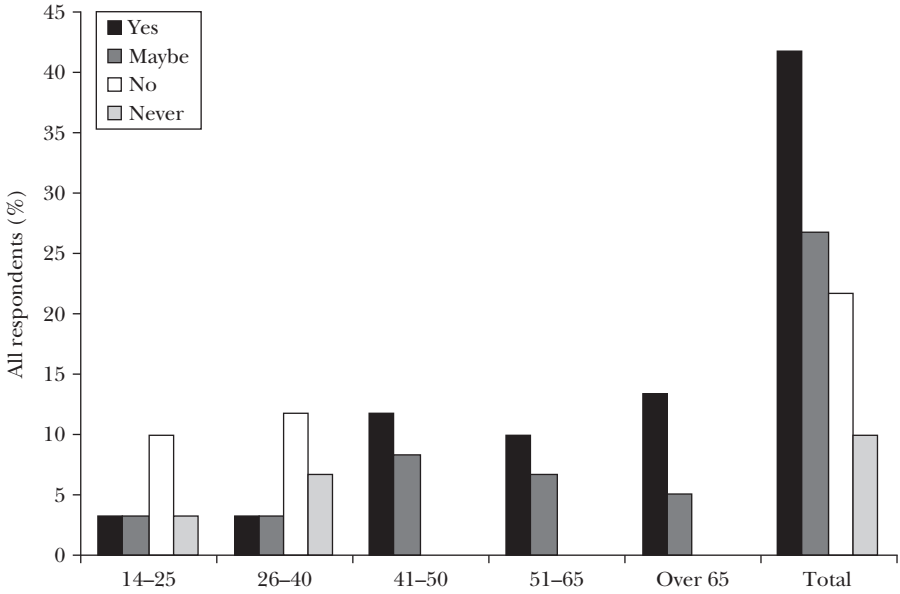

Figure 5.4. Informing a possible suitor about epilepsy. Chart by Cecilia S. Obeng.

A majority of respondents aged 41 and older felt obliged to inform their future husbands or wives about this diseased relative (see fig. 5.4). On the surface, it may appear that these people do not see a relative's epilepsy as a major factor in their marriage, however, a closer look reveals that those who were certain about informing a possible suitor or partner were already married. None of those who were either unmarried or divorced (and, therefore, wishing to remarry) said "yes" to the question. They all chose "maybe." This suggests that diseases (such as epilepsy) of relatives may influence decisions about marriage.

Table 5.5. Will you attend social gatherings with an epileptic relative?

Answer	14–25	26–40	41–50	51–65	Over 65	Total
Yes	3	7	7	6	8	31
Maybe	2	2	2	4	3	13
No	4	4	2	0	0	10
Never	3	2	1	0	0	6
Total	12	15	12	10	11	60

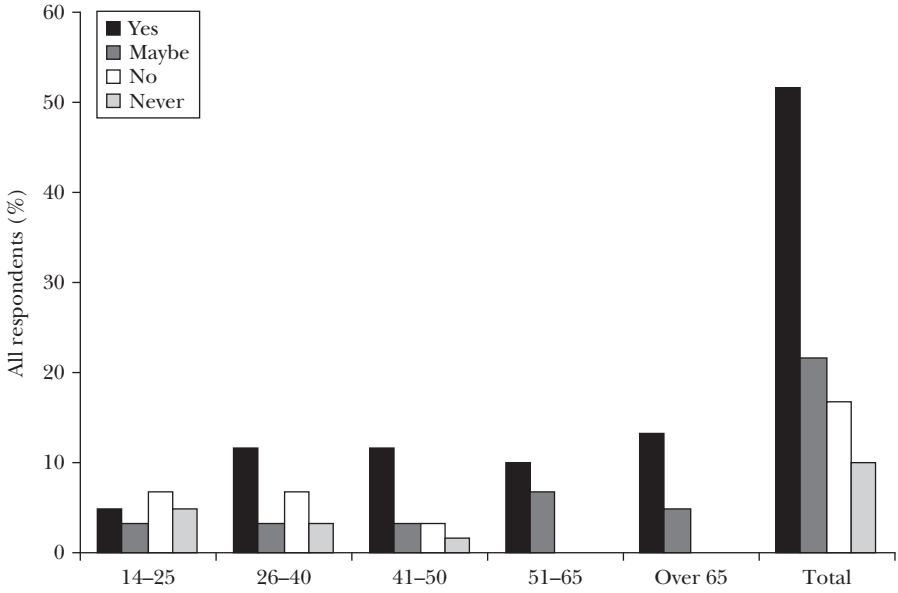

Figure 5.5. Attending social gatherings with an epileptic relative. Chart by Cecilia S. Obeng.

From figure 5.5, we observe that a majority of respondents aged 26 and older will attend social gatherings with an epileptic relative. In all, thirty-one (60 percent) of the respondents answered positively about going to social gatherings with an epileptic relative. This suggests that relatives of epileptic individuals place a higher premium on lineage relationship over the stigma attached to the disease. This claim is supported by such statements as "Nothing is more important than a sibling"; "Even if she is ill, she is still my lineage personage"; and "You cannot remove and throw away your intestines" (an Akan proverb that means one cannot ignore one's kith and kin or that not even a disease can make one give up on their kith and kin). From the above excerpts we learn that the bonds of lineages and families may not be totally destroyed by social or health problems.

We also learn from the data in table 5.5 that only 25 percent of respondents between the ages of 14 and 25 would attend social gatherings with an epileptic

relative. The fact that as many as 30 percent of the respondents (twelve saying no and six saying never) would not attend social gatherings with an epileptic relative is significant culturally.

Reasons given by those in this age group for the decision not to attend social gatherings with an epileptic relative include: "It will be very disgraceful if she gets a seizure in public"; "If she gets a seizure, I'll not know what to do"; "My friends will stop inviting me to their house; they might think we have done something wrong; that's why my sister has a seizure"; "They say if her seizure comes in public and you touch her the curse may be transferred to you." The cultural perceptions and stigma attached to the disease determine the decision to go or not to go to social gatherings with an epileptic relative.

Data in table 5.6 provide an indication as to shame and embarrassment associated with seizures that accompany epilepsy.

Table 5.6. Will you feel embarrassed if an epileptic relative has a seizure in public?

Answer	14–25	26–40	41–50	51–65	Over 65	Total
Yes	11	10	7	7	10	45
Maybe	0	1	1	0	0	2
No	1	4	3	3	1	12
Never	0	0	1	0	0	1
Total	12	15	12	10	11	60

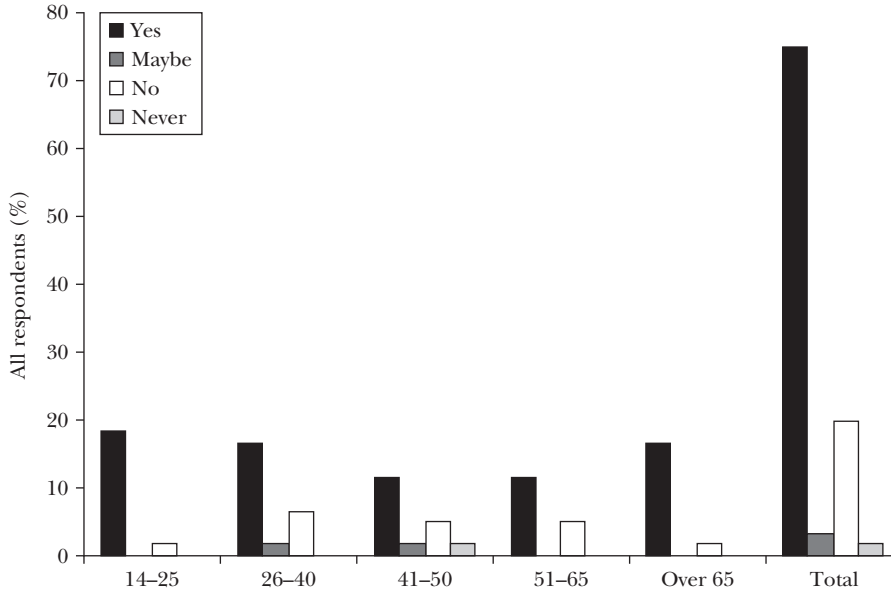

Figure 5.6. Embarrassment about seizure in public. Chart by Cecilia S. Obeng.

From figure 5.6, we observe that an overwhelming number of the respondents—75 percent of the total number of respondents—would feel embarrassed if their epileptic relative had seizure in public. This observation gives further credence to the claim made earlier that a negative stigma is attached to the disease. Some of the reasons given by respondents regarding why they would feel embarrassed hinged on perceptions about the disease. For example, one of the respondents said, "People will think that we are witches and that we are responsible for her disease. In Abena's case, not only was I viewed as a witch; even her own sister was ridiculed for bewitching her." Another said:

> Once a seizure happened in public, the entire village looked at us with a "bad" eye. There were people who never drank from the same cup as us because of the fear of being bewitched by us. Teacher, we went through a lot of humiliation. You see, Teacher, this disease is evil-spirit-caused disease so once it happens in public, the entire family is put to shame.

From the above table and excerpts, I argue that the embarrassment that comes with epilepsy stems from it being perceived as a spiritual disease, the blame that may be associated with family members of the diseased individual, and society's attitude toward the diseased individual and his or her relatives.

Table 5.7 and figure 5.7 categorize respondents' would-be reaction to the death of an epileptic relative. The responses point to the fact that a majority of them would be unhappy or would be sad if an epileptic relative passed away. Overall, 63.33 percent indicated they would be unhappy; some said they would be very sad, quite sad, or simply sad. Some of the reasons given included: "No matter her illness, she is a human being"; "Every human is useful in one way or the other. At least you can ask them to bring you this or that"; "She also is part of God's creation"; "You never know who will look after you in the future"; and "Every human being is important." The above excerpts suggest that despite the fear or stigma attached to the disease, the respondents still value the diseased individuals. We also see from some of the answers that people take into consideration the interdependent nature of the society and the benefits members gain, or anticipate gaining, from one another regardless of whether the member is afflicted with a disease. Also, we learn from the excerpts about the need to respect life, in particular, and creation, in general.

Respondents between the ages of 14 and 40 expressed a greater degree of sadness at the death of an epileptic relative than those aged 65 and over. Two of the over-65 respondents indicated "being overly sad is bad because it means you were happy to see the diseased individual suffer." For them, death is preferable to the pain that an epileptic endures. One respondent noted "Teacher, if you were here to see the pain Abena went through, you would have been happy for her when she passed away." Another indicated: "It is preferable to go and rest [die] than to be disgraced by this devilish disease."

Table 5.7. How will you feel if your epileptic relative passes away?

Answer	14–25	26–40	41–50	51–65	Over 65	Total
Very sad	6	7	4	4	3	24
Quite sad	3	2	3	2	5	15
Sad	1	2	2	2	2	9
Very happy	0	0	0	0	0	0
Quite happy	0	0	0	0	0	0
Happy	1	1	1	0	0	3
Won't matter	1	3	2	2	1	9
Total	12	15	12	10	11	60

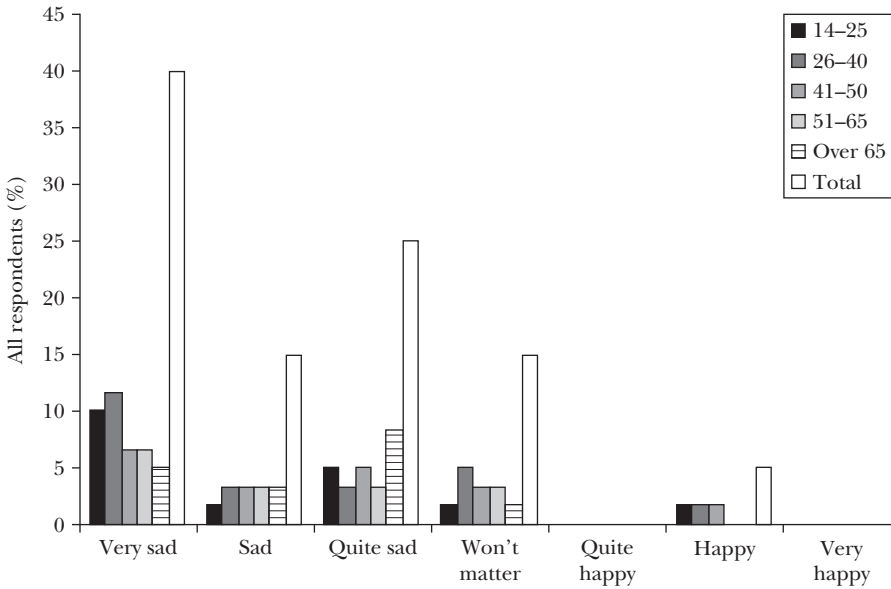

Figure 5.7. Feelings about the death of an epileptic relative. Chart by Cecilia S. Obeng.

There were three respondents who said they would be happy if their epileptic relative died, and each gave a different reason. One (aged 17) said he would be happy because he knows that the person's soul will be with God. This seventeen year old was a brother of Abena, and he mentioned that he was a Christian and that he felt Abena was in heaven, a place he believed was better than earth since "Abena will have no more seizures there." A twenty-nine-year-old woman who said she would be happy if an epileptic relative passed away said, "My happiness is for her; not for me. You see, when Abena

passed away, it shamed the witches who were bewitching her. They wanted her alive so that they could keep making her suffer. A supreme power took her away from them so now they are stuck in their witchcraft. They will die disgraceful deaths!" A forty-two-year-old man who also expressed happiness at Abena's death indicated that her death led to an end of the fighting and suspicion that had engulfed the extended family.

From the above statements, we see that faith (religion), the belief about who is responsible for causing the disease, and rancorous or acrimonious feelings form the basis of people's reaction to a relative's death, especially, if in their opinion, the deceased suffered from a spirit-caused disease.

Fifteen percent of the respondents indicated that the death of an epileptic relative would not matter to them. Four of such respondents indicated that being sad or happy would not bring her back to life. As one of the respondents noted, "Teacher, once the person dies, if you rejoice, they will say you killed her; if you cry too much, they will say you're shedding crocodile tears. The best way is to pretend nothing has happened." A first cousin of Abena mentioned to me "Sister [referring to me], the water has already poured; being happy attracts attention to you and you are seen as mean and evil; being sad ruins your own spirit. When such things happen, we drink a little and then we pretend we are tough. That is how we survive in such a tragedy." From the above utterances we can posit that the decision not to be bothered by the death of an epileptic relative is motivated by fear of the reaction of other members of the family or community and by the fact that showing any emotion will not change the situation (that is, bring the person back to life).

Regarding the question of whether they will allow an epileptic relative to receive formal education (figure 5.8), 51.67 percent answered in the affirmative. Reasons given by such respondents, include: "Schooling will help her take care of herself"; "Schooling will enable her to get a job in order to be able to look after herself and other helpless and needy members of the extended family"; "Schooling will enable her to go abroad to seek medical care"; "If she goes to school, she may be fortunate to get a stranger to marry her. The men in this town know her background so even if she is completely healed, it may not be easy for her to get a husband."

The fact that most of the respondents would not deny an epileptic relative formal education suggests that the respondents were interested in formal education and believed there were needs for everyone (including those who are ill) to be given a chance to obtain one. The reasons given above point out that the respondents' decisions not to deny the patient formal education are based mainly on economic (the diseased individual being self sufficient and also helping to sustain other members of the lineage) and cultural (the possibility of getting a husband in the future) reasons as well as on their desire for the patient to be cured and thus get well.

We observe in table 5.8 that most of the respondents who answered yes are between the ages of 14 and 50. Two-thirds of those aged 14 to 25 and 26 to 40

Table 5.8. Will you allow your epileptic relative to have formal education?

Answer	14–25	26–40	41–50	51–65	Over 65	Total
Yes	8	10	7	4	2	31
No	1	1	2	4	8	16
Maybe	3	4	3	2	1	13
Total	12	15	12	10	11	60

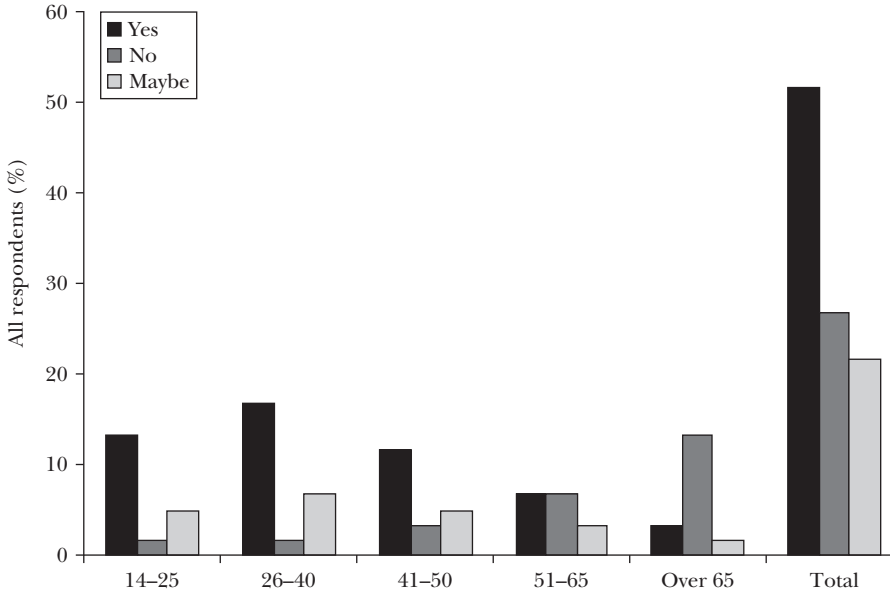

Figure 5.8. Allowing an epileptic relative to have formal education. Chart by Cecilia S. Obeng.

answered in the affirmative. For those in the age group 41 to 50, 58.33 percent answering in the affirmative. The age group that had the least interest in making formal education available to epileptic relatives was those over 65 (18 percent). The above figures point to a culture in transition. Specifically, it may point to changes in perceptions relating to education for the disabled: whereas the older generation—72.72 percent of them—feels it is pointless to educate the disabled, the younger generation sees it differently.

Some of the reasons given by those over 65 to deny an epileptic formal education include: "You don't waste money on a lost cause. Why would you throw money away when people are starving?"; "Will you give such a person a job? Even those who are well have no jobs; how will a sick person get a job? It is a

complete waste of money to send such children to school"; "If he is a boy, I'll let him learn a trade; if she is a girl, I'll pray for her to have a husband"; "If she goes to school, the students will laugh at us. Some may even hoot at us because they will say we have bewitched her and we will communicate the disease to them." We can argue then that the reasons for denying diseased individuals a formal education are mainly economic (the fact that such people are believed to be unemployable or stand little chance of getting jobs) and sociocultural (a probable gender bias that sees the role of women as housewives and men as breadwinners). Also, a fear of being ridiculed (which is motivated by cultural perceptions of the disease) is seen as a major factor in determining whether epileptic individuals receive formal education.

On table 5.9, data relating to the level of education the respondents considered enough for epileptic relatives is categorized. The older generation appears to expect such diseased individuals to have little or no education (see fig. 5.9). Seventy-three percent of respondents aged over 65 indicated that no education is necessary for such diseased individuals. The few who felt such individuals must have some education felt that educating them beyond the elementary school level would be a waste of money, since they will be unemployable or may "die before they complete school thereby resulting in a waste of scarce resources."

Even for those who considered education to be important for people with epilepsy, only one respondent felt that a college education was necessary. Most of the respondents felt that junior secondary school (ninth grade) level was the highest level of education needed by epileptic individuals. Respondents expressed that "excessive" education will pay no dividends given the medical condition of epileptics. Sad and unreasonable as this may seem to people outside of the family, a close examination of the lineage (extended family) reveals that most members had no formal education. For those with formal education, most had completed only a middle school education. Only three had a college education, and they were not considered "rich" in the community.

Tables 5.10 and 5.11 represent questions on attitude change and care for epileptics. The data in table 5.10 suggest that a majority of the respondents (61.7 percent) either seek or wish for a change in society's attitude toward people

Table 5.9. What level of education is considered enough for someone suffering from epilepsy?

Answer	14–25	26–40	41–50	51–65	Over 65	Total
None	1	1	2	4	8	16
Elementary	2	7	5	3	3	20
JSS	5	5	4	3	0	17
SSS	3	2	1	0	0	6
College	1	0	0	0	0	1
Total	12	15	12	10	11	60

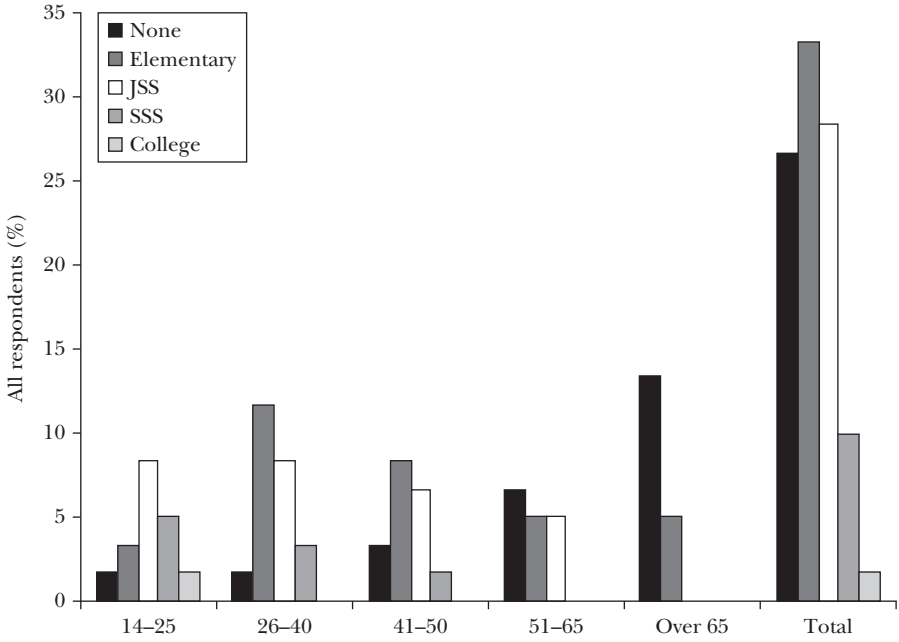

Figure 5.9. Level of education considered enough for an epileptic. Chart by Cecilia S. Obeng.

suffering from epilepsy. Most of the respondents who seek a change in attitude are aged between 14 and 65. It is primarily those over 65 who feel there is no need for a change in attitude. Of the nine respondents who felt there was no need for an attitude change, five (55.6 percent) were older than 65. The group that expressed the highest need for a change in attitude was the 26 to 40 age group, the group with the highest number of educated individuals (see fig. 5.10).

For those who felt change in attitude was necessary, the following reasons were given: "There is civilization (times are changing) so we must change in order to be abreast with the times"; "Every human being deserves a chance"; "In the past, such people used to die; now they live as long as every other person so giving them a chance to develop themselves is better for all of us"; "Now some of us know that it is not a contagious disease so giving them equal chance is good for us in the long run. You know, Mr. Kofi Boadu's son has completely recovered after he had surgery. Although he limps a little, he is even more successful than most of the foolish boys who have never been deformed." From the above excerpts, it is clear that the change they are asking for is motivated by their improved knowledge of the disease and by a specific case involving someone having recovered from the disease who has done well in life.

For the elderly who felt there was no need for attitude change, such reasons as the following were given:

> Teacher [referring to me], our ancestors were not stupid in their characterization of diseases. This disease [epilepsy] is a demonic disease. If you change your perceptions about it you'll be asking for the wrath of the ancestors. You children of today have little respect for spirits. It is only when the spirits attack you that you begin to see things the way we do.
>
> Teacher, if anyone thinks she is more intelligent than us, let him destroy our tradition. The gods and our ancestors will unleash a hefty fine in the form of a deadly disease on him. You are young so you may not understand the implications of an attitude change.

The reasons given above are based on the speakers' belief systems, their attention to tradition, their unwillingness to break from the past, and the fear of the consequences if they do so.

Table 5.10. Should society's attitude change toward epilepsy?

Answer	14–25	26–40	41–50	51–65	Over 65	Total
Yes	8	11	8	7	3	37
Maybe	3	3	3	2	3	14
No	1	1	1	1	5	9
Never	0	0	0	0	0	0
Total	12	15	12	10	11	60

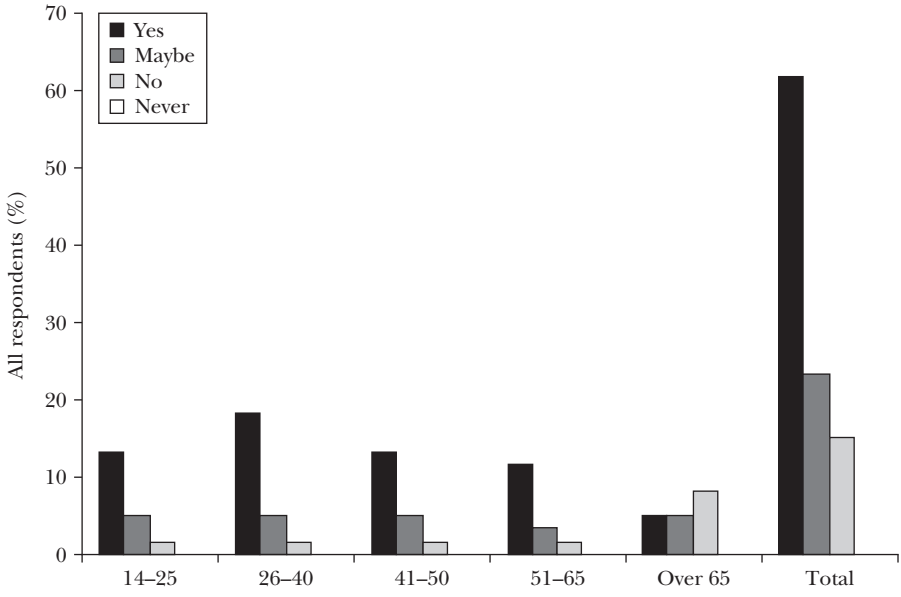

Figure 5.10. Attitude change toward epilepsy. Chart by Cecilia S. Obeng.

Table 5.11. When should the change in attitude take place?

Answer	14–25	26–40	41–50	51–65	Over 65	Total
Right away	6	7	2	1	1	17
In 5 years	5	5	3	2	3	18
After 5 years	1	3	6	5	2	17
Not in your lifetime	0	0	1	2	5	8
Total	12	15	12	10	11	60

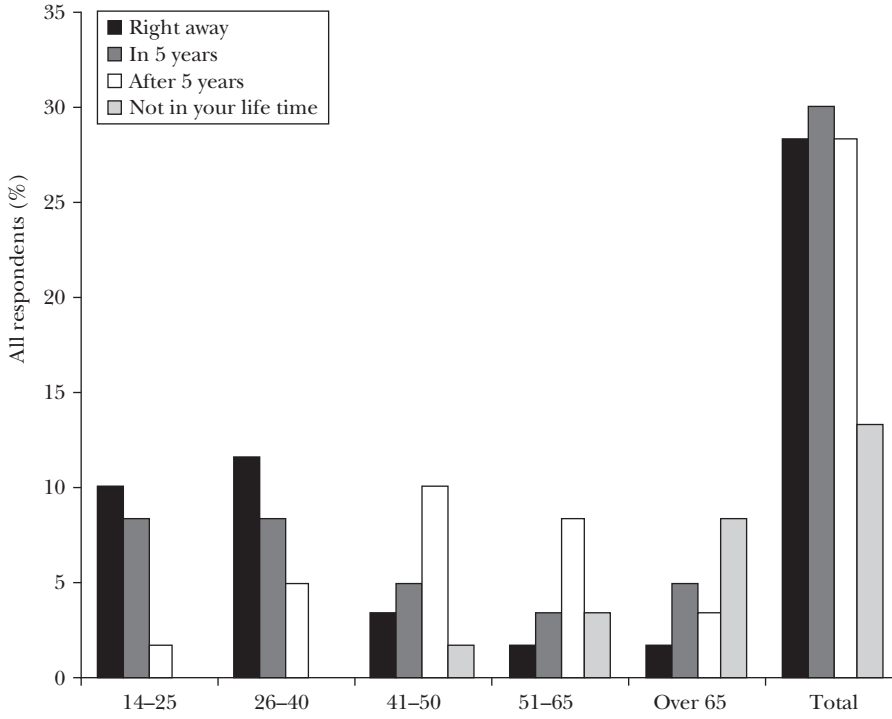

Figure 5.11. When the change in attitude should take place. Chart by Cecilia S. Obeng.

Closely linked to whether members of the research area should change their attitude(s) toward epilepsy is the question of when such a change in attitude should take place or begin. A large percentage of respondents who were under 41 years of age called for an immediate change in attitude. One percent of respondents aged 51 years or more viewed such a change as pressing. Fifty percent of respondents over the age of 65 did not anticipate any change in attitude in their lifetime. The data in table 5.11, therefore, point to the fact

that age is an important factor in determining how soon a change in attitude toward epilepsy could be expected to take place in the research area.

The study presented in this chapter has bolstered the claim by Levy, Forbes, and Parirenyatwa and by Giel that some African societies believe epilepsy is caused by evil spirits.[8] That epilepsy causes embarrassment to the victims and their relatives and may even form the basis on which people refrain from marrying into such families for fear of getting the disease is also supported.

I conclude that in this research community, the older one gets, the more likely one is to associate epilepsy with evil spirits, and consequently to rule out orthodox medicine as a possible cure. Furthermore, the older one gets, the less likely one is to be either ashamed of, or embarrassed by, the disease.

In conclusion, epilepsy is a stigmatized and misunderstood disease in the research area. There is no doubt that, given the stigma and fear attached to the disease, epilepsy is capable of affecting a patient's social and emotional development.

A limitation of this study is the number of respondents involved; given the limited number, it is inaccurate and unwise to make any generalizations about perceptions of the disease. This limitation is, to some extent, mitigated by the inclusion of the voices of some of the respondents. Such voices add a human face to the often "abstract" statistical data by providing the reader with some insights into the research participants' worldviews. It is hoped the research can be extended to other communities to help us better understand perceptions about the disease and to enable us to ascertain claims of general applicability.

Notes

1. Levy et al., "Epilepsy in Africans," 241–49; Dada and Odeku, "Epilepsy in the Nigerian Patient," 153–63; and Giel, "The Epileptic Outcast," 27–31.

2. For perceptions on spirit-caused diseases see El-Shamy, "Mental Health in Traditional Culture," 13–28; Field, "Witchcraft as a Primitive Interpretation of Mental Disorder," 826–33; Dodu, "Meeting the Health Needs of our Developing Countries," 3–16; and Obeng, *Voices of Affliction.*

3. Asuni et al., *Mental Health and Diseases in Africa.*

4. Obeng, *Voices of Affliction.*

5. Obeng, *The Relevance of Gender.*

6. Obeng, *The Relevance of Gender*; Obeng, "Address Forms among Akan Families (Couples) Living in the United States," 44–60.

7. Van Maanen, *Tales of the Field.*

8. Levy et al., "Epilepsy in Africans," 241–49; Giel, "The Epileptic Outcast," 27–31.

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6

DISABILITY IN NIGERIA

Gabriel B. Fosu, W. Bediako Lamousé-Smith,
Baffour K. Takyi, and Stephen Obeng-Manu Gyimah

Studies on the health of Africans have increased substantially during the past couple of decades. For the most part, recent studies have concentrated on reproductive health issues, malaria, and HIV/AIDS. One health topic that is rarely addressed in African health research is disability. Not much is known about prevalence, determinants, and impact of disability among African populations. While disability is generally associated with reduced labor force participation, it also has social, cultural, and political consequences. As governments adopt policies and institute programs to ensure the full participation of the population with disability in all national activities, they often face the challenge of identifying the population with disability, and the extent and type of disability. There is, indeed, a great need to understand the magnitude of the problem in order to develop intervention programs.

Since the 1982 United Nations World Program of Action Concerning Disabled Persons, many countries have affirmed the importance of information on disability for developing programs and policies that promote the threefold objectives of prevention of disability, rehabilitation, and realization of the full participation of disabled persons in social life and economic development. Such information, however, is not being collected and analyzed on a regular basis. For this reason the UN recommended that disability should be included in national censuses in order to provide "a valuable source of information on the prevalence and distribution of disability in the population at national, regional, and local levels and give possibilities for its correlation with data on employment, level of education and other relevant variables collected in the census."[1]

The main purpose of this chapter is to examine disability in the Federal Republic of Nigeria using data from the 1991 population census. We look at the number of people with disabilities in the total population, as well as the

prevalence of disability by age, gender, and rural–urban residence. The challenges for ensuring the full participation of the population with disabilities in cultural, social, economic, and political activities in the twenty-first century are discussed. The size of Nigeria's population—137.3 million in mid-2004—is more than half of the 263 million for the whole sub-region of western Africa and its population makes up almost 20 percent of the whole of sub-Saharan Africa.[2] A study of disability in Nigeria, therefore, has significance beyond the country's own borders.

Methodological Challenges

Identifying, defining, classifying, and creating frameworks for the study of disabilities is fraught with several methodological challenges. These challenges can be especially daunting when the basic data are drawn from censuses only without the additional complement of data from health surveys. These difficulties are acknowledged by Vicki A. Freedman, Linda G. Martin, and Robert F. Schoeni in a recent publication on disability in America that, "there are several classification schemes and frameworks for defining disability, but there is no gold standard for measurement." They go on to point out that "disability exists when an individual's physical, cognitive, or psychological capacity does not fit the demands of a given task within a specific environment."[3] Hence, some researchers have used disability interchangeably with impairment and handicap. In 1980 the World Health Organization (WHO) proposed a unifying framework for classifying disability in the International Classification of Impairments, Disabilities, and Handicaps (ICIDH).[4] The ICIDH was revised in 2002. In this classification, disability is defined as a limitation in activity and handicap as the existence of a relative disadvantage, vis-à-vis others, due to the limitation.[5]

Another methodological challenge in measuring disability is how disability is counted. In some instances, the number of disabilities is counted such that a disabled person with multiple disabilities may be counted thrice, first due perhaps to hearing impairment, second due to blindness, and third due to a limp in gait. In other cases persons with disabilities are counted in the census irrespective of the number of disabilities an individual may have.

Additionally, the presence of disability is difficult to ascertain under census conditions due to the limited period assigned for enumeration. Hence, the strategy adopted by the National Population Commission (NPC) during the 1991 census was to canvass broad and general conditions that were commonly observable in the society as recommended by the Expert Group on Development of Statistics on Disabled Persons.[6] For the census, disability was defined as "the inability of the respondent to perform, up to the normal natural expectation, some specified physical or mental activities due to certain

physiological malformation, or weakness which may be congenital or acquired through injury.[7]" Enumerators were asked to find out whether the respondent was suffering from any of the seven kinds of disabilities considered to be predominant in Nigeria. These were sub-categorized into three broad types of disability: (1) sensory limitations, (2) mental and emotional limitations, and (3) limitations of physical functioning.

Sensory Limitations

Deaf: Inability of respondent to hear normal human sound through the eardrum, with or without the aid of any device, physical or electronic.

Dumb: Inability of respondent to speak audibly and intelligibly, the normal human words of the mouth. This inability does not include stammering and other irregularities in pronunciation of words.

Deaf and Dumb: Some persons suffer from both of the above.

Blind: This is physiological impairment of the sense of sight (with or without the use of aid) or the complete loss of their ability to see, that is, totally blind.

Mental and Emotional Limitations

Mentally Ill/Lunatic: These are respondents who, due to injury, sickness or congenital malformation, suffer from defective and (or) deficient mental aptitude.

Limitations of Physical Functioning

Cripple: These are respondents who have lost the proper and effective use of their limbs through physiological defects and who, therefore, cannot use such limbs for the normal function of moving around. This category may also include those who lost their limbs through injury or disease such as leprosy.

Others

Other disabled persons not classified above should be included in this category.

Disability Rates

The standard demographic method for measuring disability is the crude disability rate (CDR), defined as the proportion of the population that is disabled in the total population, usually expressed in units per 100 or 1,000 or 100,000 persons depending on the frequency of occurrence of the attributes of the disabled population. In 1991, Nigeria had a crude disability rate of 0.48 percent or 4.8 disabled persons per 1,000 persons. When state-specific disability rates are computed (number of disabled persons in each state divided by the total population of the state), as table 6.1 shows, fifteen states had higher CDR for both males and females than the national average of 4.8 per 1,000 persons, ranging from a low of 3.1 per 1,000 persons in Akwa Ibom State to a high of more than 6 per 1,000 persons in Anambra, Borno, Sokoto, Kebbi, and Yobe states. At the time of the 1991 census, Nigeria had thirty-one federal states. Table 6.2 shows the male to female ratio of disabled persons in each state. Apart from four states—Ogun, Sokoto, Kebbi, and Osun—there were higher ratios of disabled males over females in all the states. This may be an indication of under-enumeration of disabilities among females who tend to have less severe ailments than males[8] or as has been observed in the literature, it may be an indication of severe impairments that are more predominant among the males. Men usually delay seeking help for their health conditions until such conditions become quite severe and life threatening.[9]

Disability Types

Table 6.3 and figure 6.1 show the dominant disabilities: deafness (24.5 percent), blindness (18.2 percent), crippling (12.9 percent), deaf and dumb (12.5 percent), and mental illness (10.2 percent). About 11 percent of all disabilities are in the "other" category, 8.3 percent are dumb only, and 2.1 percent do not state the disability. The rates of five of the eight disabilities are higher in urban than in rural areas. The distribution of the disabled population by state and type of disability (table 6.4) shows that eleven states have consistently higher levels of deafness than the national average. These range from 25.5 percent in Kaduna State to 34 percent in Rivers State. The rates of dumbness are high in Bauchi and Jigawa states, and in Abuja, the Federal Capital Territory (FCT). The relatively high rates of multiple disabling conditions of deafness and dumbness point to the need for special attention to that subgroup of the population. When the two categories of dumbness, and dumb and deaf are combined, their national average goes beyond 20 percent, with some ten states exceeding the national average. The combined rates of the two disabilities in Abuja and Bauchi make up about 29 percent and 27 percent of each of the states' total disability, respectively.

Table 6.1. Distribution of disabled persons, by state and gender

State	Total population			Population disabled			Population disabled per 1,000*		
	Males	Females	Both sexes	Males	Females	Both sexes	Males	Females	Both sexes
Abia	1,125,999	1,212,488	2,338,487	4,805	4,549	9,354	0.05	0.05	0.10
Adamawa	1,050,791	1,051,262	2,102,053	6,005	5,581	11,586	0.07	0.06	0.13
Akwa Ibom	1,167,829	1,241,784	2,409,613	3,836	3,584	7,420	0.04	0.04	0.08
Anambra	1,374,671	1,421,804	2,796,475	8,869	7,836	16,705	0.10	0.09	0.19
Bauchi	2,192,423	2,158,584	4,351,007	10,054	9,412	19,466	0.11	0.11	0.22
Benue	1,368,965	1,384,112	2,753,077	7,100	6,761	13,861	0.08	0.08	0.16
Borno	1,296,111	1,239,892	2,536,003	10,220	9,687	19,907	0.11	0.11	0.22
Cross River	956,136	955,161	1,911,297	4,040	3,354	7,394	0.05	0.04	0.08
Delta	1,271,932	1,318,559	2,590,491	4,599	4,409	9,008	0.05	0.05	0.10
Edo	1,085,156	1,086,849	2,172,005	4,555	3,771	8,326	0.05	0.04	0.09
Enugu	1,475,648	1,678,732	3,154,380	8,694	7,947	16,641	0.10	0.09	0.19
Imo	1,166,448	1,319,187	2,485,635	8,661	8,340	17,001	0.10	0.09	0.19
Jigawa	1,455,780	1,419,745	2,875,525	7,587	7,511	15,098	0.09	0.08	0.17
Kaduna	2,041,141	1,894,477	3,935,618	8,014	7,494	15,508	0.09	0.08	0.17
Kano	2,958,736	2,851,734	5,810,470	14,967	14,107	29,074	0.17	0.16	0.33
Katsina	1,860,658	1,892,475	3,753,133	8,956	8,902	17,858	0.10	0.10	0.20
Kebbi	1,035,723	1,032,767	2,068,490	6,405	6,680	13,085	0.07	0.08	0.15
Kogi	1,039,484	1,108,272	2,147,756	4,066	3,708	7,774	0.05	0.04	0.09
Kwara	773,182	775,230	1,548,412	3,375	2,942	6,317	0.04	0.03	0.07
Lagos	3,010,604	2,714,512	5,725,116	11,229	8,957	20,186	0.13	0.10	0.23
Niger	1,252,466	1,169,115	2,421,581	6,284	5,558	11,842	0.07	0.06	0.13
Ogun	1,147,746	1,185,980	2,333,726	5,762	5,786	11,548	0.06	0.07	0.13
Ondo	1,881,884	1,903,454	3,785,338	7,388	6,989	14,377	0.08	0.08	0.16
Osun	1,043,126	1,115,017	2,158,143	4,477	4,538	9,015	0.05	0.05	0.10
Oyo	1,711,428	1,741,292	3,452,720	6,928	6,448	13,376	0.08	0.07	0.15
Plateau	1,657,209	1,655,203	3,312,412	8,751	8,111	16,862	0.10	0.09	0.19
Rivers	2,239,558	2,069,999	4,309,557	10,164	8,892	19,056	0.11	0.10	0.21
Sokoto	2,208,874	2,261,302	4,470,176	16,303	16,397	32,700	0.18	0.18	0.36
Taraba	759,872	752,291	1,512,163	3,431	3,265	6,696	0.04	0.04	0.08
Yobe	714,729	684,958	1,399,687	5,288	4,784	10,072	0.06	0.05	0.11
Abuja (FCT)	205,299	166,375	371,674	1,096	933	2,029	0.01	0.01	0.02
Nigeria	44,529,608	44,462,612	88,992,220	221,909	207,233	429,142	2.49	2.33	4.82

Source: Nigeria, *1991 Population Census.*
Note: (Proportion disabled in state/total national population) * 1,000.

Table 6.2. Crude disability rate, by state and gender

State	Total population			Population disabled			Population disabled per 100*			
	Males	Females	Both sexes	Males	Females	Both sexes	Males	Females	Both sexes	Ratio
Abia	1,125,999	1,212,488	2,338,487	4,805	4,549	9,354	0.21	0.19	0.40	105.63
Adamawa	1,050,791	1,051,262	2,102,053	6,005	5,581	11,586	0.29	0.27	0.56	107.60
Akwa Ibom	1,167,829	1,241,784	2,409,613	3,836	3,584	7,420	0.16	0.15	0.31	107.03
Anambra	1,374,671	1,421,804	2,796,475	8,869	7,836	16,705	0.32	0.28	0.60	113.18
Bauchi	2,192,423	2,158,584	4,351,007	10,054	9,412	19,466	0.23	0.22	0.45	106.82
Benue	1,368,965	1,384,112	2,753,077	7,100	6,761	13,861	0.26	0.25	0.51	105.01
Borno	1,296,111	1,239,892	2,536,003	10,220	9,687	19,907	0.40	0.38	0.78	105.50
Cross River	956,136	955,161	1,911,297	4,040	3,354	7,394	0.21	0.18	0.39	120.45
Delta	1,271,932	1,318,559	2,590,491	4,599	4,409	9,008	0.18	0.17	0.35	104.31
Edo	1,085,156	1,086,849	2,172,005	4,555	3,771	8,326	0.21	0.17	0.38	120.79
Enugu	1,475,648	1,678,732	3,154,380	8,694	7,947	16,641	0.28	0.25	0.53	109.40
Imo	1,166,448	1,319,187	2,485,635	8,661	8,340	17,001	0.35	0.34	0.69	103.85
Jigawa	1,455,780	1,419,745	2,875,525	7,587	7,511	15,098	0.26	0.26	0.52	101.01
Kaduna	2,041,141	1,894,477	3,935,618	8,014	7,494	15,508	0.20	0.19	0.39	106.94
Kano	2,958,736	2,851,734	5,810,470	14,967	14,107	29,074	0.26	0.24	0.50	106.10
Katsina	1,860,658	1,892,475	3,753,133	8,956	8,902	17,858	0.24	0.24	0.48	100.61
Kebbi	1,035,723	1,032,767	2,068,490	6,405	6,680	13,085	0.31	0.32	0.63	95.88
Kogi	1,039,484	1,108,272	2,147,756	4,066	3,708	7,774	0.19	0.17	0.36	109.65
Kwara	773,182	775,230	1,548,412	3,375	2,942	6,317	0.22	0.19	0.41	114.72
Lagos	3,010,604	2,714,512	5,725,116	11,229	8,957	20,186	0.20	0.16	0.35	125.37
Niger	1,252,466	1,169,115	2,421,581	6,284	5,558	11,842	0.26	0.23	0.49	113.06
Ogun	1,147,746	1,185,980	2,333,726	5,762	5,786	11,548	0.25	0.25	0.49	99.59
Ondo	1,881,884	1,903,454	3,785,338	7,388	6,989	14,377	0.20	0.18	0.38	105.71
Osun	1,043,126	1,115,017	2,158,143	4,477	4,538	9,015	0.21	0.21	0.42	98.66
Oyo	1,711,428	1,741,292	3,452,720	6,928	6,448	13,376	0.20	0.19	0.39	107.44
Plateau	1,657,209	1,655,203	3,312,412	8,751	8,111	16,862	0.26	0.24	0.51	107.89
Rivers	2,239,558	2,069,999	4,309,557	10,164	8,892	19,056	0.24	0.21	0.44	114.30
Sokoto	2,208,874	2,261,302	4,470,176	16,303	16,397	32,700	0.36	0.37	0.73	99.43
Taraba	759,872	752,291	1,512,163	3,431	3,265	6,696	0.23	0.22	0.44	105.08
Yobe	714,729	684,958	1,399,687	5,288	4,784	10,072	0.38	0.34	0.72	110.54
Abuja (FCT)	205,299	166,375	371,674	1,096	933	2,029	0.29	0.25	0.55	117.47
Nigeria	44,529,608	44,462,612	88,992,220	221,909	207,233	429,142	0.25	0.23	0.48	107.01

Source: Nigeria, *1991 Population Census.*
Note: (Disabled in state/total state population) * 100.

Blindness, the second most prevalent single disability in the nation, is consistently high in all the states. It ranges from 10.2 percent in Delta State to 26.3 percent in Yobe State. Nine other states recorded rates of blindness exceeding 20 percent of all disabilities in those states. The rates of lameness and crippling

Table 6.3. Disabled population, by type of disability, gender, and rural–urban residence

Disability type	Country			Urban			Rural		
	Both	**Male**	**Female**	**Both**	**Male**	**Female**	**Both**	**Male**	**Female**
Deaf	24.45	22.00	27.07	23.88	20.95	27.20	24.74	22.55	27.01
Dumb	8.25	8.69	7.78	8.16	8.46	7.83	8.29	8.81	7.75
Deaf and Dumb	12.54	12.47	12.61	12.86	12.68	13.07	12.37	12.36	12.39
Blind	18.16	17.30	19.08	15.18	14.15	16.35	19.65	18.93	20.39
Crippled	12.92	14.14	11.61	13.05	14.27	11.67	12.85	14.08	11.58
Mental illness	10.23	10.86	9.56	11.60	12.30	10.80	9.55	10.11	8.96
Other	11.39	11.58	11.19	11.83	12.23	11.39	11.18	11.25	11.10
Not stated	2.06	2.96	1.10	3.43	4.97	1.69	1.38	1.91	0.82
Percentage	*100.0*	*100.00*	*100.00*	*100.00*	*100.00*	*100.00*	*100.00*	*100.00*	*100.00*
Total	429,142	221,909	207,233	143,057	75,897	67,160	286,085	146,012	140,073

Source: Nigeria, 1991 *Population Census*.

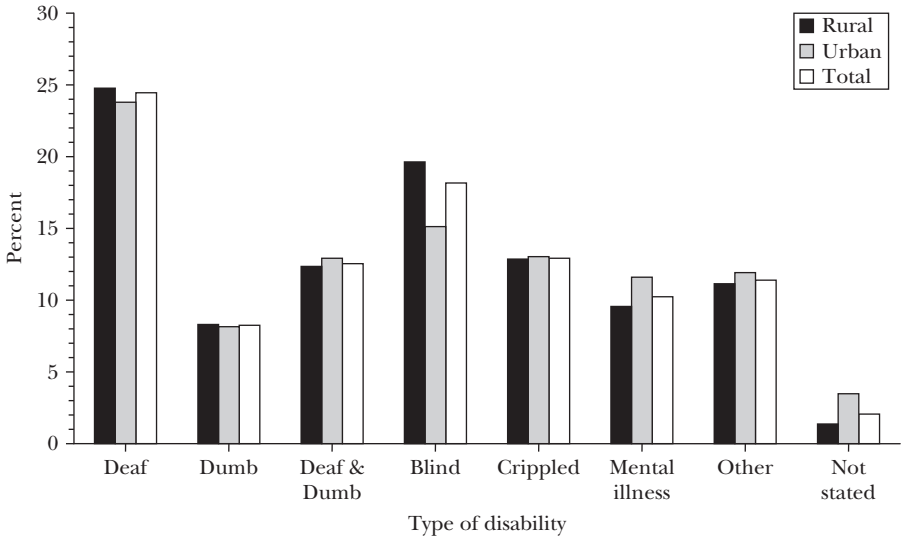

Figure 6.1. Percentage distribution of disability type by rural–urban residence and gender, Nigeria, 1991.

Source: Nigeria, 1991 *Population Census*.

Table 6.4. Numerical and percentage distribution of disabled population, by state and type of disability

State	Total		Deaf		Dumb		Deaf & Dumb		Blind		Crippled		Mental illness		Other		Not stated	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Abia	9,354	100.0	2,738	29.3	615	6.6	1,113	11.9	1,275	13.6	1,004	10.7	1,244	13.3	1,209	12.9	156	1.7
Adamawa	11,586	100.0	2,652	22.9	801	6.9	1,742	15.0	2,214	19.1	1,483	12.8	905	7.8	1,599	13.8	190	1.6
Akwa Ibom	7,420	100.0	1,706	23.0	595	8.0	1,017	13.7	1,055	14.2	996	13.4	790	10.6	1,120	15.1	141	1.9
Anambra	16,705	100.0	3,446	20.6	970	5.8	1,510	9.0	2,002	12.0	1,840	11.0	3,552	21.3	2,888	17.3	497	3.0
Bauchi	19,466	100.0	4,551	23.4	2,695	13.8	2,607	13.4	3,842	19.7	2,420	12.4	1,499	7.7	1,639	8.4	213	1.1
Benue	13,861	100.0	3,104	22.4	895	6.5	1,828	13.2	3,358	24.2	1,830	13.2	1,036	7.5	1,622	11.7	188	1.4
Borno	19,907	100.0	4,101	20.6	1,353	6.8	1,701	8.5	5,088	25.6	3,081	15.5	1,962	9.9	2,293	11.5	328	1.6
Cross River	7,394	100.0	1,497	20.2	550	7.4	770	10.4	1,183	16.0	1,273	17.2	954	12.9	1,080	14.6	87	1.2
Delta	9,008	100.0	2,574	28.6	628	7.0	1,161	12.9	918	10.2	953	10.6	1,263	14.0	1,278	14.2	233	2.6
Edo	8,326	100.0	1,441	17.3	568	6.8	1,726	20.7	910	10.9	955	11.5	1,379	16.6	1,121	13.5	226	2.7
Enugu	16,641	100.0	3,920	23.6	1,085	6.5	1,905	11.4	2,538	15.3	1,985	11.9	2,283	13.7	2,611	15.7	314	1.9
Imo	17,001	100.0	2,782	16.4	1,252	7.4	1,771	10.4	2,735	16.1	2,044	12.0	3,056	18.0	3,139	18.5	222	1.3
Jigawa	15,098	100.0	4,745	31.4	1,602	10.6	1,480	9.8	3,368	22.3	1,655	11.0	842	5.6	1,253	8.3	153	1.0
Kaduna	15,508	100.0	3,956	25.5	1,272	8.2	2,754	17.8	2,589	16.7	1,936	12.5	1,192	7.7	1,426	9.2	383	2.5
Kano	29,074	100.0	7,933	27.3	2,819	9.7	4,119	14.2	5,322	18.3	3,301	11.4	2,092	7.2	3,053	10.5	435	1.5
Katsina	17,858	100.0	5,203	29.1	1,582	8.9	2,010	11.3	3,483	19.5	2,568	14.4	1,443	8.1	1,380	7.7	189	1.1
Kebbi	13,085	100.0	3,591	27.4	1,125	8.6	1,397	10.7	2,981	22.8	1,652	12.6	1,080	8.3	1,102	8.4	157	1.2
Kogi	7,774	100.0	2,068	26.6	524	6.7	1,018	13.1	1,409	18.1	1,076	13.8	802	10.3	765	9.8	112	1.4
Kwara	6,317	100.0	1,429	22.6	336	5.3	747	11.8	1,354	21.4	750	11.9	669	10.6	875	13.9	157	2.5
Lagos	20,186	100.0	4,106	20.3	1,750	8.7	3,118	15.4	2,238	11.1	2,803	13.9	2,470	12.2	2,649	13.1	1,052	5.2
Niger	11,842	100.0	2,581	21.8	1,064	9.0	1,617	13.7	2,904	24.5	1,425	12.0	804	6.8	1,088	9.2	359	3.0
Ogun	11,548	100.0	2,511	21.7	860	7.4	1,468	12.7	1,769	15.3	1,691	14.6	1,500	13.0	1,406	12.2	343	3.0
Ondo	14,377	100.0	3,388	23.6	1,274	8.9	2,248	15.6	1,843	12.8	1,919	13.3	1,549	10.8	1,727	12.0	429	3.0
Osun	9,015	100.0	2,387	26.5	545	6.0	891	9.9	1,368	15.2	1,347	14.9	1,236	13.7	1,021	11.3	220	2.4
Oyo	13,376	100.0	3,182	23.8	958	7.2	1,635	12.2	2,139	16.0	1,871	14.0	1,557	11.6	1,599	12.0	435	3.3

Table 6.4. (*continued*)

State	Total		Deaf		Dumb		Deaf & Dumb		Blind		Crippled		Mental illness		Other		Not stated	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Plateau	16,862	100.0	3,370	20.0	1,471	8.7	2,095	12.4	3,659	21.7	2,615	15.5	1,445	8.6	1,787	10.6	420	2.5
Rivers	19,056	100.0	6,650	34.9	1,819	9.5	2,457	12.9	2,286	12.0	2,417	12.7	1,184	6.2	1,746	9.2	497	2.6
Sokoto	32,700	100.0	8,881	27.2	2,828	8.6	3,787	11.6	7,594	23.2	3,941	12.1	2,521	7.7	2,786	8.5	362	1.1
Taraba	6,696	100.0	1,888	28.2	407	6.1	882	13.2	1,544	23.1	835	12.5	463	6.9	592	8.8	85	1.3
Yobe	10,072	100.0	2,056	20.4	951	9.4	831	8.3	2,652	26.3	1,550	15.4	1,019	10.1	839	8.3	174	1.7
Abuja (FCT)	2,029	100.0	492	24.2	207	10.2	400	19.7	310	15.3	219	10.8	106	5.2	204	10.1	91	4.5
Nigeria	429,142	100.0	104,929	24.5	35,401	8.2	53,805	12.5	77,930	18.2	55,435	12.9	43,897	10.2	48,897	11.4	8,848	2.1

Source: Nigeria, 1991 *Population Census.*

disabilities are also consistently greater than 10 percent of all disabilities in each of the states, the highest rates enumerated being in Cross River (17.2 percent).

The prevalence of mental illness varies from 5.2 percent in Abuja (FCT) to a relative high of 21.3 percent in Anambra. The rates of "other" category of disability vary among the states. However, sixteen states have rates of the "other" disabilities that are higher than the national average of 10.2 percent. Lagos and Abuja (FCT) have higher prevalence of unspecified disabilities than the other states, though more than thirteen states have rates that exceed the national average.

Disability by Age and Gender

Table 6.5 presents the age-specific disability rates for the country. Columns 7 through 10 are obtained by dividing the number of males or females who are disabled in each specific age group by the total number of persons (both disabled and nondisabled) in that age group multiplied by a constant (e.g., 100). Columns 7 through 10 reveal two distinct patterns. First, with a few exceptions, the level of disability increases with age. Figure 6.2 clearly shows this pattern. The age-specific disability rate at ages 80 to 84, for instance, is about five times the rate for ages 0 to 4. Both males and females show a similar trend. The rates reported support the pattern observed in several countries that in the process of aging, the level of disability, particularly old-age disability, tends to increase.[10] Disabilities like blindness, deafness, and restrictions in physical movement tend to be related to the deterioration of health as people age.[11]

A second feature that may be seen from table 6.5 is that males generally tend to have higher disability rates than females. This is true for almost all the age groups, except the 20 to 24 and 25 to 29 age categories (see also figure 6.2). This pattern is also depicted in figure 6.3 where the ratio of male disability as a percentage of female disability is presented. Gender variability in disability may be the result of socialization processes that tend to protect females more than males. Such varying exposure to health risk factors associated with the different roles of males and females is consistent with observed higher rates of accident, for example, among boys compared with girls of the same age.[12] Also, it is well documented that censuses tend to under-enumerate persons with mild disabilities and disabilities of children.[13] Identifying disability in preschool-age children, for instance, is not an easy task, even when highly sophisticated medical techniques are used. Very often among pre-school children, it is not yet known even to their parents that they have a disability, for example, a hearing impairment or difficulty in seeing. The likelihood of such biases in data collection suggests the need for further methodological refinement to enable a better understanding of such observed gender and age differentials in disability.

Youth Disability

The crude disability rate among young persons (0–24) was 3.8 per 1,000 population compared with 4.8 per 1,000 among the total population of the country. The disability rates among young persons varied by age and gender. The rate was lowest among children and highest among youth; females had the highest disability rate among all young persons. There were broad regional differences in rates of disability. In general, the rate was higher in the northern than in the southern states. In literacy, educational attainment, labor force participation, and economic activities, persons with disability were more disadvantaged than those without disabilities. This has major implications for the education of children and young persons. Disabled males were less likely to be married than disabled females. The most prevalent disability irrespective of age and gender was deafness.

Disability by Rural–Urban Residence

As noted earlier, table 6.3 presents the percentage distribution of type of disability by rural–urban residence and gender. The percentage of persons who are deaf, dumb, or blind is higher in rural areas than in urban areas. Yet, persons who are deaf and dumb, crippled, or mentally ill, or those with unspecified disabilities are more likely to be found in the urban than the rural areas (figure 6.1). Reasons for the rural–urban differences by type of disability is not entirely clear from the data. Nevertheless, certain general patterns that have been observed in other countries may also exist in the country. For instance, mental illness is generally more prevalent in urban than in rural areas, however, researchers do not agree on the causes of such higher urban rates, and two equally plausible hypotheses—the drift and the stress hypotheses—have been used to explain such geographical differences.[14]

Tables 6.6a, 6.6b, and 6.6c show the prevalence of disability by type of disability, rural–urban residence, and other characteristics. When both genders are combined, total disability rates tend to be higher in rural areas than in urban areas (figure 6.4). However, there are gender and geographic differences when specific types of disability are examined. For instance, in both rural and urban areas, females tend to make up a higher percentage of deaf and blind persons. This pattern becomes even clearer when we examine the age-specific disability rates for deafness and blindness, as shown in figures 6.5a and 6.5b. Generally, up to age 55–59 years, females tend to have higher rates of both deafness and blindness than males in both rural and urban areas. After age 59, these disability rates for the females tend to drop below that of the males, particularly the occurrences of blindness. More females than males who are both deaf and dumb were enumerated in urban areas, but in the rural areas the rates are the same for both genders. Another consistent picture is that the percentage of males who are crippled, mentally ill, or have unspecified disabilities is higher than the percentage for females in both rural and urban areas.

Table 6.5. Age-specific disability rates, Nigeria

Age	Total population			Population disabled			Percentage disabled			Ratio
	Males	Females	Both sexes	Males	Females	Both sexes	Males	Females	Both sexes	
0–4	7,344,454	6,999,435	14,343,889	25,306	21,859	47,165	0.18	0.15	0.33	115.77
5–9	7,374,314	7,126,144	14,500,458	18,348	17,579	35,927	0.13	0.12	0.25	104.37
10–14	5,812,538	5,336,143	11,148,681	26,492	21,372	47,864	0.24	0.19	0.43	123.96
15–19	4,528,811	4,806,977	9,335,788	20,005	19,614	39,619	0.21	0.21	0.42	101.99
20–24	3,314,303	4,357,267	7,671,570	17,287	31,839	49,126	0.23	0.42	0.65	54.30
25–29	3,304,739	4,006,932	7,311,671	16,352	17,150	33,502	0.22	0.23	0.45	95.35
30–34	2,808,629	3,105,298	5,913,927	15,354	13,480	28,834	0.26	0.23	0.49	113.90
35–39	2,206,871	2,008,062	4,214,933	14,347	11,653	26,000	0.34	0.28	0.62	123.12
40–44	1,971,197	1,874,721	3,845,918	12,598	8,827	21,425	0.33	0.23	0.56	142.72
45–49	1,355,101	1,061,602	2,416,703	9,094	6,901	15,995	0.38	0.29	0.67	131.78
50–54	1,388,650	1,182,149	2,570,799	9,749	7,919	17,668	0.38	0.31	0.69	123.11
55–59	638,375	481,394	1,119,769	5,330	3,919	9,249	0.48	0.35	0.83	136.00
60–64	898,801	791,573	1,690,374	8,240	6,401	14,641	0.49	0.38	0.87	128.73
65–69	406,540	357,400	763,940	4,620	3,704	8,324	0.60	0.48	1.08	124.73
70–74	492,186	394,116	886,302	6,124	4,662	10,786	0.69	0.53	1.22	131.36
75–79	195,455	156,368	351,823	3,132	2,311	5,443	0.89	0.66	1.55	135.53
80–84	258,059	222,627	480,686	4,041	3,312	7,353	0.84	0.69	1.53	122.01
85+	230,585	194,404	424,989	5,490	4,731	10,221	1.29	1.11	2.40	116.04
Total	44,529,608	44,462,612	88,992,220	221,909	207,233	429,142	0.25	0.23	0.48	107.08

Source: Nigeria, *1991 Population Census.*
Note: Disabled Males (X-5)/Total Population (X-5) * 1,000.

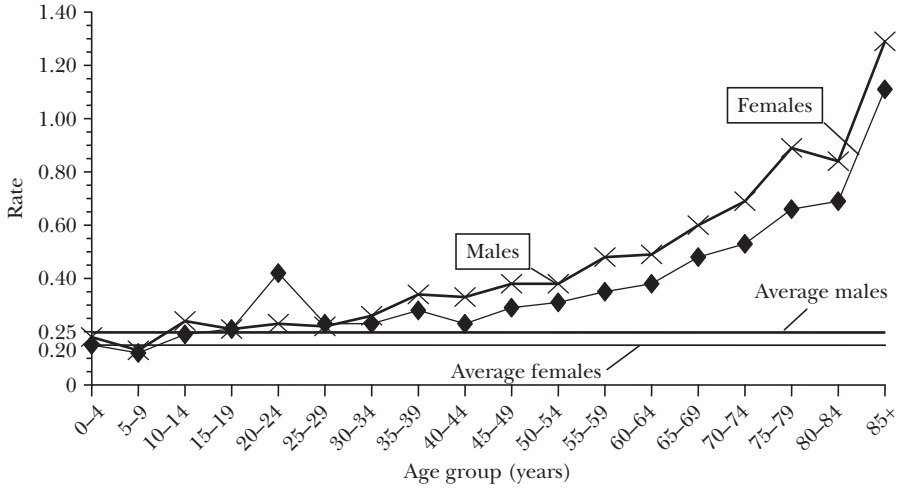

Figure 6.2. Age-specific disability by gender, Nigeria, 1991.

Source: Nigeria, 1991 *Population Census.*

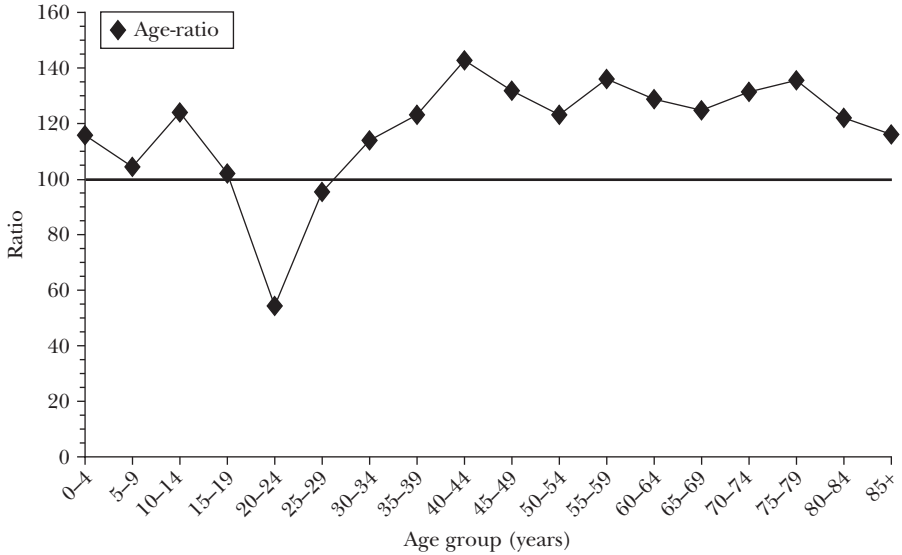

Figure 6.3. Age–gender disability ratios, Nigeria, 1991.

Source: Nigeria, *1991 Population Census*.

Disability by Marital Status

Table 6.7 shows the percentage of disabled persons by marital status. Overall, about 52 percent of disabled persons are married, while 34 percent have never married, although the levels among males differ from those among the females. About 55 percent of disabled women are married, compared with 50 percent of the males. More than 40 percent of disabled males and 27 percent of disabled females have never married. These percentages are consistent with the literature on mental health, which states that even though marriage tends to favor men, disability makes it harder for men than for women to find possible suitors.[15] When types of disability are examined, the differences are quite notable. For instance, as high as 61 percent of deaf women, compared with 50 percent of deaf men, are married. The major differences between men and women are found when the never married are compared with the married.

About half of the males who are mentally ill, dumb, or both deaf and dumb have never married. Among the mentally ill male group, the proportion who never married (60 percent) is twice the proportion of married (29 percent). In contrast, the percentages of both blind males (64 percent) and females (56 percent) who are married are twice the percentage of those that have never married. Such differences may indicate strong attitudes toward certain types of disability.

Table 6.6a. Prevalence of disability (per 1,000), by age, gender, and disability type, Nigeria

Age (Years)	Total population	Total disabled	Type of disability								
			Disabled	Deaf	Dumb	Deaf & Dumb	Blind	Crippled	Mental illness	Other	Not stated
Both sexes	88,992,220	429,142	4.82	1.18	0.40	0.60	0.88	0.62	0.49	0.55	0.10
0–4	14,343,889	47,165	3.29	1.25	0.67	0.39	0.26	0.33	0.15	0.23	0.00
5–9	14,500,458	35,927	2.48	0.61	0.29	0.48	0.21	0.41	0.17	0.31	0.00
10–14	11,148,681	47,864	4.29	1.24	0.46	0.53	0.63	0.55	0.41	0.44	0.05
15–19	9,335,788	39,619	4.24	0.60	0.23	0.87	0.58	0.81	0.43	0.65	0.08
20–24	7,671,570	49,126	6.40	2.16	0.49	0.48	1.20	0.58	0.67	0.64	0.18
25–29	7,311,671	33,502	4.58	0.86	0.23	0.74	0.69	0.60	0.68	0.64	0.14
30–34	5,913,927	28,834	4.88	1.43	0.47	0.34	0.73	0.48	0.77	0.44	0.20
35–39	4,214,933	26,000	6.17	1.21	0.26	1.03	0.78	0.93	0.93	0.77	0.25
40–44	3,845,918	21,425	5.57	1.20	0.35	0.64	0.99	0.68	0.88	0.65	0.18
45–49	2,416,703	15,995	6.62	1.09	0.27	1.14	1.15	1.05	0.86	0.83	0.22
50–54	2,570,799	17,668	6.87	1.53	0.37	0.51	1.70	0.92	0.81	0.86	0.17
55–59	1,119,769	9,249	8.26	1.28	0.27	0.84	2.52	1.07	0.84	1.20	0.25
60–64	1,690,374	14,641	8.66	1.89	0.35	0.47	2.90	1.14	0.73	1.00	0.18
65–69	763,940	8,324	10.90	1.58	0.22	1.43	3.56	1.48	0.88	1.52	0.23
70–74	886,302	10,786	12.17	2.08	0.45	0.81	4.95	1.43	0.83	1.39	0.23
75–79	351,823	5,443	15.47	2.26	0.42	1.50	6.44	1.83	0.74	2.01	0.26
80–84	480,686	7,353	15.30	2.28	0.46	0.90	7.39	1.66	0.62	1.77	0.22
85+	424,989	10,221	24.05	3.55	0.46	1.50	12.24	2.56	0.86	2.62	0.26
Males	44,529,608	221,909	4.98	1.10	0.43	0.62	0.86	0.70	0.54	0.58	0.15
0–4	7,344,454	25,306	3.45	1.26	0.75	0.43	0.26	0.35	0.17	0.24	0.00
5–9	7,374,314	18,348	2.49	0.54	0.31	0.48	0.19	0.46	0.18	0.32	0.00

Table 6.6a. (*continued*)

Age (Years)	Total population	Total disabled	Type of disability								
			Disabled	Deaf	Dumb	Deaf & Dumb	Blind	Crippled	Mental illness	Other	Not stated
10–14	5,812,538	26,492	4.56	1.18	0.50	0.58	0.72	0.59	0.45	0.45	0.06
15–19	4,528,811	20,005	4.42	0.57	0.26	0.94	0.59	0.87	0.44	0.63	0.12
20–24	3,314,303	17,287	5.22	1.74	0.44	0.41	0.67	0.61	0.64	0.50	0.21
25–29	3,304,739	16,352	4.95	0.77	0.27	0.73	0.62	0.73	0.87	0.74	0.23
30–34	2,808,629	15,354	5.47	1.35	0.52	0.35	0.74	0.60	1.03	0.53	0.33
35–39	2,206,871	14,347	6.50	1.08	0.28	0.99	0.72	1.09	1.09	0.87	0.39
40–44	1,971,197	12,598	6.39	1.22	0.41	0.72	1.03	0.85	1.08	0.76	0.31
45–49	1,355,101	9,094	6.71	0.85	0.29	1.13	1.17	1.15	0.88	0.91	0.34
50–54	1,388,650	9,749	7.02	1.52	0.39	0.49	1.65	1.06	0.75	0.92	0.25
55–59	638,375	5,330	8.35	1.23	0.31	0.76	2.40	1.23	0.78	1.28	0.36
60–64	898,801	8,240	9.17	1.91	0.39	0.48	3.01	1.31	0.69	1.12	0.26
65–69	406,540	4,620	11.36	1.57	0.25	1.47	3.68	1.69	0.83	1.53	0.33
70–74	492,186	6,124	12.44	2.05	0.49	0.77	5.00	1.59	0.74	1.48	0.33
75–79	195,455	3,132	16.02	2.24	0.52	1.59	6.62	2.09	0.60	1.97	0.40
80–84	258,059	4,041	15.66	2.26	0.46	0.83	7.64	1.75	0.57	1.84	0.30
85+	230,585	5,490	23.81	3.44	0.49	1.51	12.33	2.43	0.75	2.48	0.37
Females	44,462,612	207,233	4.66	1.26	0.36	0.59	0.89	0.54	0.45	0.52	0.05
0–4	6,999,435	21,859	3.12	1.25	0.60	0.36	0.27	0.30	0.13	0.22	0.00
5–9	7,126,144	17,579	2.47	0.68	0.26	0.47	0.23	0.36	0.16	0.30	0.00
10–14	5,336,143	21,372	4.01	1.30	0.40	0.48	0.53	0.49	0.36	0.42	0.03
15–19	4,806,977	19,614	4.08	0.62	0.20	0.81	0.56	0.75	0.43	0.66	0.04
20–24	4,357,267	31,839	7.31	2.48	0.53	0.53	1.60	0.56	0.69	0.76	0.16
25–29	4,006,932	17,150	4.28	0.93	0.20	0.75	0.75	0.49	0.53	0.55	0.07

30–34	3,105,298	13,480	4.34	1.51	0.42	0.33	0.73	0.37	0.54	0.36	0.08
35–39	2,008,062	11,653	5.80	1.36	0.24	1.09	0.84	0.76	0.76	0.66	0.10
40–44	1,874,721	8,827	4.71	1.18	0.28	0.55	0.95	0.50	0.67	0.53	0.05
45–49	1,061,602	6,901	6.50	1.39	0.26	1.16	1.12	0.93	0.85	0.73	0.08
50–54	1,182,149	7,919	6.70	1.55	0.36	0.52	1.77	0.77	0.88	0.78	0.08
55–59	481,394	3,919	8.14	1.35	0.21	0.95	2.68	0.85	0.91	1.09	0.11
60–64	791,573	6,401	8.09	1.88	0.31	0.45	2.79	0.93	0.77	0.86	0.09
65–69	357,400	3,704	10.36	1.59	0.18	1.38	3.42	1.23	0.95	1.50	0.11
70–74	394,116	4,662	11.83	2.13	0.40	0.85	4.89	1.22	0.95	1.29	0.10
75–79	156,368	2,311	14.78	2.29	0.30	1.38	6.23	1.51	0.93	2.05	0.10
80–84	222,627	3,312	14.88	2.30	0.45	0.98	7.10	1.55	0.68	1.69	0.12
85+	194,404	4,731	24.34	3.67	0.43	1.48	12.13	2.73	0.99	2.78	0.12

Source: Nigeria, *1991 Population Census.*

Table 6.6b. Prevalence of disability (per 1,000), by age, gender, disability type, and urban residence, Nigeria

Age (Years)	Total population	Total disabled	Type of disability								
			Disabled	Deaf	Dumb	Deaf & Dumb	Blind	Crippled	Mental illness	Other	Not stated
Both sexes	32,288,455	143,057	4.4	1.1	0.4	0.6	0.7	0.6	0.51	0.52	0.15
0–4	4,795,296	14,271	3.0	1.1	0.6	0.4	0.2	0.3	0.16	0.21	0.00
5–9	5,033,819	11,459	2.3	0.6	0.3	0.5	0.2	0.4	0.17	0.30	0.00
10–14	4,243,166	16,767	4.0	1.1	0.4	0.5	0.5	0.5	0.42	0.41	0.07
15–19	3,624,638	15,090	4.2	0.6	0.2	0.9	0.5	0.8	0.42	0.63	0.12
20–24	3,144,486	18,501	5.9	2.1	0.5	0.5	0.8	0.5	0.64	0.60	0.25
25–29	2,971,465	12,205	4.1	0.7	0.2	0.6	0.6	0.5	0.66	0.62	0.21
30–34	2,239,203	10,315	4.6	1.3	0.4	0.3	0.6	0.4	0.81	0.41	0.33
35–39	1,645,969	9,130	5.5	0.9	0.2	0.9	0.6	0.8	0.92	0.73	0.39
40–44	1,299,269	6,987	5.4	1.1	0.3	0.6	0.8	0.7	0.94	0.68	0.31
45–49	857,805	5,152	6.0	0.8	0.2	1.0	1.0	1.0	0.93	0.76	0.36
50–54	777,573	5,231	6.7	1.4	0.3	0.5	1.5	0.9	1.03	0.94	0.27
55–59	371,105	2,849	7.7	1.1	0.2	0.7	2.2	1.0	0.87	1.22	0.42
60–64	470,188	3,927	8.4	1.8	0.3	0.4	2.6	1.1	0.91	1.00	0.21
65–69	238,053	2,458	10.3	1.4	0.2	1.3	3.2	1.6	0.99	1.31	0.28
70–74	236,451	2,839	12.0	2.3	0.4	0.8	4.4	1.4	0.99	1.36	0.26
75–79	101,888	1,572	15.4	2.1	0.3	1.5	6.4	2.1	0.74	1.97	0.28
80–84	123,620	1,778	14.4	2.2	0.4	0.8	6.6	1.5	0.81	1.86	0.28
85+	114,461	2,526	22.1	3.1	0.4	1.3	11.1	2.4	0.96	2.53	0.25
Males	16,467,039	75,897	4.6	1.0	0.4	0.6	0.7	0.7	0.57	0.56	0.23
0–4	2,455,300	7,628	3.1	1.1	0.7	0.4	0.2	0.3	0.18	0.22	0.00
5–9	2,545,665	5,921	2.3	0.5	0.3	0.5	0.2	0.4	0.19	0.32	0.00
10–14	2,165,770	9,407	4.3	1.1	0.5	0.6	0.5	0.6	0.51	0.46	0.10

15–19	1,813,902	8,026	4.4	0.6	0.3	0.9	0.5	0.9	0.44	0.65	0.19
20–24	1,471,223	7,210	4.9	1.6	0.4	0.4	0.5	0.6	0.60	0.49	0.29
25–29	1,444,074	6,501	4.5	0.6	0.2	0.6	0.5	0.7	0.81	0.74	0.32
30–34	1,163,116	5,897	5.1	1.2	0.5	0.3	0.5	0.5	1.02	0.45	0.54
35–39	924,252	5,352	5.8	0.8	0.2	0.8	0.6	1.0	1.02	0.81	0.58
40–44	710,478	4,294	6.0	1.0	0.3	0.7	0.8	0.8	1.09	0.79	0.52
45–49	509,852	3,071	6.0	0.6	0.2	1.0	0.9	1.1	0.86	0.85	0.50
50–54	422,718	2,815	6.7	1.3	0.3	0.4	1.5	0.9	0.88	0.99	0.40
55–59	213,127	1,651	7.7	1.0	0.2	0.6	2.0	1.1	0.84	1.42	0.59
60–64	231,785	2,163	9.3	1.8	0.4	0.4	2.9	1.4	0.96	1.15	0.31
65–69	117,433	1,317	11.2	1.6	0.2	1.3	3.4	2.1	0.89	1.38	0.38
70–74	118,349	1,549	13.1	2.5	0.4	0.8	4.8	1.7	0.90	1.64	0.44
75–79	50,392	885	17.6	2.1	0.4	1.7	7.6	2.4	0.75	2.04	0.52
80–84	57,038	937	16.4	2.4	0.3	0.8	7.8	1.6	0.77	2.14	0.53
85+	52,565	1,273	24.2	3.5	0.6	1.4	12.1	2.7	0.84	2.63	0.48
Females	15,821,416	67,160	4.2	1.2	0.3	0.6	0.7	0.5	0.46	0.48	0.07
0–4	2,339,996	6,643	2.8	1.1	0.6	0.3	0.2	0.3	0.14	0.20	0.00
5–9	2,488,154	5,538	2.2	0.6	0.2	0.4	0.2	0.3	0.15	0.28	0.00
10–14	2,077,396	7,360	3.5	1.2	0.4	0.5	0.4	0.5	0.34	0.35	0.03
15–19	1,810,736	7,064	3.9	0.6	0.2	0.8	0.5	0.8	0.41	0.62	0.05
20–24	1,673,263	11,291	6.7	2.5	0.5	0.5	1.1	0.5	0.67	0.71	0.22
25–29	1,527,391	5,704	3.7	0.8	0.1	0.7	0.6	0.4	0.52	0.51	0.11
30–34	1,076,087	4,418	4.1	1.4	0.4	0.3	0.6	0.3	0.58	0.35	0.10
35–39	721,717	3,778	5.2	1.1	0.2	1.0	0.7	0.7	0.79	0.63	0.15
40–44	588,791	2,693	4.6	1.1	0.3	0.5	0.8	0.5	0.76	0.55	0.07
45–49	347,953	2,081	6.0	1.1	0.2	1.0	1.0	0.8	1.03	0.63	0.15
50–54	354,855	2,416	6.8	1.5	0.3	0.5	1.4	0.8	1.22	0.88	0.11
55–59	157,978	1,198	7.6	1.2	0.2	0.8	2.4	1.0	0.91	0.96	0.18
60–64	238,403	1,764	7.4	1.8	0.2	0.4	2.4	0.8	0.86	0.85	0.11

Table 6.6b. (*continued*)

Age (Years)	Total population	Total disabled	Type of disability								
			Disabled	Deaf	Dumb	Deaf & Dumb	Blind	Crippled	Mental illness	Other	Not stated
65–69	120,620	1,141	9.5	1.3	0.2	1.4	3.0	1.1	1.08	1.25	0.17
70–74	118,102	1,290	10.9	2.0	0.4	0.9	4.1	1.2	1.08	1.08	0.08
75–79	51,496	687	13.3	2.1	0.2	1.2	5.3	1.8	0.72	1.90	0.06
80–84	66,582	841	12.6	2.0	0.5	0.8	5.5	1.4	0.84	1.62	0.06
85+	61,896	1,253	20.2	2.8	0.3	1.1	10.3	2.2	1.07	2.46	0.06

Source: Nigeria, *1991 Population Census.*

Table 6.6c. Prevalence of disability (per 1,000), by age, gender, disability type, and rural residence, Nigeria

Age (Years)	Total population	Total disabled	Type of disability								
			Disabled	Deaf	Dumb	Deaf & Dumb	Blind	Crippled	Mental illness	Other	Not stated
Both sexes	56,703,765	286,085	5.05	1.25	0.42	0.62	1.0	0.65	0.48	0.56	0.1
0–4	9,548,593	32,894	3.44	1.33	0.69	0.41	0.3	0.35	0.15	0.23	0.0
5–9	9,466,639	24,468	2.58	0.63	0.30	0.49	0.2	0.44	0.17	0.32	0.0
10–14	6,905,515	31,097	4.50	1.32	0.47	0.53	0.7	0.56	0.39	0.46	0.0
15–19	5,711,150	24,529	4.29	0.61	0.24	0.88	0.6	0.80	0.44	0.65	0.1
20–24	4,527,084	30,625	6.76	2.21	0.50	0.49	1.5	0.62	0.69	0.67	0.1
25–29	4,340,206	21,297	4.91	0.98	0.27	0.80	0.8	0.63	0.70	0.65	0.1
30–34	3,674,724	18,519	5.04	1.50	0.48	0.37	0.8	0.51	0.75	0.46	0.1
35–39	2,568,964	16,870	6.57	1.39	0.29	1.12	0.9	0.98	0.94	0.79	0.2
40–44	2,546,649	14,438	5.67	1.28	0.37	0.65	1.1	0.69	0.85	0.63	0.1
45–49	1,558,898	10,843	6.96	1.22	0.31	1.22	1.3	1.10	0.83	0.86	0.2
50–54	1,793,226	12,437	6.94	1.59	0.40	0.52	1.8	0.96	0.71	0.82	0.1
55–59	748,664	6,400	8.55	1.39	0.29	0.92	2.7	1.08	0.82	1.19	0.2
60–64	1,220,186	10,714	8.78	1.94	0.38	0.48	3.0	1.14	0.66	1.00	0.2
65–69	525,887	5,866	11.15	1.65	0.23	1.47	3.7	1.42	0.84	1.61	0.2
70–74	649,851	7,947	12.23	2.02	0.47	0.79	5.1	1.42	0.78	1.40	0.2
75–79	249,935	3,871	15.49	2.32	0.47	1.51	6.4	1.72	0.75	2.02	0.3
80–84	357,066	5,575	15.61	2.30	0.48	0.95	7.7	1.71	0.56	1.74	0.2
85+	310,528	7,695	24.78	3.71	0.47	1.58	12.7	2.62	0.82	2.65	0.3
Males	28,062,569	146,012	5.20	1.17	0.46	0.64	1.0	0.73	0.53	0.59	0.1
0–4	4,889,154	17,678	3.62	1.33	0.77	0.44	0.3	0.38	0.17	0.24	0.0
5–9	4,828,649	12,427	2.57	0.56	0.32	0.49	0.2	0.49	0.17	0.33	0.0
10–14	3,646,768	17,085	4.68	1.26	0.51	0.57	0.8	0.59	0.42	0.45	0.0
15–19	2,714,909	11,979	4.41	0.58	0.26	0.95	0.6	0.85	0.44	0.62	0.1

Table 6.6c. (*continued*)

Age (Years)	Total population	Total disabled	Type of disability								
			Disabled	Deaf	Dumb	Deaf & Dumb	Blind	Crippled	Mental illness	Other	Not stated
20–24	1,843,080	10,077	5.47	1.82	0.47	0.42	0.8	0.63	0.67	0.50	0.1
25–29	1,860,665	9,851	5.29	0.89	0.31	0.80	0.7	0.77	0.91	0.74	0.2
30–34	1,645,513	9,457	5.75	1.45	0.54	0.40	0.9	0.65	1.04	0.58	0.2
35–39	1,282,619	8,995	7.01	1.28	0.32	1.09	0.8	1.18	1.14	0.91	0.3
40–44	1,260,719	8,304	6.59	1.34	0.45	0.74	1.2	0.88	1.07	0.75	0.2
45–49	845,249	6,023	7.13	0.97	0.34	1.22	1.3	1.20	0.89	0.94	0.2
50–54	965,932	6,934	7.18	1.61	0.43	0.52	1.7	1.14	0.69	0.89	0.2
55–59	425,248	3,679	8.65	1.37	0.35	0.83	2.6	1.29	0.74	1.22	0.2
60–64	667,016	6,077	9.11	1.95	0.40	0.49	3.0	1.27	0.60	1.11	0.2
65–69	289,107	3,303	11.42	1.57	0.27	1.55	3.8	1.54	0.80	1.59	0.3
70–74	373,837	4,575	12.24	1.91	0.51	0.76	5.1	1.57	0.69	1.43	0.3
75–79	145,063	2,247	15.49	2.28	0.55	1.54	6.3	1.99	0.54	1.95	0.4
80–84	201,021	3,104	15.44	2.20	0.49	0.86	7.6	1.78	0.52	1.76	0.2
85+	178,020	4,217	23.69	3.43	0.47	1.53	12.4	2.36	0.72	2.44	0.3
Females	28,641,196	140,073	4.89	1.32	0.38	0.61	1.0	0.57	0.44	0.54	0.0
0–4	4,659,439	15,216	3.27	1.32	0.61	0.37	0.3	0.33	0.12	0.22	0.0
5–9	4,637,990	12,041	2.58	0.70	0.28	0.49	0.3	0.39	0.17	0.31	0.0
10–14	3,258,747	14,012	3.02	1.39	0.43	0.49	0.6	0.52	0.37	0.46	0.0
15–19	2,996,241	12,550	3.85	0.64	0.22	0.81	0.6	0.75	0.44	0.69	0.0
20–24	2,684,004	20,548	6.86	2.49	0.52	0.54	1.9	0.60	0.71	0.79	0.1
25–29	2,479,541	11,446	4.26	1.05	0.23	0.80	0.8	0.53	0.54	0.58	0.0
30–34	2,029,211	9,062	3.65	1.55	0.44	0.35	0.8	0.39	0.52	0.37	0.1
35–39	1,286,345	7,875	3.88	1.50	0.26	1.16	0.9	0.79	0.74	0.67	0.1

40–44	1,285,930	6,134	4.77	1.22	0.30	0.56	1.0	0.50	0.63	0.52	0.0
45–49	713,649	4,820	3.75	1.51	0.27	1.21	1.2	0.99	0.76	0.77	0.0
50–54	827,294	5,503	7.71	1.57	0.37	0.53	1.9	0.75	0.73	0.74	0.1
55–59	323,416	2,721	3.29	1.42	0.21	1.03	2.8	0.79	0.91	1.15	0.1
60–64	553,170	4,637	14.34	1.93	0.36	0.47	3.0	0.98	0.74	0.87	0.1
65–69	236,780	2,563	4.63	1.74	0.19	1.38	3.6	1.28	0.88	1.63	0.1
70–74	276,014	3,372	14.24	2.17	0.41	0.83	5.2	1.22	0.89	1.38	0.1
75–79	104,872	1,624	5.88	2.36	0.36	1.46	6.7	1.36	1.03	2.12	0.1
80–84	156,045	2,471	23.56	2.42	0.45	1.07	7.8	1.63	0.61	1.72	0.1
85+	132,508	3,478	22.29	4.09	0.48	1.66	13.0	2.97	0.96	2.94	0.2

Source: Nigeria, *1991 Population Census.*

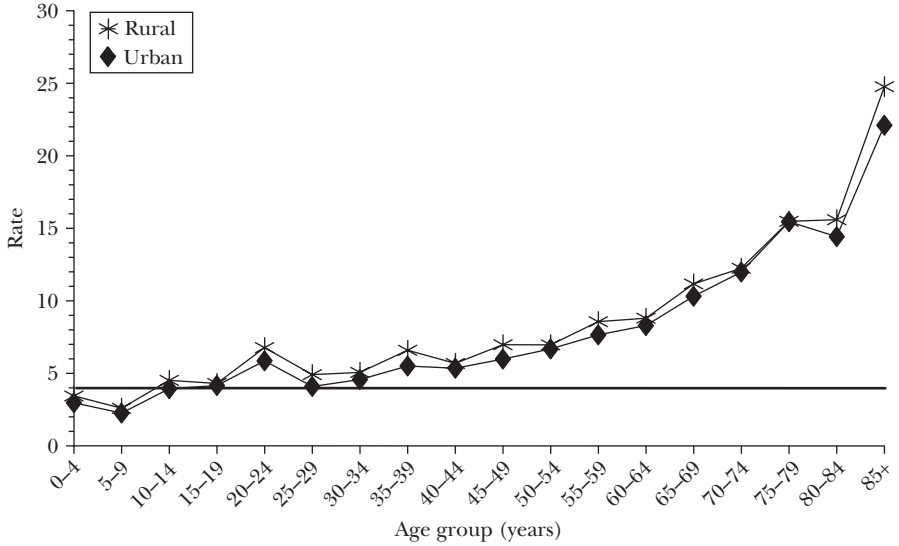

Figure 6.4. Age-specific disability rates (per 1,000) by rural–urban residence, Nigeria, 1991.

Source: Nigeria, *1991 Population Census.*

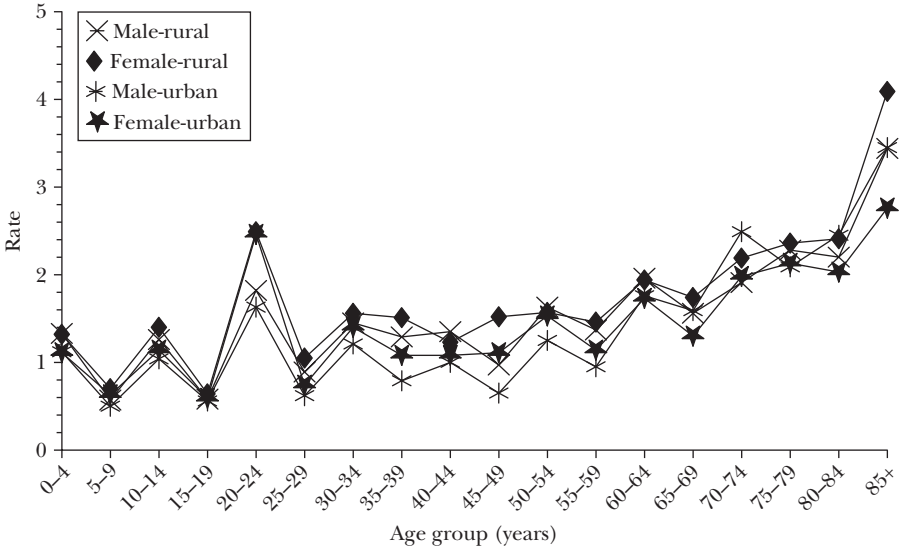

Figure 6.5a. Age-specific disability rates (per 1,000) for deafness by rural–urban residence, Nigeria, 1991.

Source: Nigeria, *1991 Population Census.*

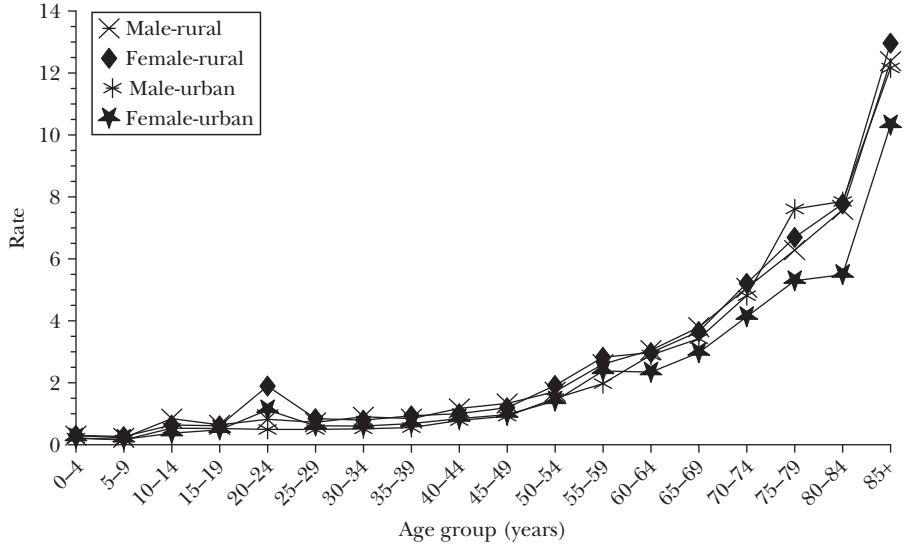

Figure 6.5b. Age-specific disability rates (per 1,000) for blindness by rural–urban residence, Nigeria, 1991.

Source: Nigeria, *1991 Population Census.*

Disability and Work Status

In general, statistics consistently show lower rates of labor force participation among disabled persons than rates quantified among the nondisabled population. Table 6.8 presents the percentage distribution of disabled population by work status. About one-third (32.9 percent) of all disabled persons identified themselves as "currently employed," compared with 43 percent of nondisabled persons. A slightly higher percentage (22 percent) of disabled persons is found in the "homemaker" category than that of nondisabled persons (19 percent). The percentage of disabled persons in the "other" category (20 percent) is almost four times that of the nondisabled population. The currently employed disabled population who are deaf, deaf and dumb, or in the "other" and "not stated" categories are higher than the average for the total disabled population. Almost everyone in the "not stated" category of disability was currently employed. The difference between males and females with regard to work status is striking. About twice as many males (43 percent) as females (22 percent) are currently employed.

The conspicuously negligible percentages of the mentally ill in either the currently or previously employed categories are noteworthy. Furthermore, the data presented for the blind and the crippled among the previously employed seems to suggest the later onset of such disabilities, which may prevent people

Table 6.7. Percentage distribution of disabled population (age 10 years and above), by type of disability, marital status, and gender

Mental status	Type of disability								
	Number of disabled	Deaf	Dumb	Deaf & Dumb	Blind	Crippled	Mental illness	Other	Not stated
Both sexes	346,050	78,094	21,565	41,236	71,097	44,797	39,269	41,145	8,847
Never married	34.37	34.58	43.56	40.62	18.74	38.42	47.67	35.24	23.17
Married	52.63	56.54	48.60	51.19	59.98	48.56	36.73	52.25	68.57
Separated	2.36	1.69	1.74	1.48	2.71	2.62	4.38	2.03	2.18
Divorced	2.66	1.78	1.95	1.75	3.12	2.96	4.83	2.48	2.68
Widowed	7.98	5.41	4.15	4.97	15.45	7.44	6.40	8.00	3.40
Total (%)	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Males	178,255	35,575	11,504	20,975	35,046	25,473	21,519	21,597	6,566
Never married	41.58	42.92	50.10	49.38	23.51	43.18	60.14	41.43	24.34
Married	50.21	50.89	44.72	45.68	64.00	48.51	29.06	51.22	69.66
Separated	2.47	1.91	1.69	1.48	2.99	2.66	4.08	2.21	2.04
Divorced	2.49	1.70	1.68	1.64	3.00	2.62	4.34	2.26	2.30
Widowed	3.25	2.58	1.81	1.82	6.50	3.03	2.38	2.88	1.66
Total (%)	100.00	100.00	100.00	100.01	100.00	100.00	100.00	100.01	100.00
Females	167,795	42,519	10,061	20,261	36,051	19,324	17,750	19,548	2,281
Never married	26.72	27.61	36.07	31.54	14.09	32.13	32.55	28.41	19.82
Married	55.20	61.26	53.03	56.88	56.08	48.62	46.02	53.39	65.40
Separated	2.24	1.50	1.81	1.49	2.44	2.58	4.74	1.83	2.59
Divorced	2.85	1.85	2.26	1.86	3.24	3.40	5.41	2.72	3.77
Widowed	12.99	7.78	6.84	8.23	24.15	13.27	11.28	13.65	8.42
Total (%)	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Source: Nigeria, *1991 Population Census*

from continuously being employed. As expected, the percentage of females in the "homemaker/housewife" category is about six times that for males.

Disability by Occupation

The pattern of disability by work status discussed above may become clearer if we examine the type of disability by occupation, as they are interrelated. The percentage distribution of economically active population by disability and gender (table 6.9) indicates there is little variation between the disabled

Table 6.8. Percentage distribution of disabled population (age 10 years and above), by type of disability, work status, and gender

Disability	Work Status								
	Total	Currently employed	Previously employed	Seeking employment	Home maker/ Housewife	Student	Income recipient	Other	Total (%)
Both sexes	60,147,873	43.50	0.76	2.18	19.66	27.27	0.74	5.89	100.00
Not disabled	59,801,823	43.57	0.75	2.18	19.64	27.33	0.73	5.80	100.00
Disabled	346,050	32.93	2.82	2.32	21.98	17.19	2.56	20.19	100.00
Deaf	78,094	38.59	2.12	2.32	24.93	20.53	1.41	10.10	100.00
Dumb	21,565	34.25	1.65	2.67	22.54	22.89	0.87	15.14	100.00
Deaf & Dumb	41,236	38.75	1.59	2.41	22.20	24.26	1.17	9.63	100.00
Blind	71,097	28.10	5.94	1.47	26.66	11.37	5.77	20.70	100.00
Crippled	44,797	35.14	3.40	2.59	19.48	19.84	2.85	16.70	100.00
Mental illness	39,269	0.00	0.00	3.40	18.26	13.09	1.59	63.65	100.00
Other	41,145	38.71	3.31	2.64	18.79	15.57	2.68	18.30	100.00
Not stated	8,847	99.66	0.00	0.00	0.00	0.00	0.00	0.34	100.00
Males	29,810,840	55.47	0.89	2.55	3.37	30.48	0.78	6.45	100.00
Not disabled	29,632,585	55.55	0.87	2.55	3.35	30.55	0.77	6.35	100.00
Disabled	178,255	42.88	3.40	2.66	6.22	18.25	2.85	23.75	100.00
Deaf	35,575	51.42	2.49	2.64	7.00	22.49	1.68	12.28	100.00
Dumb	11,504	44.06	1.83	3.04	6.20	24.67	1.07	19.13	100.00
Deaf & Dumb	20,975	49.64	1.71	2.92	6.41	27.44	1.16	10.71	100.00
Blind	35,046	39.53	7.72	1.76	7.95	12.18	6.85	24.01	100.00
Crippled	25,473	45.55	3.95	2.77	5.75	20.43	2.92	18.64	100.00
Mental illness	21,519	0.00	0.00	4.09	5.99	13.67	1.56	74.69	100.00
Other	21,597	49.36	4.13	2.95	4.62	16.28	2.93	19.72	100.00
Not stated	6,566	99.71	0.00	0.00	0.00	0.00	0.00	0.29	100.00

Table 6.8. (*continued*)

Disability	Work Status								
	Total	**Currently employed**	**Previously employed**	**Seeking employment**	**Home maker/ Housewife**	**Student**	**Income recipient**	**Other**	**Total (%)**
Females	30,337,033	31.74	0.64	1.82	35.66	24.13	0.69	5.33	100.00
Not disabled	30,169,238	31.79	0.63	1.82	35.64	24.17	0.68	5.27	100.00
Disabled	167,795	22.36	2.21	1.95	38.72	16.07	2.26	16.42	100.00
Deaf	42,519	27.85	1.82	2.06	39.92	18.88	1.18	8.29	100.00
Dumb	10,061	23.02	1.45	2.25	41.22	20.85	0.64	10.58	100.00
Deaf & Dumb	20,261	27.46	1.46	1.89	38.55	20.96	1.18	8.50	100.00
Blind	36,051	17.00	4.20	1.18	44.84	10.59	4.72	17.47	100.00
Crippled	19,324	21.40	2.68	2.36	37.58	19.06	2.75	14.16	100.00
Mental illness	17,750	0.00	0.00	2.57	33.14	12.38	1.63	50.27	100.00
Other	19,548	26.94	2.39	2.30	34.44	14.79	2.40	16.73	100.00
Not stated	2,281	99.52	0.00	0.00	0.00	0.00	0.00	0.48	100.00

Source: Nigeria, *1991 Population Census.*

Table 6.9. Percentage distribution of economically active population, by occupation in major groups, type of disability, and gender

Disability	Occupation (In Major Groups)									
	Economically active population	Professional/ technical & related workers	Administrative & managerial workers	Clerical & related workers	Sales workers	Service workers	Agriculture & related workers	Production & related workers	Not stated	Total (%)
Both sexes	26,624,926	6.78	2.46	3.12	22.29	3.22	44.98	13.85	3.29	100.00
Not stated	26,501,192	6.79	2.46	3.13	22.31	3.22	44.95	13.86	3.28	100.00
Disabled	123,734	6.44	2.11	2.32	17.56	2.87	50.99	11.66	6.06	100.00
Deaf	31,794	5.63	2.41	1.31	18.85	2.41	54.50	10.72	4.18	100.00
Dumb	7,741	5.52	2.54	1.30	15.77	2.53	55.78	12.56	4.99	101.00
Deaf & Dumb	16,631	5.65	2.36	1.40	18.27	2.86	53.45	11.51	4.50	100.00
Blind	24,201	5.70	2.00	1.17	13.64	0.45	63.72	1.90	11.42	100.00
Crippled	17,262	6.80	2.08	2.64	18.53	1.95	47.45	13.32	7.24	100.00
Mental illness	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other	17,288	6.79	2.06	3.07	18.89	3.41	46.74	12.73	6.32	100.00
Not stated	8,817	12.25	0.67	9.67	19.44	12.19	9.74	36.00	0.03	100.00
Males	16,802,823	7.18	3.03	3.33	12.30	3.19	50.50	16.69	3.79	100.00
Not disabled	16,720,325	7.19	3.03	3.34	12.31	3.19	50.47	16.70	3.78	100.00
Disabled	82,498	6.59	2.40	2.40	10.60	2.79	55.52	13.37	6.33	100.00
Deaf	19,179	5.27	2.68	1.22	10.15	2.02	61.98	12.29	4.40	100.00
Dumb	5,279	5.02	2.86	1.02	9.76	2.10	60.18	14.57	4.49	100.00
Deaf & Dumb	10,771	5.92	2.89	1.47	9.71	2.47	60.26	12.89	4.39	100.00
Blind	16,559	6.05	2.32	1.17	7.17	0.45	69.18	2.08	11.58	100.00
Crippled	12,609	7.34	2.38	2.63	12.72	1.46	51.27	14.66	7.54	100.00

Table 6.9. (*continued*)

Disability	Occupation (In Major Groups)									
	Economically active population	**Professional/ technical & related workers**	**Administrative & managerial workers**	**Clerical & related workers**	**Sales workers**	**Service workers**	**Agriculture & related workers**	**Production & related workers**	**Not stated**	**Total %**
Mental illness	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other	11,554	7.11	2.38	3.47	12.32	3.60	49.03	15.19	6.90	100.00
Not stated	6,547	11.82	0.63	9.29	15.59	13.20	10.13	39.30	0.05	100.00
Females	9,822,103	6.10	1.48	2.77	39.38	3.28	35.55	9.00	2.44	100.00
Not disabled	9,780,867	6.10	1.48	2.77	39.41	3.28	35.52	9.00	2.43	100.00
Disabled	41,236	6.13	1.54	2.16	31.49	3.02	41.91	8.23	5.51	100.00
Deaf	12,615	6.18	2.00	1.44	32.07	3.00	43.13	8.32	3.86	100.00
Dumb	2,462	6.58	1.87	1.91	28.68	3.45	46.34	8.25	2.92	100.00
Deaf & Dumb	5,860	5.15	1.40	1.28	33.99	3.57	40.92	8.99	4.69	100.00
Blind	7,642	4.93	1.30	1.16	27.65	0.46	51.90	1.53	11.07	100.00
Crippled	4,653	5.33	1.27	2.69	34.26	3.29	37.07	9.69	6.40	100.00
Mental illness	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other	5,734	6.12	1.41	2.25	32.12	3.02	42.13	7.78	5.16	100.00
Not stated	2,270	13.48	0.79	10.79	30.53	9.30	8.63	26.48	0.00	100.00

Source: Nigeria, *1991 Population Census.*

and nondisabled population as regards to professional/technical, administrative, and, to some extent, the clerical and service categories. The biggest differences are found among sales and agricultural workers. While 22 percent of the "not disabled" group is found in sales, 17 percent of the disabled are found in that same category. The percentages for agriculture are 45 percent and 51 percent, for the nondisabled and disabled persons, respectively.

Patterns between males and females show the three leading occupations for disabled males to be agriculture (55 percent), production (13 percent), and sales (11 percent), while for the females they are sales (31 percent), agriculture (24 percent), and production (8 percent). The higher rates of disabled women in sales, as compared with men (especially dumb, deaf and dumb, and blind) may be a reflection of the general trend in the country. It also may be an indication of the fact that fewer employment opportunities are available to disabled persons and that certain jobs (e.g., sales) are the only available options.[16] The removal of barriers to full participation and equal opportunities for people with disabilities will enable disabled persons to compete favorably in the job market.

Disability and Literacy

One of the more devastating effects of disability, particularly among children, is the loss of opportunity to attend school.[17] Empirical evidence suggests that education affects demographic processes, fertility, mortality, and migration in a number of ways. Education, particularly women's education, is also associated with greater opportunities for employment outside the home and greater domestic power in decision making. Such effects have been found in all segments of the population. Table 6.10 presents literacy status by type of disability and gender and reveals that in the population as a whole, 56 percent of the people are literate while 42 percent are illiterate. The percentage among males is about 18 percent more than that for females. A similar pattern is found between disabled males and females. About 49 percent of the males are literate compared with 37 percent of females. The percentage of literate is highest among both males and females with unspecified disabilities. This is followed by the deaf and dumb and deaf categories. The group with the lowest percentage of literacy is the blind, followed by the mentally ill group. This may be due to the special educational services that are usually needed by the blind and the mentally ill. As noted earlier, disabled females are more disadvantaged than the males, educationally. This pattern may be the result of a double jeopardy, that is, being female and disabled, and calls for further attention from the research community and from policymakers.

Table 6.10. Population distribution, by type of disability, literacy, and gender

Disability	Literacy status				
	Total	**Literate**	**Illiterate**	**Not stated**	**Total**
Both sexes	71,556,875	56.69	42.84	0.47	100
Not disabled	71,181,399	56.76	42.77	0.47	100
Disabled	375,476	43.32	55.64	1.04	100
Deaf	85,347	46.85	52.57	0.59	100
Dumb	25,073	45.67	53.39	0.95	100
Deaf & Dumb	47,411	50.66	48.60	0.74	100
Blind	73,751	31.21	68.20	0.59	100
Crippled	49,354	44.39	55.00	0.61	100
Mental illness	41,895	37.40	58.74	3.86	100
Others	43,720	46.86	52.09	1.05	100
Not stated	8,925	68.64	31.09	0.27	100
Males	35,618,540	65.69	33.85	0.46	100
Not disabled	35,425,238	65.78	33.77	0.46	100
Disabled	193,302	49.06	49.81	1.14	100
Deaf	38,881	53.01	46.41	0.58	100
Dumb	13,396	50.01	49.07	0.92	100
Deaf & Dumb	24,169	56.74	42.57	0.70	100
Blind	36,316	35.72	63.71	0.57	100
Crippled	28,032	50.19	49.24	0.57	100
Mental illness	22,882	42.46	53.09	4.45	100
Others	23,013	53.87	44.94	1.19	100
Not stated	6,613	70.35	29.40	0.26	100
Females	35,938,335	47.77	51.75	0.48	100
Not disabled	35,756,161	47.82	51.70	0.48	100
Disabled	182,174	37.23	61.82	0.95	100
Deaf	46,466	41.68	57.72	0.59	100
Dumb	11,677	40.69	58.34	0.98	100
Deaf & Dumb	23,242	44.33	54.88	0.79	100
Blind	37,435	26.84	72.56	0.60	100
Crippled	21,322	36.76	62.58	0.65	100
Mental illness	19,013	31.32	65.53	3.15	100
Others	20,707	39.08	60.03	0.89	100
Not stated	2,312	63.75	35.94	0.30	100

Source: Nigeria, *1991 Population Census.*

To sum up, the national average CDR, based on the 1991 census, was 4.8 per 1,000 people. A state-specific disability rate of more than 6 per 1,000 people was found in Anambra, Borno, Sokoto, Kebbi, and Yobe states. The lowest disability rate of 3.1 per 1,000 people was found in Akwa Ibom State. Except in Ogun, Sokoto, Kebbi, and Osun states, there were more disabled males than females.

Nationally, deafness (24.5 percent) is the most prevalent disability, followed by crippling (12.9 percent), and deaf and dumb (12.5 percent). Distribution of disability by type within each state conforms to the national pattern. Proportions of deafness that are higher than the national average were found in eleven states. These range from 25.5 percent of deaf persons in Kaduna to 34.0 percent in Rivers State. In Bauchi and Jigawa states, including Abuja (FCT), disability rates of dumbness were high. The rate of blindness was high in all the states, ranging from 10.2 percent in Delta to 26.3 percent in Yobe.

Generally, the level of disability increases with age and tends to be higher for males than for females. Although this pattern is consistent with findings in other countries, further analysis could facilitate understanding of the age and gender differentials. An examination of the socioeconomic characteristics of the disabled population was revealing. Overall, about 52 percent of disabled persons were married, while 34 percent were not. The percentage married among disabled females (55 percent) was higher than the corresponding percentage for males (50 percent).

Labor force participation rate was lower among disabled persons (32.9 percent) than among the nondisabled population (43 percent). Proportionately, almost twice as many disabled men (43 percent) than females (22 percent) were currently working. Only a little variation was observed between the percentage of the disabled persons engaged in professional/technical, administrative, and their nondisabled counterparts. Agriculture was found to be the leading occupation for disabled males (55 percent), while disabled women were mostly in sales.

The literacy rate was higher among disabled males (49 percent) than among their female counterparts (37 percent). Regardless of the gender, the literacy rate was highest among persons with unspecified disabilities.

Disability has major implications for demographic, health, social, and economic development: all have problems still needing solutions. It is a demographic problem because the levels of disability differ according to age, gender, and other subgroupings. It is also a health issue because preventing unnecessary deaths is only one aspect of the public health agenda; preservation of physical and mental function is also important. Quality, and not merely quantity, of life has become the issue. As the population of the country grows, the problems posed by disabling conditions increasingly demand the nation's attention.

There is need for increased recognition, sensitivity, and knowledge with respect to disability, as well as improved programs for people with disabilities. To achieve these goals, there must be a substantial increase in the application of national disability statistics for policy formulation and program planning. Disability continues to be underappreciated as a contributor to the burden of disease worldwide[18] due to gaps in collecting disability data through population censuses, sample surveys, and disability registration.[19]

Most studies on disability have been general in nature, measuring the prevalence of moderate and severe disabilities in the population. Though such studies are important in their own right insofar as they identify the size, type, and various social, economic, and demographic characteristics of the disabled population, they rarely provide insight into the causes and consequences of disability. For instance, blindness may be the result of trachoma, onchocerciasis, glaucoma, cataract, congenital or perinatal factors, diabetes, and neurological damage from malaria, motor vehicle accidents, and other trauma. Such information was not available from the 1991 census. It, therefore, has limited potential use for the allocation of health resources to specific interventions, such as primary or secondary prevention strategies.

Similarly, many prior disability studies do not provide insight into the dynamics of the disabling process that often follows the occurrence of disease or injury. There is a need, therefore, for studies that can identify new disabilities, follow their evolution—nature, timing, and severity—as well as the impact of interventions. Such information is essential for the establishment of appropriate policies and programs for persons with disabilities. It is within this context that the use of Disability-Adjusted Life Years (DALYs) methodology, first developed by the World Bank,[20] and later modified by the World Health Organization,[21] becomes instructive. The WHO's Global Burden of Disease method provides a mechanism for quantifying the health consequences of the years of life lived with disabilities by mapping the incidence rates of the underlying conditions into a single disability index that reflects the probability of progressing to a disability, the duration of life lived with the disability, and the severity of the disability in terms of activity restriction. Such an index would be useful, not only to those concerned with planning health services for the disabled but also to health planners and policymakers in order to prevent underlying conditions compounding in to serious disabling conditions in the country.

Observations for Policy Considerations

Disability is a state or condition whereby people are unable to use or have total control over their body due to physiological, psychological, emotional, social, or mental impairment. Such persons often find themselves partially or totally dependent on others.

Problems faced by persons with disabilities are many. Addressing such problems to reduce the incidence of disability should be conducted along the following lines.

1. Establish effective means of detecting disability at an early stage so as to prevent further progression.

2. Incorporate effective means of assisting the disabled to make meaningful use of their lives through acquisition of vocational skills for both genders. There should be more emphasis on women, especially those in their childbearing years, so they can assist themselves and their children in contributing to national development.
3. Establish conducive environments that will enable the disabled to have access to and use of services for primary and secondary health care, education, and recreation. There should be poverty alleviation programs for the disabled.
4. Initiate programs of action by governments at the three tiers of governance. Such programs would incorporate prevention of disability, rehabilitation of the disabled, and ensure the full participation of all persons with disability in sustainable development of the nation.
5. Mobilize voluntary organizations and institutions (religious and secular) to promote the welfare of persons with disabilities.
6. Address other ancillary conditions that give rise to, or heighten the incidence of disability. Young mothers, who tend to suffer disabilities such as increased hypertension in pregnancy and vesico vaginal fistulae (VVF), often encounter abandonment by their spouses. These women should be assisted while efforts are made to prevent the occurrence of the disabilities. The efforts will include economic empowerment and legislation stipulating a minimum age of marriage.
7. Put in place policy measures that would address old-age-induced disabilities, including curative and preventive health measures. Special education (education for the disabled) should be included in the adult literacy programs. Basic eye care should be integrated into the primary health-care program and eye care should be subsidized. Reorient the populace through Information Education and Communication (IEC) programs in order to overcome the stigmatization of disabled elderly persons.
8. Establish policies or programs for the hiring of people with disabilities and to promulgate laws to prohibit all employers from discriminating against qualified disabled persons.

Notes

1. United Nations, *Briefing Note on the Collection and Dissemination of Disability Statistics*, 11.
2. Population Reference Bureau. *2004 World Population Data Sheet.*
3. Freedman et al., *Disability in America*, 4.
4. World Health Organization, *International Classification of Impairments, Disabilities and Handicaps.*
5. World Health Organization, *Towards a Common Language for Functioning, Disability, and Health.*
6. United Nations, *Development of Statistics on Special Population Groups.*

7. National Population Commission, *1991 Population Census of the Federal Republic of Nigeria*, 198.

8. United Nations, *Disability Statistics Compendium.*

9. Wolinsky, "Assessing the Effects of Predisposing, Enabling and Illness Morbidity Characteristics on Health Service Utilization," 3843–96; Fosu, "Perceptions of Mental Disorders in the Context of Social Change," 103–16; and Fosu, "Social Support and Compliance with Hypertensive Regimens among the Elderly," 7–20.

10. Feachem et al., *The Health of Adults in the Developing World.*

11. Yu, "The Demography of Disability," 61–78; Adeokun, *The Elderly All Over the World.*

12. Mechanic, "Sex, Illness Behavior and the Use of Health Services," 29.

13. United Nations, *Disability Statistics Compendium.*

14. Cockerham, *The Sociology of Mental Illness.*

15. Cockerham, *The Sociology of Mental Illness.*

16. Hellandendu and Tuggarlergo, "Employment of the Disabled," 12–21.

17. United Nations, *Disability Statistics Compendium.*

18. Murray and Lopez, "Quantifying Disability," 55–95.

19. Yu, "The Demography of Disability," 61–78.

20. Jamison et al., *Disease Control Priorities in Developing Countries.*

21. World Health Organization, *Global Comparative Assessments in the Health Sector.*

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PART III

Globalization, Development, and Health

7

THE MICROBIAL REBELLION

TRENDS AND CONTAINMENT OF ANTIMICROBIAL RESISTANCE IN AFRICA

Iruka N. Okeke

The Close of the Antibiotic Era?

Preventive interventions were almost entirely responsible for steep declines in infectious disease in Europe and North America in the late nineteenth and early twentieth centuries. Antimicrobial agents,[1] chemical entities that kill or inhibit microorganisms, were developed late in the stage of this public health revolution. In parts of the world where potable water, sanitary housing, and sewage treatment are taken for granted, antimicrobials have, at least in the eyes of the public, displaced prevention as the primary tool for infectious disease control. In developing countries with suboptimal public health systems, antimicrobials are afforded a similar status and consequently greater expectations. The advent of antimicrobial chemotherapy has undeniably improved the prognosis for the individual infected patient because, save for host immunity, it is the only recourse once infection has occurred. In sub-Saharan Africa, the region that bears the greatest infectious disease burden, antimicrobials are the most commonly used class of drugs, even though their demand far exceeds their supply.

Paul Ehrlich (1854–1915) provided a conceptual definition for chemotherapeutic agents when he postulated that the ideal treatment for infection would be a chemical that would inhibit or destroy an infecting organism, or pathogen, without deleterious effects on the host. Ehrlich's search for what he described as "magic bullets" was only partially successful and the antimicrobials developed by others before and during his time were few. The noteworthy include the discovery of the antimalarial activity of *Cinchona* bark from South American ethnomedicine and subsequent isolation of quinine. Alexander Fleming (1888–1955) formally ushered in the "antibiotic era" with

the publication of his serendipitous discovery of an agent produced by a fungus, which killed bacteria.[2] Since the purification of penicillin from *Penicillium* mold by Ernst Chain, Howard Florey, and co-workers,[3] the drug has saved millions of lives and is still used, though in a much more limited context today.[4]

In the half-century following Fleming's discovery, numerous antimicrobial compounds were identified and introduced into medicine. Previously terminal diseases caused by bacteria belonging to the deadly genuses *Staphylococcus* and *Streptococcus* became curable in a few days, and the threat from infectious agents was considered over. Young scientists, physicians, and public health trainees were advised to avoid the study of infectious disease because this was perceived as leading to a career with no future.[5] The threat from resistance was earlier underestimated because, even though it was known that not all bacterial species were susceptible to all agents, it was thought that once the spectra of different agents were known, they would not change. This naïve assumption is of course contradictory to fundamental evolutionary theory and was rapidly proved to be untrue.

The Genetic Basis for Resistance

The genetic makeup of each living organism is dynamic. Just as humans learned to produce more sophisticated antimicrobials, microbes learned to resist them and to pass knowledge of how to do so to subsequent generations. An understanding of the biological basis for antimicrobial resistance is essential for appreciating development of the almost entirely manmade crisis that may be the most important roadblock for infectious disease prognosis. Resistance occurs in a diverse range of microorganisms—bacteria, viruses, protozoans, and fungi—irrespective of whether they cause disease. Despite the diversity of both microbes and antimicrobials, the underlying biological mechanisms for resistance are remarkably similar, at least conceptually.

The basic blueprint of life is carried within DNA, the genetic material. As with other forms of life, microorganisms can undergo subtle mutations or changes in their genetic material, most of which are either lethal or inconsequential. A few mutations confer characters between the two extremes, and some of these confer advantages over unaltered strains under adverse conditions. Microbial progeny inherit such mutations from their parents. If a microbial strain acquires a mutation that confers resistance to an antimicrobial, it will outcompete other bacteria in a milieu containing the specific antimicrobial. Under such conditions, the population of susceptible bacteria is rapidly replaced by descendants of the resistant strain. Thus, antimicrobial agents, which are designed to control microbes, can provide a competitive advantage for resistant strains thereby indirectly terminating their own usefulness.

In the 1950s, Japanese scientists reported the astoundingly rapid emergence of resistance in *Shigella dysenteriae*, the causative organism of epidemic

bacillary dysentery.[6] Their investigations revealed that microbes, particularly bacteria, are adept at donating and acquiring mobile DNA, much of which is in the form of self-replicating elements called plasmids. This horizontal exchange of genetic material has made it possible for some strains to acquire a resistance to many agents at once without having to undergo mutagenesis and selection. Genes acquired horizontally are also transmitted to progeny. In synopsis, microbes can become resistant by acquiring mutations sequentially or by receiving blocks of multiple genes horizontally, which explains why resistance has spread very rapidly, in a manner akin to an epidemic.[7]

Reports of bacteria that had acquired resistance to antimicrobial agents to which they were previously susceptible began to accumulate in the scientific literature soon after antibiotics were introduced. Over the next fifty years, a slow but steady acknowledgment of this problem by clinicians began. In retrospect, the emergence of clinically significant resistance could have been predicted much earlier, as Fleming himself observed bacteria that were resistant to penicillin and wrote an article in the *New York Times* in 1946, stating:

> the greatest possibility of evil in self-medication is the use of too small doses so that instead of clearing up infection, the microbes are educated to resist penicillin and a host of penicillin-fast organisms is bred out which can be passed to other individuals and from them to others until they reach someone who gets septicemia or a pneumonia which penicillin cannot save.[8]

The Global and Local Scale of the Resistance Problem

In developing countries, per capita antimicrobial consumption is low. The presumption that resistance consequently would be slow to emerge has proved to be yet another erroneous supposition in the resistance paradigm. Genes conferring resistance against all antimicrobials have evolved several times, and successfully multiplied resistant clones of microbes have emerged and disseminated within and across borders. The problem of resistance is therefore a global one even though the scale of its clinical significance was first noted in hospitals in industrialized countries. Antimicrobial consumption, and hence selective pressure for resistant microbes, is greatest in hospitals, and sick people are more likely to catch, fall ill with, and die of resistant infections. It later became apparent that the appearance and amplification of resistant organisms seen in hospitals and other comparable closed systems (such as nursing homes) was also occurring, often undetected, in the community. The focus of this chapter is resistance in community-acquired pathogens, because peculiar factors add to the propensity of resistant organisms to disseminate outside of hospitals in Africa. Also, diagnostic insufficiency and the absence of surveillance systems have led to a situation where the resistance problem is largely overlooked.

Case reports of patients in Africa contracting and dying of resistant, or presumed resistant, infections began to appear in the 1960s and are becoming increasingly common. In addition to its adverse effects on morbidity and mortality, resistance increases the cost of returning patients to health.[9] Second- and third-line drugs for treating resistant infections are invariably more expensive, less readily procured, and more toxic than first-line therapies. Furthermore, patients infected with resistant organisms remain sicker for a longer duration and require more specialized care. People with resistant infections are more likely to fail their first chemotherapeutic course and therefore more likely to remain infectious for longer and spread the disease. Resistance has entered into considerable significance now that people immunocompromised by AIDS are likely to be completely dependent on antimicrobial chemotherapy and consequently serve as vessels for continuous selection.[10] Resistance also increases the cost of treating patients who are not infected by resistant organisms because empiric therapy must presume resistance so the use of a second- and third-line regimen becomes routine. The direct and indirect costs of resistance are unacceptably high, increasing, and beyond what many countries can afford. Resistance is a complex externality since the resistance-promoting activities of an individual rarely negatively impact his or her own health at that point in time. Consequently, individuals are unlikely to connect the problem of resistance to their health and welfare, and communities and countries are likely to give resistance containment low priority.

Africa bears a disproportionate infectious disease burden and continues to be heavily affected by resistance. *Plasmodium falciparum*, the most deadly malaria parasite species, is the predominant African species and is transmitted by the most resilient of mosquitoes, *Anopheles gambiae*. While treatment failure in *P. ovale, P. malariae*, or *P. vivax* malaria can result in debilitating, protracted illness, failure to cure a patient infected with *P. falciparum* can commonly lead to cerebral infection and death. Chloroquine resistance in *Plasmodium* emerged in Asia in the 1960s and did not appear in Africa until 1977.[11] Nevertheless, because of the predominance of Falciparum malaria and very high entomologic inoculation rates,[12] consequences of resistance for Africa have been more severe, as manifested by increases in malaria deaths in children under five years of age. It is therefore unsurprising that the resurgence of malaria in Africa, which has occurred over the last two decades, is coincident with the spread of chloroquine resistance.[13] The issue of resistance in Africa is well illustrated by *Plasmodium* species but is not limited to them. An outbreak of cholera and dysentery caused by resistant *Vibrio cholerae* and *Shigella dysenteriae*, killing about 30,000 people, resulted in one of the largest diarrheal disease disasters in recent times.[14] There is also considerable concern for the rising rates of resistant salmonellae, *Neisseria gonorrhea, Streptococcus pneumoniae*, and *Mycobacterium tuberculosis*, among other pathogens.[15]

Although it negatively impacts the treatment of virtually every infectious disease, resistance in Africa is often justifiably highlighted in the context in which it affects the greatest killers—malaria, tuberculosis, and AIDS. Resistance is a

severe compromising feature in all three conditions. As detailed above, the costs and capabilities for managing malaria escalated considerably upon emergence of chloroquine resistance. Similarly, multidrug resistance is the greatest threat to global tuberculosis control worldwide. The fear of widespread resistance to antiretrovirals is one of the arguments presented for limiting the supply and distribution of these drugs in Africa. In this light, resistance should be a public health priority and close surveillance of resistance would be a logical accompaniment to chemotherapy. Unfortunately, in all three cases, surveillance is grossly suboptimal, and the projected cost of capacity building for just sentinel site surveillance is enormous. In addition to the financial, human, and infrastructural challenges that must be overcome, there is the reality that the causative agents of malaria, tuberculosis, and AIDS cannot be routinely cultured in the most fundamental clinical laboratories.

With time, it is expected that molecular tests will serve as surrogates for culture and susceptibility testing, and some of these have been piloted in a limited number of field tests.[16] While the potential advantages of their routine application cannot be understated, most parts of Africa presently lack the facilities, budgets, and personnel to apply molecular diagnostics. Furthermore, because molecular tests detect only known resistance genes, they cannot be used to monitor the emergence and spread of resistance due to previously unknown mechanisms.[17] Therefore, although they will be valuable for surveillance, molecular tests cannot entirely displace microbial susceptibility testing.

The situation with resistance surveillance for malaria, tuberculosis, and HIV is a reflection of the dearth of diagnostic infrastructure, systematic research, and surveillance data from Africa. This is of direct consequence to local infectious disease control because resistance patterns and trends are known to vary geographically and so likewise should prioritization of containment strategies.[18] Malaria and bacterial infections that are leading causes of death are almost always treated empirically. Surveillance informs empiric prescribing and necessarily precedes the identification of predisposing factors as well as the testing and implementation of intervention for containment.

The absence of reliable surveillance data from most parts of Africa is the principal reason why the resistance problem is underrated, and the consequent absence of baseline data makes it unlikely that intervention studies will be piloted in the near future.[19] In our desire to assess resistance in the long term and in the community, and working in areas where molecular testing was unavailable, we elected to use the commensal (nonpathogen) *Escherichia coli* as an indicator organism.[20] *Escherichia coli* is rapidly, easily, safely, noninvasively, and relatively inexpensively collected and cultured. It is also genetically tractable, which will allow us to extend our studies to the molecular level in the future. Furthermore, because it is present in both healthy and ill people, a commensal indicator permits us to study resistance in communities, irrespective of diseased condition. Finally, our findings correlate with similar data from clinical isolates because *E. coli* is an important reservoir for resistance genes.

Escherichia coli is competent at transferring resistance genes to other intestinal organisms including pathogenic *E. coli, Salmonella, Shigella*, and *Vibrio cholerae.*

In the course of monitoring resistance trends in *E. coli* from healthy people in southwestern Nigeria for almost two decades, we have observed an increase in the proportion of isolates that are resistant to five antimicrobials commonly

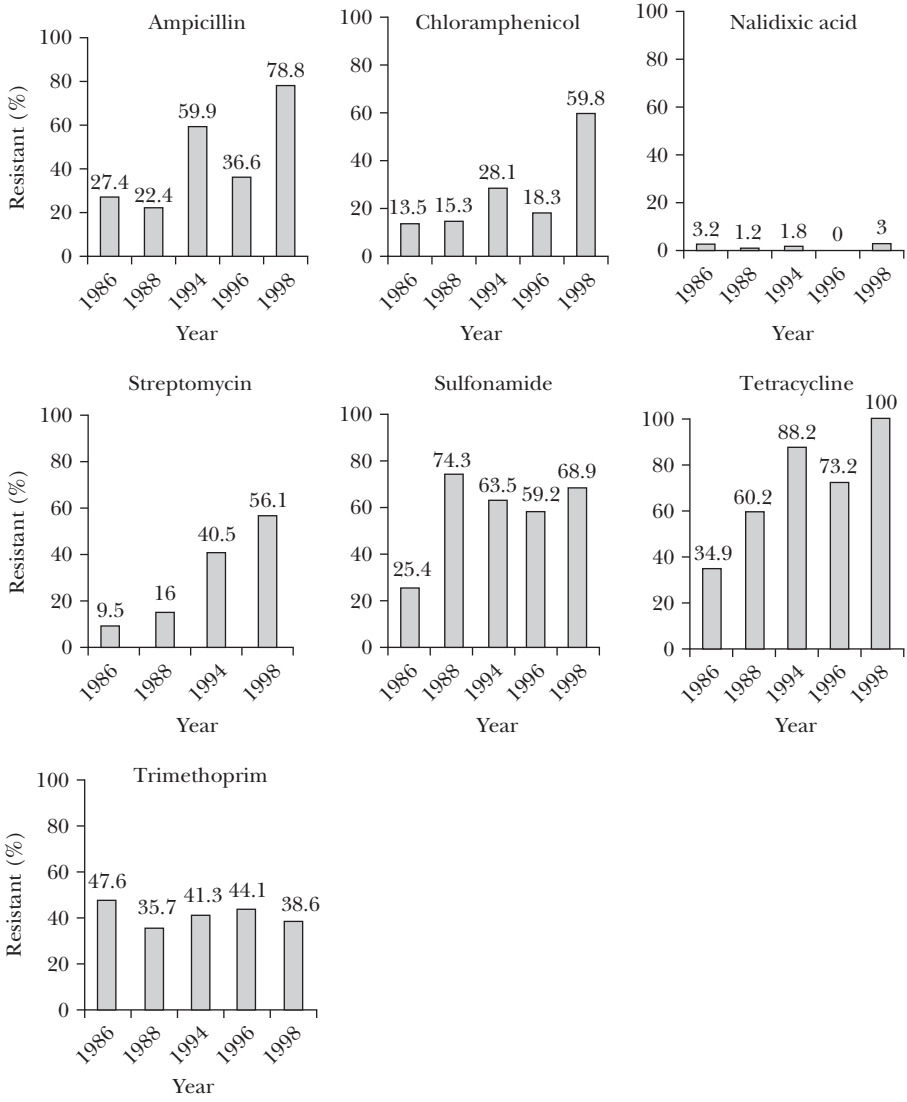

Figure 7.1. Antimicrobial resistance trends in *Escherichia coli* isolates from healthy adults. Adapted from Okeke, Fayinka, and Lamikanra, "Antibiotic Resistance in *Escherichia coli* from Nigerian Students, 1986–1998." *Emerging Infectious Diseases* 6, no. 4 (2000): 393–96.

used from the start of our study (figure 7.1) but not to nalidixic acid, whose derivatives have only recently been widely used as chemotherapeutics in Nigeria. Between 1986 and 1998, the proportion of isolates resistant to chloramphenicol rose from 14 to 60 percent, while the corresponding values for tetracycline were 35 to 90 percent. Both drugs are broad-spectrum antibiotics that were discovered more than fifty years ago and are generally used and abused as inexpensive capsules. As shown in figure 7.1, resistance to the other agents with similar properties either increased with time or was maintained at stable highs. The exception was nalidixic acid, to which resistance remained rare over the twelve-year period. In 1986, 30 percent of the isolates were sensitive to all six drugs, 30 percent were multiply resistant in that they were insensitive to three or more, and 1.6 percent were resistant to at least six of seven antimicrobial agents. These could be considered worrying statistics but are diminished by the 1998 data in which no isolate was sensitive to all seven agents, 71 percent were resistant to three or more, and 16 percent to six or seven.[21] These increases in *E. coli* resistance have been paralleled by the documentation of resistance in pathogens that can cause life threatening diseases.[22]

Human Activities Promote Resistance

The existence of associations between human behavior and disease ecologies is well known[23] and resistance can be considered a prime example. Selective pressure for resistance genes, elements, and organisms and the dissemination of these factors are the major contributors to widespread resistance today and arise almost exclusively from human activities. Antimicrobial use provides the pressure that gives resistant strains selective advantage over susceptible ones. Much of this use is justifiable, despite the externality of resistance, because it saves the lives of people who would otherwise have died from infections and stems the epidemic spread of pathogens. Far more selective pressure emanates from irrational use. This includes the use of inappropriate antimicrobials or unsuitable dosage regimen as well as antimicrobial chemotherapy in the absence of authentic infection by a susceptible organism. In all these cases, selective pressure with no concomitant benefit is generated and often worsened. When organisms are exposed to subinhibitory concentrations of antimicrobials, the opportunity exists for sequential mutations to resistance to be selected. Such subinhibitory concentrations occur when drugs are used at the wrong dose, for insufficient periods of time, or when substandard or counterfeit antimicrobials are consumed.

The overuse and unjustified prescription of antimicrobials in the clinic in developing countries, including those in Africa, has been severely criticized but is dwarfed by the uncontrolled abuse of antimicrobials in the community.[24]

The availability of antimicrobials from sanctioned and unsanctioned providers, with or without prescription, and in user-selectable doses or permutations, has created a situation where antimicrobial use is not only uncontrollable but also unquantifiable. Available antimicrobials in most sub-Saharan African countries include those appropriately produced or imported as well as donated and smuggled drugs, all of which vary in quality; therefore, an accurate assessment of defined daily doses consumed per 1,000 of the population is essentially not possible at any level of the supply chain. In countries where a free and uncontrolled market for antimicrobials exists, patients themselves are unlikely to admit to what they have consumed, even if they have been able to keep up with their undocumented treatment histories.[25]

Urban metropoles in Africa and other parts of the developing world appear to constitute foci for resistance. We initially made this observation when we compared resistance in *E. coli* isolated from incumbent university undergraduates from the conurbation of Lagos with similar isolates from provincial areas of southwestern Nigeria. We found that the proportion of isolates resistant to antibiotics was greater in urban isolates, and more extensive studies demonstrate that this feature is seen in *E. coli* from healthy people in other parts of Africa.[26] The phenomenon is not *E. coli* specific: Mthwalo et al., working with organisms that reside in the respiratory tract in southern Africa, made similar findings.[27] Many African cities are growing exponentially. For example, the population of Lagos increased from 1.2 million in 1965 to 7.7 million in 1990 and is projected to exceed 23 million by 2015.[28] With this growth, resistance is even more likely to compromise infectious disease chemotherapy. People in urban areas in developing countries live in close proximity and have great opportunity to exchange organisms. They also have better access to antimicrobial drugs and attendant selective pressure as well as to hospitals, which are hubs for resistant organisms. Rural dwellers are more likely than urban residents to employ complementary medicine in exclusion. An open question is whether these disparities are in any way blurred in villages with large migrant populations. Displaced people who live under conditions of extreme crowding and poor sanitation may be at risk for acquiring resistant organisms. While these are compelling hypotheses and questions, testing them by experiment is hampered by the overburdening of the issue with confounding data. It is more likely that unequivocal answers will emerge from studies in model systems than from field data.

The emergence and spread of resistance in Africa is of global concern. Even when they are localized in their distribution, short-term visitors—who often take prophylactic antimicrobials—are at high risk of being colonized by resistant organisms.[29] Through them and by a number of other means, resistant strains and genes have spread, and will continue to disseminate, globally.[30]

Resistance Containment

The WHO released a strategy for resistance containment in 2001.[31] Although no country has yet implemented all the interventions recommended in the report, the strategy was proposed with the hope that specific interventions would become the basis of national and international policy with effective grassroots implementation. For example, selective pressure can be reduced drastically by eliminating irrational use, which is the goal behind many WHO-recommended interventions (table 7.1). In Finland and Denmark, reducing or abolishing the use of specific antimicrobials at the national level has resulted in the return of drug-susceptible microbes.[32] Other strategies for resistance containment aim at preventing the dissemination of resistant organisms and promoting the development of novel antimicrobials.

Table 7.1. Summary of WHO-recommended interventions to contain antimicrobial resistance, 2001

Interventions	**Desirable actions**
Interventions targeted at patients and the public • Education on appropriate use and to discourage self medication • Education on hygiene and disease transmission Interventions targeted at health workers • Education on appropriate use • Education on promotion • Professional regulation • Monitoring and supervision • Decision support tools (guidelines and formularies)	Desirable actions from health systems • Institution of therapeutic committees • Institution of infection control committees • Guidelines for antimicrobial use • Antimicrobial use surveillance • Antimicrobial resistance surveillance through laboratory networks
Interventions targeted at veterinarians and agriculturalists • Surveillance of resistance and use • Disallow or phase out growth promoters • Educate farmers and veterinary practitioners Interventions targeted at the pharmaceutical industry • Incentives for research and development	Desirable actions from policymakers • Commitment to a national antimicrobial resistance task force with a budget • National drug policies (e.g., essential drug lists) • Registration and regulation of all drug outlets and dispensing staff • Quality assurance for antimicrobials • Require resistance data for drug licensing

Table 7.1. (*continued*)

Interventions	Desirable actions
• Production according to Good Manufacturing Practice Standards • Monitor and supervise drug promotion	• Access to evidence-based drug information and monitoring of promotion • Monitor and link resistance and use data • Undergraduate and continuing education on resistance

Source: Adapted from Laxminarayan et al., "Drug resistance," 1031–51.

It is important to note that while many of the WHO-recommended interventions are based on rational thought and scientific data, the data almost invariably comes from Europe or North America and more commonly from closed systems such as hospitals. Recent meta-analyses by Radyowijati and Haak as well as by Wilton et al. have demonstrated that there is insufficient data from developing countries where community-acquired infections are the leading cause of disease and death, and that no studies of this nature are in progress or planned.[33] Such studies are necessary since previous work has demonstrated that seemingly rational interventions do not always affect the prevalence of resistant microbes or measurable practices that contribute to resistance.[34]

The use of drugs in combination reduces the probability that resistance will emerge.[35] Combination therapy has proved essential for TB treatment and is also the basis for highly active antiretroviral therapy.[36] Combination strategies have, until recently, been considered superfluous when the duration of therapy is much shorter. Recent modeling and clinical studies have, however, demonstrated that while combination therapy may add little benefit for the infected patient, it does drastically deter the emergence of resistance. The future of malaria chemotherapy has therefore been directed toward the application of artemisinin combination therapy. The use of combination therapy, as compared with artemisinin alone, not only deters the emergence of resistance but also reduces the time required for malaria chemotherapy from seven to three days.[37]

Combination strategies are problematic in that two drugs are more expensive than one, so that in order to conserve therapies for the future, someone must pay more for treatment today.[38] Should the increased cost of a combination be borne by the patient (who is unlikely to receive immediate direct benefit) or the health system, which may bear the brunt of increased costs

should resistance to cheaper drugs emerge? This question remains largely unanswered and is only one of the dilemmas associated with the control of the complex externality that is resistance. The issue is further complicated by the requirement that combination therapy strategies be paired with surveillance. This is because combination therapy becomes a misnomer when resistance to one or more of the drugs in the combination is widespread or when horizontally transferred resistance genes are linked.[39]

A drug-use strategy that may be potentially capable of reversing trends to resistance is the use of antimicrobials in cyclical phases at the population level. This is easily achieved in hospitals, but in the community, cycling must be conducted at a national, or preferably, even subcontinental level to be effective.[40] This makes cycling difficult to implement when drug use law enforcement is weak, as is typical in most of sub-Saharan Africa. A case in point was the attempt of the Kenyan government substitute sulfadoxine-pyrimethamine[41] for chloroquine as the primary antimalarial in 2001. Illegal importation, prescription, and distribution of chloroquine continued into 2003, despite widespread resistance and an official ban of chloroquine.[42] Resistance to sulfadoxine-pyrimethamine has emerged due to pressure from the official sector[43] and chloroquine resistance is also likely to persist for as long as selective pressure comes from the unofficial distribution of chloroquine.[44]

Some classes of drugs have antimalarial and antibacterial activity and can therefore exert selective pressure in different microbes.[45] This makes it difficult to set up a cycling strategy since cross-selecting drugs must be withdrawn at the same time as the target drug. It is also likely that some drugs will respond better than others to cycling but not enough is known about the technique to make informed predictions. Indeed, some theoretical predictions suggest that cycling may be inferior to mixing or combination strategies for containing resistance.[46] Cycling of combinations may be a more definitive way to combat resistance. Although Malawi has successfully implemented one round of chloroquine versus sulfadoxine-pyrimethamine cycling,[47] it is not unduly pessimistic to predict that the level of drug use control required for effective cycling exceeds the enforcement capability of most African countries. Therefore, although an attractive concept, cycling is less likely to be applied at the country level in Africa in the near future. If cycling programs are to be attempted, it is essential to engage all interest groups. Nigeria's health ministry made the unexpected announcement in 2005 that chloroquine and sulfadoxine-pyrimethamine would be withdrawn and replaced by artemisinin-based combination therapy (ACT). While the move may have been well intentioned and is justified by available susceptibility data, the panic that ensued[48] is indicative of failure to carry prescribers, distributors, and patients along in the process and is predictive of an unsuccessful cycling program.

Studies in northern Europe have revealed direct associations between resistance and antimicrobial use.[49] Similar studies in developing countries are hampered by widespread misuse so that antimicrobial consumption cannot be

accurately quantified. In addition to misuse by clinicians, availability of antimicrobials without prescription means that unsanctioned providers supply a substantial proportion of antimicrobials and that self-medication is the norm.[50] While poverty and drug scarcity have been identified as contributors to these practices, they are not the only factors since self-medication and inappropriate procurement do not disappear when these factors are addressed.[51] Social scientists have long recognized that the cultural bases for African health and healing are dynamic and present-day antimicrobial abuse can be better understood in this context.[52] Neocultural influences may be the most important determinants of antimicrobial abuse, and addressing them will require multidisciplinary approaches. Any intervention that targets antimicrobial pressure must address unsanctioned providers and the culture of unsupervised chemotherapy.[53] This presents a dilemma for national regulators, since incorporating unofficial providers into any program implies sanctioning at some level.[54] Antimicrobial misuse control is, in theory, one of the most effective and essential strategies for resistance control. As Shears pessimistically noted, in developing countries where there are so many factors in the way of such a goal, it is unlikely to be achieved in its simplest form. Potential surrogates for absolute control include the policing of the distribution of very few, last resort drugs and educational programs for health workers, unsanctioned providers as well as the general population.[55]

When an antimicrobial contains less than the stated dose of active agent, or a less bioavailable form,[56] the patient may be unwittingly receiving subtherapeutic doses. Poor quality drugs can arise due to improper storage, particularly with antibiotics, which are heat and moisture labile. The high temperature and relative humidity in tropical countries mean that drugs can be appropriately stored only in conditioned air. Recently Kayumba et al. and Minzi et al. demonstrated that, when stored under ambient tropical conditions in Rwanda and Tanzania, solid oral antimicrobial formulations—including amoxicillin, metronidazole, sulfamethoxazole/trimethoprim, quinine, and sulfadoxine-pyrimethamine—showed considerable quality degradation in six months or less.[57] In our own research, we found substandard ampicillin and tetracycline capsules marketed in Nigeria.[58] All contained sufficient active ingredient and breakdown product to suggest that low active ingredient concentration was due to degradation. In a larger study, Taylor et al. found that 48 percent of the 581 antimicrobial products they obtained from two urban metropolis in Nigeria—including the antimalarials, antibacterials, antituberculosis drugs, antifungals and antihelminthics—were substandard.[59] Most of these products had slightly less or more active ingredients than allowed by pharmacopoeia. This is again indicative of degradation but also of poor quality assurance. However, five samples of metronidazole suspension analyzed in the study contained no active ingredient at all. More recently, Basco used spot tests to determine that a substantial proportion of chloroquine, quinine, or sulfadoxine-pyrimethamine and sulfamethoxazole/trimethoprim products

marketed in Cameroon contained little or no active ingredient.[60] These reports are but a few of many recent reports describing counterfeit medicines in Africa and worldwide.[61] What is most worrisome is that very few investigators are studying drug quality at dispensing points, and the problem is therefore likely to be grossly underestimated. Developing countries, including those in Africa, are a magnet for counterfeit products because of the high demand for cheap drugs and inadequate enforcement of legislation. While it is recognized that poor quality is likely to contribute to resistance, very little has been done to assess or address the problem.

Indirect Approaches to Dealing with Resistance

Alleged irrational antimicrobial prescription is inevitable when infection is commonplace but surveillance and laboratory diagnostic capabilities are weak. This is the situation in many African countries so that while numerous studies have documented antibiotic misuse in primary, secondary, and tertiary care institutions, it can be argued there is insufficient basis for health professional chastisement.[62] Prescribers in Africa know that patients who more often than not have life-threatening infections may not survive failure of their first chemotherapeutic regimen. Even if they do, many patients do not have the luxury of making repeat visits to the prescriber. Prescribers themselves rarely have access to microbial culture and sensitivity testing facilities or, in many cases, any diagnostic laboratory support at all. They are often in direct competition with unsanctioned providers whose prescribing habits are not restrained by knowledge of microbial physiology and evolution. The temptation to prescribe antibiotics as well as antimalarials for a presumptive case of malaria "just in case" the correct diagnosis is acute bacterial infection can be understood if not condoned.

The Integrated Management of Childhood Illnesses (IMCI) program was conceived in acknowledgment that many sick children in developing countries concomitantly suffer more than one predicament. IMCI is essentially a set of protocols by which health-care workers can identify illnesses other than the primary complaint and therefore provide holistic care for ill children.[63] Where implemented, IMCI has been largely successful at providing primary pediatric care. Since IMCI protocols will detect conditions that may have otherwise been missed, rational drug prescription increases when the protocols are used. By ensuring that diagnosis and prescription follow standard treatment protocols, when IMCI is used, irrational prescription has been shown to decrease. This not only leads to a net reduction in drug expenditure—as has been shown in Nigeria, Uganda, and Tanzania—but also a considerable reduction in the defined daily doses of antimicrobials prescribed, reducing the selective pressure for resistance.[64]

WHO's current protocol for managing tuberculosis (TB) addresses a fundamental cause of resistance: nonadherence to the antimicrobial regimen. This is because directly observed therapy (short course), best known by its acronym DOTS, requires that the ingestion of every dose be monitored by a trained observer. The concept of directly observed therapy is an old one,[65] but the concerted use of this strategy for TB control is relatively recent and inspired by the resurgence of TB that has occurred over the last two decades.[66] Adherence is perceived to be the most important component of the program since it accounts, in a large part, for the success of many regions in effecting a cure and preventing the emergence of resistant TB. The DOTS program, however, has other anti-resistance strategies at its core. These include the regular supply of antituberculosis drugs, laboratory confirmation of diagnosis and cure verification, as well as political commitment.[67] DOTS is considered cost effective, since it has exemplary cure rates; however, the true savings from DOTS arise from the prevention of resistance emergence. In countries where multi-drug resistant tuberculosis is highly prevalent, the cost of treating the disease is astronomical. Tuberculosis presents an uncommon paradigm where the emergence of resistance can occur within the mismanaged patient and compromise his/her own therapy. Thus, in this case, resistance is not an externality, and patients and policymakers can easily be convinced of the danger it poses. A similar paradigm exists for AIDS and, thus, the emerging idea of tagging highly active antiretroviral therapy to DOTS programs is an admirable one, particularly as many patients will be co-infected with *Mycobacterium tuberculosis* and HIV.[68] It is probable that the principles of directly observed therapy can be applied to other chemotherapeutic paradigms where resistance poses a severe threat, particularly if combined with educational interventions on the cost of the resistance externality.

The prevention of infection precludes the need for antimicrobials in the first place. Barriers against infection can also serve as barriers for the dissemination of resistant pathogens and commensal reservoirs of resistance. Thus, preventive programs that target specific infectious diseases have been shown to have a positive influence on resistance. Acute respiratory infection due to *Streptococcus pneumoniae* kills about two million children in developing countries each year.[69] A global pandemic of resistant *S. pneumoniae* is currently in effect and has rendered affordable, previously empiric antimicrobials such as penicillin ineffective. Healthy people can be colonized by *S. pneumoniae*, which can cause disease when transmitted to an appropriate site in susceptible people. Appropriate sites are not limited to the respiratory tract; *S. pneumoniae* is also the most common cause of otitis media (ear infections), bacteremia, and bacterial meningitis in children. As all these infections are highly prevalent worldwide, the development of a vaccine was considered high priority. The vaccine mimics the protective outer coating of the bacteria. As there are several variations of this coating, a vaccine that would protect against all such forms (serotypes) of the bacteria would be expensive and cumbersome

to produce. It was known, however, that only a limited number of serotypes are responsible for most human infection[70] and therefore a heptavalent vaccine was prepared. It so happens that the serotypes represented in the vaccine are those most likely to be resistant to multiple antimicrobials. Therefore, when the vaccine was tested in the United States, it not only protected children from infection but also led to a drop in the proportion of antimicrobial resistant cases.[71] By contrast, control of selective pressure from antimicrobial use in one study produced no noticeable effect.[72]

Available, albeit insufficient, data suggest that the predominant colonizing/disease-causing and resistant serotypes of *S. pneumoniae* in some parts of Africa (Botswana, South Africa) are similar to those in other parts of the world, although a Malawian study suggests a broader repertoire. Therefore a positive effect on disease burden as well as on resistance can be expected when the vaccine is put into widespread use, particularly if a recently developed 9-valent vaccine is used.[73] It is probable the *S. pneumoniae* case could serve as a template for other infectious diseases and the availability of structures within the expanded program in immunization should make vaccine-based strategies workable in the field, provided that adequate engagement of local communities is part of the program.[74] However, the identification of targets for vaccine development must invariably come from clinical laboratory studies and will require strengthening of diagnostic and investigational capabilities.

In conclusion, although strategies to contain resistance have been proposed, many gains have been acquired from programs where resistance control was not the primary objective. Because of the direct benefit to patient health, the marketing and implementation of such programs is more straightforward than for programs that target resistance alone. The relative successes of indirect approaches should not be taken to mean that resistance containment should be left to happenstance. It is clear that a multipronged approach is the only solution to the ever-present and rising problem of resistance. Therefore, commitment to programs such as IMCI, DOTS, and vaccination should be partnered with educational strategies to make resistance-specific interventions culturally acceptable and a political priority. In the long term, the success of ancillary programs suggests that it is best to rationally incorporate strategic plans for resistance containment into future disease control programs.

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Notes

1. The term "antimicrobial" is an all-encompassing one that includes antibacterials, antivirals, antifungals, and antiprotozoals (including antimalarials). Antimicrobials may be synthetic or obtained from natural sources. For example, quinine, from cinchona bark, and artemisinin, from the Chinese medicinal plant Qinghaosu (*Artemisia annua*) are antimalarials from natural sources. Chloroquine and sulfadoxine-pyrimethamine (Fansidar®) are synthetic antimalarials. "Antibiotic" refers to antimicrobials derived from microorganisms, which likely represent defense systems for the source organism. Like penicillin, the first antibiotic discovered, most, but not all, antibiotics are antibacterials and obtained from fungi or bacteria.

2. Fleming, "On the Antibacterial Action of Cultures of a Penicillium," 226–36.

3. Chain et al., "Penicillin as a Chemotherapeutic Agent," 226–28.

4. The reader is referred to Bèottcher's, *Wonder Drugs: A History of Antibiotics*, and to Milton Wainwright's *Miracle Cure: The Story of Antibiotics*, or to "From Pasteur to Penicillin," chapter 14 of Roy Porter's *The Greatest Benefit to Mankind* for a more comprehensive history of antimicrobial chemotherapy.

5. Stewart, "A Mandate for State Action." In 1967, William H. Stewart, the then United States surgeon general, told the Association of State and Territorial Health Officers that the book on infectious diseases was all but closed. He recommended that national attention be shifted to chronic diseases. The tables have completely turned so that the dip in infectious disease specialists that occurred in the mid-twentieth century is one of many factors that have slowed human response to microbial resurgence. In a recent solicitation of ideas of the scientific and technological roadblocks that must be overcome to advance global health, all fourteen of the selected Grand Challenges had bearing on infectious diseases (see introduction, table I.1), and one of them specifically called for the discovery of drugs and delivery systems that minimize the likelihood of antimicrobial resistant microorganisms. See Varmus et al., "Public Health Enhanced," 398–99.

6. Watanabe and Fukasawa, "Episome-Mediated Transfer of Drug Resistance in Enterobacteriaceae. I," 669–78.

7. A more comprehensive explanation of the biological basis and clinical consequences of resistance, accessible to the non-scientist, is given in *The Antibiotic Paradox* by Stuart Levy.

8. Sir Alexander Fleming, *New York Times*, June 26, 1945, quoted in Levy, *The Antibiotic Paradox*, 7.

9. Holmberg et al., "Health and Economic Impacts of Antimicrobial Resistance," 1065–78.

10. Bax, "Antibiotic Resistance: A View from the Pharmaceutical Industry," S151–53.

11. Kean, "Chloroquine-Resistant Falciparum Malaria from Africa," 395.

12. The entomologic inoculation rate (EIR) is the annual number of infectious bites per person. Areas of low or medium transmission have an EIR of 100 or less. In areas of high transmission, this indicator typically can reach the thousands. See Arrow et al., *Saving Lives, Buying Time*. The EIR is determined in part by the life cycle of the infecting *Plasmodium* spp. but also by the resilience of the mosquito. The *P. falciparum* (parasite) – *Anopheles gambiae* (mosquito) combination, which is endemic in much of sub-Saharan Africa, produces the highest EIR.

13. Trape, "The Public Health Impact of Chloroquine Resistance in Africa," 12–17; Arrow et al, *Saving Lives, Buying Time*.

14. Goma Epidemiology Group, "Public Health Impact of Rwandan Refugee Crisis," 339–44.

15. Laxminarayan et al., "Drug Resistance," 1031–51.

16. Djimde et al., "Application of a Molecular Marker for Surveillance of Chloroquine-Resistant falciparum Malaria," 890–91; Kiepiela et al., "Genomic Mutations in the katG, inhA and aphC Genes," 47–56; Eshleman et al., "Performance of the Celera Diagnostics ViroSeq HIV-1 Genotyping System," 2711–17.

17. Bates et al., "Rare, Highly Pyrimethamine-Resistant Alleles of the *Plasmodium falciparum* Dihydrofolate Reductase Gene from Five African Sites," 1783–92.

18. Holloway, "Prioritizing Interventions to Contain Antimicrobial Resistance," 16–18; Radyowijati and Haak, "Improving Antibiotic Use in Low-Income Countries," 733–44.

19. Shears, "Antimicrobial Resistance in the Tropics," 114–16; Laxminarayan et al., "Drug Resistance," 1031–51.

20. *Escherichia coli* was discovered by Theodore Escherich, who isolated it from the feces of newborns. See Escherich, "The Intestinal Bacteria of the Neonate and Breast-fed Infant," 352–56. These rod-shaped bacteria are found in the intestines of humans and animals, which means they can be employed in the quality control of water as an indicator of recent fecal contamination. *Escherichia coli* was one of the first bacterial species to be studied at the molecular level. Laboratory strains are used for routine molecular biology procedures in almost every biology laboratory and thus are very well understood. Most strains are beneficial commensals but a few cause diseases. Most studies of *E. coli* from the wild focus on how pathogenic *E. coli* differ from nonpathogenic laboratory strains and exploit the availability of laboratory tools specifically designed for *E. coli*. In our case, the obvious next question is how resistant *E. coli* strains differ from susceptible strains. The *E. coli* tools and protocols have made it possible for us to extend our analysis to mechanistic studies at the molecular level.

21. Okeke and Edelman, "Dissemination of Antibiotic-Resistant Bacteria across Geographic Borders," 264–69.

22. Okeke and Edelman, "Dissemination of Antibiotic-Resistant Bacteria across Geographic Borders," 264–69; Okeke et al., "Microbiological Investigation of an Outbreak of Acute Gastroenteritis in Niger State, Nigeria," 514–16; Iwalokun et al., "Epidemiology of Shigellosis in Lagos, Nigeria," 183–90.

23. Feierman, Janzen, and Joint Committee on African Studies, *The Social Basis of Health and Healing in Africa*.

24. Hart and Kariuki, "Antimicrobial Resistance in Developing Countries," 647–50; Okeke, "Antibiotic Use and Resistance in Developing Countries," 132–39.

25. Liu et al., "Inappropriate Use of Antibiotics and the Risk for Delayed Admission and Masked Diagnosis of Infectious Diseases," 2366–70.

26. Lamikanra and Okeke, "A Study of the Effect of the Urban/Rural Divide on the Incidence of Antibiotic Resistance in *Escherichia coli*," 91–97; Nys et al., "Antibiotic Resistance of Faecal *Escherichia coli* from Healthy Volunteers from Eight Developing Countries," 952–55.

27. Mthwalo et al., "Antibiotic Resistance of Nasopharyngeal Isolates of *Streptococcus pneumoniae* from Children in Lesotho," 641–50.

28. Brockerhoff, "An Urbanizing World," 1–48.

29. Murray et al., "Emergence of Resistant Fecal *Escherichia coli* in Travelers Not Taking Prophylactic Antimicrobial Agents," 515–18; Tauxe et al., "Antimicrobial Resistance of Shigella isolates in the USA," 1107–11.

30. As detailed in an earlier paper, these include but are not limited to importation by immigrants, importation with livestock or agricultural products, transmission aboard travel vessels, transport by wildlife and pests, and carriage via surface water. See Okeke and Edelman, "Dissemination of Antibiotic-Resistant Bacteria across Geographic Borders," 364–69.

31. World Health Organization, *WHO Global Strategy for Containment of Antibiotic Resistance*.

32. Seppala et al., "The Effect of Changes in the Consumption of Macrolide Antibiotics on Erythromycin Resistance in Group A Streptococci in Finland," 441–46; Aarestrup et al., "Effect of Abolishment of the Use of Antimicrobial Agents for Growth Promotion on Occurrence of Antimicrobial Resistance in Fecal Enterococci from Food Animals in Denmark," 2054–59.

33. Radyowijati and Haak, "Improving Antibiotic Use in Low-Income Countries," 733–44; Wilton et al., "Strategies to Contain the Emergence of Antimicrobial Resistance," 111–17.

34. Arason et al., "Clonal Spread of Resistant Pneumococci Despite Diminished Antimicrobial Use," 187–92; Hennessy et al., "Changes in Antibiotic-Prescribing Practices and Carriage of Penicillin-Resistant *Streptococcus pneumoniae*," 1543–50.

35. Palumbi, "Humans as the World's Greatest Evolutionary Force," 1786–90.

36. Cohn et al., "Combined Drug Treatment of Tuberculosis. I," 1349–55; Vandamme et al., "Managing Resistance to Anti-HIV Drugs," 337–61.

37. Arrow et al., Saving *Lives, Buying Time*.

38. This is not true for artemisinin combination therapy, compared with artemisinin, since artemisinin is the most expensive component of the combination and the use of the combination makes it possible to reduce the duration of treatment.

39. Enne et al., "Persistence of Sulphonamide Resistance in *Escherichia coli* in the UK Despite National Prescribing Restriction," 1325–28.

40. Kublin et al., "Reemergence of Chloroquine-Sensitive *Plasmodium falciparum* Malaria after Cessation of Chloroquine Use in Malawi," 1870–75.

41. Sulfadoxine-pyrimethamine is marketed as Fansidar® by Roche Pharmaceuticals.

42. Phillips-Howard et al., "Diagnostic and Prescribing Practices in Peripheral Health Facilities in Rural Western Kenya," 44–49.

43. Mberu et al., "The Changing In Vitro Susceptibility Pattern to Pyrimethamine/Sulfadoxine in *Plasmodium falciparum* Field Isolates from Kilifi, Kenya," 396–401; Terlouw et al., "Sulfadoxine-Pyrimethamine in Treatment of Malaria in Western Kenya: Increasing Resistance and Underdosing," 2929–32.

44. Kublin et al., "Reemergence of Chloroquine-Sensitive *Plasmodium falciparum* Malaria after Cessation of Chloroquine Use in Malawi," 1870–75.

45. Feikin et al., "Antibiotic Resistance and Serotype Distribution of *Streptococcus pneumoniae* Colonizing Rural Malawian Children," 564–67.

46. Fridkin, "Routine Cycling of Antimicrobial Agents as an Infection-Control Measure," 1438–44; Bergstrom et al., "Ecological Theory Suggests that Antimicrobial Cycling Will Not Reduce Antimicrobial Resistance in Hospitals," 13285–90.

47. Kublin et al., "Reemergence of Chloroquine-Sensitive *Plasmodium falciparum* Malaria after Cessation of Chloroquine Use in Malawi," 1870–75.

48. Kunle Sanyaolu, "The Malaria Drug Policy," Guardian (Lagos), January 31, 2005, criticizing the proposal just after it was announced by making the statement: "Surely, it is a scourge that necessitates a more deeply thought-out and more coordinated program than that embarked upon by the Federal Ministry of Health." This and other media responses described the proposed cycling program as a top-down dictatorial one at best and as a conspiracy against the Nigerian people at worst. The press was justified in its attack in that artemisinin combination therapies are neither affordable nor available, and the announcement did not address how such availability would be effected. Comments denouncing the ban from physicians and distributors were avidly quoted. Finally, in spite of rapidly published commentaries from scientists acknowledging the communication shortfall but explaining the potential benefits of the cycling program (Adebayo Lamikanra, "Winning the War against Malaria," *Guardian* [Lagos], February 2, 2004, and Iruka Okeke, "On Banning Chloroquine," *Guardian* [Lagos] February 2, 2004; Ben Ukuoma "Why Government Dumped Cholorquine," *Guardian* [Lagos] February 6, 2005), the Lagos state commissioner of health announced that the state with the greatest population density would not abide by the ban (Andrew Ahiante, "Lagos to Ignore Ban on Chloroquine Usage," *ThisDay* [Lagos], February 4, 2005). A week later, the minister of health, Professor E. Lambo, was quoted as describing the chloroquine ban as a rumor, panic was quelled and the confusion over the future of malaria chemotherapy in the country rapidly dissipated (Godwin Haruna, "Minster Debunks Chloroquine Ban Rumour," *ThisDay* [Lagos], February 12, 2005). No statements as to intended strategies for dealing with the resistance problem were made, even though it was acknowledged that over half the Plasmodia in some parts were resistant to the drug.

49. Seppala et al., "The Effect of Changes in the Consumption of Macrolide Antibiotics on Erythromycin Resistance in Group A Streptococci in Finland," 441–46; Cars et al., "Variation in Antibiotic Use in the European Union." 1851–53; Bronzwaer et al., "A European Study on the Relationship between Antimicrobial Use and Antimicrobial Resistance," 278–82.

50. Djimde et al., "Application of a Molecular Marker for Surveillance of Chloroquine-Resistant falciparum Malaria," 890–91; Okeke et al., "Socioeconomic and Behavioral Factors Leading to Acquired Bacterial Resistance to Antibiotics in Developing Countries." 18–27.

51. Okeke, "Antibiotic Use and Resistance in Developing Countries," 132–39; Okeke and Lamikanra, "Export of Antimicrobial Drugs by West African Travelers," 133–35.

52. Feierman, Janzen, and Joint Committee on African Studies, *The Social Basis of Health and Healing in Africa*; Okeke et al., "Socioeconomic and Behavioral Factors Leading to Acquired Bacterial Resistance to Antibiotics in Developing Countries," 18–27.

53. Okeke, "Antibiotic Use and Resistance in Developing Countries," 132–39.

54. Feierman, Janzen, and Joint Committee on African Studies, *The Social Basis of Health and Healing in Africa*.

55. Shears, "Antimicrobial Resistance in the Tropics," 114–16; Laxminarayan et al., "Drug Resistance," 1031–51.

56. Only a portion of drugs administered actually reach their active site and are therefore bioavailable. Bioavailability can be affected by food, health, and even variation among individuals. Barriers exist at sites of absorption and improperly formulated drugs may not be bioequivalent to standardized innovators' products. Our

studies have documented bioinequivalency in antimicrobial products, and this is yet another factor that may contribute to resistance. See Okeke and Lamikanra, "Quality and Bioavailability of Tetracycline Capsules in a Nigerian Semi-urban Community," 245–50; Okeke and Lamikanra, "Quality and Bioavailability of Ampicillin Capsules Dispensed in a Nigerian Semi-urban Community," 47–51. As bioequivalence can be accurately measured only in human volunteer studies, it is unreasonable to expect these tests to become part of routine quality assurance at the provider level.

57. Kayumba et al., "The Quality of Essential Antimicrobial and Antimalarial Drugs Marketed in Rwanda and Tanzania," 331–38; Minzi et al., "Evaluation of the Quality of Amodiaquine and Sulfadoxine/Pyrimethamine Tablets Sold by Private Wholesale Pharmacies in Dar Es Salaam, Tanzania," 117–22.

58. Okeke and Lamikanra, "Quality and Bioavailability of Tetracycline Capsules in a Nigerian Semi-urban Community." 245–50; Okeke and Lamikanra, "Quality and Bioavailability of Ampicillin Capsules Dispensed in a Nigerian Semi-urban Community," 47–51.

59. Taylor et al., "Pharmacopoeial Quality of Drugs Supplied by Nigerian Pharmacies," 1933–36.

60. Basco et al., "Molecular Epidemiology of Malaria in Cameroon. XIX," 245–50. Basco et al., "False Chloroquine Resistance in Africa," 224, have earlier suggested that the prevalence of chloroquine resistance may in fact be overestimated because poor quality drugs that cause therapeutic failure give the illusion of resistance. Since subtherapeutic antimicrobial concentrations frequently promote the selection of resistant strains, Kun et al., "Low-dose Treatment with Sulfadoxine-Pyrimethamine Combinations Selects for Drug-Resistant *Plasmodium falciparum* Strains," 2205–8, it is likely that the illusion contributed to the creation of the reality. The use of substitution of chloroquine for the more expensive quinine in some counterfeit products from Cameroon, Basco et al., "Molecular Epidemiology of Malaria in Cameroon. XIX," 245–50, could potentially compromise a drug cycling program as well as lead to dire consequences, because quinine is often employed in patients who have failed chloroquine chemotherapy.

61. Newton et al., "Fake Artesunate in Southeast Asia," 1948–50; Sulaiman et al., "Counterfeit praziquantel," 666–67; Prazuck et al., "Quality Control of Antibiotics before the Implementation of an STD Program in Northern Myanmar," 624–27.

62. Okeke et al., "Socioeconomic and Behavioral Factors Leading to Acquired Bacterial Resistance to Antibiotics in Developing Countries," 18–27.

63. World Health Organization, "Integrated Management of Childhood Illness: Conclusions," 119–28; Gove, "Integrated Management of Childhood Illness by Outpatient Health Workers: Technical Basis and Overview," 7–24.

64. Wammanda et al., "Drug Treatment Costs: Projected Impact of Using the Integrated Management of Childhood Illnesses," 86–88; Gouws et al., "Improving Antimicrobial Use among Health Workers in First-level Facilities," 509–15.

65. Fox, "The Chemotherapy of Pulmonary Tuberculosis," 785–96.

66. Gandy and Zumla, *The Return of the White Plague*, Verso.

67. World Health Organization, *Global Tuberculosis Control—Surveillance, Planning, Financing*.

68. Friedland et al., "Utility of Tuberculosis Directly Observed Therapy Programs as Sites for Access to and Provision of Antiretroviral Therapy in Resource-Limited Countries," S421–28; Lurie et al., "Directly Observed Therapy for HIV/Tuberculosis

Co-infection," 137–38; Harries et al., "Expanding Antiretroviral Therapy in Malawi," 1163–66.

69. Schrag et al., *Resistant Pneumococcal Infections.*

70. Hausdorff et al., "Which Pneumococcal Serogroups Cause the Most Invasive Disease," 100–121.

71. Klugman, "Efficacy of Pneumococcal Conjugate Vaccines and Their Effect on Carriage and Antimicrobial Resistance," 85–91; Klugman, "The Successful Clone," 1–5.

72. Arason et al., "Clonal Spread of Resistant Pneumococci Despite Diminished Antimicrobial Use," 187–92.

73. Huebner et al., "Nasopharyngeal Carriage and Antimicrobial Resistance in Isolates of *Streptococcus pneumoniae* and Haemophilus Influenzae Type b in Children under 5 Years of Age in Botswana," 18–25; Feikin et al., "Antibiotic Resistance and Serotype Distribution of *Streptococcus pneumoniae* Colonizing Rural Malawian Children," 564–67; Huebner, Wasas, and Klugman, "Trends in Antimicrobial Resistance and Serotype Distribution of Blood and Cerebrospinal Fluid Isolates of *Streptococcus pneumoniae* in South Africa, 1991–1998," 214–18; Gordon et al., "Poor Potential Coverage for 7-Valent Pneumococcal Conjugate Vaccine, Malawi," 747–49.

74. Trust is an important factor in ensuring the success or failure of vaccination campaigns, particularly when the protection of the population is of greater importance than protection of the individual. As pointed out by Ebenezer Obadare in "A Crisis of Trust," 265–66, the lack, or at least deficiency, of trust was one of several instrumental factors in the interruption of the polio vaccination campaign and consequently the derailment of the global polio eradication campaign.

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8

DEVELOPMENT AND THE EPIDEMIOLOGIC TRANSITION IN SUB-SAHARAN AFRICA

Kathryn H. Jacobsen and Melissa K. Van Dyke

Dr. Jeffrey Sach's recent United Nations report, "Investing in Development: A Practical Plan to Achieve the Millennium Development Goals," has brought renewed discussion on the role of economic development in reducing poverty and improving health in the developing world.[1] While much of the public debate in developed countries has focused on the amount of aid and the implementation of this proposal, there has been limited discussion on the role economic development has already played and continues to play in the improvement of health in developing countries. Increases in the GNP (gross national product), a key indicator of economic growth, are associated with an increased life expectancy at birth (figure 8.1) because of increased nutrition and decreased deaths due to infectious and parasitic diseases.[2] Childhood immunization programs and water development projects have also played significant roles in improving child health. As people survive to older ages, the main causes of death are typically chronic and noncommunicable conditions such as heart disease and stroke.[3] This shift in the burden of disease from infectious diseases to chronic conditions is called the "epidemiologic transition."[4] Developing countries' health systems are frequently ill equipped to manage the new health concerns that arise during this transition, especially those in countries that continue to face high rates of infectious disease.[5]

Rather than following the "classic" pattern of epidemiologic transition, sub-Saharan Africa is facing what some have dubbed the "double burden" of disease because economic development is leading to an increasingly significant burden from chronic diseases while the rate of morbidity and mortality from infectious agents remains high.[6] Figure 8.2 highlights these differences. HIV/AIDS and AIDS-related infectious diseases, like tuberculosis, are causing

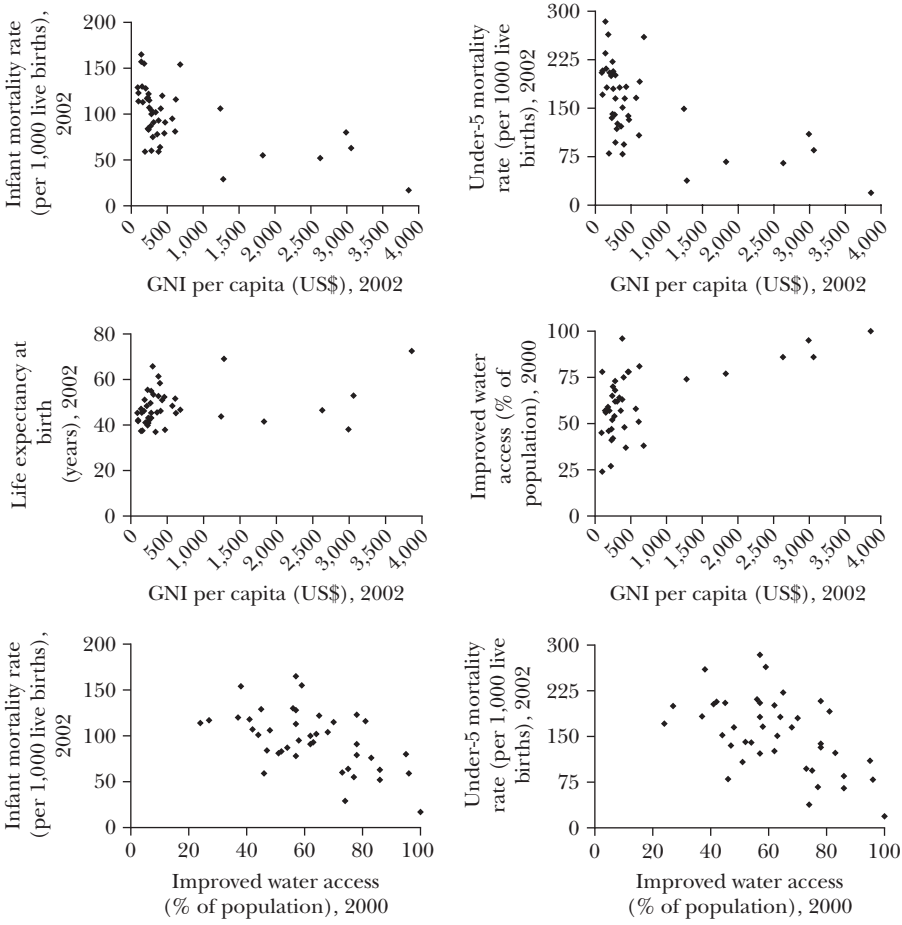

Figure 8.1. Relationship between selected economic and health indicators in sub-Saharan Africa. Higher GNI (gross national income) per capita is associated with decreased infant and child mortality rates (per 1,000) and increased life expectancy at birth and access to an improved water source. Access to an improved water source is associated with decreased infant and child mortality rates. (Data from the World Bank Development Database, http://devdata.worldbank.org/data-query/ [accessed March 20, 2004]).

tremendous loss of life in sub-Saharan African nations.[7] With so much attention being focused on the HIV/AIDS pandemic, the health burdens created by other infectious and chronic diseases, particularly those that may be the unintended result of the very economic development programs that have improved overall health, are being largely overlooked.

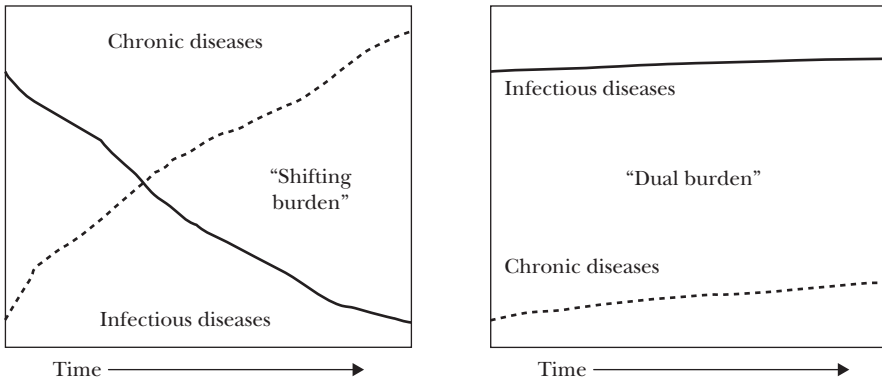

Figure 8.2. The "Epidemiologic Transition" in sub-Saharan Africa. The graphic entitled "shifting burden" shows the "classic" pattern for the epidemiologic transition: increasing GNP, life expectancy at birth, and nutrition lead to decreased deaths from infection and increased deaths from noncommunicable conditions like such as cancers and heart disease. The graphic for "dual burden" shows the pattern seen in sub-Saharan Africa. Increasing immunization and literacy rates, nutrition, and child survival have led to an increasing burden from chronic diseases even as the burden from infectious diseases remains high, especially because of HIV/AIDS and related infections.

It is not our intention to minimize the significance of HIV/AIDS in sub-Saharan Africa nor to diminish the many success stories that have accompanied development, but rather to call attention to the other health burdens that African nations face, with particular focus on the role economic development processes may play in the increase in prevalence of certain chronic and infectious diseases. Economic development has played and will continue to play a significant positive role in the transformation of the health of developing nations, but it is important to address the negative health changes that may accompany development so that better programs can be designed and implemented and countries can be better equipped to address the health changes that may follow.

Changes in Disease Burden

Economic Development and the Epidemiologic Transition

A regional analysis of sub-Saharan Africa from the World Bank has shown that key development indicators such as GDP per capita, literacy rates, and immunization rates have continued to increase over the past several years[8] despite the effects of the HIV/AIDS pandemic and even while overall life expectancy has decreased.[9] We propose three points that arise from this observation.

1. Reduced life expectancy because of HIV/AIDS is slowing the emergence of chronic disease epidemics in sub-Saharan Africa but not stopping their emergence.[10] As more Africans survive to older ages, more will survive long enough to suffer from chronic diseases.
2. Economic development indicators in many sub-Saharan African nations are weaker because of the effects of the HIV/AIDS pandemic,[11] but these economic measurements alone may not be capturing the true level of economic, environmental, social, and health changes that are occurring despite the HIV/AIDS pandemic. Life expectancy is declining in some nations, but immunization rates and literacy rates are generally improving.
3. Economic and social changes that accompany development are causing changes in the health profile. Even if mortality due to infectious diseases as a whole is not decreasing, the proportion of deaths from various diseases within the infectious disease category is changing.

Chronic disease is an emerging problem in sub-Saharan Africa, even as the infectious disease burden remains high. In low-income nations, noncommunicable diseases now account for 35 percent of mortality, and an estimated 63 percent of worldwide cardiovascular disease deaths since 1990 have occurred in developing countries.[12] Although the risk of developing a chronic disease is lower in developing countries, such as those in sub-Saharan Africa, than in developed nations, the probability of dying from a chronic disease is greater.[13] Recent analysis of data from Tanzania by Setel et al. estimated that although acute (short-term) illnesses were responsible for most illness and death in children less than five years of age, chronic diseases account for 75 percent of deaths among adult females and 64 percent of deaths among adult males.[14] When considering disability-adjusted life years lost (DALYs), a common, standardized epidemiologic measure of the burden of disease both in years of life lost to early death and in productive years lost to illness or disability, the burden of disease is even more skewed toward chronic conditions, with an estimated 83 percent of DALYs in Tanzanian women and 96 percent of DALYs in Tanzanian men due to chronic diseases and not acute diseases.[15] The high probability of death and disability from chronic disease in sub-Saharan Africa demonstrates the need for adjustments in health systems to provide care for long-term conditions.

The increase in the prevalence of many chronic diseases is a result of the positive developments in health that have extended life expectancy enough for chronic conditions to emerge. Typically, chronic conditions such as hypertension, cardiovascular disease, type 2 diabetes, and cancer do not develop until middle adulthood. Although it is estimated that the most significant risk factors for DALYs in sub-Saharan Africa in 1990 were malnutrition; poor water, sanitation, and hygiene; and unsafe sex,[16] enhanced nutrition, improved water resources, and expanded immunization programs have improved childhood and early adult survival rates in at least some segments of

populations.[17] Improved nutrition reduces macro- and micro-nutrient deficiencies; better water resources reduce the disease burden of trachoma, diarrheal diseases, parasitic worms, and other waterborne infections; and immunization programs reduce deaths from measles, pertussis, diphtheria, tetanus, and other preventable infectious diseases. The occurrence of such improvements is evidence that improvements in health due to developments in agriculture, water, infrastructure, and other sectors are occurring in sub-Saharan Africa, even though HIV/AIDS is limiting the extent of such developments.

Figure 8.3 shows that noncommunicable diseases are a significant cause of illness and death in developing countries, but it also demonstrates that infectious diseases cause even more mortality. One might ask how the distribution of disease burden makes sense if development has improved survival to the point where chronic disease has become significant. We offer two explanations for this finding. First, broad categories such as communicable and noncommunicable disease fail to show changes in disease burden within each category, and, second, the burden of infectious versus chronic disease is not uniform across the population of sub-Saharan Africa.

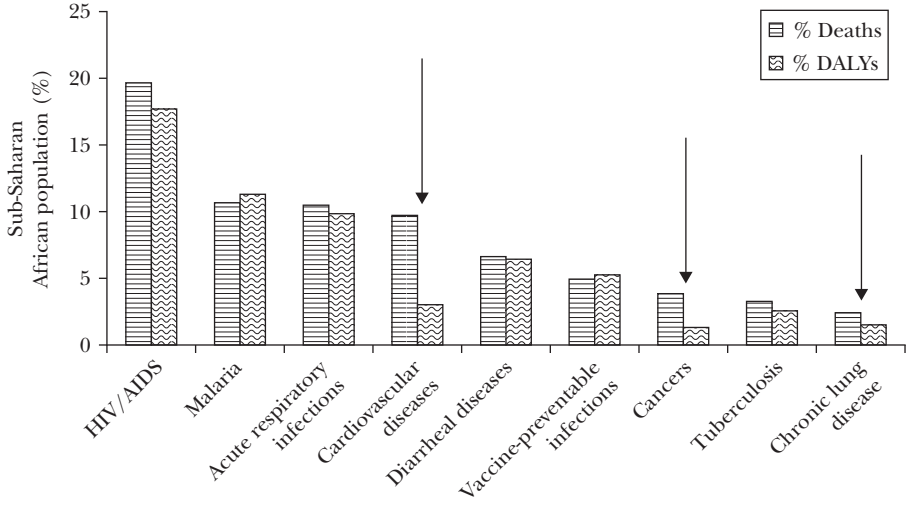

Figure 8.3. Proportion of deaths and DALYs (disability-adjusted life years lost) due to selected conditions. Note that although infectious diseases continue to be leading causes of death in sub-Saharan Africa, chronic noncommunicable conditions are becoming significant causes of mortality. Chronic diseases are responsible for fewer DALYs because the DALY gives more weight to diseases of childhood, and children typically do not develop chronic conditions. (Data from the World Health Organization, *The World Health Report 2004: Changing History* [Geneva: World Health Organization, 2004]).

Analysis of the World Health Reports from 2000 and 2004 shows that the proportion of disability-adjusted life years (DALYs) has shifted during these years.[18] For example, the percentage of disease burden from HIV/AIDS has decreased while the burden from malaria has increased. Another limitation of grouping diseases into communicable and noncommunicable categories is that the categorization fails to capture the nature of the conditions. Some infectious diseases that are persistent and considered chronic might be better grouped with noncommunicable diseases.[19] For example, hepatitis B virus infection persists as a chronic infection and is associated with an increased risk of other chronic diseases such as cirrhosis and liver cancer in infected persons. The change in the distribution of the burden of disease in sub-Saharan Africa is not only the result of a direct shift from communicable to noncommunicable disease but also the result of changes in the distribution, duration, and severity of diseases within these categories.

Our second argument is that the burden of chronic disease is not uniform across regional or national populations. HIV/AIDS is in some ways an unusual infection because it has affected all population groups. In contrast, most chronic conditions are considered diseases of affluence because historically they have affected primarily those with relatively high socioeconomic status, while the burden of infectious disease remains with those of lower socioeconomic status within the sub-Saharan population. The "overlapping of health profiles"[20] means that as development is occurring, the epidemiologic transition is "incomplete": chronic diseases are not replacing the infectious disease burden but rather adding to the already strapped health-care system (figure 8.2).[21] Evidence for the inequality in disease burden comes from studies that have found that increases in hypertension, diabetes, and heart disease are occurring primarily in urban and not rural areas in sub-Saharan Africa.[22] Infectious diseases continue to affect some population groups, particularly poorer populations, as chronic diseases begin to affect other, primarily higher-income, population groups.

Types of Health Indicator Changes

Three epidemiologic concepts relate to the role of economic development in the changing health profile in sub-Saharan Africa. There is little doubt that the disease burden is changing; we are looking for ways to describe and quantify the change so that we can better understand the magnitude of the change and the complex factors contributing to it. The criteria, also shown in table 8.1, used to evaluate epidemiological change are:

1. Is the disease increasing in incidence or prevalence?
2. Is the disease range expanding?
3. Are the symptoms experienced by individuals with the disease becoming more severe?

Table 8.1. Assessing health changes

Category	Incidence/ Prevalence	Geography	Severity	Improving?
Definition	In populations where the disease is endemic, is the incidence (new cases per year) or prevalence (total cases) increasing?	Is the disease being seen in new populations?	Are the symptoms of the disease more severe or is the likelihood of death from the disease increasing?	Is the incidence or prevalence decreasing? Is the range shrinking? Is the severity decreasing?
Examples	Measles and other infectious diseases may increase in incidence during an outbreak. The prevalence of diabetes is increasing.	Schistosomiasis may occur in a new area following dam construction. Obesity may be seen in new populations.	Polio and hepatitis A disease are more severe in adults than children. Chronic diseases are more severe in late stages.	The incidence of vaccine-preventable diseases is decreasing.

The incidence of a disease refers to the number of new cases of a disease in a population in a given time period. The incidence of a disease is related to the proportion of a population that is susceptible to the disease and is a standard epidemiologic measure of the impact of an infectious disease outbreak. Prevalence is a measure of the total amount of disease in a population and is often used to measure the burden of chronic disease. Because chronic conditions rarely have an acute beginning and many people with chronic conditions remain undiagnosed, it is difficult to measure the incidence of most noncommunicable diseases. Unlike measurements of incidence, there is no simple method to calculate the at-risk population in a given time period. Instead, prevalence is the proportion of a total population with a certain disease at a given time. Prevalence does not take into account the length of time a person has had a condition and often does not measure the severity of the disease.

When we refer to the range of a disease expanding, we are interested in the changing geography of a disease and the introduction of disease into new populations. The environmental changes that often accompany a development project, such as irrigation, the building of dams, mining, and the expansion of urban environments, may unintentionally result in the expansion of disease range.[23] For instance, the flooding of an area because of the construction of a dam provides mosquito habitat for the introduction of malaria. The expansion of the range of a disease may also happen as a result of the globalization of economies that fosters increased movement of people and

materials—and infectious diseases—across borders. The steady progression of West Nile Virus, a disease not native to North America, through susceptible avian and human populations across the United States is one example of how quickly an infection can spread as a consequence of human transnational action and movement. Noncommunicable diseases are also expanding in range and affecting new subpopulations. While obesity and the chronic diseases associated with obesity are often called "diseases of affluence" in developing countries, there is new evidence that the chronic disease epidemic is beginning to affect lower socioeconomic status groups in the developing world.[24]

Finally, disease severity refers to the intensity of illness, pain, and disability caused by the symptoms that accompany a disease. For example, the symptoms that accompany infection with certain agents, like the polio virus and hepatitis A virus, increase with age. Improving sanitary conditions, which will reduce exposure to these viruses in early childhood, increases the risk of the severe disease that is more likely to occur in older persons who become infected. Severity may increase also as a result of a more virulent strain of a virus being introduced into a population. The severity of influenza varies from year to year based on the predominant genetic type of the year's influenza strain. The experience of chronic diseases may become more severe or prolonged when treatment is available for mild symptoms, which allows patients to survive and perhaps to experience more severe symptoms, or when diagnosis and management of the disease is delayed.

Mechanisms for the Emergence of Development-Related Diseases

More than thirty years ago, Hughes and Hunter wrote that "the evidence is replete with examples of development interventions that inadvertently increase disease hazards," and they identified six changes that can contribute to shifts in population health status: (1) changes in human-environment interactions, (2) increases in population movement and density, (3) changes in patterns of water flow and water use, (4) changes in vegetation cover, (5) changes in local environmental conditions, and (6) changes in value systems and social sanction systems.[25] Their analysis of the role of technological development in promoting the expansion of infectious diseases in Africa is surprisingly relevant today. While their categories are still useful, we are instead proposing three broader categories for classifying changes so that we can expand the dialogue to more readily include noncommunicable diseases in our discussion of inadvertent disease risk that may be brought on by economic development programs. These mechanisms for change, also described in table 8.2, are:

1. *Environmental*: water development, infrastructure development (electrification, communications, and transportation), habitat destruction, and pollution.
2. *Biological*: changes in immunological profile, insecticide resistance, and other agent (bacterium, virus, parasite), vector (insect-carrier), and host (human) characteristics, including those resulting from aging or other immunocompromising factors.
3. *Sociocultural*: diet and lifestyle, smoking, and changes in contact patterns (crowding and urbanization).

Thus, we can combine the types of changes with the mechanisms for change to describe the extent and pathway for change for particular diseases as shown in table 8.3. Infectious diseases may increase in incidence, range, and (or)

Table 8.2. Mechanisms for the emergence of development-related diseases

Category	Mechanism	Examples
Environmental	Water development, infrastructure development (such as electrification, communications, transportation), habitat destruction, land use, or pollution.	Increased exposure to industrial pollutants may increase asthma prevalence. Water development may increase schistosomiasis.
Biological	Changes in the immunologic profile (percentage of population susceptible); changes in agent (bacterium, virus, parasite) and vector characteristics (includingdrug resistance); or changes in host characteristics (including immune status).	Drug-resistant strains of bacteria may result in an increase in the severity of infection. Changes in mosquito biting habits may increase malaria prevalence.
Sociocultural	Diet and lifestyle, smoking, or changes in contact patterns (crowding, migration, and urbanization).	Dietary changes may increase risk of obesity, hypertension, diabetes, and stroke. Crowding and urbanization may increase the incidence of STIs (sexually transmitted infections) and TB.

Table 8.3. Changes in the epidemiologic profile of infectious diseases in sub-Saharan Africa, by category of change

	Incidence/ Prevalence	**Geography**	**Severity**	**Improvement**
Environmental	HIV/AIDS West Nile Virus Yellow Fever Rift Valley Fever Other Arboviruses Chlamydia/ Gonorrhea Cholera Dengue Hepatitis B Histoplasmosis Leptospirosis Malaria TB Typhus	HIV/AIDS West Nile Virus Yellow Fever River Valley Fever Other Arboviruses Cholera Dengue Giardiasis Kalazar Leptospirosis Malaria Schistosomiasis TB	HIV/AIDS Cholera Dengue Hepatitis A Malaria Staphylococcus TB Typhoid	Hookworm Filariasis Vaccine-preventable diseases Dracunculiasis Onchocerciasis Trachoma Trypanosomiais Childhood ARI (Acute Respiratory Infections)
Biological	HIV/AIDS West Nile Virus Yellow Fever Rift Valley Fever Other Arboviruses Chlamydia/ Gonorrhea Cholera Dengue Hepatitis B Histoplasmosis Leptospirosis Malaria TB Typhus	HIV/AIDS West Nile Virus Yellow Fever River Valley Fever Other Arboviruses Cholera Dengue Giardiasis Kalazar Leptospirosis Malaria Schistosomiasis TB	HIV/AIDS Cholera Dengue Hepatitis A Malaria Staphylococcus TB Typhoid	Hookworm Filariasis Vaccine-preventable diseases Dracunculiasis Onchocerciasis Trachoma Trypanosomiais Childhood ARI
Sociocultural	HIV/AIDS West Nile Virus Yellow Fever Rift Valley Fever Other Arboviruses Chlamydia/ Gonorrhea Cholera Dengue Hepatitis B Histoplasmosis Leptospirosis Malaria TB Typhus	HIV/AIDS West Nile Virus Yellow Fever River Valley Fever Other Arboviruses Cholera Dengue Giardiasis Kalazar Leptospirosis Malaria Schistosomiasis TB	HIV/AIDS Cholera Dengue Hepatitis A Malaria Staphylococcus TB Typhoid	Hookworm Filariasis Vaccine-preventable diseases Dracunculiasis Onchocerciasis Trachoma Trypanosomiais Childhood ARI

severity because of environmental, biological, and (or) sociocultural changes. Similarly, noncommunicable diseases may increase in prevalence, range, and severity because of environmental, biological, and (or) sociocultural changes. Assessing both the extent of and the mechanism for the emergence of development-related diseases is critical for exploring the health effects of development. Most changes do not exist in isolation; consideration must be given to the complexities of changes in disease processes.

Environmental Changes

Environmental factors that contribute to disease include biophysical factors such as suitable habitat for the presence of insect vectors, animal reservoirs, population density, and land cover; chemical substances in air, water, and soil; geographic characteristics, climate, and weather; and industrial exposures to waste, radiation, and air pollution. Environmental change refers both to changes in biophysical properties, such as water, air, or forest cover, and to changes in the way humans interact with their environment. Environmental changes increase the spread of infectious diseases by providing new environments for the growth of infectious agents and by changing the migration patterns of infected persons, animals, birds, and insects, unintentionally facilitating contact with new susceptible populations. Chronic diseases increase as a result of increased exposure to harmful substances, including smoke, solar radiation, and contaminated water.

Agricultural intensification, urbanization, deforestation and reforestation, and water development projects like dams, canals, and irrigation are known to create increases in infectious disease incidence and range.[26] Water development projects may create new disease burdens by increasing the spread of waterborne diseases; providing a reservoir for intermediate hosts, such as snails, which transmit parasites; and providing a breeding ground for mosquitoes. Onchocerciasis (river blindness) and mosquito-borne diseases, such as malaria, lymphatic filariasis, and yellow fever, may increase in incidence following water development.

As an example, consider the effect of water development on schistosomiasis in Senegal. The construction of two dams has had positive socioeconomic benefits by transforming agriculture, improving crop productivity, creating new jobs, and increasing nutrition. But the feasibility studies that touted the economic benefits of the dams' construction minimized the potential disease hazards of water-resources development and neglected disease prevention. As a result, the local health systems were overwhelmed by the epidemic of intestinal schistosomiasis (also called bilharzia) following dam construction.[27] The building of dams and irrigation canals creates new water bodies that provide habitat for aquatic snails, and changes in the ways humans interact with the water through swimming, fishing, washing, and farming may enable susceptible individuals to acquire *Schistosoma* infection, which causes schistosomiasis.[28]

Thus, we see that water development projects that may reduce malnutrition because of improved agriculture may unintentionally result in the emergence of different health concerns. Health inequalities between rural and urban residents may also be exacerbated if the hydroelectric dam provides electricity to urban areas and not to the population that lives near the dam.

The mechanisms by which environmental factors increase the prevalence of noncommunicable diseases is often not mentioned in the dialogue surrounding development projects. However, industrial pollutants are known to increase risk of asthma and chronic bronchitis.[29] The soil erosion that follows rainforest deforestation releases mercury, a known human carcinogen, into the rivers and food chain.[30] Because the slow onset of symptoms associated with most chronic diseases makes it difficult to prove an association between specific types of development and the increased prevalence or range of many chronic diseases, most feasibility studies for economic development projects do not consider the full impact of development on community health.

Biological Changes

Biological changes include microbial adaptation and change, such as the development of antimicrobial and insecticide resistance, and changes in human susceptibility to infection due to aging, nutrition, and other causes of immunosuppression.[31] Although related to environmental change, changes in the biology of infectious agents, insect transmitters, and humans are a distinct contributor to increases in disease. The transmission of infection might be enhanced by biological changes in the infectious agent or vector, or human susceptibility might be increased by reduced immune system functioning. Other biological changes include the evolution of new genotypes of parasites, bacteria, and viruses; increased infectivity (ability to cause infection in a susceptible human host); increased pathogenicity (ability to cause symptoms in an infected host); and increased virulence (severity of disease).

Malaria is reemerging as a holoendemic disease in many parts of Africa not just because of population movement and the creation of new mosquito breeding sites by water development projects but also because of the rapid spread of resistance to antimalarial drugs and changes in the behavior of mosquito-biting habits.[32] Biological changes that affect the transmission of parasites include changes in vector development, survival, or behavior; host behavior, resistance, or immunity; the life cycle development of the parasites and time between generations; parasite survival and transmission rates; and parasite-parasite and parasite-natural enemy interactions.[33] In other words, pesticide-resistant *Anopheles* mosquitoes may become hardier, allowing more vectors to survive and potentially transmit the parasite. Similarly, global warming is thought to allow the *Plasmodium* parasite to mature faster so that the mosquito vector does not need to survive for as long to transmit the parasite. The result is that malaria can expand its range, increase in incidence, and

become more severe as drug resistance makes it more difficult to treat the infection.

Changes in individual human susceptibility caused by immunosuppression, poor nutrition, aging, or drug use also increase biological risk of disease. For example, higher-income adults in Africa may be at risk of severe hepatitis A disease, a waterborne infection, because improved water supplies have prevented the development of antibodies to fight the viral infection.[34] When young children become infected with hepatitis A virus (HAV), they rarely have symptoms yet develop a lifelong immunity to HAV. When older children and adults become infected, however, they are at risk of severe liver disease and even death. Thus, the decrease in the infection rate as socioeconomic status and access to water increase has a paradoxical effect: as development lowers the incidence rate, the average age of infection increases and the risk of deaths from hepatitis A disease may increase.

An increase in the proportion of a community that is susceptible may also increase the risk of an outbreak of a communicable disease. "Herd immunity" means that a certain threshold of the population must be immune either from previous infection or from vaccination to prevent an outbreak. Recent measles outbreaks in the United States have emphasized the need to maintain community immunity levels. Community susceptibility can increase because of interrupted hesalth services, in-migration of new susceptible persons, and the presence of infants and children who have not yet been vaccinated or developed natural immunity.

Sociocultural Changes

Sociocultural change, as we are using the term, refers to changes in the ways humans interact with one another and the resources available to them. This includes, but is not limited to, population density, migration, health-care changes, and lifestyle transformations. The standardization of immunization programs has reduced the burden of vaccine-preventable diseases in children, but changes in diet, physical activity, smoking, and alcohol use are contributing to significant rises in obesity, hypertension, diabetes, and stroke, especially in urban residents.[35] The westernization of African lifestyles through consumption of high-fat diets and increasingly sedentary habits[36] often accompanies the economic development that has brought the initial improvements in health.

Overnutrition is an indication of a steady food supply but is associated with increased risk of many chronic diseases. Overweight and obesity in women[37] and in preschool children[38] is becoming more common in sub-Saharan Africa and is concentrated in urban areas and among women with higher levels of education. Hypertension prevalence is low in rural Africa but slightly higher among the urban poor and working class.[39] The total hypertension prevalence is probably as high as 5 to 10 percent of the total population in the region.[40]

The prevalence of diabetes in sub-Saharan Africa is projected to increase by 161 percent between 2000 and 2030, more than doubling the current prevalence.[41] A study of stroke prevalence found higher-than-expected rates in South Africa,[42] and the rates in other parts of sub-Saharan Africa also may be higher than reported.[43] Although only a small subpopulation of sub-Saharan Africans have adopted a western lifestyle, these diseases of affluence are not limited to high-income populations. Risk factors for cardiovascular disease such as tobacco use and alcohol consumption are readily available across all socioeconomic strata,[44] and cardiovascular disease will increase as more people adopt a western lifestyle. Lung cancer and liver disease are also likely to rise.

Social changes also affect the burden of infectious diseases. For instance, the burden of disease from parasitic infection can be influenced by nutrition, hygiene, contact patterns, access to medical care, habitat development project, population growth, migration patterns, and conflict.[45] Urbanization, a type of sociocultural change, can increase risk for infectious diseases by increasing contact rates, especially among rural migrants attracted to cities for wage-labor opportunities. Migrants often live in urban slums, which are characterized by crowded conditions, limited water access, and no sewage system. The impoverished conditions and close contact patterns facilitate the spread of infection and resident susceptibility to infections such as tuberculosis. This is another example of the growing inequality in the health profile: while tuberculosis is not limited to the poor fringes of urban society and HIV/AIDS is increasing the incidence of TB, wealthier members of society may be more likely to have access to diagnosis and treatment.[46]

In this chapter we argue that socioeconomic development in sub-Saharan Africa is associated with an increase in noncommunicable and some infectious diseases. We propose a framework for assessing emerging disease risks using an environmental-biological-sociocultural framework to examine the development processes that might lead to increased incidence or prevalence, increased range, and increased severity, as well as developments that positively affect health. Using this framework, we show that sub-Saharan Africa faces a dual burden of disease as noncommunicable diseases increase in prevalence while the burden of infectious diseases remains high. It is still essential that the primary focus of research and public health interventions in sub-Saharan African countries be the current challenges of infectious disease.[47] HIV/AIDS, tuberculosis, and malaria demand our attention and resources. However, the primary health needs in sub-Saharan African should be balanced with research that addresses emerging noncommunicable diseases and shifting infectious disease risks.

This chapter also highlights areas that call for attention when planning economic development programs. The increasing health burden from chronic disease necessitates that developing countries begin to develop their own context-appropriate models of health research and health interventions to

provide care for cardiovascular diseases, stroke, and other emerging noncommunicable diseases,[48] and prepare their health systems to manage emergent diseases of development. The unintentional consequences that may arise from development programs calls for holistic approaches to understanding potential disease risk by bringing together experts from different specialties.[49] This chapter can contribute to expanding the dialogue on diseases of development and formulating new strategies for addressing problems as they begin to emerge.

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9

THE ECONOMIC BURDEN OF BURULI ULCER DISEASE ON HOUSEHOLDS IN RURAL GHANA

Frank N. F. Dadzie, Ellen A. S. Whitney, and Gerald M. Mumma

Buruli ulcer (BU) is a little understood, severely debilitating skin disease caused by *Mycobacterium ulcerans* that has serious health and economic consequences. The slow growing environmental *Mycobacterium* clinically manifests as papules, nodules, plaques, edema, ulcers, and scars with or without contracture. Although its mode of transmission is not fully understood, the disease-carrying agent has been identified as belonging to the family of pathogens that cause tuberculosis and leprosy.

BU begins as a painless nodule. If not treated early, the organism gains access to the subcutaneous tissue and develops a unique toxin called *mycolactane* that suppresses the immune system, and invades the lymphatic system and blood vessels of the patient. The patient feels no pain until it is too late, by which time the patient's skin tissue and other vital organs have been severely damaged. The result is extensive scarring, permanent disability, or in very rare cases even death. Medical treatments for the lesions are generally disappointing, leaving wide surgical excision as the only effective treatment.[1] Generally, treatment involves hospitalization for debridement and skin grafting, which frequently has to be repeated.[2] Current epidemiological studies reveal lopsided prevalence rates among children between the ages of 2 and 14,[3] although the disease is not confined to any specific age group.

Few studies have assessed the economic impact of BU on its victims. With the exception of two studies, one in the Côte d'Ivoire[4] and the other in Australia,[5] most of the existing research on the economic aspects of the disease has been conducted in Ghana,[6] one of the most severly affected countries. The studies in Ghana have focused on one of the most endemic areas in Ghana[7] and have researched health-facility-based treatment costs and

outreach-based costs of the Buruli ulcer. In this chapter, we analyze the economic burden of BU on affected households in three endemic rural districts of Ghana. They are the Upper Denkyira, the Amansie West, and the Atwima districts. These three districts collectively account for some 60 percent of reported cases in Ghana.[8]

Although the Ghanaian government, along with other public and private donors, subsidizes treatment for BU, substantial shares of the treatment costs and productivity losses associated with the disease are borne by its victims and their households. The extent of this economic burden on households and the ultimate effect on combating the disease is currently unclear. Furthermore, since BU presents itself in distinctive disease stages, early treatment may lead to improved health outcomes at lower costs. At present, there is limited information about the economic value and cost savings from early treatment of BU. Therefore, estimates of the economic cost of BU are needed to allow for an informed assessment of the value of interventions designed to prevent, control, or manage the disease.

This study assessed the cost of BU to households in three endemic districts in Ghana, covering the first nine months of 2003. The costs of treatment were recorded by stage of disease per affected individual. The data collected covered households in the three endemic districts of Ghana, in which at least one person had a BU disease.

Methods

We used a 2003 household-stratified survey to collect socioeconomic (education), demographic (gender), and disease-specific (stage of disease) data from households affected by BU in Upper Denkyira (UD), Atwima (AT), and Amansie-West (AW) districts in the central and Ashanti regions of Ghana. The target population included all households in the study area in which a member had BU or had died from BU. We defined a case of BU as an individual in the target population who met the WHO clinical case definition for BU disease. A household was defined as a basic social and economic unit in which the residents ate from the same pot, and for practical purposes, the head of household was identified as a woman or man, eighteen years of age or older, who knew about, and could speak on, how resources were generated and utilized in the household on a day-to-day basis. We used a stratified multistage sample design and simple random sampling within the substrata to identify households. The stratum was the district where the BU case and the affected household lived. The substrata were the three general stages of the disease: pre-ulcerative, ulcerative, and post-ulcerative stages. For each case and stage of BU, we calculated the direct and indirect economic costs and compared the costs between and within each substratum of the disease. The direct costs[9]

to a household due to BU for 2003 included the value of all resources used to treat and manage illness and disability during the nine-month period between January and September 2003. Similarly, indirect costs[10] to a household (due to BU for 2003) were the weighted value of all resources that were consumed or lost as a result of the prolonged morbidity and (or) reduced productivity. To obtain the cost to a household on a per case basis, we summed up the direct and indirect costs of BU to obtain the total cost of illness for an individual, summed up this value across all BU cases, and divided by the number of BU cases for which costs were reported in the nine-month period in 2003. The elements of the direct and indirect costs are as shown in table 9.9. We compared the costs to a household per case of BU between and within each stratum: nodules and edema or plaque for the pre-ulcerative stage; ulcer with joint involvement and ulcer without joint involvement for the ulcerative stage; and scar with visible contracture of joint and scar without visible contracture of joint for the post-ulcerative stage.

Results

There were 411 BU cases from the 351 households surveyed. Table 9.1 depicts the overall distribution of the cases by age and by district. It shows that children aged 15 years or less account for 53 percent of the reported cases, compared with 27 percent by those aged 16 to 30, 15 percent for those aged between 31 to 65, and 5 percent for those above 65 years of age. Also, distribution by districts is consistent with this pattern.

A breakdown by age of the BU cases reported for the first nine months of the year 2003 showed there were 12 cases in the pre-ulcerative stage, 66 cases in the ulcerative stage, and 265 cases in the post-ulcerative stage. Of the twelve cases in pre-ulcerative stage, ten (83 percent) were children aged 15 years or less. This consists of seven (100 percent) for nodules and three (60 percent) for plaque or edema. Of the 66 reported cases in the ulcerative stage, 47 percent of patients were 15 years or less; 32 percent were between the ages of

Table 9.1. Distribution of Buruli ulcer cases by age and district

Age range	Reported cases (%)	Upper Denkyira District (%)	Atwima District (%)	Amansie-West District (%)
0–15 years	53	52	52	54
15–30 years	27	25	25	29
30–60 years	15	17	18	13
Above 60	5	9	5	4

16 and 30 years; 15 percent were between the ages of 31 and 65, and 6 percent were above 65 years of age (table 9.3). Fifty percent of the 265 cases reported for the post-ulcerative stage were children aged 15 years or less, 29 percent were between the ages 16 and 30, 17 percent between the ages 31 and 65, and 4 percent above the age of 65.

On examination of the distribution of disease stage by age, gender, and education, our results showed that, at the pre-ulcerative stage, children aged 15 years or less accounted for one hundred percent of the nodules and sixty percent of the plaque or edema (table 9.2). Fifty-seven percent of the nodule cases were males, while forty-three percent were females. At the ulcerative stage (table 9.3), males dominated those whose ulcers had joint involvements. However, females reversed the domination when we consider ulcers with no joint involvements. At the post-ulcerative stage (table 9.4), females dominated the three states, with the exception of those aged 16 to 30 who had scars with visible contracture. The exception also included those of the same age group who were amputated, and children aged 15 years or less whose scars had no visible contractures.

In the post-ulcerative stage (table 9.4), children under age 15 made up 48 percent of those with scars and visible contracture, and 52 percent of those with scars but no visible contracture. The corresponding figures for the other age groups were 33 percent and 29 percent, respectively, for those between

Table 9.2. Pre-ulcerative Buruli ulcer disease by age, gender, and education, 2003

Disease stage	Age group	N	Gender		Education*					
			Female	Male	0	1	2	3	4	5
Nodules	0–15	7	43	57	29	57	14	0	0	0
	16–30	0	—	—	—	—	—	—	—	—
	31–65	0	—	—	—	—	—	—	—	—
	65+	0	—	—	—	—	—	—	—	—
Plaque or Edema	0–15	3	0	100	33	67	—	—	—	—
	16–30	1	0	100	0	100	—	—	—	—
	31–65	1	100	0	0	100	—	—	—	—
	65+	0	—	—	—	—	—	—	—	—

* Definitions of education level:
0 = No Education.
1 = Primary School.
2 = Middle School/Junior Secondary School.
3 = Secondary/Senior Secondary/Commercial/Technical/Teacher Training.
4 = Post-Secondary (Polytechnic).
5 = University.

Table 9.3. Percentage distribution of ulcerative stage by age, gender, and education, 2003

Disease stage	N	Age group	Gender		Education*					
			Female	Male	0	1	2	3	4	5
Ulcer on joint										
	11	0–15	45	55	9	91	0	—	—	—
	10	16–30	50	50	0	30	70	—	—	—
	5	31–65	40	60	20	20	60	—	—	—
	2	65+	50	50	33	0	67	—	—	—
Ulcer not on joint	20	0–15	55	45	0	80	20	0	—	—
	7	16–30	71	29	14	57	14	14	—	—
	5	31–65	60	40	60	20	20	0	—	—
	2	65+	50	50	50	0	50	0	—	—

*See categories in table 9.2.

Table 9.4. Percentage distribution of post-ulcerative stage by age, gender, and education

Disease stage	N	Age group	Gender		Education*					
			Female	Male	0	1	2	3	4	5
Scar, visible contracture										
	20	0–15	65	35	10	71	19	0	—	—
	14	16–30	36	64	14	29	50	7	—	—
	7	31–65	86	14	43	29	29	0	—	—
	1	65+	100	0	100	0	0	0	–	—
Scar, no visible contracture										
	112	0–15	43	57	8	79	13	0.89	0	—
	59	16–30	64	36	10	27	58	3	1.69	—
	36	31–65	78	22	50	14	36	0	0	—
	10	65+	80	20	80	0	20	0	0	—
Amputation										
	0	0–15	—	—	—	—	—	—	—	—
	4	16–30	25	75	50	50	—	0	—	—
	2	31–65	100	0	0	50	—	50	—	—
	0	65+	—	—	—	—	—	—	—	—

*See categories in table 9.2.

16 and 30 years of age; 17 percent even for those aged 31 to 65 in both stages; and 2 percent and 5 percent, respectively, for those above 65 years of age. No child aged 15 years or less was recorded to have had an amputation out of the total of six amputations recorded for 2003.

None of the patients in the pre-ulcerative stage attained education beyond primary school level (table 9.2). Twenty-nine percent of the children with nodules had no education, while 57 percent attained primary education, and 14 percent had secondary education or its equivalent. For plaque or edema, most patients had no more than a primary school education, and 33 percent of children aged 15 or less had no education. In comparison with the pre-ulcerative stage, an increasing proportion of the higher age groups in the ulcerative stage had no education, but those who were educated had at least a middle school education, and 14 percent of the age group 16 to 30 whose ulcers had no joint involvement had a secondary education or its equivalent. With the exception of the age group 16 to 30 in the stages of scar with visible contracture and amputation, and the age group 0 to 15 for scar with no visible contracture, the cases in the post-ulcerative stage were heavily skewed toward female patients. The highest education level was found in the age group 16 to 30, although only 1.69 percent of this age group had a post-secondary education. However, the same age group showed the highest proportion of people who had a middle school education in the two stages of scar *with* and *without* visible contracture. Again, the educational level for the majority of the cases was either primary education or middle school/junior secondary school education.

Table 9.5 shows both the number of BU cases reported in the survey and the number of cases that were treated in each of the stages. The overwhelming majority of the cases (89.5 percent) had their infections advance to the ulcerative stage and beyond, with only 10 percent reportedly cured in the pre-ulcerative stage. Some 236 (57 percent) of the 411 cases left sequelae of scars with no visible contracture; fifty-five (13 percent) were ulcers with no joint involvement; and forty-nine (12 percent) were scars with visible contracture.

Table 9.5. Classification of cases by stage of disease

Stage of disease	No. of observations
Pre-ulcerative	
Nodule	24
Plaque/Edema	22
Ulcerative	
Ulcer on joint	43
Ulcer not on joint	55
Osteomyelitis (bone infection)	1
Post-Ulcerative	
Scar with visible contracture	49
Scar with no visible contracture	236
Scar with Osteomyelitis	2
Amputation	6
Scar with organ involvement	0
Scar with previous organ involvement	0

Table 9.6. Location of disease

Location of disease (N = 411)	No. of observations	Percentage
Head	3	0.73
Neck	4	0.97
Eye	1	0.24
Ear	0	0.00
Nose	0	0.00
Face	5	1.22
Fingers	6	1.46
Hand	107	26.03
Wrist	11	2.68
Elbow	22	5.35
Arm	17	4.14
Shoulder	15	3.65
Trunk (Front or back)	37	9.00
Foot	23	5.60
Ankle	27	6.57
Knee	33	8.03
Leg (no joint involvement)	112	27.25
Buttocks or genitals	9	2.19

Table 9.7. Reported treatment options for BU patients, 2003

Treatment options	Number reporting	Yes	No	Percentage reporting Yes (%)
Self-treatment	398	50	348	0.13
Spiritual healers	398	1	397	0.00
Traditional healers	398	3	395	0.01
Formal health facility	398	136	262	34.00
Hospitalized	138	90	48	35.00
Rehabilitated	345	6	339	1.70

The locations of the disease are shown in table 9.6; significant proportions of the reported cases were located on the lower (26 percent) and the upper (25 percent) limbs. Table 9.7 tallies the treatment options adopted by those affected by the disease. Of the total reported cases, 66 percent sought treatment in a formal health facility. Of these, 34 percent were hospitalized for treatment, and 7 percent were rehabilitated.

Costs data (table 9.8) from the first nine months of 2003 show the following costs to a typical household due to a BU case at each stage of the disease: nodular stage—$23.44 (SD $12.12); plaque or edema stage—$713.81 (SD $378.72); ulcer on the joint— $289 (SD $84.45); ulcer not on the joint—

Table 9.8. Average direct and indirect costs at disease stage, 2003

Stage of disease	N	Direct costs $ (SD)	N	Indirect costs $ (SD)	N	Total cost $
Pre-ulcerative						
Nodule	4	23.44 (12.14)	—	—	4	23.44 (12.14)
Plaque/Edema	5	466.78 (301.64)	5	247.03 (86.69)	5	713.81 (378.72)
Ulcerative						
Ulcer not on joint	20	7.75 (52.68)	15	106.97 (50.42)	22	80.66 (49.18)
Ulcer on joint	25	235.21 (88.73)	24	79.94 (24.43)	27	288.84 (84.45)
Osteomyelitis	—	—	—	—	—	—
Post-ulcerative						
Scar, no contracture	43	60.61 (14.40)	120	62.85 (9.39)	127	79.91 (7.75)
Scar, contracture	15	43.95 (19.69)	30	213.90 (18.76)	33	214.43 (22.98)
Amputation with or without prosthesis	2	183.09 (181.06)	5	317.87 (17.31)	5	391.10 (78.29)

SD = standard deviation.

$80.66 (SD $49.18); scar with visible contracture—214.43 (SD $22.98), and scar without visible contracture—$79.91 (SD $7.75). These costs estimates are derived from both direct and indirect costs, the components of which are detailed in Table 9.9.

Discussion

The results presented in this chapter confirm some findings about BU that have been cited in other studies.[11] The first of these findings relates to the age distribution of the disease. Those aged 15 years or less bear a larger share of the health burden at each stage of the disease, which suggests that these communities should expect mounting losses in productivity, and hence, increased indirect costs as their economically active population of the future continues to be burdened by the debilitating outcomes of BU. It therefore calls for urgent action on the part of all stakeholders to control the rates of infection, particularly among children.

A substantial share of the infections develop into the ulcerative lesions and beyond, which is often explained as a failure to seek early care because of limited economic resources. In this study, 89.5 percent of the cases reported had their infections develop into ulcerative stages and beyond. These stages require extensive surgical treatment and prolonged hospitalization. Prolonged hospitalization in turn requires family members to invest considerable resources to cure the afflicted patient. It also requires family members to designate an accompanying caregiver who may need to attend to the needs of the patients during their hospitalization, often spending as much time at the treatment facility as the patient is required to stay. This phenomenon has

Table 9.9. Elements of direct and indirect costs used in estimation

Cost category	Direct costs	Indirect costs
Self-treatment	Cost to self-treat Cost of medications to self-treat	Value of time spent on self-treatment
Spiritual healer	Expenses at spiritual healer Out-of-pocket cost of travel to spiritual healer	Value of travel time to the spiritual healer
Traditional healer	Expenses at traditional healer Out-of-pocket cost of travel to traditional healer	Value of travel time to the traditional healer
Health facility	Expenses at health facility Out-of-pocket travel expenses to health facility Net food costs at health facility Amount paid to someone else for caregiver's work	Value of time the patient was hospitalized Value of travel time to the health facility Time spent waiting for doctor Time spent waiting for hospital card Less amount paid to someone for caregiver's work
Costs due to functional limitations		Weighted productivity loss because of functional limitations
Schooling time foregone	School fees paid but not used or retrieved	Hours of school lost by patient Hours of school lost by caregiver
Community costs	Costs to the community Other costs not discussed	Community activities not carried out because of BU Travel costs to the community

far-reaching implications for indirect costs incurred by the affected households. The sacrifices made by the households go beyond the unplanned expenditures for food and the loss of productivity of the diseased patient and involve sacrifices made by other members of the household who must forego their needs to meet expenses related to the treatment of their beloved member of the family. All of these sacrifices are made in an economic environment of poverty, where per capita income is $100 or less. Therefore, BU, in whatever stage, confers difficult economic challenges on households that are already burdened by the exigencies of poverty.

The costs of treatment depicted in table 9.7 show that considerable cost savings may exist in treating the disease at the nodular stage. Although the sample size may not be large enough to render this result credible, our data concur with the existence of cost savings at the nodular stage, as was emphasized in another study.[12] The unusually high costs for plaque or edema can be explained partly by insufficient sample size, but it is also explained by the rapid development of the disease through this stage into an ulcerative stage.

Buruli ulcer disease poses serious economic challenges to diseased households in rural Ghana. This chapter reveals that more than 50 percent of the afflicted are children 15 years of age or less. The economic cost of the disease, which includes the loss of productivity and current production, could be potentially devastating to households that are already trying to survive at poverty income levels. The evidence suggests that this economic cost is a function of the degree of ulceration, with advanced forms of the disease imposing a considerable economic burden on households. Data for 2003 suggest that some cost savings exist if the disease can be treated early enough. The way to realize these savings is to promote a proactive outreach search and treatment of the disease.

Notes

1. Portaels, "Epidemiology of Mycobacterium Diseases," 214.
2. Drummond and Butler, "*Mycobacterium ulcerans*," 1038.
3. Asiedu and Etuaful, "Socioeconomic Implications," 1017; Marston et al., "Emergence of Buruli Ulcer Disease," 219–24.
4. Marston et al., "Emergence of Buruli Ulcer Disease," 219–24.
5. Drummond and Butler, "*Mycobacterium ulcerans,*" 1038–43.
6. Amofa et al., "Buruli Ulcer in Ghana," 170; Dadzie et al., "Assessing Direct Costs," 132.
7. Asiedu and Etuaful, "Socioeconomic Implications," 1015.
8. Amofa et al., "Buruli Ulcer in Ghana," 168–70.
9. For households who sought and received treatment from a health facility, direct BU cost was the weighted sum of the amount of money spent by the household on treatment of BU at a facility, out-of-pocket cash travel expenses to health facilities,

expenses on food beyond the regular daily expenses at home, and the portion of school fees already paid but unused by school-age children afflicted with BU. For those who treated themselves, direct BU cost was the weighted sum of expenditure on non-prescription and prescription drugs and materials purchased to self-treat at home.

10. For households who sought and received treatment from a health facility, indirect BU cost was the weighted sum of the value of time: (1) spent by the household during the hospitalization of the BU patient, (2) to travel to and from the hospital, and (3) to wait for a treatment card and to see the doctor. We calculated the opportunity cost of productive time away from work, home, or leisure as the product of local wages, generally referred to as "by-day," and the time tending to BU.

11. Asiedu and Etuaful, "Socioeconomic Implications," 1017–21; Amofa et al., "Burden and Epidemiological Characteristics," 169; Marston et al., "Emergence of Buruli Ulcer," 219–24**.**

12. Dadzie et al., "Assessing Direct Costs," 134.

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10

HEALTH ISSUES IN A MINING COMMUNITY IN SOUTH AFRICA

Freek Cronjé and Charity Chenga

Health issues in mining communities in South Africa are unique because of the nature of the mining industry. The illnesses and diseases that will be discussed in this chapter are not exclusive to the mining industry, but it is the risk factors associated with the mining environment and communities that exacerbate the incidence of these illnesses and diseases and make the subject matter burning and relevant.

The unique characteristics of the mining environment in South Africa are that mining communities are mainly isolated, originally rural with high illiteracy rates, and consequently, they become dependent on the mining companies for their livelihood and development. The rural-based environment often becomes barren and ugly from large-scale excavation. In addition, communities are often exposed to toxic environmental hazards from mine operation wastes. Mining is by its nature a temporary activity because of its dependence on the available mineral deposits. It is also fast growing and generates high earnings for the mining corporations, which has an impact on the local communities, who are usually unable to respond to this across-the-board momentum because of their rural background. Consequently, the local population experiences cultural shock and does not respond effectively to the developmental changes, occupational skills requirements, and rapid change from an agricultural-based society to a cash-dependent environment. This has resulted in companies depending on labor from elsewhere. Against this background, what is often observed in mining communities in South Africa are some or all of the following:

- loss of livelihood, especially for women, because the mining industry is not gender sensitive; opportunities for employment are few as compared with the agricultural environment that existed prior to the emergence of the mining industry;

- discriminatory practices that have a disempowering effect on women to the extent that it impacts on sustainable social, cultural, and economic development of the communities;
- vast social inequalities between the poor and the wealthy;
- high rates of unemployment, especially for the local population;
- underdeveloped communities, neither rural nor urban in nature;
- isolated communities with limited scope for development of alternative markets and industries;
- high prevalence and incidence of communicable and poverty-related diseases such as HIV/AIDS and tuberculosis (TB);
- high influx of migrant labor;
- physical degradation of the landscape; and (or)
- high levels of potentially dangerous and toxic waste products from mine operations.

A discussion of health in the mining communities of South Africa is not complete without looking at the political history of the sector and the subsequent power relationships between the mining corporations, government, and communities. According to Mbendi's website, in order to get a better understanding of the political history of the sector, it is important to look at the historical background of migration in the mining industry.[1] Schoofs argues that the scale of mining explains why the Draconian system of migrant labor was imposed and in turn paved the way for apartheid. To maintain profitability, the mining industry required cheap labor and consequently looked outside its borders. In addition, he argues that white labor, imported for their mining skills and experience shortly after gold was discovered in 1886, saw blacks as a threat to their relatively high wages. To combat this threat, the white unions forced the industry, and then government, to adopt the "color bar," banning blacks from skilled jobs and preventing black workers and black families from settling permanently in mining towns. These policies were the forerunner of the apartheid system. The impact of these policies on the social and economic conditions in mining communities has been identified as the major risk factor associated with health issues in these communities.[2]

Despite a new political dispensation (resulting from the eradication of the *Apartheid System* to the first democratic political system) in 1994, these social and economic conditions still continue in the mining communities. Globally and nationally, there has been pressure on corporations to be more accountable for their actions in the communities in which they operate. This entails that companies not only focus on the profitability and production of the company but also direct the focus of their core business toward corporate social responsibilities, which implies being involved in sustainable development in the communities.

Historically, lack of environmental regulation has had a direct impact on the health of people, communities, and obviously on the environment itself. Although stringent regulations have been introduced in recent decades, the

legacy of health problems associated with mining remains prevalent.[3] Health issues in mining communities are associated with both physical and social mining environmental factors. For this chapter, physical mining environmental factors include dust and other harmful particles in the air and water,[4] excessive noise from blasting and other mining operations, and overcrowded and unhygienic living conditions.

The most common illnesses and diseases associated with these environmental threats include TB, silicosis, airborne and water-associated illnesses (asthma, other chronic chest infections, sinusitis, eye problems, diarrhea, and cancer), and hearing problems.

Mining communities in South Africa are also characterized by poor social conditions, as already suggested, such as poverty, unemployment, poor housing and infrastructure, prostitution, and a high influx of unaccompanied migrant labor.[5] Major health issues in this regard are the extraordinarily high incidence rate of HIV/AIDS and STIs, unwanted pregnancies, malnutrition, alcohol addiction, and mental illness.

The health issues raised in this chapter are the result of research undertaken at a specific platinum mining community in the North-West Province of South Africa. The scope of the health issues under discussion relates only to the communities and not the employees, except where they interrelate with each other, such as communicable diseases.

The main objectives of this chapter are to identify the risk factors and vulnerability of mining communities with regard to health; and to introduce the concepts of social responsibility and accountability as agents for the development and sustainability of the health structure in the mining communities.

Research Methodology

The vast majority of the communities in this survey are underdeveloped and semirural with a very low literacy level. This means that a quantitative research method was unsuitable and would not produce the comprehensive results that a qualitative research method would. The qualitative method was a better choice for the subject matter in that it enabled the respondents to expand on their points of view without being limited by the questions. Data-collection methods included focus groups and interviews. Focus groups (eight to twelve people) and interviewees were selected purposely to take account of gender, race, migrant or local status, age, and specific interest groups.[6] To enhance the scientific nature of the study, two researchers and a translator, where necessary, facilitated each focus group and personal interviews.

The interviews with the respondents were translated where necessary and transcribed. The translated version supplied information that was qualitatively interpreted by the researchers. A more theoretical (contrary to a practical)

approach—that is the interpretation of written sources (literature control)—was used as the basic point of departure for the analysis and interpretation of the results.

According to Guba (in Krefting), there are four important elements for increasing trustworthiness in qualitative research:[7]

- truth value (confidence in the truth of the findings and the context in which the study was undertaken);
- applicability (the degree to which the findings can be applied to other contexts and settings or with other groups);
- consistency (whether the findings would be consistent if the inquiry were replicated with the same subjects or in a similar context); and
- neutrality (the degree to which the findings are a function solely of the informants and conditions of the research and not other biases).

The researchers tried their utmost to guide their research and material according to these elements during the study.

The communities under study are adjacent to the mining operations. However, some health issues pertaining to the "sending" communities (country of origin of migrants), both within and outside the South African borders, also will be discussed. All the communities, except for two, have a similar socioeconomic nature, namely black and poor with a high incidence of unemployment coupled with a poor infrastructure. The two exceptions are predominantly white with socioeconomic conditions and infrastructure that is of high standard. Most of the health issues raised in this study and discussed in this chapter will relate to the communities with poor socioeconomic conditions. Pretoria (about 45 miles east) and Rustenburg (about 25 miles west) are the two cities nearest to the mine.

Although a qualitative study, the researchers kept a record of the demographic data of the research subjects (table 10.1).

Table 10.1. Demographic composition of respondents

Demographic composition	**Percentage**
Black respondents	85
White respondents	15
Female participants	58
Male participants	42
Migrants from out of area	26
Migrants from outside the borders	18
Local people	56
Respondents employed by the mining company including projects	22
Respondents employed elsewhere	13
Unemployed	65

Total number of participants = 365.

Findings

Two broad themes were clearly identified for the study, and these will be used as a framework for the presentation of the findings: Diseases and illnesses associated with the physical mining environment; Diseases and illnesses associated with the social mining environment.

Diseases and Illnesses Associated with the Physical Mining Environment

Tuberculosis (TB)

The history and prevalence of TB in South Africa is synonymous with the country's industrialization, which is primarily based on mining and former political and economical policies derived from apartheid.[8] In short, tuberculosis was first recognized as an important health hazard soon after gold mining started in South Africa in the 1890s. Black migrant miners, recruited from rural South Africa and surrounding neighboring countries, were employed for short periods and often stayed home for extended periods between contracts. This coming and going of workers served as an agent for spreading TB within the communities and across the national boundaries. Furthermore, overcrowding, poor diets, and poor working conditions were at the time identified as important factors contributing to TB among miners.[9] Despite more knowledge and better treatment of the disease, the living and working conditions of mine workers have not changed significantly. Consequently, it is not surprising that current trends show that TB is on the increase in the mining sector. This fact is also confirmed by the manager, the medical services of the mining company, as well as by private medical practitioners in the community.[10]

The rise in incidence of TB cases from 1991 coincides with the rise of HIV incidence in the RSA. Churchyard and Corbett show that the TB incidence rates among gold miners have paralleled the rising HIV prevalence in women attending state antenatal clinics.[11]

Specific factors determining the incidence of TB in a mining community include: age at infection, silica dust and silicosis, and HIV infection. The incidence of TB, especially in gold mining, is strongly age dependent, with a progressive increase in TB disease rates with increasing age. This could be because of increased exposure to silica dust.

Silica Dust and Silicosis

In South Africa, exposure to silica dust is commonly found in granite and gold mining operations. In their study of 2,255 mine workers, Hnizdo and Murray found that exposure to silica dust is a risk factor for the development of

pulmonary tuberculosis (PTB) in the absence of silicosis, even after exposure of silica dust ends.[12] The late onset of PTB can have an impact both on the community and on the miner in that, if for example the miner has retired, early diagnosis of PTB is reduced because he no longer has access to the advantageous health-care provisions at the mine. In addition, the miner is disadvantaged in terms of his ability to claim compensation. This is more so if the miner is a migrant who has returned to his homeland where access to health-care provisions are likely to be worse than those in the surrounding mining communities. The community is affected as a result of the high risk of TB infection from the untreated miner.

Two studies conducted in Welkom (Free State Province, South Africa) on the relationship between silicosis and TB found that overall TB rates are approximately three times greater in silicotics than in non-silicotics. Workforce TB rates are about three to four times higher in silica-exposed gold miners than in non-silica-exposed platinum miners.[13]

HIV Infection

In their study of HIV infection and silicosis on mycobacterial disease in a South African gold mine, Churchyard and Corbett concluded that TB remains as much a silica-related occupational disease in HIV-positive as in HIV-negative miners, and HIV-positive silicotics have considerably higher TB incidence rates than those reported from other HIV-positive African communities. The increased susceptibility to TB is apparent from an early stage of HIV infection and becomes more pronounced with an increasing degree of immunosuppressant. Because of the high reactivation disease, latent TB infection is a strong risk factor for TB among HIV-positive individuals. Overall incidence in HIV-positive patients is higher in communities where TB is endemic (such as the mining communities) than in non-endemic areas.[14]

From the above it is apparent that silica exposure and HIV infection, products of the conditions in which the miners live, work, and socialize, contribute to high rates of transmission of TB and the risk of disease to those infected.

In terms of TB control strategies, South African health policy currently uses strategies promoted by the World Health Organization and based on the principle of interrupting TB-transmission through the diagnosis of smear-positive patients who self-present with symptoms. Cure is ensured by completion of TB treatment using a strategy referred to as "directly observed treatment, short course" (DOTS).[15] The problem with this strategy is that it is dependent on access to treatment and patient compliance. Two studies looking at gold miners' adherence to TB treatment demonstrated a lower adherence to therapy than was expected among both inpatients and outpatients. Figures for mining community members are most likely higher because adherence to treatment may be influenced by the quality of the

health care provided. Non-adherence to treatment may result in acquired drug resistance, which may explain some of the experiences described by community members.[16] Despite these control strategies, the rate of TB incidence in mining communities continues to rise at an unprecedented rate. Therefore, a more comprehensive strategy needs to be introduced that can include some or all of the following: better silica dust control in mining operations, increased HIV-prevention activities, reduction in active TB prevalence by improving systems for finding active cases, and improvement in healthcare provisions in mining communities. There was a recent announcement that a gold mining industry-wide $14 million TB study would be undertaken locally.[17] This may go a long way toward understanding the strategies that are effective in dealing with TB in the mining communities.

Risk factors related to TB as experienced by members of the community in this study are represented by the following.

> TB treatment must be given to everyone suffering from TB in close contact for at least two months. But this is not happening. The environment in which the person is staying needs to be checked otherwise it is not effective. People are completing the six-month treatment course but are not getting better. There are a lot of resistant strains. Consequently, there is a need to give the multidrug TB treatment. The mine cannot afford to give this treatment; therefore its current treatment regime is like a placebo. (Private general practitioner in the community)
>
> The time period given away from work is insufficient. It is not right that a person is given two months on the surface, and then back to the underground where they are exposed to the unfavorable environment before the treatment is completed. (Mine worker)
>
> When someone is suffering from TB they are still made to work underground. In the area that we work there is a lot of dust. TB and dust do not go hand in hand [in terms of being able to work]. (Mine worker)
>
> The hostel situation is very poor and overcrowded. We want privacy. Illnesses such as TB are infectious and it's not nice when someone is coughing in your face. Another problem is that the people working in the kitchen are those taking time out from the underground, such as those suffering from TB. It is not healthy, is it? (Hostel resident)

Airborne and Water-Associated Illnesses

Large-scale resource extraction projects can have disastrous local and regional impacts, including toxic contamination of ground and surface water, air pollution, soil degradation, and loss of critical natural ecosystems and biodiversity.[18] Runoff and leakage from tailing dams and existing waste rock dams pollute streams flowing out of the mining area, causing widespread damage downstream.[19]

Industrial wastes and pollutants are another mining-related environmental hazard. Solid wastes produced by the separation of gold from ore are placed

in dumps, and liquid wastes are collected in pits called slime dams. Both of these contain small amounts of active uranium. Radon gas emitted by the uranium poses a health threat when inhaled and can contribute to lung cancer and other ailments. Furthermore, the dust from mine dumps can contribute to respiratory diseases such as silicosis. The Medical Research Council concurred with this by stating that diarrhea and airway infections, caused by poor environmental conditions, are among the top five causes of mortality in children.[20]

Respondent's opinions and experiences on these issues include:

> Dust from the mine causes asthma, especially in children. In addition to this we find that a lot of people suffer eye problems as a result of the dust. The smoke from the mines causes a lot of discomfort with the bad smells that come from there. (Community member)
>
> A health survey conducted in 1992 declared Wonderkop a health hazard. At Wonderkop, for instance, this contaminated water gets consumed by the livestock that the people slaughter for family consumption. It is also used for funerals, related rituals, and weddings. (Community representative)
>
> The mine pumps away thousands of liters of water upstream without any attempt to recycle it. Lots of farmers and some parts of the communities, especially downstream, end up stranded for water. This lack of water has an impact on sanitation, sewerage (for the informal settlements), and farming activities. We have held numerous meetings with mine management with no success. Although the mining company claims to be working within the minimum standards set by legislation, we doubt the validity thereof. (Farmer)

Hearing Problems

Sound is regarded as noise if it has the potential to interfere with communication or to damage people's hearing. Sources of noise and vibration in the mining environment are from machinery, heavy transportation, and blasting, especially in the cast areas.[21] According to Burger et al., the South African Safety in Mines Research Advisory Committee (SIMRAC) identified noise-induced hearing loss (NIHL) as a major occupational health risk in the South African mining industry. Also, the number and value of compensation payments for NIHL have increased substantially over the past few years. Another indicator of the severity of the problem is the data obtained from medical records submitted by South African mines to the chief inspector of mines for the period October 1, 1999, to September 30, 2000.[22] From this data (table 10.2), hearing loss ranks with tuberculosis as the largest occupational health risks in terms of numbers of workers affected.[23] Some of the community settlements in the study are located less than 500 meters away from the mine operations; therefore, they feel the brunt of the noise and vibrations from the mine operations.

Table 10.2. Medical records submitted by 189 South African mines to the chief inspector of mines for the period October 1, 1999 to September 30, 2000

Disease	Number of cases reported
Tuberculosis	3,737
Hearing loss	3,506
Silicosis	1,769
Obstructive airway disease	161
Asbestosis and pheumoconiosis	131

In 1988 the South African mining industry introduced hearing conservation programs, and this has since resulted in revised legal requirements relating to noise levels in the mining industries as part of the Mine Health and Safety at Work program.[24] One aspect derived from this was the compulsory use of personal hearing protection devices, but this has not yet had the required effect. A low-noise blast-hole drilling system was recently developed by the Department of Mechanical and Aeronautical Engineering at the University of Pretoria to limit the risk of noise-induced hearing impairment in mining operations.[25] Although a new invention, this system offers mines the opportunity to comply with the regulations on noise in the workplace while maintaining and even exceeding penetration rates required by operators. Despite structured noise-control levels and a compensation system at work, there is still very little awareness or consideration for the surrounding communities.

The World Health Organization suggests that noise can affect human health and well-being in a number of ways including annoyance reaction, increased number of headaches, greater susceptibility to minor accidents, loss of sleep, increased mental hospital admission rates, and hearing loss.[26]

Some comments by community members reveal some of these health hazards, it would appear that despite experiencing physical environmental-related health problems, communities feel their needs are not prioritized.

> Noise from the mining operations is irritating. This is especially so where there is open cast mining. Apart from the intense noises from the blasting, there is also the impact from the vibrations. This can be quite scary; I was once so scared from the vibrations because I though that there was an earthquake. I just ran under the bed. (Community member)
>
> The added danger from the vibrations is that it shakes the house and creates very dangerous cracks. The other effects are that the cold wind comes into the house in winter and this can impact on the health of an already vulnerable population. There are also complaints that children find it difficult to concentrate at

school because of the cold wind and heat during winter and summer seasons respectively. (Community member)

Psychologically the cracks [due to the vibrations] can lead to stress because of regular repair bills to the property. This is aggravated by the fact that we do not have the income to make these repairs. The mine does not respond to our complaints. (Community representative)

Noise is bad at night and Sunday nights are the worst because that is when they start up the machinery for the week. You hear the grinding of the machinery and the ventilation. It is hard enough getting to sleep when you are pregnant, but that noise is really disturbing. (Community member)

Rocks fly for over a kilometer from the blasting cast. In one incident a stone weighing roughly 400 kilograms was thrown by the blast and landed eighty meters away from my house. My neighbor's house was hit by a rock and that day we all had to run away from the flying rocks. Some of the noise from the blasts can be heard over 45 kilometers away. (Community member)

Diseases and Illnesses Associated with the Social Mining Environment

One of the core issues when looking at diseases and illnesses associated with poor social conditions in the mining environment is the poor medical facilities as well as the access to them.

The health-care provisions and facilities in the area are as follows:

- one mine hospital;
- one mine clinic;
- one government clinic per village, except for one of the villages where there is a mobile clinic once a week and a number of private practitioners;
- one government hospital in Rustenburg (about 25 miles away from the research setting); and
- traditional healers (the government has incorporated traditional healers into the health system to improve access. Some clinics reported that they have a complementary working relationship with the traditional healers).

With regard to the mine hospital and clinic, only permanent employees of the mine have access to those services. Consequently, dependents of mine employees have to rely on either government clinics or the private sector. The mine employees do not pay at the mine medical facilities according to the manager of medical services. For some occupational positions (mainly white employees), this facility is extended to dependents, and they are also assisted

with medical aid, which enables them to access private health care. Community members who do not work for the mine and dependents of employees in the lower occupational positions do not have access to the mine hospital or clinic unless it is an emergency. These people have to use government facilities, which are not as adequately equipped as the mine facilities. The vast majority of those in the lower positions are black. In comparison, 99 percent of the white employees have access to medical aid, so they have a choice where to go for treatment.

The implication of this is that government clinics are being overburdened by additional patients not accounted for by government structures. Furthermore, in some cases the conditions of the government clinics are very poor, for example, there is a clinic that provides health-care services to 20,000 local people that also has to serve additional contract workers from the mine with a basic staff complement of only six professional nurses, three nursing assistants, one medical doctor (once a week), and a social worker (twice a week). The clinic is located in a building that was once used as a police station.

According to a community general practitioner, in conditions such as these, services integration is imperative if the mining communities' health services are to optimize service provisions. Currently, services are finding that they are repeating medical tests or examinations already provided by another health service. This is a waste of scarce resources. There is a call for a holistic approach in which there is information sharing among services. While this is a useful proposal, it is important for service providers to be aware that when diverse cultures come together for collective effort in a project, culture shock could be experienced. Sohmen argues that acculturative project stress, which can be defined as job-related stress that is exacerbated by cultural differences such as diverse assumptions, values, and beliefs among participants, can be an impediment to the success of the project.[27]

The following are comments by respondents relating to the impact of the health service and facilities on the communities.

> What is happening is that migrant pregnant women are delivering at home and only seeing a doctor after ten days. The result of this is that the children do not have immunization and the women are not checked to ensure that all the afterbirth has been removed. Sometimes when they come there is usually a lot of infection to deal with and at times they may require emergency hospitalization. The reason for the delay in seeing the doctor is due to financial problems and waiting lists at the clinics. (Private doctor in the community)
>
> There are not enough clinics in these communities. People have to travel long distances to get to a clinic. Can you imagine I have delivered two babies in the streets, one on a lamppost and the other just outside our police station? I know as a policeman I should always be prepared for emergencies but this is going beyond the call of duty. Anyway I now carry sufficient equipment just in case. (Police officer)
>
> Sixty percent of the people in these communities live below the bread line with 40 percent illiterate. They live in fear of violence, crime, and poor medical facilities. Sanitation is poor, with no running water and sewage facilities. The maternity clinic

is small; although it has running water, it is overcrowded. For example, I am aware of a case where a young lady gave birth in a consultation room where the doctor was seeing other patients. (General Manager of the mine)

Diseases and Illnesses Associated with Poor Social Conditions

HIV/AIDS and STIs

One cannot talk about health in Africa and specifically South Africa without looking at the impact of HIV/AIDS on the social, economic, and emotional level. Of concern is the increasing rate of STIs in the communities, especially since the mode of transmission of STIs and HIV/AIDS is generally similar. We treat the risk factors for transmission of HIV/AIDS in the same manner as for STIs. The following are some of the disturbing facts indicating the prevalence and effects on the people of South Africa.

- According to UNAIDS, South Africa is still the home of the greatest number of HIV/AIDS cases in the world (between 4.5 and 6.2 million people, which constitutes 20.1 percent of the population), and it is still rising.[28]
- According to the Department of Health's report on the incidence of HIV/AIDS among pregnant women in prenatal clinics, more than 37.0 percent are HIV positive.[29]
- UNICEF has reported that South Africa has about 1.1 million AIDS[30] orphans and that there are more than 40,000 child-headed families (compare 4.2.1.2).[31]
- According to a survey, 62 percent of the mining sector in South Africa's profit margin has been affected by HIV/AIDS through productivity, absence of the workforce, and an increase in the cost of worker benefits.[32]
- As already implied in the previous point, the mining industry has a disproportionately high incidence of HIV/AIDS. This is evidenced by several HIV/AIDS-testing surveys in the mining industries. For example, the findings of the above-mentioned survey estimate that about 33 percent of the workforce of the AngloGold and Harmony mining groups is HIV-positive,[33] as compared with the national level of 21.5 percent.[34]

When talking about HIV/AIDS in a mining community, four factors come to the forefront, namely migrant labor, social structure, infrastructure, and HIV/AIDS programs.

The epidemiology of HIV/AIDS is closely linked to the process of migration. In the South African mining community context, migration both within borders and outside the South African borders has played a significant role in

the spread of HIV/AIDS. Brummer argues that the characteristics of the migration process have facilitated the rapid spread of HIV/AIDS. The mode of transmission of HIV in southern Africa in the mining communities under this study is (mainly heterosexual) sexual intercourse. The communities were noticeably quiet when issues relating to homosexuality were raised, despite having single-sex male hostels housing 11,000 men within their communities. Brummer adds that although HIV/AIDS is a medical condition restricted to only a few modes of transmission, the political economy creates an environment that induces transmission.[35]

Migrant labor per se is not a risk to transmission of HIV/AIDS. It is risky sexual behavior that increases the probability of transmission of HIV/AIDS infection, and the vulnerability of the migrant labor to become involved in risky sexual behavior makes the South African mining migrant laborer an agent for transmission of the virus both in the receiving communities and the sending communities. Caldwell et al. concur with this view by arguing that migration not only facilitates the rapid spread of the virus along the corridors of migration but also causes behavior (e.g., nonselective multipartner sexual activities) and situations (e.g., large single-sex hostels and inability to bring family partners to the mining environment) that facilitate transmission from one person to another. Focus on migrant workers should therefore be in terms of their vulnerability rather than as risk factors to HIV/AIDS transmission.[36] For example, the focus on migrants as risk factors for the transmission of HIV/AIDS led to Malawians being thrown out of South Africa in 1988 following false accusations that they were responsible for spreading AIDS in South Africa.[37] Webb suggests that vulnerability refers to the social, cultural, economic, and political environment of individuals, families, communities, and society, and occurs in situations where people are limited in their ability to make free, informed decisions. He defines the risk as situations in which, socially and geographically, the individual's capacity to respond effectively to health situations has been reduced.[38]

In the South African context, the type of migration models and the environment in which migrant laborers live post-migration make them vulnerable to high-risk sexual behavior. Bekker and Swart suggest there are three models that often appear in the analysis of migration in South Africa; namely circulatory migration, oscillating migration, and gravity migration. In terms of the labor migration that exists in the mining industry, the oscillating migration model is the most pertinent in terms of facilitating the spread of HIV/AIDS. Oscillating migration refers to labor migration where an adult moves in search of a job, returns to the rural home after this job has been completed, and then repeats the cycle. The individual often undertakes this form of migration without the family.[39] In terms of the environment they find post-migration, the high-risk situations include overcrowded and poor single-sex hostels, harsh working conditions, hostile and desperate surrounding communities with a strong dependency on the miners' incomes, and poor recreational facilities.

The level of vulnerability is also influenced by whether the migrant is [legally] documented or undocumented, that is documented by government and whether they are employed or unemployed. The situations encountered and the responses in terms of behavior will vary from person to person.

What sets the mining migrant community apart from other migrant communities in terms of high risk for the transmission of HIV/AIDS is the exclusion of women in the mine employment, the single-sex quarters, and the subsequent dependence on prostitutes.

Some of the following quotations from the survey give an indication of how the migrant labor system can influence the risk of transmission of HIV/AIDS.

> Migrants contribute to the spread of HIV/AIDS. The mine is not doing enough for the community. You see migrants come in; they give money to the girls. This results in an increase in prostitution. It is impacting negatively on the community. (Community member)
>
> There is a possibility that our women are having affairs back home. It is something that we have to accept. It is difficult to imagine your wife with another man. But our circumstances force us to live with this. (Migrant laborer)
>
> With regard to HIV/AIDS the migrant situation has played a role. It is the socioeconomic situation that they find themselves in. For example, single-sex accommodation, hard work, and no social activities; those are what contribute to them being associated with the spread of disease. The only way for them to unwind is to go to the shebeen [an unlicensed "illicit" liquor bar and outlet in the residential area] and one thing leads to another, they end up with a woman. The saying is that a mineworker has the money and no sex whilst the local people have the sex but no money. Therefore, if these conditions existed elsewhere, South Africans would find themselves behaving just like the migrants. (HIV/AIDS coordinator of the mine)
>
> It is difficult not having our women and children here, but we prefer our families to stay back home because that is where there is support for us. Those of us from Mozambique also have to pay ZAR400 (estimated US$66) per month to the immigration officials when our wives come over to stay. This is far too expensive. (Migrant mine laborer)

In addition to the migrant labor issue, the poor social structure of mining communities is also conducive to the transmission of HIV/AIDS infection. These factors include poverty, unemployment levels, overcrowded housing, family disorganization, and culture.

The links between poverty and HIV/AIDS are complex and not fully understood.[40] Whiteside suggests that poverty has played—and continues to play—an important role in the spread of HIV.[41] Colvin and Sharp conclude from data on changing distribution of HIV/AIDS that the poor are more vulnerable to being infected by the virus.[42] The level of poverty in the communities is high in terms of basic needs: insufficient food, poor shelter, poor health care, and, in some cases, no access to water. The issue of absolute poverty within these communities was echoed by various people and institutions that work closely with the communities, such as the executive mayor of

the Bojanala platinum district, NGOs, medical personnel from the local clinics, teachers, church leaders, community leaders, and self-reports from the community members. HIV/AIDS itself has had a profound impact on the families of those suffering from the illness in terms of aggravating the level of poverty the family experiences when caring for their relatives. Despite the government sanctioning a social grant of ZAR750 (estimated US$125) per month to the HIV/AIDS sufferer, families still have to contribute financially toward the care of their relatives. The ZAR750 per month is not enough to cover the food, transport, treatment, and care for the person. In addition, the individual may have a family that needs to be looked after. Consequently, this can result in resentment from those who have to contribute or envy from onlookers for the attention that the person is receiving. Suggestions have been made that focus should also be on those who are HIV negative to motivate them to remain so. Otherwise, some community members who are experiencing extreme poverty may find that the relative comforts and benefits of being HIV positive outweigh being HIV negative. The quotations below reflect what people are prepared to do in the name of poverty despite the HIV/AIDS pandemic.

> Since the government introduced the HIV grant, there has been an unprecedented increase in applications for grants. As long as someone is seen five times by the doctor they can apply for a social grant. Now all sorts of illnesses such as diabetes, asthma, etc., are being used as a way of getting money. (Private general practitioner in the community)
>
> Some people are said to be injecting themselves with the HIV virus so they can get the social grant. (Member of the community)
>
> HIV-positive blood has become big business. (Medical practitioner)
>
> In fact, I feel that the people who should qualify for the social grant are those who are HIV negative. Some youths are saying that you are going to die anyway, you might as well enjoy yourself whilst you are still young. (Member of a youth group)

Mining communities are characterized with high unemployment levels for the local community members and a large number of undocumented migrants seeking work. According to one of the general managers of the mining company, it is estimated that the level of unemployment in the local communities is 40 percent. Without a doubt, the most affected are women and the youth. Women are high in the unemployment ladder in the mining communities because traditionally, according to one of the mining company's general managers, mining in South Africa has not employed women for one reason or another. The global myth that the presence of women in the mines leads to the collapse of the mines and the deaths of the miners resonates with the hostility and contempt toward women by the mining sector.[43] This scenario is not sustainable, as women are known to play a significant part in reducing poverty at the household level as well as in the community. The rapid change from

rural societies to money-based societies creates social problems especially for women, youths, and children. The displacement of people from rural communities, where people have been able to fend for themselves for basic food, has had a serious impact on issues such as food security because the mining operations drastically change the nature of the communities and take away the agrarian land from communities. Communities are now characterized by high cash dependency with no informal activities relating to extra income-earning projects such as cottage industries or backyard vegetable gardens. In view of this, the levels of poverty are dependent on the employment status of the community members. Opportunities for women are few in mining communities. Consequently, some women take up prostitution as a way of earning income to feed themselves and their family.

Under the mining charter of South Africa and the new Mineral and Petroleum Resources Development Act (MPRDA) of 2004, women must constitute 10 percent of the mining companies' labor force within the next five years.[44] High unemployment rates for women and youths have serious implications on the prevalence and spread of HIV/AIDS, especially when these communities are in close proximity to more than 8,000 men with money and little to spend it on except women and alcohol.

Unemployed women are more vulnerable to the transmission of HIV/AIDS in several ways. As wives, women are often dependent on their husbands for financial support and consequently find it difficult to enforce condom use or refuse sex.[45] Those who are not married have reported being forced by their poor social circumstances into relationships in order to obtain financial support for their families. There are situations in which women have offered their children to men in order to have continuous financial support for the family. Although this can be interpreted as a subtle form of prostitution and child abuse, overt prostitution is commonplace in these communities. Reports are that girls of school age are increasingly involved in prostitution. Several women reported that when women apply for work at the mines, they encounter "sex for jobs" policies instituted by the recruitment officials. In some desperate situations, teenage girls have resorted to becoming pregnant in order to qualify for child support. The Department of Health reported last year that teenage pregnancies in some parts of the North-West Province increased by 90 percent. Their concern was the possible relationship between teenage pregnancy and receiving child support by the mothers.[46]

Examples of the communities' feelings about the unemployment situation and its connection to the transmission of HIV/AIDS include:

> Prostitution exists because people are unemployed. You can find a 60-year-old sleeping with a 16-year-old or younger girl because he has got money. (Community member)
>
> There are no jobs for us. Local people have to pay for jobs. Most of our youths are educated, some even have diplomas, but they are being asked to bring their standard 5 certificates to get jobs. They [those who recruit] do not want our youth to use their proper qualifications because they feel threatened. (Community leader)

> I tried to get a job with the mine but you need connections to get a job there. If I could get a job I would stop doing this sex work. This is very difficult because I can sometimes go for two months without money. (Sex worker)

Generally, the housing conditions are very poor. There is a serious shortage of adequate housing with an estimated 80 percent of the population living in tin shacks (poorly constructed corrugated sheds) as their permanent home. Initially some of these tin shacks were set up by migrants, but in some areas the tin shacks accommodate both the local people and the migrants. Poor housing conditions have been blamed for the increase in spread of disease because of overcrowding. In addition, poor housing conditions cause family disorganization and early sexual experiences for the young, because in some instances, a shack can house three to four families and at times they are separated only by curtains. According to the minister of housing, the government is committed to a housing program with a target of doing away with shacks in ten years' time.[47] Local authorities in the research setting reported that they are in a dilemma whereby they have the money to build the houses but the land belongs to the mine. Consequently, they are unable to meet the targets.

The following comments relate to some of the experiences associated with the poor housing conditions.

> In one village you can find a dilapidated house with five families living there. People are renting rooms and are using curtains to separate themselves from the children and any other family members. What does this do for the children and parents bringing up children under these conditions? (HIV/AIDS coordinator)
>
> In a lot of these cases the shacks are turned into shebeens. It is difficult bringing up children where they are constantly exposed to drunkards and prostitutes as a way of life. (Community member)

Most of the issues discussed above can result in family disorganization. Most examples of family disorganization are the result of single parentage caused by teenage pregnancy and relationships with migrant contract workers who return home and leave the local women and children behind. Added to this is the increasing rate of child- and grandparent-headed families as a result of parental deaths from HIV/AIDS. The problem for the survivors is that, by its nature, HIV/AIDS is a slow, painful death that requires intensive care in terms of feeding, hygiene, and emotional support. Furthermore, it is shrouded by secrecy making it difficult for the caregivers to seek support. In most cases it is the children who look after both parents until they die. These children have to pick up the pieces when their parents die. For migrant children especially, the problem is more severe because they are not entitled to child welfare benefits or support from the social support services like their South African counterparts. The result of this is either the children return to the sending communities where they are strangers, or they fend for themselves as street kids with all that comes with that. These situations help to feed the HIV cycle.

Reports of experiences of family disorganization and how it can affect the transmission of HIV/AIDS are disheartening.

> Families who are raised by both parents are a lot more disciplined, more stable and happier than those raised by a single parent. Some mothers become irresponsible in the absence of their husbands. They neglect their children for long periods whilst at shebeens, and it is in instances like that, that I wish men did not have to go away. (Woman from sending community)
>
> Migrant labor impacts on family disorganization because they come here, marry girls and have children but do not tell them that they have another family. Two families are too much responsibility for a man. In the end the children are the ones who suffer. (Community member)
>
> Our elderly have problems in that they have no one to look after them. In fact the opposite is happening; they are the ones looking after grandchildren. They have to use their pension because their children have either died or are unemployed. The problem is that the elderly have limited funds and children end up not going to school. As a result there is an increase in crime, prostitution, and further family disorganization which again leads to HIV/AIDS transmission. (Traditional healer)
>
> The impact of HIV/AIDS is serious. There are many situations where the child has become the head of the family. Even at an age as young as thirteen years old because both parents have died or are seriously ill with the disease. (General Manager of the mining company)

The issue of "African culture" and its perceived contribution to the high prevalence and incidence of HIV/AIDS is a contentious subject among scholars and laymen alike. Although an important issue, we are going to discuss only briefly a few points raised by respondents in this regard. This subject matter is so wide that it would be folly to attempt to discuss it in depth in this forum, but inevitably, the issue was raised on several occasions during the survey. The main arguments put forward in this regard focused on African culture contributing to the risk factors for the transmission of HIV/AIDS infection.

First of all, there is a perception held by some of the mining company's managers that African culture has an impact on the employment status of women. When asked why few women were employed in mining, one general manager's response was:

> Employment has its problems from a cultural point of view in that if a woman becomes the breadwinner this may not go down well with the husband. There are also problems with the shift work. Culturally, women may not be able to do this.

According to the responses given by the communities, this statement appears to be the personal opinion of some management rather than the actual cultural practice. The following is a response from a women's group about cultural issues relating to work:

> There are no cultural issues that prevent women from working. It would not be a problem looking after children and husbands when working. In some cases some women are single parents; therefore [they] need to work to support their children. We have no problems with doing shift work. The only issue is that we are not happy to walk alone at night. If the mine can arrange the transport then it would be no problem. You see, if the mine employed women the rate of prostitution would drop. (Women's group)

It appears there are few cultural reasons why women cannot work in this mining community. In fact, it would be good if women could work because it would help their husbands' income and reduce the rate of prostitution, which is a serious risk factor for transmission of HIV/AIDS. It may be worth noting that the mining environment has generally been male-dominated; consequently, the facilities have not been accommodating in terms of dressing rooms for both genders. Therefore, the management view may be based on the company's lack of facilities rather than culture.

The second example refers to some men refusing to wear condoms because it is not "in their culture" to do so. Traditional healers refuted this argument, stating that:

> People use culture as an excuse not to use condoms. Not using condoms is an individual issue and has nothing to do with culture. For example, in the old days, some of our forefathers used a form of a condom. These condoms were not made of rubber but were made out of used goat intestines. They used to make them soft, rap them round their waist and use them when they wanted and then wash them.

Refusing to use condoms might be related to lack of knowledge of how to use it. Since the instructions are likely to be in a language they do not understand, they may feel embarrassed to ask other men. Consequently culture is being used as an excuse.

The final example refers to some views that culturally African men are promiscuous and African societies are tolerant toward multiple partners. At the onset it is important to state that the African population is not homogenous; it is a heterogeneous population with a variety of different races, languages, and cultures. South Africa alone has twelve different languages with as many different cultures. There are some cultures in Africa where it is culturally permitted to have more than one wife. In most cultures where a man or a woman is allowed multiple partners, there is a procedure that has to be followed that involves the families of both parties. It seems that if the cultural procedures are followed, then culture could be used as a protective measure against the transmission of HIV/AIDS. For example, HIV/AIDS testing can be requested before the marriage ceremony. The king of Swaziland is reported to now have the new wives tested before the marriage ceremony.[48] Other forms of multiple partners are usually outside cultural practices and are similar to the kind of promiscuous behavior in other societies. Multiple partners

are a result of many factors including vast gender imbalances as in the mining communities, values, economic factors, opportunities, and choice.

It is thus important to have a good understanding of cultural issues within all communities in order to avoid misrepresentation and discriminative behavior toward groups in the community.

Basic infrastructure in the community generally refers to services such as the transportation networks; access to school, sport, and leisure facilities; and other basic services such as electricity and water. The major impact on transmission of HIV/AIDS infection in terms of infrastructure in the mining community is the lack of recreational facilities. Throughout the study, the theme that was echoed by all groups in the community was boredom. The study found that lack of recreational facilities resulted in high and early dependence on illicit substances such as alcohol and drugs. This has its own impact on risky sexual behavior. Campbell and Mzaidume found that the level of HIV infection differed among different networks of people: members of church and sports groups had lower levels of infection; people in savings clubs (informal saving society in which members contribute regularly and receive payout on rotation) had higher levels as a result of generally having more sexual partners and a higher level of alcohol consumption.[49]

The following quotation reflects the impact of poor infrastructure on the community:

> The only social activities available for us are church, soccer, and drinking. We have football grounds but these are in very poor condition and not everybody wants to play football. (Community youth)

Programs to Combat the Transmission of HIV/AIDS

In addition to being involved in HIV/AIDS awareness programs, free pretesting counseling, HIV-testing, condoms, and offering nevirapine for pregnant women, the government is also promising increased finances to NGOs working with HIV/AIDS.[50] The mining company has been proactive in its campaign to combat the transmission against HIV/AIDS for its employees. They have instituted the following programs.

Sex-worker Program

According to the manager of medical services, the mining company pays, tests, and educates the sex workers on issues related to safe sex. The sex workers are also encouraged to work as volunteers in the HIV/AIDS campaign. Steen et al. found that successful interventions have been reported in mining communities where provision of STI-treatment services to a core group of high-risk women eventually reduced the prevalence of STIs, not only in the target group but also in the wider community.[51]

ART-treatment Program:
Only 7 percent of South Africans with HIV/AIDS who urgently need ART treatment receive it, and then most are likely to receive it from the private sector. Research shows there are about 837,000 people in South Africa between the ages of 15 and 49 who are in need of ART.[52] The mining company has offered free ART-treatment programs to all its workers suffering from HIV/AIDS. This has improved the quality of life of employees living with HIV/AIDS, however, there has been controversy relating to this program because it neglects the partners and families of those under the program.

Volunteer Program
The mining company initiated a volunteer program, which involves members of the community participating in awareness campaigns, administering medication to employees suffering from HIV/AIDS living in the communities, providing care service, and counseling. Volunteers have been dissatisfied with the program, stating that, although they are making gains in terms of experience and the humanitarian aspects of their work, they are not happy with the programs. Some of the reasons for this include not being paid, having to walk long distances from one patient to another without refreshment, not being given protective clothing or uniforms, and not being supported in terms of supervision for the counseling work that they do.

Medical aid:
The mining company is currently conducting a survey with regard to the best medical aid scheme for dependents of its employees.

Comments about the uptake of the programs are as follows.

> Migrant workers have no problem using condoms. Older men from the village have no problems using condoms. Young men do not want to use condoms. For example, if we have an agreement of ZAR70 for sex, they say that they will increase it to ZAR100 if we do not use a condom. If you refuse they point a gun at you and try to rape you. Men from the Eastern Cape do not want to use condoms. Eastern Cape men think that the condom has AIDS. They say you can't have meat whilst it is wrapped in plastic. (Sex worker)
>
> The mine's practice of only treating one partner for HIV does not resolve the problem. The HIV virus mutates; therefore if the individual continues to sleep with someone with HIV the ART treatment is not effective. (Private general practitioner in the community)
>
> The problem with ART is that not many people are taking it. We are trying to encourage people to take it. Most of the people are still ignorant about ART. They would rather get a cure than something that delays their death. The other problem is that it takes time for people to trust new medication. Some people do not like taking it because they have to stop drinking alcohol. The side effects and having to use condoms also puts a lot of people off. The medication has to be taken regularly and this affects the shift work and therefore reduces their chances of making money. (Community HIV/AIDS volunteer)

> Most of these pregnant women do not want to be tested for HIV so that we can prescribe "nevirapine" [medication which prevents mother transferring the HIV virus to her unborn child]. Consequently, most of the children are born HIV positive. Most die early in childhood. (Private general practitioner in the community)
>
> Married men use condoms when having sex with girlfriends but they do not use condoms when having sex with their wives. They are afraid to admit that they are having extramarital relations. (Community member)

Addiction

Alcohol remains the most commonly abused drug in South Africa, followed by dagga (cannabis) and the dagga/Mandrax (white pipe) combination.[53] South Africans consume well over five billion liters of alcoholic beverages per year. The figure could be nearer to six billion, depending on one's estimation of the amount of sorghum beer consumed.[54]

The overall prevalence of alcohol misuse in South Africa is likely to be as high as 30 percent among certain groups and as low as about 5 percent in others, and can be dependent on factors such as age, gender, socioeconomic status, and degree of urbanization. Binge drinking among young people, especially males, is high (in excess of 25 percent in many communities). High levels of alcohol misuse have been reported among persons involved in certain occupations, for example, farming, mining, and among residents of disadvantaged communities where there is easy access to alcohol.

All respondents to this research overwhelmingly agreed that alcohol consumption is high in the communities and hostels as well as among the white population. According to the community members and mine management, alcohol abuse manifests itself in the form of increased violence during the weekends after payday, men not returning home or not turning up to work for a period of two to three days after pay, and reports of rape around the beer holes. Health problems related to alcohol problems according to the communities include risk of rape, risk of transmission of HIV/AIDS, and stress because of lack of money after a period of bingeing. There was limited knowledge of the impact of alcohol on other health issues such as damage to brain cells, liver, mental health, and other general illnesses. This lack of knowledge about the impact of alcohol on health was reflected by the lack of help-seeking behavior relating to alcohol problems. There are many factors contributing to this, some of which include not perceiving alcoholism as an illness therefore not seeking medical help. Other factors are inadequate and overcrowded health-care facilities making it difficult to undertake appropriate assessment for an alcohol-related diagnosis, nonexistent support groups, poor access to relevant therapeutic intervention in the area, and shame and stigma associated with having an alcohol-related problem.[55] Littlewood and Lipsedge suggest that alcohol-related problems may not be recognized because they are

being mistakenly identified as reaction to problems relating to poor socioeconomic conditions.[56]

Most of the comments on addiction related to the level of use and the impact that it is having on the communities.

> Alcohol is a serious problem in the community. People drink because they are desperate. There are too many outlets. People drink every day; some even owe the bars money. Most do not have any inclination for seeking help. (Youth leader)
>
> Alcohol use is rampant amongst the learners. There is a lot of absenteeism from school and other behavioral patterns when the learners get involved with alcohol. Boys tend to become sexually abusive towards the girls. We try to deal with it by talking with them but the behavior only changes for a few weeks. Sometimes telling the parents does not help because they are either abusing alcohol and drugs themselves or they are aware that their child uses alcohol. In one situation where we approached the mother about a child drinking at school, she appeared to be more concerned that the child had drunk wine instead of beer. (Local school teacher)
>
> We do not get patients addicted to drugs. But we get a lot with alcohol-related problems. This place is dangerous. There is a lot of violence. At weekends there are a lot of stabbings, gun shootings, and so forth. You have to make sure that by 18:00 you are indoors. (Government clinic staff nurse)

Mental Health

Kleinman defined a health-care system as a mixture of health-care activities dictated by the social, political, and economic contexts of a culture or society. Medicine, therefore, is a cultural system—a system of symbolic meanings that are anchored in the particular arrangements of social institutions and patterns of interpersonal interactions. Illnesses, the responses of individuals, their caregivers, and society at large and the social institutions relating to them are interconnected.[57] Health-care systems include patterns of beliefs about the causes of illness; norms governing choice and evaluation of treatment; and socially legitimated statuses, roles, power relationships, and institutions. Understanding this may be the key to understanding why, despite reports of high incidence of mental health problems in the communities, there is a low uptake of the service provisions for mental health compared with other forms of illnesses.

There has been a sharp rise in the number of black adolescents attempting suicide since the advent of democracy in South Africa. Of the total number of children trying to kill themselves each year, almost 50 percent are black, with the remainder made up of coloreds, whites, and Indians in equal proportions.[58] Research findings show a perception of a high prevalence of mental health problems in the communities. Stress and depression were the main forms of mental health illnesses identified. According to the respondents,

people in the communities are stressed and depressed because of the poor socioeconomic conditions and the high prevalence of HIV/AIDS. According to Freeman of the Human Sciences Research Council (HSRC), HIV/AIDS will have an increasing impact on the mental health of South Africans. Only an estimated 5 percent of South Africans have undergone HIV testing; fear of a positive diagnosis and stigma may prevent others from being tested. *AIDS Weekly* states that 80 percent of HIV-positive people experience symptoms of anxiety and depression. Antiretroviral medicine has had a positive influence on the mental health of HIV/AIDS persons. It is estimated that between 45 and 65 percent of AIDS patients experienced delirium in the later stages of the illness. Between 4 and 18 percent of AIDS patients experience major depression and AIDS mania in the later stages of the illness. The impact on the mental health of women has an additional dimension; the trauma of knowing that you are going to leave children behind, especially if you are the only breadwinner, is immense.[59] The mental health problems are reported to manifest in the form of high alcohol consumption and increased rates of domestic violence.

Schlebusch (in Padayachee) suggests that black children keenly feel the weight of their communities' expectations. With better access to education, they are required to succeed but then are burdened by the financial costs of schooling, academic competition at universities, and examination stress. And once they qualify, they are not guaranteed jobs. This leads to a sense of hopelessness. Schlebusch further suggests that the reason for larger numbers of blacks killing themselves postapartheid is that South African children have not been taught how to adjust to the massive changes that society has undergone. Despite this perceived increase in the prevalence of mental illness in the communities, the health services in the communities are not reporting a corresponding increase in demand for mental health services. Assessment of the pathway to mental health care may help to understand some of these findings.[60]

Goldberg and Huxley's pathway to psychiatric care is a helpful frame of reference with which to compare themes emerging from the mining communities' access to mental health services. They propose a five-stage model of the route from first experiencing symptoms to arrival to secondary care. They argue that each stage could be considered as a selectively permeable filter, with some individuals having greater ability to pass through the filter than do others. Here, we will focus on three stages relevant to the communities, namely: Community; Assessment; Therapeutic interventions.[61]

Community

For a person to approach a mental health service, they have to define what is happening to them as a mental illness. At this point it is worth drawing attention to the distinction between disease and illness, which can determine help-seeking behavior. Disease refers to a malfunctioning of biological and (or)

psychological processes, while the term "illness" refers to the psychosocial experience and meaning of perceived disease. Kleinman emphasizes that illness is the shaping of disease into behavior and experience created by social, personal, and cultural reaction to disease. This distinction between disease and illness is absolutely crucial when trying to understand the pathways taken when seeking help. The development of disease into illness (at the individual level) and the provision of acceptable services (at the health-care system level) are linked in determining the pathway that a patient may follow while looking for help.[62] The definition of mental illness in the South African context is not as wide as the western model.[63] Mood-related mental disorders such as anxiety and depression do not constitute mental illness as in the western perspective. Most people in the communities link such distresses to the social and economic pressures they are experiencing and would either cope with these feelings or normalize the distress.[64] Mining community members do not always "medicalize" mood disorders or conceptualize medical help seeking. It is only when they reach the breakdown point that they will seek help. The pathway to that help is not always the mainstream health-care system. Community members have several options they use and these include social networks, church leaders, and traditional healers. Those who are migrants may choose to return home to use the system they feel understands their explanatory model. By this time it is likely that the extended family will be involved. At the same time even if a member of the community "medicalizes" these disorders, there is an element of being stigmatized. Generally, in these communities there is more sympathy for someone who has an alcohol problem than someone with mental health problems. In addition, the service provision is such that if you are seen receiving counseling from either the social worker or the community volunteers, it is assumed that you are HIV positive.

Assessment

Goldberg and Huxley suggest that once a decision has been made to consult the doctor, the doctor must first detect whether the patient is emotionally distressed and respond appropriately. Progression to the psychiatry services is reliant upon the general practitioner's (GP) recognition of the psychiatric nature of the disorder and his or her decision that it is necessary to refer. Goldberg and Huxley suggest that a large proportion of psychiatric disorders are "missed" by GPs, largely because of the tendency of patients to present their GP's with physical symptoms only.[65] One GP confirmed that a lot of her patients come in complaining of physical ailments and it is only after several consultations when the patient talks about social issues that it becomes apparent the problem is a mental health issue. The problem with this long process of diagnosis is that most people do not get the opportunity to be diagnosed with a mental health problem. The state of the health service in the mining communities has an impact on whether an individual has sufficient access to

the doctor for the diagnosis to be made. There were many reports of people being turned away from the clinics because they were overcrowded. In addition, the doctor only comes once per week to see a maximum of seven seriously ill patients at a clinic that attempts to provide care to more than 20,000 people; these conditions make it unlikely that mental health problems are adequately dealt with. Furthermore, the mining communities comprise several different migrant and local groups using different languages. This can make it difficult for the doctor to ascertain the exact mental health problem. For example, the common language used in the mining communities is Fanagalo, which has a total of 500 words, most of which are mining operations–based words; it is unlikely that a language with such a limited number of words can enable a person to provide a clear description of their feelings. These communication problems can lead to misdiagnosis and result in either wrong therapeutic interventions or loss of confidence or interest on the part of the patient.

Therapeutic Intervention

Once a diagnosis has been made, the patients are referred to the social worker for counseling. They normally have to wait months to be seen and by that time their conditions have become worse. Some people end up seeing traditional healers and can stay with them for a period of up to three months. This route is well-supported by government and should be incorporated in the health system according to recent health policy. Although not yet formalized, some clinics are already collaborating with the traditional healers. One clinic reported that for illnesses that need to be treated in cultural ways, such as issues relating to being bewitched and some STIs, these are referred to the traditional healers. They reported that some of the traditional healers' herbs are very effective for some chronic STIs. Traditional healers and the clinic have an understanding in that the traditional healers do not give medication for TB and HIV/AIDS but provide reassurance to their clients about the service they are getting from the clinics. The traditional healers' therapeutic interventions are unique in their approach. The traditional healers' therapeutic approach is to tell the patient what is wrong and prescribe the treatment. Ingleby and Fernando argue that the western model focuses on what is in the "individual's head," while much of the experience of illness is connected to the societal reactions and the structure of the institutions. Most western therapies encourage patients to talk about their feelings and work out the solution; this is not popular with people from non-western cultures. They are more inclined to prefer the therapist who is the expert to do the talking and work out the solution.[66] In addition, talking therapy may not be popular because of language difficulties. The medical doctors do not trust the traditional healers' approach and as a result there appears to be some controversy whether traditional healers should be involved in therapeutic interventions.

Some medical doctors feel the traditional healers' approach has no scientific basis. Despite this, it is known that community members go to traditional healers. The current difficulty with involving traditional healers as part of alternative therapy is that the individual has to pay for their service because traditional healers have not yet been fully incorporated into the national health system. In addition, there is no scientific way of measuring the traditional healers' performance. If the patients' explanatory models for their illnesses require traditional healers, then integrating traditional healers into the health system will improve access. Some aspects of the Dutch mental health system incorporate traditional healers effectively to take account of the multicultural nature of their society. Integrating government, mining, and traditional healers' health systems will bring about issues relating to acculturative stress and these will need to be taken into consideration. The following are comments illustrating some of these mental health issues.

> There is more stigma against mental health than for people with alcohol problems. One man attempted suicide and was shunned by his peers. But those with alcohol problems tend to get support from their peers. (General Manager of the mining company)
>
> Depression is usually manifested by migraine headaches. This is usually picked up after several consultations. When the patients start to talk about their social backgrounds, then it becomes apparent that the problem is a mental health issue as opposed to a physical problem. Stress in women is usually related to what their husbands are up to or the husbands' finances, i.e., not knowing how much and not being involved in the decision making in terms of finances. Children come with heart problems [query anxiety]. Again the social background and history give you an indication of what is going on with the child. Children are usually brought in because they have fainted at school or they have had a serious asthma attack, which is not reflected in the physical examination. (General practitioner in the community)
>
> There are cases of suicides in the communities. This normally takes place when people have been informed that they are HIV positive. This occurs mainly when the person is a parent. They do it because they feel that they have let their family down. The youth can also commit suicide or be suicidal because of HIV. (Volunteer for the HIV/AIDS program)
>
> There are people who believe that they will only survive by taking tablets and there are people who believe that they can only survive by using roots. The mine should recognize this. We are also here to check and remedy any illnesses. The mine should send people to us because some people can die because the mine does not refer them to us. Recognizing us is important because there are some illnesses related to our culture, such as being bewitched, which the white hospitals cannot deal with. They either do not understand them or do not recognize these illnesses. Because we understand them we can deal with such illnesses. The problem is that most people would never report this in the mine hospital because they are scared. There is a lot of this. (Traditional healers)
>
> In this community issues such as poverty, unemployment, and family problems are the main issues behind mental health illnesses. (Community member)

Recommendations

Both internationally and in South Africa (mining charter), there is increasing pressure for all companies and organizations (including government) to incorporate transparent accountability into their operating principles. This entails not only taking account of financial accountability but also social and environmental accountability leading ultimately to full triple bottom-line reporting. Corporative citizenship involves a more holistic integrated approach to sustainable development than has previously been the case. Companies need to be able to identify not only what their core business is but how they carry out that business in terms of both core and non-core activities. As part of the mining company's corporate social-responsibility commitment, the mining company has integrated the following guidelines in its policy document.

- Develop a culture of caring, support, and respect for human rights that is our normal way of interacting with our employees and our communities.
- Work with our communities both locally and in the rural labor-sourcing areas to understand their needs and to contribute to relevant initiatives that contribute to improving their living conditions.
- Assist, where possible, in the provision of infrastructure and resources for our employees, their families, and our communities, which supports the sustainable development of these communities.[67]

Because the concept of social responsibility is immeasurable, it can be difficult to pin down companies' responsibility in terms of the environmental and social obligations. In addition, there is also the problem of identifying a clear split of responsibilities between the mining organization, government, and the communities. According to some of the communities' responses, even some of the measurable criteria are being ignored or misrepresented by the companies.

In view of this, the impact of the mining sector on the health of communities in terms of the physical and social environment is less well-defined than those faced by the workers. There are problems not only in defining "community" but also in conducting the kinds of epidemiological studies that might provide evidence of links between mining activities and health outcomes.[68] The communities in this study are for several reasons unable to provide scientific evidence to show there is a link between the illnesses experienced by the communities and the mining activities. Basic problems stem from poor health service provisions and poor socioeconomic conditions that make it difficult for them to obtain accurate records and tests to prove there is a link. The other issue relates to the power relationship among the mining company, government, and the communities. The mining company has both

financial and knowledge power that it is able to use over the communities and government to avoid rectifying some of the environmental and social problems affecting the communities. Although the government has legislative power in the form of the mining charter and the more recent and specific MPRDA, the communities feel that these are just formal powers and the mining company still uses its financial base to maintain control.[69] According to the communities, control is maintained through the revenue from taxes and the manipulation of government officials responsible for inspecting the standards. Some of these negative perceptions and accusations may stem from the mining company's poor communication structures with the communities. Throughout the survey there were complaints of lack of feedback, indifference, use of technical language to avoid issues, and at times some of the officials were accused of intimidation.

In addition to the above, because there is a difference between scientific levels and what is viewed to be socially acceptable environmental levels, and what is used as adequate benchmarking for standards of living in the communities, the study reveals that the mining company is still a long way from achieving its corporate social responsibilities in terms of the physical and social environment. Consequently, the mining communities will continue to suffer the health problems associated with mining operations. On a positive note, the mining company has started to redress these issues by commissioning and supporting this research as part of their social responsibility initiatives.

What has emerged from the survey is that although HIV/AIDS programs have been initiated and developed in the mining communities, the rate of incidence still continues to increase, primarily because these programs are focused on the symptoms rather than the cause.

The problems and challenges associated with health in mining communities are complex. Progress and change in this area is dependent on an inclusive process involving politicians, mine management, government health service, mining health service, NGOs/volunteers, service users, caregivers, and traditional healers. Some broad recommendations for improvement of health service provisions in the mining communities, taking account of environmental and social conditions, follow.

- *Research and monitoring.* Evidence-based practice ensures the communities are provided with appropriate service provisions that suit their needs, rather than the needs of the service providers.
- *Improvement of socioeconomic conditions.* This allows the community members to make informed choices with regard to health risk behavior.
- *Structural integration.* Coordination of all the services in the locality ensures optimum use of resources.
- *User involvement.* Ensure that service provisions are culturally, age, and gender sensitive and take the illness explanatory models into account.

- *Health promotion.* In addition to programs for the ill, health promotion programs should take account of people's efforts to remain healthy.
- *Communication.* The importance of communication among the main role players, including the communities, cannot be overemphasized.
- *Sustainability.* It is not only about meeting community and government targets; the long-term health implications must be considered.
- *Community responsibility awareness.* Most of the discussion has been about the responsibility of others and the vulnerability of the communities; however, the ultimate responsibility is on the community members themselves to move on from survival to development, despite their circumstances.

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11

GLOBALIZATION, HEALTH, AND THE HAJJ

THE WEST AFRICAN PILGRIMAGE SCHEME, 1919–38

Matthew M. Heaton

International regulation of the West African overland pilgrimage from northern Nigeria to Mecca had its basis in concerns of British colonial officers and Saudi Arabian authorities to promote the health and well-being of itinerant Nigerian Muslims en route to Mecca in the first half of the twentieth century. Regulations enacted to control the West African pilgrimage in the period between 1919 and 1936, dubbed the Nigerian Pilgrimage Scheme, were adapted from regulations previously attempted in India, the Straits Settlement [Singapore], and Indonesia and were meant to bring the West African pilgrimage into conformity with international standards established and modified since the Third International Sanitary Conference in Constantinople in 1866. Because of the historically international nature of pilgrimage control schemes and the transnational nature of the Islamic pilgrimage to Mecca, the Nigerian Pilgrimage Scheme is a useful case study of the history of globalization in Africa and the effects that concerns for global health have had on efforts to control the globalization process. This chapter seeks to rethink several key assumptions about both the relationship between health and globalization and the effects that globalization has had on Africa through a discussion of the motivations and processes of the Nigerian Pilgrimage Scheme of the early twentieth century.

Globalization and health are two terms that have been increasingly related in academic literature in recent years. As a burgeoning field of study, the relationship between globalization and health rests on several explicit and implicit assumptions. Social scientists, who dominate the research on the subject, tend to recognize that the catch word "globalization" is a somewhat generic term

that encompasses sets of political, economic, sociological, geographical, environmental, and epidemiological processes that have eroded barriers of time and space and have to some extent challenged the nation-state as the primary unit of political, economic, or cultural study. Although social scientists recognize that these processes have origins several hundred if not thousands of years ago,[1] nevertheless, social scientists interested in the health implications of globalization quickly move on to focus on the contemporary period after recognizing these historical precedents. This leads to the first problem with globalization studies: while recognizing the historical implications of globalization, social scientists do not have the tools or interests to delve into the history of this phenomenon. At the same time, historians have been slow to take up the mantle and make significant contributions to this field.[2] As a result, social scientists have been able to define globalization largely in terms of its contemporary manifestations. This has led to several assumptions that, when viewed in historical terms, do not seem to be fully adequate representations of the process of globalization. First, in the present era, globalization is assumed to relate to the health of people only insofar as global forces affect the political, economic, cultural, or environmental determinants that, in turn, impinge upon the health of individuals and communities. The flow here is unidirectional: globalization affects health, but political or economic issues relating to health are not themselves shown to affect the processes of globalization.[3] Second, the forces of globalization in this framework are assumed to emanate only from the West,[4] and, third, to the extent that Africa or the Islamic world are integrated at all in these discussions, this is done to explain the ways that modern globalization has left these places disgruntled and underdeveloped, with negative consequences for the health of their populations.[5]

Through the historical discussion of the Nigerian Pilgrimage Scheme presented in this chapter, a more complex picture of the relationship between globalization and health begins to emerge. First, and perhaps most important for the purposes of this chapter, the history of pilgrimage control, and the Nigerian Pilgrimage Scheme in particular, illustrate the ways that understandings of human health and how to preserve it affected the process that globalization would take. Pilgrimage control happened the way it did primarily because of the need to prevent the spread of disease and destitution. In other words, it was within the context of controlling the spread of disease and destitution that economic and political considerations concerning the pilgrimage took shape, not the other way around. Second, this chapter points out at least one instance wherein African territories (in this case Nigeria and Sudan) were effectively integrated into a set of global processes, in this case the long-standing process of international pilgrimage control, rather than having their health ignored or harmed by those processes. Finally, although instituted mostly by western powers, and in particular Britain, the historical process of pilgrimage control illustrates the complicated intermingling of two powerful but distinct global systems—the European colonial system and the

dar-al-Islam—through efforts to control the global spread of disease and destitution. This is worth noting only insofar as we must be aware that the western globalization assumed to be the driving force in global affairs over roughly the last five centuries has not always been as dominant as it might now seem. Even today, the West must to a great degree negotiate its relationships with non-western societies, the Islamic world being still the most remarkable example. Islam has always represented its own form of globalization, one that has developed an increasingly complicated relationship with western globalization, particularly over the last 150 years. By exposing these assumed characteristics of globalization and its relationship to health in Africa, this chapter represents a potential starting point for scholars to begin reconceptualizing the effects of globalization on African health and the effects of health knowledge on the globalization of Africa.

History of Pilgrimage Control

The Muslim pilgrimage to Mecca has always been a transnational phenomenon. For several centuries Muslims from places as far flung as Senegal and Indonesia have been converging on Mecca and Medina to perform the duties that all able-bodied and financially secure Muslims are required to perform once in their lives. The global nature of the pilgrimage has meant that the Hejaz, in which both Mecca and Medina are located, has become a melting pot for the intermingling of Muslims from all across the world.[6] Languages come together, goods from across the world are bought and sold and taken home to new countries and cultures. Foods are prepared and modified from all corners of Islamdom. This mixing of peoples and cultures has done more than forge cross-cultural ties, it also has been a point from which epidemic disease has spread throughout the world. Given the international nature of this problem, international solutions have been sought since the second half of the nineteenth century.

International control of the Mecca pilgrimage was inextricably linked to concerns over the spread of contagious disease from Asia, most notably cholera, in the period after 1831. Cholera is a bacterial infection of the small intestine that causes profuse diarrhea, resulting in dehydration and electrolyte imbalance, which in turn commonly result in cardiac failure and death within a matter of days after contraction.[7] Cholera bacteria are present in the evacuations of its victims; the bacteria are most commonly transmitted through water sources contaminated by human feces. As a result, cholera has the potential to spread quickly and virulently in situations where large numbers of people congregate, sharing limited space and communal water supplies, as with the Muslim pilgrimage. Furthermore, the incubation period can be anywhere from five hours to five days, meaning that infected persons can

contract the illness in one place and travel far from the original source before becoming symptomatic.

Cholera became a global concern (for Europe, India, central Asia, and the Middle East at least) in the first half of the nineteenth century. Endemic to the Indian subcontinent, where the first epidemic was recorded in 1817,[8] cholera was first recorded in Arabia in 1821 and killed over 20,000 pilgrims on its first appearance in the Hejaz in 1831.[9] Incidentally, this was also the first year that cholera struck Europe, although it spread to Europe overland through Astrakhan and Russia, not as a direct result of the pilgrimage.[10] Cholera outbreaks continued to strike both the Hejaz and Europe periodically over the next thirty-five years, with epidemics in the Hejaz in 1841, 1847, 1851, 1856/57, and 1859,[11] and in Europe in 1847–49 and 1853–54.[12] The spread of cholera to Europe was not directly linked to outbreaks in the Hejaz until 1865, when pilgrims presumably spread cholera from the Hejaz to Egypt, from whence it spread to Europe and the Americas.[13]

By 1865 there was little dispute among worldly minds that cholera had become a devastating illness capable of spreading long distances and affecting people in any corner of the globe. The 1865 cholera outbreak emanating from Egypt, however, was unique for two main reasons. First, whereas previous cholera epidemics had spread to Europe somewhat slowly over land routes, now Europe faced the predicament that cholera might strike quickly through the Mediterranean on steamships embarking from Egypt. Second, the impending opening of the Suez Canal (which took place in 1869) meant that the volume of trade, people and, potentially, cholera was destined to increase rapidly and exponentially, posing immediate risks to all of Europe, and indeed, the rest of the world, if not quickly addressed. Thus, the first international efforts to control the Muslim pilgrimage were undertaken by European countries, Egypt, and the Ottoman Empire at the Third International Sanitary Conference in Constantinople in 1866.

This conference, known as the Cholera Conference, was the first to deal exclusively with cholera and was the first in which the pilgrimage played an important role. The Cholera Conference was also the first International Sanitary Conference in which some measure of agreement was reached about the nature and spread of cholera. Although two previous International Sanitary Conferences had been held, one in 1851 and the other in 1859, both in Paris, neither had resulted in agreement or action on the part of the participating countries toward developing a system of international sanitary measures to prevent the spread of epidemic diseases.[14] This was partly because scientific minds of the nineteenth century were at odds over the nature, source, and transmission of cholera. Some believed cholera was spread by humans through contact, others through water. Still others believed cholera incubated in soil, was instigated by environmental conditions, or any number of combinations of the above. Until Robert Koch's discovery of the *Vibrio cholerae* bacterium in 1883–84 became commonly accepted scientific proof of

the nature of cholera in the 1890s, many different and relatively plausible explanations for the spread of cholera competed for prominence in the international scientific community.[15]

These competing explanations of cholera causation and spread had hampered earlier International Sanitary Conferences, however, at the Cholera Conference several unanimous agreements were reached on less controversial aspects of epidemic cholera. These were that cholera spread to Europe from India, where it was endemic in the Ganges valley; that the Muslim pilgrimages were the most important factor behind the spread of epidemics; and that maritime communications were the most dangerous means through which cholera could be spread.[16] As a result of the agreements reached at the Cholera Conference, efforts were undertaken to control the spread of cholera from India. Since the pilgrimage was deemed the most likely culprit in the spread of cholera from India, it is not surprising that control efforts hinged significantly on controlling the pilgrimage. Since it was also agreed that maritime conveyances were the most important aspect of the spread of cholera, efforts to control the pilgrimage centered mostly on improving conditions on vessels that carried pilgrims from India, the Malay Peninsula, and the Dutch East Indies to the Hejaz and on quarantining these vessels before releasing pilgrims into the Hejaz.

Over roughly the next three decades, many different actions were taken both by the international community and the British colonial administration in India to sanitize the pilgrimage through the institution of various international bodies and quarantine stations, the development of sanitary regulations for pilgrim vessels, as well as attempts at pilgrimage schemes designed to prevent unhealthy or impecunious pilgrims from engaging in the pilgrimage in the first place. A major maritime quarantine station opened at Kamaran Island in 1881, where pilgrims were held and received a bill of health before entering the Hejaz. The Dutch colonial government in the East Indies had required pilgrim passports since 1825 and proof of sufficient funds since 1859, models that the British colonial governments in India and the Straits Settlements borrowed from and implemented in the years after the 1866 Cholera Conference.[17] The Straits Settlement instituted a mandatory pilgrim passport program and return deposit in 1881, and the Government of India instituted voluntary registration of pilgrims from 1878.[18] Conditions on pilgrim ships were improved by the Indian Native Passenger Ship Act of 1887, which reduced overcrowding on pilgrim vessels, provided for more thorough sanitation of pilgrim vessels before embarkation, provided for special compartments for the sick aboard pilgrim vessels, and regulated the number of toilets and the sanitation of food preparation facilities on ships. The act also required any pilgrim vessel carrying more than one hundred passengers to station a medical officer on board.[19]

Control of the Indian pilgrimage in the interests of global health came at both political and economic costs to the British colonial administration in

India. Politically, the colonial government had to walk a tight line between satisfying the desires of the international community for a safe, healthy pilgrimage and the desires of the Muslim population for cheap, quick, and easy pilgrimage with as little restriction on their movement as possible. Quarantines forced pilgrims into crowded, uncomfortable conditions and were expensive to operate. The expenses of the quarantine stations were offset by charging each pilgrim high dues for their services. At the same time, regulations on shipping that reduced the number of pilgrims that could be crammed onto a vessel bound for the Hejaz caused the price of a single ticket to increase significantly, an added expense that the Muslim community resented. For these reasons, and others, the British colonial administration came under constant fire from the leaders of India's Muslim communities.

Economically, Britain suffered the costs of increased sanitation measures, such as employing sanitary staff and building sanitary inspection facilities. More important, from the British point of view, quarantine in general meant that British shipping interests faced longer journeys, threats to perishable products, and sanitary expenses related to keeping their ships free of cholera and other communicable diseases. In the interests of free trade, Britain regularly and consistently argued for the elimination of the quarantine system except in instances where outbreaks of disease were already documented.[20]

Despite the costs incurred by British colonial governments, however, the rights of the international community to demand and institute controls on the pilgrimage in the interests of global health were established in the period between 1866 and 1900. Britain, while constantly fighting for greater freedom of the seas and more country-by-country control over quarantine and sanitary regulations, nevertheless found itself compelled to comply to many of the reforms to the pilgrimage system proposed by the international community, composed in this case of other European countries and the independent Muslim authorities of Egypt[21] and the Ottoman Empire. By the turn of the twentieth century, the precedent for pilgrimage control was well established, if only for maritime control of pilgrim traffic from the East. During the twentieth century, however, the British colonial governments in Nigeria and Sudan found that, unlike in the Indian case, it was actually in their own political and economic interests to try to institute pilgrimage controls on the West African overland route to Mecca from Nigeria. The controls later instituted in Nigeria and the Sudan had their roots in the experiments conducted on the Indian and Straits Settlements pilgrimages of the nineteenth century and in the development of the global system of pilgrimage control established by the international actors represented at the International Sanitary Conferences and on the various international boards and offices established to control the spread of disease from the East to the West. This precedent for the international control of the movement of peoples in order to prevent the global spread of infectious disease was easily extended to Africa, where it was adapted to local circumstances and motivations.

Motivations for West African Pilgrimage Reform

Whereas concern for the health of Europeans and Ottoman subjects was the motivating factor behind control of the pilgrimage in the nineteenth century, concerns over the health and well-being of Nigerian overland pilgrims themselves were the initial impetus for regulating the pilgrimage procedure in Nigeria in the years after World War I. Although relatively reliable statistics of West Africans embarking on the pilgrimage are not available until the late 1920s, the numbers had risen remarkably enough by 1919 to compel H. R. Palmer, the District Officer of Bornu, Northern Nigeria, to submit a report to the Government of Nigeria providing narrative and analysis on the overland pilgrimage route from northern Nigeria to Jeddah (the main port city in the Hejaz), which he had recently completed along with the Emir of Katsina. While Palmer himself could not estimate the number of West Africans actually performing the pilgrimage on a yearly basis, he did estimate that in 1912, some 30,000 West Africans had resided in the Sudan, and estimated that this number was likely between 50,000 and 60,000 only seven years later.[22] Not all of these people were actively performing the pilgrimage because of economic or other circumstances, but the vast majority had left Nigeria with this intention.

West Africans had been performing the hajj since Islam first spread to the region in the ninth century, although in small, unregulated numbers. By the twentieth century, however, thousands of West African Muslims, mostly from the areas of northern Nigeria and southern Niger, were embarking on the pilgrimage annually. The overland pilgrimage route from West Africa to the Red Sea was a treacherous one, fraught with perils to life and limb. Nevertheless, over the course of the twentieth century, ever increasing numbers of Nigerian Muslims undertook the journey as their religious duty. Yamba has provided three explanations for the rise in West African pilgrim traffic at the beginning of the twentieth century. First, conquest of northern Nigeria by British forces in 1903 was seen by many Muslims in the region as an apocalyptic sign, the invasion of a prophesied evil force, and served as a major push factor influencing Muslims to leave the region. Traveling eastward on pilgrimage was both a reasonable and a righteous response to British occupation. Second, the rise of the Mahdi in the Sudan in the late nineteenth century fueled millenarian impulses in West Africa. Although the original Mahdi had died prematurely in 1885 and his successor, Abdullahi, had been vanquished by British forces in 1898, many West African Muslims flocked to the Sudan to aid the Mahdi's cause against British encroachment. While abroad, many undertook, or attempted to undertake, the pilgrimage to Mecca.[23] Third, Yamba explains that colonialism in Africa, while causing people to embark on pilgrimage as a politico-religious activity, also made the process of pilgrimage comparatively easier. "Colonial rule," claims Yamba, "brought about an improvement in the infrastructure of the colonized areas thereby making travel comparatively

easy; it also offered prospective pilgrims opportunities for working en route towards their continued journey."[24] Thus, in this case, the spread of European globalization in the form of imperialism actually opened doors to the magnification of the Islamic sphere of global influence, allowing exponentially more West African Muslims to partake of the pilgrimage to Mecca.

These factors accounted for much larger numbers of pilgrims to begin the trek out of Nigeria, across southern Chad, through the Sudan toward various ports on the Red Sea, where they would cross into the Hejaz to perform the holy rites of the pilgrimage. With increasing numbers of pilgrims heading overland through Sudan toward Mecca, it became increasingly important for the British colonial administrations in Sudan and Nigeria to collaborate with each other and the British Agent at Jeddah to control the pilgrimage route and create a viable system whereby prospective Nigerian pilgrims could complete the journey quickly, cheaply, and safely.

Palmer's report marked the first step toward governmental control of the West African pilgrimage. In this report, Palmer detailed the many and various perils facing poor Takrunis[25] over the long distance between the Nigerian border and the Arabian Peninsula. Not only were Nigerian pilgrims subject to violence, robbery, and extortion along the way but also they faced hardships of starvation and thirst, caused in large part by their combined status of poverty and itinerancy. Because of the complications of poverty and the long distances involved, it took many, if not most, pilgrims anywhere from several months to several years to complete the voyage across the Sahel and the Red Sea, if they ever finished it at all. Many settled permanently in West African villages in the Sudan, while even those who completed the pilgrimage to Mecca faced a renewal of their hardships on the return journey to Nigeria, most even poorer than they had been on the outward voyage. Their poverty left them vulnerable to conscription or enslavement in the Hejaz, where the practice was still common and legal. Many West Africans died in the process of the pilgrimage. Witnessing the seemingly insurmountable obstacles facing Nigerian pilgrims, Palmer urged that it was "very necessary, not only in the interests of Nigeria as a country, but in the interest of the people themselves that this movement should be regulated so as to ensure as little human waste as possible."[26]

Palmer's goal was a noble one: to make arrangements whereby the safety, health, and well-being of the Nigerian pilgrim could be safeguarded on his or her long journey. Palmer made suggestions for regulations of the pilgrimage in his report. He urged that pilgrim passports should be issued, indicating the pilgrim's name and place of origin. Pilgrims should be forced to prove that those traveling with them were family members, not random acquaintances who might be sold into slavery along the route. Perhaps most important, Palmer believed that pilgrims should be required to make a deposit large enough to cover the costs of the pilgrimage—that is, for round-trip railway tickets, quarantine and inoculation dues at Red Sea ports, and a small stipend for subsistence in the Hejaz—before they left Nigeria to ensure they would

not become destitute, thereby exposing themselves to the dangers of slavery, malnutrition, and premature death.[27]

Little of immediate consequence seems to have come of Palmer's report. In 1922, however, the issue of slavery in the Hejaz was again brought to the attention of the Nigerian colonial government. In a confidential memorandum from the Secretary of the Northern Provinces, Kaduna, to the Chief Secretariat in Lagos, the dangerous situation facing Nigerian pilgrims in the Hejaz was explained thus:

> Slavery is rife in the Hejaz and there is no doubt there is a considerable traffic in women and children from Nigeria and the Sudan. The Emir was asked if he had brought no children for sale, and I met a string of some forty to fifty Hausa and Fulani girls carrying water who, I learnt had recently been bought by various Notables, sold, I gather, by relations or friends whom they had accompanied on the pilgrimage. The purchase of slaves is, of course, not illegal and even Arab girls are dealt in. A thing that greatly shocked the Emir.
>
> Many adults also drift into practical slavery. Either they have spent all their money or have been robbed and cannot pay their passages back to Port Sudan, and they endeavour to earn money by acting as porters or "servants" to Arab notables. In the former case they may preserve their independence, in the latter they probably find that when they wish to leave, there is some technical difficulty and they are forced to enter on another contract of service, while their children are simply "domestic slaves."[28]

As a result of such problems facing Nigerian pilgrims, the Government of Nigeria established a fund in Jeddah for the repatriation of destitute pilgrims who might come under such risks. This fund was to be fed by contributions from each Native Administration in the Northern Provinces as a percentage of their overall revenues.[29] These contributions were then forwarded to the British Agent at Jeddah and put under his discretion. Under the repatriation system afforded by the Repatriation Fund, a legitimately destitute pilgrim could approach the British Agent in Jeddah with the request to be repatriated. The agent could then authorize an advance from the Nigerian Repatriation Fund for the amount necessary for the pilgrim to purchase a steamer ticket across the Red Sea to Suakin. Once in Sudan, the pilgrim was expected to find work, most likely in the cotton fields of Gezira, and earn the necessary funds to complete his voyage back to Nigeria.[30] The Repatriation Fund, therefore, represented the first steps to regulation of the West African pilgrimage and was instituted primarily for the same humanitarian reasons outlined by Palmer in his report of three years earlier: that is, to prevent the destitute Nigerian pilgrim from either dying or falling into conditions of real or proximate slavery.

While concerns for the health and well-being of the Nigerian pilgrim on his journey can be seen as the initial impetus for some sort of regulation of the overland pilgrimage from West Africa, political and economic circumstances

necessitated the colonial governments in Nigeria and the Sudan to instigate much stronger reorganization of the pilgrimage after 1925. Ibn Sa'ud's conquest in 1925 of the Hejaz, the region in which the Islamic holy cities of Mecca and Medina were located, marked the beginning of a campaign to "purify" the pilgrimage, which had direct implications on the West African overland pilgrimage. It had been reported in 1922 that there were as many as 4,000 Nigerian pilgrims in Jeddah alone,[31] not to mention the numbers lingering in the area of Mecca and Medina. The large numbers of Nigerian pilgrims remaining for long periods in the Hejaz was displeasing to the new Wahhabist regime because, according to Abdullah Damluji, the Director of Foreign Affairs for the recently incorporated Saudi Arabia:

> they come to the Hejaz running away and holding no passports or any official documents such as are usually issued to pilgrims by their Governments when they leave, and as their presence now in this country is worrying the inhabitants because they bother people by always begging for food in a disturbing manner.[32]

The Saudis also complained that West African pilgrims often crossed into the Hejaz illegally through unauthorized ports along the Red Sea. The Saudis wanted to bottleneck the influx of pilgrims by authorizing their entry only at Jeddah.[33] This system, however, could only work with the cooperation of the European colonial governments that controlled the sites of embarkation, most notably the British in Sudan, whose port at Suakin constituted the bulk of traffic across the Red Sea into the Hejaz. Further implicating the British colonial administrations in the need for pilgrimage control was the fact that the vast majority of African pilgrims came from the British-held territories of Egypt, Sudan, or Nigeria. The Saudis therefore requested that the British

> secure a good method of their [pilgrims] coming in a regular legal manner, providing them with passports when they wish to leave and giving strict warnings to such people to limit their visit to this country as much as possible and that it should only be for visiting the "Beit Muazzam" Kaaba [the great house] during the season months, to lighten the pressure of their presence in the country and to decrease their harms.[34]

If the British did not take these measures, the Saudis reserved the right to "take the necessary steps to prevent them from landing at such ports and places on the coast in order to protect their lives and rights."[35] Therefore, not to accede to such a request would jeopardize the British relationship with the new Saudi regime as well as potentially aggravate Muslim opinion of British rule in Sudan and Nigeria. More direct control of the West African pilgrimage now became inevitable because of direct pressure from the Islamic government of Saudi Arabia, indicating the extent to which pilgrimage regulation had become not just a western construct but an internationally accepted process to control the global flow of people across national boundaries.

A second political consideration for the British was the new International Sanitary Convention that came into being in 1926. This convention, to which Britain was signatory, imposed several new restrictions on pilgrims and pilgrim ships, most notably quarantine requirements related to cholera, smallpox, and yellow fever. The convention obliged port authorities to "prevent the embarkation of persons showing symptoms of plague, cholera, yellow fever, exanthematous typhus or smallpox, and of persons in such relations with the sick as to render them liable to transmit the infection of these diseases." The convention further obliged governments to maintain in their port areas "a sanitary service possessing an organization and equipment capable of carrying out the application of the prophylactic measures" to prevent the spread of the diseases mentioned above.[36] The convention required that pilgrims purchase round-trip steamer tickets and that they cross the Red Sea only in "mechanically propelled ships."[37] In respect of these obligations, the Government of Sudan instituted the policy that all pilgrims embarking from Suakin for the Hejaz be vaccinated against cholera and inoculated against smallpox to prevent even the possibility of an outbreak.[38] And pilgrims were indeed required to purchase return steamer tickets. This convention gave further backing to the Saudi requests for pilgrimage control in Africa and legally required British colonial governments to ensure that all pilgrims passing into the Hejaz received these inoculations. The British colonial regimes now felt compelled to take up the issue of regulating the pilgrimage to satisfy the desires of the international community, whose jurisdiction over such matters had been largely accepted.

Conceivably, British colonial governments could have responded to the Saudis and the International Sanitary Convention by preventing Muslim subjects from performing the pilgrimage at all. Of course, this was never a serious consideration, as to do so would have inflamed Muslim opinion against the colonial regime. Beyond this consideration, British colonial officials prided themselves on their accommodating attitude toward Islam in British colonial territories. Palmer himself had recognized the political advantage to be gained by cultivating Muslim approval in his report of 1919, in which he suggested, "there is nothing more certain than that the general belief that the English though not Muhammadans themselves, look with approval on Islam as a religion has been the greatest factor in preserving the peace of the Sudan during the War."[39]

Beyond these political considerations, British colonial governments felt by 1926 that it was in their own economic best interests to regulate and control the pilgrimage for three main reasons. In the first place, the repatriation of Nigerian pilgrims from the Hejaz was becoming an increasingly cumbersome expense. Threats from the Saudis to roust indigent and undocumented West Africans from the Mecca and Medina would only bring more requests for repatriation to the British Agent in Jeddah, thereby costing the Nigerian Native Administrations an increasing amount to replenish the Repatriation

Fund.[40] Second, once repatriated to Suakin, as per the instructions for the use of the Repatriation Fund, it was expected that the repatriated migrant would find work in the Sudan to fund his return trip to Nigeria across the Sahel. The stress that large numbers of repatriated West African pilgrims would put on the Sudan labor markets was not to be desired.[41]

The third and final economic reason to regulate the West African pilgrimage came in the form of the costs involved in regulating the pilgrimage and illustrates the extent to which the health considerations of pilgrimage control affected the way that pilgrimage control was conducted. Both quarantine and inoculation were costly endeavors and were never intended to be granted freely to any Muslim wishing to cross into the Hejaz. Individual pilgrims were expected to pay quarantine and inoculation dues at Suakin. Over the course of the overland journey, however, West African Muslims very regularly found themselves in a more penurious position than they perhaps anticipated and, by the time they reached Suakin, many could not afford to pay the quarantine and inoculation dues. To avoid these payments, pilgrims would often try to cross into the Hejaz illegally on dhows or sambuks from illegal ports of exit to illegal ports of entry.[42] No doubt, requisite quarantine and inoculation increased the cost of the pilgrimage for the average, poor West African. A second major cost to the pilgrim came in the form of transportation. Poor pilgrims often would choose to buy only one-way train or steamer tickets, thinking they would be able to earn enough money to buy their return ticket later. This was not always the case, and as a result, many pilgrims found themselves destitute and stranded in the Hejaz or Sudan, unable to purchase return tickets and vulnerable to slavery, starvation, ill-health, and death. Therefore, any regulation of the pilgrimage route and procedure would have to take into account the costs imposed on the pilgrim and develop a way to make the regulated pilgrimage both convenient and economical to the individual pilgrim. This would also presumably bolster Muslim opinion of British colonial governance, thereby meeting a political end as well.

The best, and probably only, way to ameliorate both the political and economic circumstances the British colonial regimes found themselves in was to institute some kind of pilgrimage control that would standardize the route (or routes) that pilgrims took from West Africa to the Hejaz, establish a passport identification system whereby it could be determined which travelers were pilgrims and whether or not they had received their inoculations and undergone quarantine, and compel pilgrims to deposit enough money at the outset of their journey to ensure that they would not become destitute in the course of their pilgrimage. This would presumably prevent Nigerian pilgrims from becoming a political or economic burden on the colonial governments of Nigeria or Sudan, or on the Saudi government, in the future. It was with these concerns in mind that the Government of Nigeria began to develop the Nigerian Pilgrimage Scheme in 1926. The idea that pilgrimage control was required to protect the health and well-being of individual pilgrims was still used to justify

the regulation of the pilgrimage. For instance, in 1927, Sir John Maffey, the Governor-General of the Sudan, proclaimed that the pilgrimage route had to be standardized "in respect of the numbers, the pecuniary means, and, above all, the health, of pilgrims,"[43] but the overwhelming majority of the correspondence regarding pilgrimage control between the Governments of Nigeria and Sudan, the British Agent at Jeddah, and the Colonial and Foreign Offices in London indicate that political and economic concerns of the British themselves had become the driving force behind pilgrimage reform by the mid-1920s. Nevertheless, the health aspects of pilgrimage control, particularly quarantine and inoculation, remained central to the process of pilgrimage control and were so indispensable that they could not be revoked even after they proved to be major factors influencing pilgrims to avoid the required route in order to avoid quarantine and inoculation and the dues associated with them.

The Nigerian Pilgrimage Scheme

The Nigerian Pilgrimage Scheme, conceived in 1926 but not finally adopted by the Government of Nigeria and the Government of Sudan until 1934, comprised elements that were designed to regulate the movement, money, and identification of Nigerian pilgrims on their journey to Mecca and back. Although there were many pitfalls to the scheme, which we will discuss later, the ideal procedure taken by pilgrims traveling under the scheme went as follows. The pilgrim would apply to his own local Native Administration for a passport, and would pay a deposit of five pounds sterling to cover passport dues, vaccination, inoculation and quarantine fees, round-trip steamer transportation between Suakin and Jeddah, Hejaz entrance taxes, and fees payable to local chiefs for their services in orienting pilgrims. The pilgrim would then travel to Maiduguri, in the northeastern corner of Nigeria, where he would receive his passport and a metal disc bearing his passport number in case of loss of the original passport. The pilgrim would then head across southern Chad and through the Sudan to Suakin on whatever route he chose.

Once in Suakin, the pilgrim would be met and aided by the local West African Sheikh of pilgrims, who would make sure that he was taken for vaccination and inoculation. He would then be taken to the Merkaz, where he would be remitted £3.14.0 of his deposit to pay the quarantine fees round-trip steamer ticket. The pilgrim would then proceed to Jeddah via steamer and then on to Mecca by whatever means he chose (and perhaps Medina) to complete the pilgrimage.

On the return journey the pilgrim would present himself at the British Legation in Jeddah, where he would be given his return steamer ticket to Suakin and the balance of his deposit, roughly one pound sterling, depending on exchange rates and remittance fees, for subsistence on the return journey.[44]

Once back in the Sudan, it was assumed that pilgrims could fend for themselves on the overland route back to Nigeria just as they had on the way to Suakin.

The Nigerian Pilgrimage Scheme sought to accomplish six goals, according to the colonial Governor of Nigeria who oversaw its institution. First, the system was designed to control the movement of pilgrims by compelling them to cross into the Hejaz only on the steamer route from Suakin to Jeddah, as per the urgings of the Saudis. Second, the scheme provided reduced rail and steamer rates where possible, thereby inclining pilgrims to take advantage of the scheme in their own best interests. Third, the scheme compelled the pilgrim to leave a deposit ensuring that all dues and fees would be payable at the time the pilgrim reached Suakin, thereby limiting the number of pilgrims needing to be repatriated via the Nigerian Repatriation Fund. Fourth, the issuance of pilgrim passports (and forwarding of duplicate copies to Suakin and Jeddah, which the scheme carried out) allowed for identification of pilgrims at all stages of the pilgrimage. Fifth, the scheme attempted to streamline the administration of the pilgrimage so that as little work or confusion as possible would fall on the British authorities at Jeddah or in the Sudan. Finally, the governor believed that, overall, the Nigerian Pilgrimage Scheme would allow "that the whole pilgrim traffic may be 'speeded up,' the pilgrims be away from Nigeria a shorter period than at present, and a smaller percentage prove unable owing to economic circumstances to return to their homes."[45] On these grounds, the Nigerian Pilgrimage Scheme was accepted by the Government of Sudan and the British Agent at Jeddah and came into effect for the first time during the pilgrimage season of 1933–34.

The Nigerian Pilgrimage Scheme, although a rather far-reaching attempt to organize and regulate the pilgrimage, suffered from unique hindrances to implementation. These hindrances were of two main varieties. In the first place, the scheme was originally adopted on a voluntary basis. This meant that pilgrims may or may not choose to make such a large deposit safeguarding their journey before they left on the pilgrimage. Those who chose not to travel under the scheme (the overwhelming majority) could simply buy a much cheaper pilgrim passport at Maiduguri before heading out on the pilgrimage. The idea behind keeping the system voluntary at first was in line with procedures undertaken in India and the Straits Settlements, and was done so as not to invite Muslim dissent by transforming Islamic traditions too radically or quickly. Adding to this logic was the idea that by keeping the system voluntary only the "better class" of Muslims would be able to afford the system at first. By running the scheme on a voluntary basis initially, the hope was "to get the benefits of the new system so appreciated by the better class pilgrim as to become sought after by a majority, when the system could be made compulsory."[46]

While the logic of this is understandable, it meant that the Nigerian Pilgrimage Scheme did little to affect the habits of the majority of pilgrims who undertook the overland journey. The Governor-General of Sudan voiced his concerns over this issue as early as 1929, claiming:

> Indeed it is, I think, self-evident that the Nigerian Government cannot reach even an approximate achievement of the aims set out while the scheme outlined remains on a voluntary basis, for it is not to be anticipated that any but the strictly limited class of well-to-do pilgrims, of the type which carries money rather than earns it upon the route, will voluntarily pay a deposit of approximately £6 and commit themselves irrevocably to make a through journey, which has been especially "speeded up" in both directions, by a specified route. The poor pilgrim—and such will always constitute the vast majority—has no incentive for so restricting his freedom, but has on the other hand, good economic reasons and a natural inherent predilection for preserving his liberty to halt en route where and for whatever time he pleases.[47]

Indeed, the progress report issued by the British Agent at Jeddah essentially corroborated this view, commenting on the minimal impact the voluntary scheme had made in its first operational season.

> Generally speaking the scheme must be accounted a success during its first season, and undoubtedly succeeded in its object of speeding up the journey for those who came under it. Two drawbacks must not, however, be overlooked. Observation suggests that nearly all those benefiting by the scheme belonged to a relatively speaking well-to-do class, who in the past would have made their way unostentatiously in and out of the Hejaz without bringing themselves to the notice of the Legation in any way, and that the poorer Nigerian, who has been the chief nuisance to the Legation in the past, has not been brought under the scheme.[48]

The voluntary basis of the scheme was therefore making it impossible to judge its ability to regulate and organize the overall West African pilgrimage.

The second main factor hampering British control of the West African pilgrimage revolved specifically around the health regulations called for under the International Sanitary Convention of 1926. Prospective pilgrims from West Africa were now required to be vaccinated against cholera and inoculated against smallpox, as well as undergo quarantine at Suakin before leaving by steamer for Jeddah to perform the pilgrimage. The procedure was both relatively expensive and invasive, and many pilgrims balked at the added expense and bodily intrusion. Pilgrims who did not deposit the funds to pay these dues before leaving on the pilgrimage (the vast majority) often could not or did not want to pay them to cross into the Hejaz upon reaching Suakin. Large numbers of pilgrims would therefore circumvent Suakin and move into Eritrea, where they would cross the Red Sea unchecked at Massawa on small, unregulated dhows or sambuks to smaller ports on the Arabian coast, thereby becoming potential vectors for the spread of disease as well as likely prospects for repatriation on grounds of destitution. Prior to about 1935, the Italian colonial authorities in Eritrea apparently made very little effort to establish quarantine and inoculation stations or to ensure that all pilgrims crossing the Red Sea received the medical and identification services required both by the International Sanitary Convention of 1926 and the Saudi authorities.

Saudi efforts to expel destitute West Africans from the Hejaz beginning in the 1920s further exacerbated the problems posed by pilgrims passing into the Hejaz via Massawa. In 1927, for instance, roughly one thousand destitute West African pilgrims were transported via sambuk from Jeddah back to Suakin. On inspection, it was discovered by British colonial authorities that a large percentage had crossed into the Hejaz from Massawa and held no passports or return steamer tickets.[49] This case, apparently the first mass repatriation of destitute West African pilgrims, was used as early evidence of the need for the Government of Nigeria to develop the Nigerian Pilgrimage Scheme so as to standardize the route and prevent pilgrims from crossing via Massawa by forcing them to deposit their Suakin quarantine dues in advance. However, the voluntary nature of the Pilgrimage Scheme on its introduction, as well as the inability of the Government of Sudan to police its extensive border effectively against the unregulated crossing of pilgrims, meant that little was initially done or could be done to prevent pilgrims from crossing at Massawa rather than Suakin. Sir John Maffey, the Governor-General of Sudan in 1927, explained the problem thus:

> For a distance of some thousand kilometres [*sic*] the boundary offers no obstacle to penetration; and the ease with which these natives can apparently leave their own village. . . . without being in possession of the proper permits and documents of identity is some measure of the more obvious ease with which they can avoid the control of the few and widely distant posts existing on our side of the border. Once within the Sudan, such natives become dissipated among the local population and they may, and often do, remain for a considerable time in this country before crossing to the Hedjaz.

The difficulty of control is, of course, enhanced by the fact that there is no bottle-neck upon the route through which they must pass, and those who lack passports or sufficient means to complete the journey avoid Port Sudan and Suakin and make their way across the Eritrean frontier to Massowah.[50]

Such large numbers of destitute pilgrims being repatriated at one time posed serious economic problems for both the Government of Sudan and Nigeria. Not only would the cost of their transport across the Red Sea have to be paid from the Nigerian Repatriation Fund but also quarantine dues at Suakin would have to be waived owing to the destitute nature of the pilgrims. The longer-term problem facing the Government of Sudan was the fact that these pilgrims, once repatriated, would necessarily burden the labor market in Sudan insomuch as they would have to find work both to survive in the Sudan and to finance their return voyage to Nigeria.

Even making the Nigerian Pilgrimage Scheme mandatory for pilgrims could not guarantee they would not try to cross to the Hejaz via Massawa simply to avoid the unpleasantness of inoculation and quarantine. Thus, Maffey suggested that the only real solution to this problem would be to approach

the Italian authorities with the request to institute more stringent control of their port and the establishment of more rigorous quarantine of pilgrims at Massawa.[51] Italian authorities claimed in 1928 that these controls had already been instituted,[52] but these claims proved untrue.[53] When confronted on this issue, the Italians apparently admitted that no such regulations had been instituted because, according to Maffey, "the destitute nature of the pilgrim passing through Massowah rendered it impossible to collect from them either quarantine dues, return fare, or deposit," and that "many of the destitute pilgrims are carried to Asir opposite Massowah on the Arabian coast by Sambuk owners as an act of piety free of charge and that he was unwilling to stir Mohammedan opinion by introducing restrictive regulations."[54]

Despite more stringent quarantine measures and assurances that only those pilgrims with the means to make a quick return would be allowed to cross at Massawa,[55] British authorities at Jeddah and in the Sudan continued to have problems with mass repatriations of destitute West African pilgrims, most of whom had crossed into the Hejaz via Massawa. In 1931, roughly five hundred West African pilgrims were repatriated from Jedaah, nearly four hundred of whom had crossed illegally at Massawa.[56] Another 1,491 destitute West Africans had to be repatriated in 1934–35 following a large fire in the West African village outside Mecca and the institution on the part of Saudi authorities of a decree requiring the removal of all destitute West Africans from the area of Mecca.[57] Of these, 1,368 had reached the Hejaz via Massawa.[58] In this case, it was arranged that the cost of steamer tickets for repatriation to Massawa of these pilgrims was paid out of the Nigerian Repatriation Fund, and quarantine dues were waived by the Italian authorities at Massawa.

The problems of voluntary deposits, the costs and unpopularity of quarantine and inoculation, and the lax regulations at Massawa complemented each other to vitiate any improvements in controlling the pilgrimage route that might have occurred as a result of the Nigerian Pilgrimage Scheme. Without mandating that pilgrims pay their quarantine and vaccination dues before leaving Nigeria, pilgrims had no incentive to cross legally at Suakin. Without instituting equally rigorous quarantine and passage restrictions in Massawa, the pilgrims had an easy alternative to the route and procedure outlined in the Nigerian Pilgrimage Scheme. Thus, while concerns over the spread of disease and the health and well-being of pilgrims had been motivating factors for the international regulation of pilgrim traffic, including the West African overland pilgrimage, political considerations over British colonial intrusion into long-standing Muslim traditions, as well as the costs, procedures, and lack of international cooperation related to health regulations caused early efforts at organizing the West African pilgrimage to be largely ineffective in the short term. Nevertheless, it is clear from this discussion of the Nigerian Pilgrimage Scheme that health considerations were central to the way that pilgrimage control unfolded. Even when these health regulations proved to be both a political and economic liability in the short term, serving as a deterrent to proper immigration into Saudi Arabia on

the part of pilgrims, it was nevertheless impossible for British authorities to revoke these health regulations in light of seventy years of international consensus establishing the indispensability of such regulations, culminating in the International Sanitary Convention of 1926. The only response was to make control of the pilgrimage even more international in scope, enlisting the Italians to establish similar health regulations at Massawa.

Long-Term Consequences

The short-term failure of this early attempt to control the pilgrimage does not mean there is nothing historically meaningful about the Nigerian Pilgrimage Scheme in the long-term history of globalization in Africa. The system continued to be reformed over time, and ultimately transformed the way that Nigerians performed the hajj. The mass repatriation of destitute West Africans in 1934–35 seems to have convinced the Italians to institute quarantine and deposit controls in earnest, finally bringing about the international cooperation necessary to regulate the pilgrimage route and reduce the extent of the destitute pilgrim problem. Furthermore, the Nigerian Pilgrimage Scheme became mandatory for the pilgrimage season of 1938–39. The cheap pilgrim passport was eliminated, and all Nigerians applying for pilgrim passports legally now had to make the five-pound deposit.[59] Thus, regulation of the overland pilgrimage route from Nigeria seems to have been largely established by the time of World War II.

This does not mean the Nigerian Pilgrimage Scheme was entirely successful at controlling the movement, finances, or identification of all West Africans, nor even Nigerians, after 1939. Nigerians could still migrate across porous borders with relative ease and the number of Nigerians resident in Sudan has continued to grow over the decades since the inception of the Nigerian Pilgrimage Scheme. It does seem clear that after the 1930s, however, it became more difficult for pilgrims to cross into the Hejaz illegally, without means or necessary identification. This is evidenced by the hundreds of thousands of prospective pilgrims who have been living in the Sudan for years, even decades, without completing their pilgrimage because of financial restraints. The prevention of these West Africans, who Bawa Yamba has called "permanent pilgrims,"[60] from continuing their travels beyond Sudan has had a significant long-term impact on the demographic makeup of Sudan, most notably in the Darfur region[61] and in the cotton-producing region of the Gezira.

In Nigeria, the role of the government in the pilgrimage process has become a highly politicized debate since independence in 1960. The Nigerian Pilgrimage Scheme of the colonial era gave way to state-sponsored Muslim pilgrimages after Nigerian independence, which allowed enormous numbers of pilgrims to pay the costs required for performance of the pilgrimage; costs

initiated under the Nigerian Pilgrimage Scheme. The expectation that the government should be responsible for facilitating the pilgrimage has a direct link to the Nigerian Pilgrimage Scheme, which first gave the secular government the power to regulate this essentially religious function. State sponsorship of Muslim pilgrimage has caused tensions with Christian communities in Nigeria, who have also demanded and, to some degree received, similar dispensations for performance of Christian pilgrimages.[62] In this way, the Nigerian Pilgrimage Scheme brought Nigeria into a long-standing international mechanism designed to control the global flow of pilgrims into and out of the Hejaz. This globalization not just of the pilgrimage but of pilgrimage control has persisted to the present day, to the extent that Nigerians can no longer perform the hajj without subjecting themselves to this migration control process.

Meanwhile, issues of health have remained central to the way that the Nigerian pilgrimage is controlled. In some cases, control measures purported to have been decreed for health reasons have had little to do with actual fears of disease transfer. Rather health-related crises have had distinctly political roots, at least according to the Nigerian governments involved. For instance, after the Suez crisis in 1956, the Saudi regime imposed higher health standards on Nigerian pilgrims, requiring them to have taken typhoid prophylaxis, which had never before been required, in order to enter Saudi Arabia. British colonial officials believed this to be a direct political attack designed to irritate Nigerian Muslims and discredit the colonial regime as retribution for the Suez crisis.[63] Forty years later, in 1996, the Saudis banned all Nigerians from participating in the pilgrimage over supposed fears that they might be carriers of cerebrospinal meningitis. Nigerian officials have since believed that the root cause of this ban was not actual concern about the spread of meningitis but rather an attempt by the Saudi regime to undermine the Nigerian dictator, Sanni Abacha, for his deposal of the sultan of Sokoto, Ibrahim Dasuki, who had been a critic of the way that the hajj had been administered under Abacha's stern rule.[64]

Whether the political motives espoused by the British colonial and independent Nigerian governments are true is immaterial for the purpose of this chapter. What is important to note is that health issues have become so central to the legitimacy of pilgrimage control that they can serve as the basis for political conflict. No government doubted that pilgrimage control could and should be regulated for health reasons, rather they debated the legitimacy of the reasons presented at any given time. The globalization of pilgrimage control has thus developed a politics of its own in which health issues often take the forefront, determining in some ways the form that pilgrimage control will take in a given set of circumstances. The role of health in pilgrimage control continues to have major implications even today.

The Nigerian Pilgrimage Scheme emerged out of long-standing historical precedent on the part of an international community consisting of European

countries and the custodians of the holy cities of Mecca and Medina to regulate the pilgrimage primarily to prevent the spread of disease from colonial locales to the Hejaz and Europe and secondarily to improve the sanitary conditions of the pilgrimage for individual Muslim travelers. International precedent for the control of the pilgrimage was therefore set in the latter half of the nineteenth century, when various reforms were instituted regulating the pilgrimages from India, the Malay Peninsula, and the Dutch East Indies. The need for pilgrimage control was first expressed in Nigeria in the years following World War I, primarily with the intent to safeguard the health and well-being of Nigerian pilgrims who faced hardships of destitution, illness, and possible enslavement on the way to Mecca. While concerns for health and well-being informed early pilgrimage reforms, other more pressing political and economic considerations resulted in a full-scale attempt to reorganize the pilgrimage route and process in the 1920s. The resulting Nigerian Pilgrimage Scheme was plagued by problems of implementation but did ultimately set the long-term precedence of governmental responsibility for regulating the pilgrimage in Nigeria. Indeed, the idea that the Nigerian pilgrimage should be governed to protect the health and well-being both of pilgrims and non-pilgrims alike has become such a fundamental belief that it now has a politics of its own.

This explication of the Nigerian Pilgrimage Scheme has implications for the way that historians and social scientists think about the relationship of health to the processes of globalization, as well as the way in which Africa fits into the historical trend of globalization as it has thus far been defined. Clearly, pilgrimage-control schemes dating from the mid-nineteenth century, and including the Nigerian Pilgrimage Scheme of the 1920s and 1930s, illustrate the ways in which concerns over global health led to international policies designed to control the pilgrimage process. Thus, in this case, ideas about how to promote and preserve health directly affected the way that the globalization of the pilgrimage and its control were conducted. This runs counter to the general trend in the social science literature suggesting that the only significant relationship between globalization and health in the non-western world consists of the effects of international, western-based, neoliberal political and economic policies on the health of impoverished populations. Simultaneously, the Nigerian Pilgrimage Scheme offers a view at a policy with roots in international efforts to control a globalization process that, when applied to Africa, actually incorporated the continent into a globalization framework that has had long-lasting impacts in the region. The Nigerian Pilgrimage Scheme set the precedent of the state-sponsored pilgrimage in Nigeria that has allowed millions of Nigerian Muslims to make the pilgrimage in the decades since its implementation.

Finally, it is also clear that pilgrimage control, while initiated by concerns of European countries for the health of their citizens primarily, has not been completely dominated by western policy. The Islamic sphere of globalization

has had a significant role in the ways that pilgrimage control has taken shape—first in the form of the Ottoman Empire, but later, and more significantly, in the form of the Saudi Arabian government that has in many ways dictated the terms on which pilgrimage control would unfold, often on grounds of health-related concerns. This is evidenced not only by the requests of the Saudi Ministry of Foreign Affairs to standardize the pilgrimage route from Africa in the mid-1920s but also in subsequent efforts to limit the Nigerian pilgrimage, as in 1956–57 and 1996. The global politics of health are therefore very much alive, and, in the case of Nigeria, have discernible historical roots in the history of international pilgrimage control.

Notes

1. Kelley Lee, *Globalization and Health: An Introduction* (New York: Palgrave Macmillan, 2003) makes distinctions between all of these different kinds of globalization in the introductory chapter.

2. Historians have had little to say on the subject of the relationship between globalization and Africa or the Muslim world, and certainly not in regard to issues of health. Those who discuss globalization as a historical process in Africa or the Muslim world make scant mention of health as a critical factor. The best examples of this are Amira K. Bennison, "Muslim Universalism and Western Globalization," in *Globalization in World History,* ed. A. G. Hopkins, 73–98 (New York: W. W. Norton & Co., 2002) and John Lonsdale, "Globalization, Ethnicity and Democracy: A View from the 'Hopeless Continent,' " in *Globalization in World History*, 196–220, which discuss globalization in historical terms in the Muslim world and Africa, respectively, but make no mention of health in relationship to globalization. The same dynamic occurs in Thomas W. Simons Jr., *Islam in a Globalizing World* (Stanford, CA: Stanford University Press, 2003). Those who discuss the historical relationship between globalization and health tend to focus on the development of international organizations in Europe or the United States, neglecting the contributions of the Muslim world and leaving Africa out of the discussion entirely. See, for example, any of the chapters in Paul Weindling, ed. *International Health Organisations and Movements, 1918–1939* (Cambridge: Cambridge University Press, 1995) or Akira Iriye, *Global Community: The Role of International Organizations in the Making of the Contemporary World* (Berkeley: University of California Press, 2002). Nor have historians made any strong attempts to portray the historical unfolding of the West African pilgrimage. Works on the history of Islam in West Africa mention the pilgrimage only in passing, almost exclusively to mention the pilgrimages of famous kings and scholars between the tenth and early nineteenth centuries. See J. Spencer Trimingham, *A History of Islam in West Africa* (London: Oxford University Press, 1962); Mervyn Hiskett, *The Development of Islam in West Africa* (London: Longman, 1984); and Nehemia Levtzion and Randall L. Pouwels, eds., *The History of Islam in Africa* (Athens: Ohio University Press, 2000) as examples of this historiographical trend. Those few works that discuss the West African pilgrimage in the twentieth century tend to focus on the experiences of pilgrims since the 1970s and do not discuss in any way the history of the regulatory controls that have affected and shaped

those experiences. Examples of this include J. S. Birks, *Across the Savannas to Mecca: The Overland Pilgrimage Route from West Africa* (London: C. Hurst & Company, 1978), which discusses the geographical makeup of West Africans resident in the Sudan as of the early 1970s; John A. Works Jr., *Pilgrims in a Strange Land: Hausa Communities in Chad* (New York: Columbia University Press, 1976), an anthropological account of the lifestyles and livelihoods of itinerant Hausa communities in Chad in the 1970s; C. Bawa Yamba, *Permanent Pilgrims: The Role of Pilgrimage in the Lives of West African Muslims in Sudan* (Washington, D.C.: Smithsonian Institution Press, 1995), which takes a similar approach to Works but focuses on Hausa communities in Sudan in the 1980s; and finally, Robert R. Bianchi, *Guests of God: Pilgrimage and Politics in the Islamic World* (Oxford: Oxford University Press, 2004), which offers a chapter on the politics of the pilgrimage in postcolonial Nigeria but nothing on the historical antecedents for the politicization of the pilgrimage in Nigeria.

3. See, for example, any of the chapters in Kelley Lee, ed. *Health Impacts of Globalization: Towards Global Governance* (New York: Palgrave Macmillan, 2003); Lincoln Chen, Jennifer Leaning, and Vasant Narasimhan, eds., *Global Health Challenges for Human Security* (Cambridge, MA: Global Equity Initiative, Asia Center, Harvard University, 2003); Lincoln Chen, Sakiko Fukuda-Parr, and Ellen Seidensticker, eds., *Human Insecurity in a Global World* (Cambridge, MA: Global Equity Initiative, Asia Center, Harvard University, 2003).

4. Ibid; Also, Lee, *Globalization and Health.*

5. Lee, *Globalization and Health*, 75–76; David Sanders and Mickey Chopra, "Globalization and the Challenge of Health for All: A View from sub-Saharan Africa," in Lee, *Health Impacts of Globalization*, 105–22.

6. Bianchi, *Guests of God,* 19–21 gives a good sense of this in the modern pilgrimage.

7. *Black's Medical Dictionary,* 39th ed., ed. Gordon Macpherson (New York and Oxford: Madison Books, 1999), s.v. "Cholera."

8. Sheldon Watts, *Epidemics and History: Disease, Power and Imperialism* (New Haven, CT: Yale University Press, 1997), 167. Chapter 5 of Watts's book is dedicated entirely to the relationship between cholera control and British imperial ambitions and administration in India from 1817 to 1920.

9. William R. Roff, "Sanitation and Security: The Imperial Powers and the Nineteenth Century Hajj," *Arabian Studies* 6 (1982): 146.

10. Ibid.

11. Ibid.

12. Anne Hardy, "Cholera, Quarantine and the English Preventive System, 1850–1895," *Medical History* 37 (1993): 250, n. 1. Hardy notes, however, that scholars debate the starting and ending points for epidemics, with some extending the periods in question over longer stretches, from 1830–37 for the first great epidemic, and 1847–56 for an extended second great wave of cholera in Europe. However one categorizes the time frames, cholera outbreaks were a persistent problem for European countries from 1831 into the early part of the twentieth century.

13. Roff, "Sanitation and Security," 146.

14. Norman Howard-Jones, *The Scientific Background of the International Sanitary Conferences, 1851–1930* (Geneva: World Health Organization, 1975), 16, 22.

15. Peter Baldwin, *Contagion and the State in Europe, 1830–1930* (Berkeley: University of California Press, 1999), 37–243 discusses the history of cholera in Europe, the development of theories on its nature and dissemination, and how each European country

attempted to prevent and control its spread. See also Howard-Jones, *Scientific Background*, for discussion of the debates held in the international scientific community over theories of cholera causation and transmission.

16. Ibid., 30.

17. Roff, "Sanitation and Security," 149–56.

18. Ibid., 149.

19. Mark Harrison, *Public Health in British India: Anglo-Indian Preventive Medicine, 1859–1914* (Cambridge: Cambridge University Press, 1994), 129.

20. See Harrison, *Public Health in British India*, 99–133. Also Howard-Jones, *Scientific Background,* relates the almost universal objections of British delegates to the International Sanitary Conventions to the quarantine of Indian ships.

21. Until the British occupation of 1882.

22. H. R. Palmer, "Report on a Journey from Maidugari, Nigeria, to Jeddah in Arabia, 1919," National Archives of the UK: Public Record Office (hereafter PRO), CO 879/119/10: 14.

23. Bawa Yamba, *Permanent Pilgrims,* 48–52.

24. Ibid., 5.

25. Takrunis was a commonly used term for West African pilgrims, who were almost exclusively Hausa or Fulani from the Northern Provinces of Nigeria or southern Niger, in French West Africa.

26. Palmer, "Report on a Journey," 15.

27. Ibid.

28. Secretary, Northern Provinces of Nigeria, to Chief Secretary, Nigeria, extract from Annexure to Confidential Memorandum No. 99/-, February 24, 1922, Nigerian National Archives, Ibadan (hereafter NAI), CSO 26/1/03028/vol. I: 49.

29. Acting Secretary, Southern Provinces, Enugu, Nigeria, to Resident, Benin Province, Benin City, May 21, 1935, NAI, BenProf 1/BP2581: 2–5.

30. Ibid.

31. Secretary, Northern Provinces of Nigeria, to Chief Secretary, Nigeria, extract from Annexure to Confidential Memorandum No. 99/-.

32. Abdullah Damluji, Director of Foreign Affairs, Saudi Arabia to S. R. Jordan, Acting British Agent and Consul, Jeddah, September 5, 1926, NAI, CSO 26/06790/vol. II.

33. Ibid.

34. Ibid.

35. Ibid.

36. "International Sanitary Convention of 1926," Paris, June 21, 1926, articles 13 and 14. This document can be found in the treaty records of each individual signatory country. In the case of the United States, the document is contained in *Treaty Series* (Washington, D.C.: G.P.O., 1928), no. 762.

37. "International Sanitary Convention of 1926," articles 93 and 94.

38. Although this does not appear to have been technically *required* by the International Sanitary Convention of 1926. The Convention only sets obligations for what must be done if ships or ports become *infected*, in which cases strenuous sanitation and vaccination campaigns must be immediately conducted. There are no requirements for *prevention* of outbreaks stipulated in the Convention.

39. Palmer, "Report on a Journey," 20.

40. Chief Secretary's Office, internal memo, April 1, 1922, NAI, CSO 26/1/03028/vol. I: 50 indicates that the cost of repatriating such individuals is not a

fair charge against the colonial government and that more such cases are likely to occur in the future. The author of the memo is indistinguishable.

41. J. L. Maffey, Governor-General of the Sudan, Khartoum, to His Britannic Majesty's Charge d'Affaires, The British Legation, Jedda, November 14, 1931, NAI, CSO 26/06790/vol. IV discusses the effect that the repatriation of more than five hundred destitute West Africans would have on an already depressed cotton labor market. Maffey claims that "this country is at present suffering severely from unemployment as a result of financial depression and the poor cotton yields of the last two seasons. To swell the number of our unemployed by any appreciable number of destitute foreigners, at a time when our people are looking for such work as can be found, is clearly undesirable and likely to aggravate our difficulties.

Enquiries which I have made establish the fact that at present there is no prospect of work being found in any province of the Sudan. . . . Consequently, were any large number of destitute Nigerians sent here now, they would form a heavy charge upon this Government, or that of Nigeria, at a time when, it is assumed, neither can afford it."

42. Particularly via Massawa, in Eritrea, to small port towns in the Hejaz or Yemen. The difficulties posed by this eventuality are discussed in detail later in this chapter.

43. J. L. Maffey, Governor-General of the Sudan, Khartoum, to High Commissioner for Egypt and Sudan, Cairo, December 11, 1927, NAI, CSO 26/06790/vol. II.

44. Secretary, Northern Provinces, Kaduna, Nigeria to Residents in all Provinces, Nigeria, memorandum, April 13, 1933, NAI, BenProf 1/BP2581: 8–12.

45. Governor, Nigeria, to J. S. Amery, Secretary of State for the Colonies, August 20, 1928, PRO, CO 583/155/10 Pilgrimage to Mecca, 1927–29.

46. Governor, Nigeria, to J. S. Amery, Secretary of State for the Colonies, August 20, 1928, PRO, CO 583/155/10.

47. Governor-General of the Sudan, Khartoum, to His Majesty's High Commissioner for Egypt and the Sudan, Cairo, May 28, 1929, PRO, CO 583/167/7.

48. British Legation, Jedda, "Memorandum on the Working of the New Nigerian Pilgrimage Scheme during the 1933–34 Season," June 30, 1934, NAI, BenProf 1/BP2581: 19–22.

49. R. Davies, Intelligence Department, Sudan Government, Khartoum, to G. J. Lethem, The Secretariat, Northern Nigeria, Kaduna, November 17, 1927, NAI, CSO 26/06790/vol. II.

50. J. L. Maffey, Governor-General of the Sudan, Khartoum, to High Commissioner for Egypt and Sudan, Cairo, December 11, 1927, NAI, CSO 26/06790/vol.II.

51. Ibid.

52. Lancelot Oliphant, Foreign Office, to Undersecretary of State, Colonial Office, January 31, 1928, NAI, CSO 26/06790/vol. II.

53. J. L. Maffey, Governor-General of the Sudan, Khartoum, to His Majesty's High Commissioner for Egypt and the Sudan, Cairo, March 24, 1928, NAI, CSO 26/06790/vol. II.

54. Ibid.

55. Stonehewer Bird, Legation, Jeddah, to His Majesty's Principal Secretary of State for Foreign Affairs, April 24, 1928, NAI, CSO 26/06790/vol. II.; Ministry of Foreign Affairs, Note Verbale, October 20, 1928, PRO, CO 583/155/10.

56. British Legation, Jeddah to Governor-General of the Sudan, November 14, 1931, NAI, CSO 26/06790/vol. IV.

57. British Legation, Jedda, to H.M. Principal Secretary of State for Foreign Affairs, May 22, 1934, NAI, CSO 26/06790/vol. V. The incidents were unrelated.

58. British Legation to Governor of Nigeria, March 21, 1935, NAI, CSO 26/06790/vol. V.

59. Secretary, Northern Provinces, Kaduna, Nigeria, to Residents all Provinces, Nigeria (except Bornu), April 14, 1938, NAI, BenProf 1/BP2581: 32.

60. Bawa Yamba, *Permanent Pilgrims*.

61. See Birks, *Across the Savannas to Mecca*.

62. Bianchi, *Guests of God*, 211–52 discusses the politics of the modern pilgrimage in Nigeria.

63. See "Pilgrimage to Mecca from Nigeria, 1954–56," CO 554/1989.

64. C. L. Ejembi, E. P. Renne, and H. A. Adamu, "The Politics of the 1996 Cerebrospinal Meningitis Epidemic in Nigeria," *Africa* 68 (1998): 118–34. The incident is also discussed in Bianchi, *Guests of God*, 219–20.

PART IV

HIV/AIDS

12

OF SAVAGES AND MASS KILLING

HIV/AIDS, AFRICA AND THE CRISIS OF GLOBAL HEALTH GOVERNANCE

Obijiofor Aginam

> Our response to AIDS has so far been a failure. There has been scientific progress, but with few dividends for people living with poverty as well as HIV. In most of sub-Saharan Africa, they have access to neither prevention nor treatment. Three million deaths this year, and not yet counted millions of new infections, bespeak massive failure.
>
> —Paul Farmer, "AIDS as a Global Emergency"

> For countries in southern Africa . . . the AIDS epidemic is a real weapon of mass destruction.
>
> —Kofi Annan, year-end press conference, New York City, December 19, 2003

> It's mass murder by complacency. . . . This pandemic cannot be allowed to continue, and those who watch it unfold with a kind of pathological equanimity must be held to account. There may yet come a day when we have peacetime tribunals to deal with this particular version of crimes against humanity.
>
> —Stephen Lewis, Text of UN Briefing on HIV/AIDS in Africa, January 9, 2003

> The world is just one village. Our tolerance of disease in any place in the world is at our own peril.
>
> —Nobel Laureate Joshua Lederberg, Quoted in Laurie Garrett, *The Coming Plague: Emerging Infectious Diseases in a World out of Balance*

Africa and the Crisis of Global Governance of HIV/AIDS

Very few, if any, contemporary global issues challenge the normative boundaries of the Westphalian international system and its governance architecture as much as the HIV/AIDS pandemic.[1] In little more than a decade, global governance of the HIV/AIDS pandemic has oscillated within a tripartite multilateral governance structure:[2] first as a global program within the World Health Organization, second as an innovative joint venture of nine United Nations system organizations,[3] and presently as the subject of a private–public sector partnership.[4] Despite these multilateral initiatives, the multilateral, global governance of HIV/AIDS constantly challenges the orthodox structures of the Westphalian system in our contemporary world. While scholars of international law and global health, multilateral organizations, and civil society have explored the global HIV/AIDS crisis from a variety of perspectives—human security, development, human rights, law, and public health—it appears, as Paul Farmer put it, that "our response to AIDS has so far been a failure."[5]

Multilateral governance of HIV/AIDS is complicated by the unfair global distribution of the mortality and morbidity burdens of the disease among populations in the developed and developing countries. According to the latest global summary of the HIV/AIDS epidemic published by the Joint United Nations Program on HIV/AIDS (hereafter UNAIDS) in December 2003, "sub-Saharan Africa remains by far the region worst-affected by the HIV/AIDS epidemic. In 2003, an estimated 26.6 million people in this region were living with HIV, including the 3.2 million who became infected during the past year. AIDS killed approximately 2.3 million people in 2003."[6] Of the estimated 40 million people living with HIV/AIDS globally, 26.6 million live in sub-Saharan Africa. Of the estimated three million AIDS deaths globally in 2003, 2.3 million AIDS deaths occurred in sub-Saharan Africa.

These figures are not different from the HIV/AIDS mortality and morbidity estimates in preceding years. According to UNAIDS,

> in sub-Saharan Africa, HIV prevalence has remained relatively steady, generally at high levels, for the past several years across much of the region. This is due to the fact that high levels of new HIV infections are persisting and are now matched by high levels of AIDS mortality. In a belt of countries across Southern Africa, HIV prevalence is maintaining alarmingly high levels in the general population.[7]

Southern Africa is home to about 30 percent of the people living with HIV/AIDS globally. In four southern African countries—Botswana, Lesotho, Namibia, and Swaziland—the epidemic, according to UNAIDS, "has assumed devastating proportions. In Southern Africa, HIV prevalence has reached extremely high levels without signs of leveling off. In 2002, national HIV

prevalence in Swaziland matched that found in Botswana: almost 39 percent. Just a decade earlier, it had stood at 4 percent." In South Africa, the average rate of HIV prevalence in pregnant women attending antenatal clinics has remained roughly at the same levels since 1998—ranging between 22 percent and 23 percent in 1998–99 and then going up to 25 percent in 2001–2. Based on South Africa's latest national antenatal clinic-based surveillance, it is estimated that 5.3 million South Africans were living with HIV at the end of 2002. In other countries in southern Africa, especially Zimbabwe and Mozambique, HIV rates among adults have remained high. At the end of 2001, Zimbabwe had an HIV infection rate of 33.7 percent, while Mozambique was estimated to have an infection rate of 13 percent.[8]

Although Uganda and Senegal are credited as relative success stories because of massive investment in HIV prevention and awareness programs, UNAIDS has warned that in other parts of Africa, the

> HIV prevalence rate has remained relatively steady—but generally at high levels—for the past several years across much of the region. This is due to the fact that high levels of new infections are persisting and are now matched by high levels of AIDS mortality. . . . The epidemic has gained a firm foothold and shows little sign of weakening.[9]

Compared with other regions of the world, sub-Saharan Africa's HIV/AIDS adult prevalence rate is an unfair share of an estimated 40 million people living with HIV/AIDS globally.

With Africa as the epicenter of the global HIV/AIDS epidemic and poverty as the epidemic's most willing ally, the metaphors of racism and *realpolitik*,[10] global emergency,[11] mass murder and crimes against humanity,[12] and weapon of mass destruction[13] have now been deployed to characterize and deconstruct even the most noble of contemporary HIV/AIDS governance initiatives. This chapter explores the crises of the multilateral governance of HIV/AIDS and argues that the real story behind the mortality and morbidity burdens of HIV/AIDS epidemic in Africa can be deconstructed by the discourses of Critical Race Theory (CRT) and Third World Approaches to International Law (TWAIL), and reconstructed by cosmopolitan ideals. In this endeavor, I do not postulate that there is any type of synthesis between these discourses. Each of the three theoretical perspectives, in different ways, underpins the politics, dynamics, and complexities of the global governance of HIV/AIDS crisis, especially the prevalence of the epidemic in Africa. Together, they implicate international law and the contemporary structures of multilateral and global health governance in the HIV/AIDS tragedy in Africa and provide a context to explore, analyze, and understand the rhetoric of such powerful actors as the G8 Summit in global health governance, the promise and limits of the Global Fund to Fight AIDS, Tuberculosis and Malaria, as well as the new decision of the general council of the World Trade Organization (WTO) on

compulsory licensing for the manufacture or importation of generic antiretroviral drugs by developing and least-developed countries.

The Real Story behind Statistics: TWAIL and CRT Approaches to the North–South Health Divide

The bedevilment of international law with its vestiges of eurocentricity,[14] colonialism, and imperialism, and its domination of non-Europeans from its inception has long offered fresh insights on the ancient and modern relations of nations and peoples. As Anghie powerfully argues, "central elements of nineteenth-century international law are reproduced in current approaches to international law and relations."[15] Thus, "the question of the enduring effects on non-European societies of the history of exclusion is related to the issue of the legacy of the nineteenth century for the discipline as a whole."[16] The history and process of exclusion in the relations among nations has led to a racialized hierarchy, which has had indelible footprints in the law of nations from the fifteenth century. Although CRT "has been grounded in the American racial quagmire, and it embodies and embraces race consciousness,"[17] its canons have since been entrenched in the vocabulary of international law as an analytical tool in south–north relations, especially the disparities between the developed and developing worlds.[18] As Gordon argues,

> critical race theorists postulate that the concept of race cannot be separated from the historical context in which it arises, for when we talk about race we are considering much more than mere phenotypes. What is key is the significance accorded to racial characteristics, rather than the racial characteristics themselves, and this significance arises from social and historical processes. Thus, the meaning of race and racism fluctuates.[19]

To explore international law from the lens of CRT, therefore, the historical context of the fifteenth century *civilized–uncivilized* construct in the interaction between Europeans and non-Europeans, as well as the triumph of positivism that facilitated the colonial project in Africa, Asia, and South Pacific in the nineteenth century have to be contextualized in contemporary relations of people and nations.[20]

Like the CRT and other critical perspectives in international law, TWAIL has emerged as "a response to decolonization."[21] As a reactive and proactive response to the illegitimacy, deficits, and unfairness of international law, TWAIL, according to Mutua, is driven by three basic interrelated objectives. First, TWAIL seeks to understand, deconstruct, and unpack the uses of international law as a medium for the creation and perpetuation of a racialized hierarchy of international norms and institutions that subordinate non-Europeans

to Europeans. Second, TWAIL seeks to construct and present an alternative normative legal edifice for international governance. Third, TWAIL seeks through scholarship, policy, and politics to eradicate the conditions for underdevelopment in the Third World.[22] The parallels between CRT and TWAIL are premised on Mutua's observation that "the globalization of injustice is closely linked to the phenomenon of globalization. TWAIL believes that forming coalitions with like-minded movements in all societies, including in the West, is an essential strategy for combating powerlessness and the victimization of the Third World and marginalized societies in the West."[23] In this endeavor, CRT's understanding of the use of law and the exercise of power as tools of domination and exclusion shares some synergy with TWAIL, and critical race theorists have identified national parallels that are really a microcosm of the international legal order.[24]

Applied to the heavy mortality and morbidity burdens of HIV/AIDS in Africa, TWAIL and CRT discourses conjure images of savagery and mass murder and offer some insights on the limits of international law as a post-ontological discipline that regulates emerging global issues in a globalizing world. Africa and Africans are both victims and savages in the global misgovernance of HIV/AIDS.[25] According to Dr. Kevin de Cock of the United States Centers for Disease Control and Prevention, "AIDS is undoubtedly Africa's biggest social catastrophe since the slave trade."[26] In an often mistaken but fatal impression, AIDS is now increasingly characterized as an African problem: Africa's Black Death in the twenty-first century. As observed by Salih Booker, "AIDS is a black plague; it is mainly killing black people. And that is the cruel truth about why the world has failed to respond with dispatch."[27] "Savage" African cultures that encourage promiscuity, male domination, polygamous relationships, infidelity, and wife inheritance, many argue, are the real factors responsible for the spread of HIV/AIDS in Africa. Savagery, as Mutua observed, conjures images of barbarism. Savagery is abominable, cruel, and inhuman. In reality, especially in state-centric international law, it is the cultural foundation of an African nation-state that bequeaths the state with a baggage of savagery.[28] As Mutua writes:

> It is not the state *per se* that is barbaric but the cultural foundation of the state. The state only becomes a vampire when "bad" culture overcomes or disallows the development of "good" culture. The real savage, though, is not the state but a cultural deviation from human rights. That savagery inheres in the theory and practice of the one party state, military junta, controlled or closed state, theocracy, or even cultural practices such as the one popularly known in the West as female genital mutilation (FGM).[29]

The continent-wide prevalence of AIDS in Africa is now a catastrophe that extends far beyond the "vampire" and "savage" African states. AIDS, according to the WHO, is now a global emergency. As Paul Farmer rightly observed,

"the prevention-versus-care argument has been the most glaringly false of the debates impeding AIDS work in the most heavily burdened countries."[30] Since AIDS is a treatable disease, though it has no cure, questions must be asked: Why are antiretroviral drugs not accessible to vulnerable groups who live with HIV/AIDS in Africa? Why have global and multilateral governance of HIV/AIDS through emerging public–private partnerships and international organizations failed to slow down the rapid spread of AIDS in Africa? Why have Africans living with HIV/AIDS been largely excluded from the dividends of AIDS therapies, including access to antiretroviral drugs? As these questions cannot be put to the "savage" African states alone, I proceed to analyze the dynamics of the global, multilateral governance of AIDS in two levels of inquiry: taking first the G8 and the Global Fund to Fight AIDS, Tuberculosis and Malaria, and second the 2001 Doha Declaration on the TRIPS Agreement and Public Health by the WTO as well as the recent decision of the WTO general council on the implementation of paragraph 6 of the Doha Declaration concerning the grant of a compulsory license for the manufacture and importation of essential medicines by developing and least-developed countries.

Africa and the Global, Multilateral Governance of HIV/AIDS: Two Levels of Inquiry

The G8 and the Global Fund to Fight AIDS, Tuberculosis, and Malaria

The G8 Summit was founded in 1975 as a forum for the heads of state and government of the major industrial democracies, a group of the eight most powerful countries in the world economically. They meet annually to discuss social, economic, and political issues facing domestic societies and the international community. The G8 countries control a considerable bulk of global capital in trade, finance, and foreign direct investment. At the first summit held in Rambouillet, France, in November 1975, six countries—France, the United States, Great Britain, Germany, Japan, and Italy—were represented. Canada joined the group at the 1976 summit in Puerto Rico, and the European community joined as an observer in 1977. Since 1991, the "G7" has always held a post-summit dialogue with the USSR (later Russia). The G7, since 1994, met with Russia after each G7 Summit until the 1998 Birmingham summit at which Russia was admitted as a full member. The G8 Summit, as it is known today, has

> consistently dealt with macroeconomic management, international trade, and relations with developing countries. . . . The Summit also gives direction to the international community by setting priorities, defining guidance to established international organizations. . . . Summit decisions often create and build international

> regimes to deal with new international challenges, and catalyze, revitalize and reform existing international institutions.[31]

Hodges et al. refer to the G8 Summits as a think tank that includes "the individuals who matter most in the world."[32] The G8 agenda in successive summits since 1975 has included international trade, migration, debt, global digital divide, environment, crime and drugs, transnational security issues and arms control, terrorism, hunger and food safety, poverty reduction, and global infectious disease challenges. The Okinawa summit of the G8 in 2000 marked a turning point in the multilateral, global governance of leading infectious diseases. The G8 leaders made a commitment to address the global challenges posed by leading infectious and parasitic diseases: HIV/AIDS, tuberculosis, and malaria. The summit recognized health as the key to posterity. Expressly recognizing the link between health and development, the final communiqué at the end of the Okinawa summit stated:

> Good health contributes directly to economic growth whilst poor health drives poverty. Infectious and parasitic diseases, most notably HIV/AIDS, TB and Malaria, as well as childhood diseases and common infections, threaten to reverse decades of development and to rob an entire generation of hope for a better future. Only through sustained action and coherent international cooperation to fully mobilize new and existing medical, technical and financial resources, can we strengthen health delivery systems and reach beyond traditional approaches to break the vicious cycle of disease and poverty.[33]

The G8 committed to working in strengthened partnerships with governments, the World Health Organization (WHO), and other multilateral institutions, industry (especially pharmaceutical companies), academic institutions, nongovernmental organizations (NGOs), and other civil-society actors to deliver three critical United Nations targets: (1) reducing the number of HIV/AIDS-infected young people by 25 percent by the year 2010 pursuant to the UN secretary general's report to the General Assembly in March 2000; (2) reducing tuberculosis mortality rates and prevalence burdens by 50 percent by 2010 pursuant to the World Health Organization's Stop TB Initiative; and (3) reducing the burden of disease associated with malaria by 50 percent by 2010 pursuant to the World Health Organization's Roll-Back Malaria Campaign.[34] To achieve these targets, the G8 committed to support innovative partnerships, including the NGOs, and private sector and multilateral organizations, and to explore the evolution of innovative governance strategies to accomplish these commitments. A post-G8 Summit International Conference on Infectious Diseases held in Okinawa later in 2000 paved the way for the progress made by the 2001 G8 Summit in Genoa, Italy, on reducing the burdens on HIV/AIDS, TB, and malaria. The Okinawa conference attracted participants from the G8 and non-G8 countries, international organizations, civil societies, and pharmaceutical companies.

At the Genoa Summit in 2001, the G8 responded to an appeal by the UN General Assembly and the UN secretary general and pledged to commit $1.3 billion to the new Global Fund to Fight HIV/AIDS, Tuberculosis and Malaria. As an innovation in global health governance, the Global Fund, according to the G8, will be a public–private partnership aimed at promoting an integrated approach emphasizing prevention in a continuum of treatment and care. The global fund will operate according to principles of proven scientific and medical effectiveness, rapid resources transfer, low transaction costs, and light governance with a strong emphasis on outcomes. Pledging their support for the new global fund, the G8 pledged to work with the pharmaceutical industry as well as with the affected countries to facilitate the broadest possible provision of drugs in an affordable and medically effective manner. The summit reaffirmed the commitment of the G8 toward balancing the intellectual property and public health imperatives of the WTO's Agreement on Trade-Related Intellectual Property Rights (TRIPS).[35]

The Global Fund is now up and running. Based in Geneva, Switzerland, the fund is a public–private collaborative financial instrument, not an implementing agency. It is an alliance of partners from UN agencies, developing countries, donor governments, foundations, corporations, and NGOs.[36] Some of the basic principles underlying the fund include the creation, development, and expansion of government, private, and civil society partnerships, including the promotion of consistency with international law and agreements and respect for intellectual property rights. In April 2002, the Global Fund approved $616 million in its first round of funding to forty countries.[37] The fund is estimated to need $7–10 billion each year to combat HIV/AIDS alone and would obviously need more resources for TB and malaria. The fund has made funding commitments to programs over five years, which add up to $1.6 billion out of the $1.9 billion presently at its disposal.[38] Where will the additional funds come from? Funding commitments by governments (including the G8) have decreased drastically in recent months. In a recent report, two NGOs—Health and Development Networks (www.hdnet.org) and Aidspan (www.aidspan.org)—criticized the lukewarm attitude of countries toward the global health fund.[39] Expressing the fear that voluntary contribution to the fund has failed, France et al. proposed an "Equitable Contributions Framework." In this framework, based on $10 billion per year, France et al. suggest

> that $1 billion a year should come from the private sector, as a minimum to justify the label "public–private partnership" and the two seats it has out of the 18 voting seats on the Fund Board. The remaining $9 billion a year should come, in proportion to Gross Domestic Product (GDP), from the 48 countries that have "high" Human Development Index, or HDI. (The UN's HDI measures the overall quality of life based on standard of living, life expectancy, and literacy plus school-enrollment.) The proposed contribution comes to 0.035 percent of GDP for each country.

> Not one country has yet given at this level. Assuming, in the absence of better data, that every contribution made thus far is entirely for use this year, the Netherlands (contributing at 97 percent of its proposed level), Sweden (73 percent), and Italy (57 percent) have done reasonably well. Seventeen countries have given between 1 percent and 50 percent of the proposed level, with Japan and the US at a very disappointing 12 percent and 13 percent, respectively. And 28 "high development" countries have given nothing at all.[40]

In another report focusing on the compliance level of G8 countries pursuant to the Genoa summit commitment of $1.3 billion to the global health fund, pledges by Britain, Canada, France, Germany, Italy, and Russia have yielded appropriate equitable ratings relative to their GDPs. Pledges by Japan and the US have yielded less equitable ratings given the size of their respective GDPs.[41]

Despite these facts, the 2002 G8 Summit in Kananaskis, Canada, paid scant attention to scaling up resources for the Global Fund. The final communiqué issued at the end of the Kananaskis summit had only one short paragraph on the global infectious disease menace wherein the G8 leaders stated, "we underlined the devastating consequences for Africa's development of diseases such as malaria, tuberculosis, and HIV/AIDS. In addition to our ongoing commitments to combat these diseases, we committed to provide sufficient resources to eradicate polio by 2005."[42] Even the ambitious New Partnership for Africa's Development (NEPAD) adopted by the G8 at Kananaskis remains flawed for the same reasons: inaction and covert discontinuity with the global health-funding commitments. Is it possible to anchor development initiatives on a sick and dying population? Malaria, HIV/AIDS, and TB all have placed heavy morbidity and mortality burdens on African populations, and therefore any socioeconomic development must simultaneously or independently tackle the burdens of these diseases. NEPAD, according to Stephen Lewis, talks of trade, investment, governance, corruption, and matters relating to financial architecture. It is startling that NEPAD hardly mentions HIV/AIDS. Can we talk about the future of sub-Saharan Africa without AIDS and malaria at the center of the analysis?[43] Lewis has correctly observed:

> If the G8 Summit takes NEPAD seriously, if it wishes to make development more than an "impossible hope," if it adds to trade and investment a pledge to rescue the human condition in Africa, if it wants to redeem the Summit process, so tainted by previous posturing and irrelevance, then it will provide a guarantee, year by year, of the monies that Kofi Annan has requested for the Global Fund. In one fell swoop, the entire Summit would then be credible.[44]

The G8 Summit's commitment to development would remain lopsided if public health remains at the margins of these initiatives. The Report on Macroeconomics and Health by the Jeffrey Sachs-chaired WHO Commission on Macroeconomics and Health is replete with convincing evidence of the

linkages between poverty, development, and disease, and how the endless cycle of poverty, disease, and underdevelopment could be addressed in multilateral health governance. The commission, in its report, argued that

> the linkages of health to poverty reduction and to long-term economic growth are powerful, much stronger than is generally understood. The burden of disease in some low-income regions, especially sub-Saharan Africa, stands as a stark barrier to economic growth and therefore must be addressed frontally and centrally in any comprehensive development strategy. The AIDS pandemic represents a unique challenge of unprecedented urgency and intensity. This single epidemic can undermine Africa's development over the next generation.[45]

The Global Fund must not be allowed to become an orphan in its infancy, at least for the altruistic and enlightened purposes that ideally should seek to preserve life in the poor regions of the world.

The WTO Agreement on the DOHA Declaration on the TRIPS Agreement and Public Health

The tension between trade liberalization and promotion of public health is nowhere more apparent than in some of the agreements enforced by the WTO.[46] The Agreement on Trade-Related Intellectual Property Rights (TRIPS) exemplifies this tension. TRIPS, which was annexed to the Marrakech Agreement that established the WTO in 1995, covers both aspects of intellectual property rights: literary and artistic property (copyrights and neighboring rights), and industrial property (trademarks, patents, geographical indications, industrial designs, and trade secrets). The TRIPS agreement seeks to harmonize certain aspects of intellectual property rights at the global level. TRIPS sets a minimum standard of intellectual property protection for all WTO member states' national legislation. Patent protection for pharmaceuticals is set for a minimum of twenty years. Although the TRIPS agreement allows parallel importation and compulsory licensing, legitimate efforts by a few developing countries to pursue these measures, even in the face of the HIV/AIDS emergency, were met with fierce opposition and threats of trade sanctions from some industrialized states led by the United States.[47]

On November 14, 2001, after prolonged agitation by developing countries and sustained advocacy by a coalition of civil-society groups led by Oxfam, *Medecins sans Frontieres* (Doctors without Borders), Treatment Action Campaign, and many others, the WTO ministerial conference meeting in Doha adopted a declaration on the TRIPS agreement and public health.[48] The Doha Declaration affirmed that TRIPS can and should be interpreted and implemented in a manner supportive of WTO members' right to protect public health and, in particular, to promote access to medicines for all.[49] The declaration recognized that WTO members with insufficient or no

manufacturing capacities in the pharmaceutical sector could face difficulties in making effective use of compulsory licensing under the TRIPS agreement.[50]

On August 30, 2003, the general council of the WTO adopted a decision on the Implementation of Paragraph 6 of the Doha Declaration on the TRIPS Agreement and Public Health.[51] The decision provides for the criteria aimed at facilitating access to essential medicines, including antiretrovirals for HIV/AIDS, by vulnerable populations in the least developed and developing countries. In the approximately two years since the WTO general council decision, facilitating increased access to essential medicines by vulnerable populations in Africa remains complex and problematic. The 2003 WTO general council decision imposes key obligations on countries that export and import generic versions of these medicines. Because virtually all the least-developed countries and many developing countries lack a thriving pharmaceutical sector to manufacture these drugs, they could only hope to import the drugs from the industrialized countries. At the same time, the industrialized countries would need to amend their patent laws to enable them to produce generics in their countries solely for export and use in developing and least-developed countries that have filed a request with the WTO secretariat.[52] To date, only Canada and Norway have started the process of amending their patent laws to produce and export generic drugs to countries in need pursuant to the WTO decision. Early signals from these two countries suggest that these initiatives might not be as effective as many hoped because of the powerful lobby of the pharmaceutical industry in these countries and their concern with maintaining intellectual property rights on their patented drugs. While complex structural problems still remain, it is important to note that the establishment of the WTO has brought to the forefront of global governance the challenges of balancing neoliberal internationalism with the promotion of global goods. The synergy, if any, between access to essential medicines and universal health care promoted by the World Health Organization and the trade agenda of the WTO, which is based on the promotion of private intellectual property rights, raises very complex questions, especially for poor African countries whose stunted socioeconomic development is viciously threatened by AIDS, TB and malaria.

Fidelity to Africa: Reconstructing the *Globalized* Health Framework

Scholars and policymakers[53] have coined the term "globalization of public health" to explore the transnational or globalized nature of emerging and reemerging public health threats in an interdependent world. Globalization of public health de-emphasizes the "territorialization" or "nationalization" of public health simply because the concept of state sovereignty is alien to the

microbial world.[54] The cumulative effect of the erosion of geopolitical boundaries as a result of the globalization of public health and the impact of the south–north health divide on populations within such boundaries has traditionally placed global health, including the HIV/AIDS crisis in Africa, within the globalization agenda. New evidence has emerged that links African underdevelopment with the mortality and morbidity burdens from leading killer diseases: HIV/AIDS, TB, and malaria. Leading epidemiologist John M. Last observed that

> dangers to health anywhere on earth are dangers to health everywhere. International health, therefore, means more than just the health problems peculiar to developing countries. . . . There are many good reasons why we should be concerned about world health. The most obvious is self-interest: Some of the world's health problems endanger us all.[55]

Globalized public health requires a global policy universe and humane global health governance framework involving a multiplicity of actors—international organizations, private and corporate actors, and civil society. Rosenau's concept of the "Frontier,"[56] which renders the distinction between domestic and foreign affairs obsolete in an interdependent world, is the locus of the governance framework that I foresee for globalized public health. According to Rosenau, "the 'Frontier' is dynamic and rugged. Thus the complexities of the new conditions that have shaped the 'Frontier' cannot be explained by a single source."[57] Fashioning an effective and humane global health governance framework will be difficult, but, as Rosenau put it, "global governance is not so much a label for high degree of integration and order."[58]

An indispensable part of this governance architecture in an era of globalized public health lies within the confines of the normative boundaries of Richard Falk's "law of humanity."[59] Governance of globalized public health in the "Frontier" involves critical choices. What is most important is for evolving multilateral governance structures to focus on the "world" as its primary constituency and humanity (human life) as the endangered species that it seeks to conserve. Nowhere is this cosmopolitan accord needed today more than Africa. From the classical cosmopolitanism of world citizenship, to Kant's "universal community" to the contemporary "egalitarian individualism," it is important to note that allegiance to both humanity and world citizenship compels the humanization of globalization.[60] Deploring the betrayal of trust on which humane global public health architecture must be constructed, Garrett observed that

> the new globalization pushed communities against one another, opening old wounds and historic hatreds, often with genocidal results. It would be up to public health to find ways to bridge the hatreds, bringing the world toward a sense of singular community in which the health of each one member rises or falls with the health of all others.[61]

While the G8 and the WTO deserve to be respectively commended for their Okinawa Global Fund initiative and the Doha Declaration, they both must be reminded nonetheless that they owe a duty to millions of Africans whose lives are viciously threatened by the mortality and morbidity burdens of AIDS. Enlightened self-interest, as Brundtland observed,

> compels industrialized countries and private corporations to do what it takes to drastically reduce the current burden of disease in the developing world. To do this will be good for economic growth, be good for health and be good for the environment. Not only for the three billion people who have yet to benefit from the technological and economic revolution of the past fifty years—but for us all.[62]

Notes

1. The Westphalian international system refers to the emergence of independent nation-states following the Peace of Westphalia 1648. States have since then remained the primary actors in international relations.

2. For a discussion of the global governance of HIV/AIDS within this tripartite multilateral governance structure, see Nana K. Poku, "The Global AIDS Fund: Context and Opportunity," *Third World Quarterly* 23 (2002): 283–98.

3. The Joint United Nations Program on HIV/AIDS (UNAIDS) is a joint venture of the United Nations family that brings together the efforts and resources of nine UN system organizations: United Nations Children's Fund (UNICEF), World Food Program (WFP), United Nations Development Program (UNDP), United Nations Population Fund (UNFPA), United Nations Office on Drugs and Crime (UNODC), International Labor Organization (ILO), United Nations Educational, Scientific and Cultural Organization (UNESCO), World Health Organization (WHO), and the World Bank.

4. The Global Fund to Fight AIDS, Tuberculosis and Malaria is a public–private partnership that brings together states, civil society, international organizations, and the private sector as a funding facility that focuses on these three communicable diseases. For the governance of the Global Fund, see http://www.theglobalfund.org (accessed December 23, 2004).

5. Paul Farmer, "AIDS as a Global Emergency," *Bulletin of the World Health Organization* 81, no. 1 (2003): 699.

6. UNAIDS, *AIDS Epidemic Update*, December 2003, http://www.unaids.rg/wad/2003/Epiupdate2003 en/Epi03 00 en.htm (accessed December 23, 2004).

7. Ibid., Introduction.

8. Ibid.

9. Ibid.

10. David P. Fidler, "Racism or Realpolitik? U.S. Foreign Policy and the HIV/AIDS Catastrophe in Sub-Saharan Africa," *Journal of Gender, Race and Justice* 7, no. 1 (Spring 2003): 97–146.

11. Farmer, "AIDS as a Global Emergency."

12. Stephen Lewis, "Text of UN Briefing on HIV/AIDS in Africa," New York, January 9, 2003 (unpublished speech, on file with this author).

13. Kofi Annan, "Year-end Press Conference," New York, December 19, 2003, published in *Africa Recovery* (Repr. June 2004): 4–6.

14. James Thuo Gathii, "International Law and Eurocentricity," *European Journal of International Law* 9 (1998): 184–211.

15. Antony Anghie, "Finding the Peripheries: Sovereignty and Colonialism in Nineteenth-Century International Law," *Harvard International Law Journal* 40, no. 1 (1999): 1–80.

16. Ibid., 73.

17. Ruth Gordon, "Critical Race Theory and International Law: Convergence and Divergence: Racing American Foreign Policy," *Proceedings of the Annual Meeting of the American Society of International Law* (2000): 260. For early writings and use of CRT in race consciousness in the United States, see Kimberle Crenshaw, Neil Gotanda, Garry Peller, and Kandall Thomas, eds., *Critical Race Theory: Key Writings that Formed the Movement* (New York: New Press, 1995).

18. For the use of CRT on global gender and feminist issues, see Adrien Katherine Wing, ed., *Global Critical Race Feminism* (New York: NYU Press, 2000); Adrien Katherine Wing, ed., *Critical Race Feminism*, 2nd ed. (New York: NYU Press, 2003).

19. Gordon, "Critical Race Theory and International Law."

20. On colonialism and nineteenth-century international law, see Anghie, "Finding the Peripheries." On the colonial origins of international law in the fifteenth century, see Anthony Anghie, "Francisco de Vitoria and the Colonial Origins of International Law," *Social and Legal Studies* 5, no. 3 (1996): 321–36.

21. Makau Mutua, "What is TWAIL?" *Proceedings of the Annual Meeting of the American Society of International Law* (2000): 31.

22. Ibid.

23. Ibid.

24. Ibid.

25. I borrowed the usage and images of "victims and savages" from Makau Mutua's use of those terms in the international human rights movement in relation with the Third World. See M. Mutua, "Savages, Victims and Saviors: The Metaphor of Human Rights," *Harvard International Law Journal* 42, no. 1 (2001): 201–45.

26. Reuters Medical News, "African AIDS Crisis Is Still Largely Ignored" (2001), quoted in David P. Fidler, "Racism or Realpolitik," 106.

27. S. Booker and W. Minter, "Global Apartheid," *The Nation* (July 9, 2001): 11–17.

28. Makau Mutua, "Savages, Victims and Saviors," 202.

29. Ibid., 203.

30. Farmer, "AIDS as a Global Emergency," 699.

31. "From G7 to G8," G8 Centre, University of Toronto, http://www.g7.utoronto.ca/g7/what_is_g7.html (accessed December 31, 2003).

32. Michael Hodges, John J. Kirton, and Joseph P. Daniels, *The G8's Role in the New Millennium* (Brookfield: Ashgate, 1999), 60.

33. Final Communiqué of the G8 Summit in Okinawa, Japan, 2000, http//www.g7.utoronto.ca/g7/summit/2000okinawa/finalcom.htm (accessed December 31, 2003).

34. Ibid.

35. Final Communiqué of the G8 Summit, Genoa, Italy, July 22, 2001, http://www.g7.utoronto.ca/g7/summit/2001genoa/finalcommunique.htmal (accessed December 31, 2002).

36. R. Brugha and G. Walt, "A Global Health Fund: A Leap in Faith?" *British Medical Journal* 323 (July 21, 2001): 152.

37. Sarah Ramsay, "Global Fund Makes Historic First Round of Payments," *Lancet* 359 (May 4, 2002): 1581.

38. Ibid.

39. Tim France, Gorik Ooms, and Bernard Rivers, "The Global Fund: Which Countries Owe How Much?" (unpublished article from Health and Development Networks & Aidspan), April 21, 2002 (on file with author).

40. Ibid.

41. Serena Yoon, Dan Ben-Aron, and Oksama Werbowy, "2001 Genoa Compliance Report: Fighting the Spread of HIV/AIDS and Other Infectious Diseases," G8 Center, University of Toronto, http://www.g7.utoronto.ca/g7/evaluations/2002compliance/2002reportCompDiseases.pdf (accessed January 1, 2003).

42. The Kananaskis Summit Chair's Summary, Kananaskis, June 27, 2002 http://www.g7.utoronto.ca/g7/summit/2002kananakis/summary.html (accessed January 1, 2003).

43. Stephen Lewis, "Speech on G8 and NEPAD" (unpublished paper, on file with the author). For a detailed study of the gaps and deficits in G8 health-related commitments as they affect Africa's socioeconomic development, see Ronald Labonte, Ted Schrecker, David Sanders, and Wilma Meeus, *Fatal Indifference: The G8, Africa and Global Health* (Lansdowne, South Africa: University of Cape Town Press, 2004).

44. Ibid.

45. World Health Organization, "Executive Summary," *Macroeconomics and Health: Investing in Health for Economic Development—The Report of the WHO Commission on Macroeconomics and Health* (Geneva: WHO, 2001), 1.

46. For a history of international trade and the evolution of the World Trade Organization, see John Jackson, *The World Trading System: Law and Policy of International Economic Relations* (Cambridge, MA: MIT Press, 1997); Michael J. Trebilcock and Robert Howse, *The Regulation of International Trade*, 2nd ed. (London and New York: Routledge, 2001). On the tension between trade liberalization and promotion of human rights in the global economy, see Robert Howse and Makau Mutua, *Protecting Human Rights in a Global Economy: Challenges for the World Trade Organization* (Montreal: Rights and Democracy, 2000).

47. For a discussion of the law and politics of parallel importation and compulsory licensing involving the United States and some developing countries, see Caroline Thomas, "Trade Policy and the Politics of Access to Drugs," *Third World Quarterly* 23, no. 2 (2002): 251–64; Naomi A. Bass, "Implications of the TRIPS Agreement for Developing Countries: Pharmaceutical Patent Laws in Brazil and South Africa in the 21st Century," *George Washington International Law Review* 34 (2002): 191–222; Ellen 't Hoen, "TRIPS, Pharmaceutical Patents, and Access to Essential Medicines: A Long Way from Seattle to Doha," *Chicago Journal of International Law* 3 (2002): 27–46.

48. World Trade Organization, "Declaration on the TRIPS Agreement and Public Health," [Doha Declaration] Adopted on November 14, 2001, http://www.wto.org (accessed December 20, 2004).

49. Doha Declaration, Paragraph 4.

50. Doha Declaration, Paragraph 6.

51. WTO General Council Decision WT/L/540, September 1, 2003, http://www.wto.org/english/tratop_e/trips_e/implem_para6_e.htm (accessed April 4, 2004).

52. On the challenges and complexities of balancing the needs and obligations of exporting and importing countries for essential medicines in the context of the WTO general council decision, see Carlos Correa, *Implementation of the WTO General Council Decision on Paragraph 6 of the Doha Declaration on the TRIPS Agreement and Public Health* (Geneva: WHO Department of Essential Drugs and Medicines Policy, 2004).

53. D. Yach and D. Bettcher, "The Globalization of Public Health, I: Threats and Opportunities," *American Journal of Public Health* 88 (1998): 735–38; D. Yach and D. Bettcher, "The Globalization of Public Health, II: The Convergence of Self-Interest and Altruism," *American Journal of Public Health* 88 (1998): 738–41; David P. Fidler, "The Globalization of Public Health: Emerging Infectious Diseases and International Relations," *Indiana Journal of Global Legal Studies* 5 (1997): 11; G. Walt, "Globalization and International Health," *Lancet* 351 (1998): 434; Kelley Lee and R. Dodgson, "Globalization and Cholera: Implications for Global Governance," *Global Governance* 6 (2000): 213–36.

54. In taking the view that globalization of public health de-emphasizes "territorialization," I am a student of David Held et al. who define globalization as "a historical process which transforms the spatial organization of social relations and transactions, generating transcontinental or inter-regional networks of interaction and the exercise of power." See D. Held, A. McGrew, D. Goldblatt, and J. Perraton, *Global Transformations: Politics, Economics and Culture* (Cambridge: Polity Press, 1999), 16. See also Jan A. Scholte, *Globalization: A Critical Introduction* (New York: St. Martins Press, 2000), 16 (characterizing globalization as "the spread of supraterritoriality").

55. John M. Last, *Public Health and Human Ecology* (Stamford, CT: Appleton & Lange, 1998), 337.

56. James Rosenau, *Along the Domestic-Foreign Frontier: Exploring Governance in a Turbulent World* (Cambridge: Cambridge University Press, 1997), 5.

57. Ibid.

58. Ibid.

59. Richard Falk, *Law in an Emerging Global Village: A Post-Westphalian Perspective* (Ardsley, NY: Transnational, 1998), 33.

60. David Held, "Cosmopolitanism: Ideas, Realities, Deficits," in *Governing Globalization: Power, Authority and Global Governance,* ed. David Held and Anthony McGrew, 305–24 (Cambridge: Polity Press, 2002) (summarizing the evolution of different phases of cosmopolitanism).

61. Laurie Garrett, *Betrayal of Trust: The Collapse of Global Public Health* (New York: Hyperion, 2000), 585.

62. Gro Harlem Brundtland, "Globalization as a Force for Better Health" (unpublished lecture, London School of Economics, March 16, 2001, on file with the author).

13

VICISSITUDES OF AIDS POLICIES IN BURKINA FASO FROM 1985 TO 2001

A HISTORICAL PERSPECTIVE

Yacouba Banhoro

In sub-Saharan Africa, Burkina Faso (in West Africa) is within a group of countries with low HIV prevalence,[1] but where HIV/AIDS is nonetheless considered a major problem. According to Guiard-Schmid, the first clinical case of AIDS in Burkina Faso was diagnosed at the National Hospital Yalgado Ouédraogo in Ouagadougou in 1985. Sera of patients from this center were tested in Paris, and some were declared HIV-1 positive. Serological research in 1986 attested to the presence of HIV 1 and HIV 2.[2] Other documents on the first case of HIV/AIDS in Burkina Faso indicate that the HIV/AIDS epidemic broke out in the mid-1980s. The data of the AIDS commission of Burkina Faso show the first six AIDS cases in 1986 (table 13.1).

A closer look at the reports on new cases of AIDS reveals a global increase of declared cases between 1986 and 1997 (table 13.1). The general HIV/AIDS prevalence amounted to 3.4 percent of the population in 1991.[3] It increased to 7.17 percent in 1997 before decreasing to 6.5 percent in 2001 and to 2.7 percent in 2004 (table 13.1). Burkina Faso, however, is still plagued by the HIV/AIDS epidemic.

Yet, from 1986 to 1997, Burkina Faso developed several strategies[4] in the fight against HIV/AIDS: the fight against prostitution, the short-term plan (1987–89), the midterm plan (1990–95), and the population plan and fight against HIV/AIDS (PPLS from 1996 to 1999).[5] The growth rate of persons infected by HIV from 1986 to 1997 and the burden of the epidemic until 2001 make the efficacy of state policies questionable, especially if we compare Burkina Faso with Senegal and Uganda, countries that have been qualified as "success stories" because of the early support of political leadership for sustained

Table 13.1. HIV and AIDS in Burkina Faso

Year	Population number	Number of new AIDS cases	Number of cumulative AIDS cases	Incidence of AIDS per 100,000 inhabitants	Ratio per 100,000 inhabitants of cumulative AIDS cases	Prevalence HIV in % of population (Sentinel surveillance)
1986	8,219,600	10	10	0.12	0.12	?
1987	8,482,600	21	31	0.24	0.36	?
1988	8,754,000	394	425	4.50	4.85	?
1989	8,988,100	351	776	3.90	8.63	?
1990	9,185,800	202	978	2.19	10.64	?
1991	9,387,900	835	1,813	8.89	19.31	3.4
1992	9,631,000	1,073	2,886	11.14	29.96	?
1993	9,839,400	836	3,722	8.49	37.82	?
1994	10,076,800	1,892	5,614	18.77	55.71	?
1995	10,316,600	1,684	7,298	16.32	70.74	?
1996	?	1,838	9,136	?	?	?
1997	10,562,100	2,216	11,352	20.98	107.47	7.17
1998	10,815,000	2,166	13,518	20.02	124.99	?
1999	11,070,900	2,031	15,549	18.34	140.44	?
2000	?	1,532	17,081	?	?	?
2001	11,837,475	1,951	19,032	16.48	160.78	6.5
2002	12,124,719	957	19,989	7.89	164.86	4.2
2003	12,419,677	942	20,931	7.58	168.53	?
2004	?	?	?	?	?	2.7

Source: CNLS-IST Burkina Faso, "Situation épidémiologique: Données statistiques sanitaires sur le VIH/SIDA et les IST" (January 2002), 3; CMLSanté/SPCNLS-IST, "Récapitulatif de statistiques sur le VIH/SIDA et les IST au Burkina Faso"; Burkina Faso, Ministère de la Santé, *Annuaire statistique* (1996), 106; Burkina Faso, Ministère de la Santé, *Annuaire statistique/Santé* (2001, 2002, 2003).

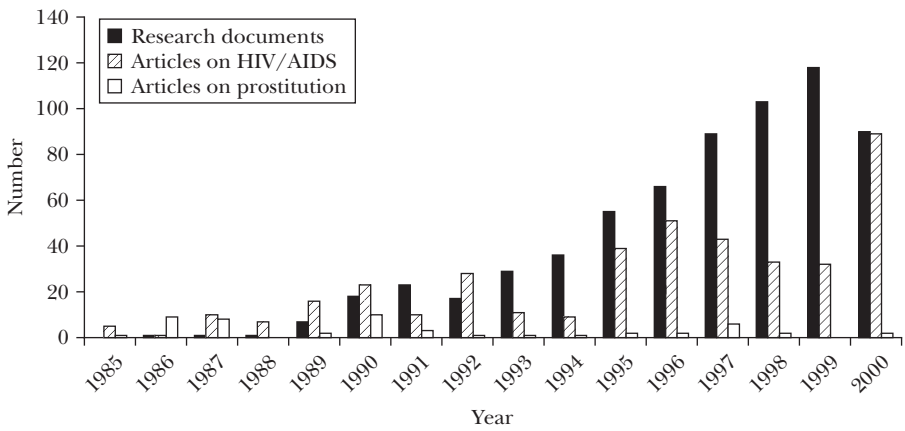

Figure 13.1. Yearly number of research documents (according to "Recueil des travaux et documents sur l'épidémie du VIH/SIDA au Burkina Faso," CLNS 2001) and articles of *Sidwaya* on HIV/AIDS and prostitution.

HIV/AIDS policies from 1986 onward. These HIV/AIDS policies contributed to the decrease of the prevalence of HIV/AIDS by 1994 in Uganda and the maintenance of a low rate in Senegal of 0.5 percent of the population by 2001.[6]

The question is whether vicissitudes appeared in AIDS policies in Burkina Faso between 1986 and 2001, when the AIDS commission became connected to the president's office, and whether these policies should be considered as determining factors in the spread or contraction of HIV/AIDS rates over time. The objective in this chapter is to analyze the policies formulated to combat the HIV/AIDS epidemic, including the political context in Burkina Faso, and to understand if vicissitudes could have influenced the trend of the epidemic. This historical approach is based mainly on analysis of written documents, including the *Journal officiel du Burkina Faso*, health reports, published studies, and newspaper articles from the state-owned daily newspaper *Sidwaya* between 1984 and 2000, and on interviews with former political leaders.

Sidwaya was chosen because during the revolutionary period (1984–91) almost every statement by political leaders on issues of national interest, as well as reports made by medical doctors who took part in international conferences, were transmitted by *Sidwaya*. At that time, it was the only operational daily paper, as the offices of the established, independent daily paper *l'Observateur* were burned in 1984 by pro-government agents.[7] The analysis of *Sidwaya* articles dealing with AIDS recounts various regimes that have been counted and classified into two series: the ones directly evoking the issue of HIV/AIDS and those dealing with commercial sex workers (CSW), commonly known as prostitutes (as they are categorized in figure 13.1). A quantitative analysis has been conducted to make comparisons of the content of articles to determine the nature of the policies against HIV/AIDS under the regime of the National Revolution Council (CNR). However, analysis of the content requires an ability to identify and separate propaganda of the governing party from real information on HIV/AIDS. The other sources cited above were used to complement the information from news articles. This chapter will first present the context in which the AIDS policies began, followed by an analysis of the structure of the fight against the HIV/AIDS epidemic in Burkina Faso.

From the "Origin Quarrels" of AIDS to Depolarization (1985–89)

Some background information will help the reader to better comprehend disputes about the origin of HIV/AIDS and the depolarization of HIV/AIDS-related discourses in Burkina Faso. After its independence from France in 1960, Burkina Faso (previously Upper Volta) experienced political instability. As of 1981, when AIDS was discovered in the United States, Burkina Faso was

still going through a phase of political instability, characterized by various military coups d'état. The coup of November 25, 1980, put an end to the Third Republic.[8] A second coup on November 7, 1982, was followed by yet another coup on August 4, 1983. This coup marked the beginning of a "democratic and popular revolution" (RDP) with Thomas Sankara as head of state and president of the leading party, the CNR. But a palace revolution brought yet another military regime to power in October 1987, and Blaise Compaoré, who is still in power, became president. This marked the second step of the revolution in Burkina Faso, referred to as "the rectification movement" by its political wing, the Popular Front. Four years later, in 1991, the Popular Front embarked on the restoration of a democratic state, which remains an ongoing process.

Some scholars have qualified the political instability that lasted from 1980 to 1991 as the most troublesome period of the country's (recent) history, during which it witnessed political violence and extremist ideologies,[9] however, without devolving into civil war.

In 1985, two years after coming to power, the revolutionary regime officially faced the AIDS issue and integrated it into international debates. At the time of the outbreak of AIDS in 1981, scientists searched for its origin. According to Mirko D. Grmek, in 1983, it was suggested that Europe was plagued with two waves of a new infectious disease: the first had African origin while the second U.S. origin and they tended to be evident in both sexes and homosexual men, respectively.[10] The statements on the African origin of AIDS led to many interpretations and misinterpretations, provoking disputes that were analyzed and criticized by Jean-Pierre Dozon and Didier Fassin.[11] Michel Carel referred to these misunderstandings on the origin of the disease as "origin quarrels."[12] Thus, the disputes about AIDS seemed at first to have mixed scientific and political concerns, as was observed in Burkina Faso between 1985 and 1987.[13]

In the 1980s, the people of Burkina Faso and its leaders espoused an ideology inspired by Marxism-Leninism, in which society is divided into different classes, one exploiting the other. Under this ideology, imperialism on the part of rich and powerful countries encouraged the domination and exploitation of poor and powerless countries. The revolution (1984–91), therefore, claimed to liberate Burkina Faso, a poor and powerless country with a background as a French colony. Disputes about the origin of AIDS became fully integrated into this context.

The disputes about the origin of AIDS began in *Sidwaya* with a communiqué from the Ministry of Health in 1985[14] and developed from this point.[15] These disputes underlined the western origin of AIDS by questioning the sexual customs of the West. Some articles reflected personal views of the president, as has been briefly explained and criticized by Basile Guissou.[16] Through the medium of public discourse, the idea of an African origin of AIDS was rejected, the infection in Burkina Faso denied, and the western origin avowed with emphasis.

In this way, AIDS was supposed to be the "ransom" of western civilization. AIDS was also considered to be a discovery of American laboratories in the 1970s.[17] Furthermore, the African origin thesis was considered by Burkinabe politicians as an imperialistic attempt to attribute the origin of AIDS to the "Negroes" as well as a ploy to market superfluous western pharmaceutical products. For example, Jacques Prosper Bazié,[18] raising concerns about the viciousness of AIDS, at the same time put in writing his indictment of western powers. He found it unacceptable to attempt to make AIDS a priority issue for African communities to solve. He was surprised that the mass media attached such importance to the matter while there were other diseases that ravaged more ferociously.[19] Furthermore, the existence of AIDS was questioned in the media through metaphors in which AIDS was defined as a "Syndrome Imaginaire pour Décourager les Amoureux"[20] or "imaginary syndrome to discourage lovers." Paradoxically, it turned out that AIDS threatened not only homosexuals but also heterosexuals who engaged in sexual relations with prostitutes or with multiple partners.

Although the communiqué of the Ministry of Health informed the population of the appearance of a new and dangerous disease, it failed to take into account recent discoveries about the disease.[21] The information was incomplete in that it did not clearly indicate and emphasize the possible heterosexual transmission of the HI virus. By stigmatizing certain so-called risk groups, as well as western society, the government was not only espousing its "anti-imperialist" ideology but also was reacting to the designation of Africa as the origin of AIDS in a kind of self-defense. Later, important information for AIDS prevention regarding the heterosexual transmission of AIDS appeared in a rather sensational form. In addition to the stigmatization of "unfaithful" people and prostitutes, AIDS was presented as a specter. In regard to these discourses, the opinions of health specialists played an important role.

Local and international health specialists took positions in the abovementioned disputes. In August 1985, Robert Soudré warned of the danger that the AIDS posed in West Africa.[22] In 1986, WHO transmitted the "WHO-directives on AIDS prevention and on LAV/HTLV-III virus"[23] to the health authorities of Burkina Faso. Also in 1986, the regional director of WHO, Gottlieb L. Monekosso, with the help of the mass media, called upon states to integrate the fight against AIDS into the "Health for all by the year 2000" initiative.[24] Hilaire Tiendrébéogo tried to concentrate the debate on the measures to prevent AIDS,[25] as the WHO proposed, since AIDS had already broken out in Burkina Faso. He tried to promote the growing international solidarity to stop AIDS to those involved in the fight against AIDS. In their press conference of September 7, 1987,[26] medical doctors who were members of the 1986 AIDS committee of Burkina Faso backed this initiative. They insisted on health education, since ignoring the danger that AIDS posed would be deemed an act of ignorance. This occurred at the same time that the Organization for African Unity warned of international discrimination[27] and while the United Nations

tried to divert attention away from arguments of the origin of AIDS.[28] According to Johnathan Mann, director of study of the AIDS program, political and social determination represented a crucial issue in the fight against HIV/AIDS, as well as the virus itself, with the global strategy being based on the prevention of all modes of transmission in every country by the use of all scientific and educational means available.[29]

Thus began the organization of the fight against AIDS.[30] But before it became better structured, a depolarization of public discourses took place. After the fall of the CNR, people freely expressed their views about HIV/AIDS. This situation was reinforced by the results of the World Health Ministers' Summit that took place in London from January 26–28, 1988. Hilaire Tiendrébéogo, writing about this meeting, eulogized the international consensus related to HIV/AIDS that had been reached: the identification of problems and proposals for solutions. This resulted in a sensitization of political leaders to the burden of HIV/AIDS. The perception of AIDS in Burkina Faso changed from this point. To enhance the fight against the epidemic, the government adopted December 1, 1988, as international HIV/AIDS day. A public awareness campaign began in *Sidwaya,*[31] and the minister of health used the opportunity to deliver public speeches to warn the population about how HIV/AIDS spreads.[32] The political authorities were thereafter present at the international celebration of World AIDS Day each December 1.[33]

This new orientation changed the earliest discourses on the origins of AIDS by ignoring them. Journalists[34] and physicians[35] began to prioritize the HIV/AIDS issue,[36] condemning the earlier ideological quarrels and the "politics of the ostrich." They warned of a possible progression of HIV/AIDS and appealed for more awareness. This trend lasted from 1988 to 1989 and appeared to be a fundamental objective, even if it did not seem to have been a structured objective at an institutional level. The depolarization period ushered in a period of discourse that condemned the disappearance of references to the original discourses and promoted different policies to fight HIV/AIDS.

Structuring the Fight against HIV/AIDS (1986–2001)

The structuring of AIDS-related activities occurred in what may be termed an "unofficial" plan. This included the fight against prostitution from 1986 to 1987, the establishment of AIDS commissions, fund-raising, political involvement, and the proliferation of community-based organizations.

The battle against prostitution in 1986 and 1987 made no reference to AIDS, but some factual remarks about documentation on AIDS and prostitution from 1985 to 2000, as well as the analysis of their content, make it possible to suggest a veiled policy against HIV/AIDS, which can be considered as

a paradox with regard to the polarization of the first public discourses that denied for some time the presence of HIV/AIDS in the country. Indeed, one can note a coincidence between the year of the unofficial appearance of AIDS in Ouagadougou in 1985, the concerns raised about AIDS in the communiqué of the ministry of health in 1985, the beginning of the fight against prostitution one year later, reflected by articles about the subject in 1986, and the official appearance of AIDS in Burkina Faso in 1986 (table 13.1). The analysis of the written documents supports the hypothesis quite clearly.

- In its communiqué of March 6, 1985, the Ministry of Health expressed the determination of the revolution to "clean up the society of Burkina Faso" and to avoid conduct that caused AIDS in so-called civilized countries as much as possible.
- The report of Robert Soudré on sexually transmitted diseases (STDs) from August 1985 indicating that AIDS could spread rapidly could have increased the fear of AIDS on the side of political authorities, especially of the president.
- Some acts that were said to have stimulated prostitution had been prosecuted and condemned in 1985, just after Soudré's report and the communiqué of the Ministry of Health.
- The analysis of the context of the CNR policy against prostitution shows many obstacles reflecting its precipitate character. The decision on the policy had been made by President Thomas Sankara on January 6, 1986,[37] during a public meeting held at the end of the war between Mali and Burkina Faso—which had broken out in December 1985—in which he talked about the solidarity between the two countries. In addition, in spite of the apparent significance of prostitution as a phenomenon, it had been neither thoroughly studied nor well documented prior to this.[38] Prostitution-related laws were unknown to the rulers and consequently not applied. Thus, they announced that prostitution was forbidden in Burkina Faso without referring to exact laws on the question. Prostitution was not forbidden by any law, however—a contradiction pointed out by the ambassador of Ghana to Burkina Faso.[39] In addition, a lawyer, Salif Nébié,[40] established the non-delictous character of prostitution itself.[41] Thus, the members of the government, by referring to the laws, were putting themselves outside of the law.
- Information about the earliest clinical discovery of AIDS in 1985 and the serological study done in Burkina Faso in 1986 that attested to the presence of HIV were not published in the country and did not appear in bibliographical references there. The first ten AIDS cases reported to WHO in 1986 were clinical cases noticed in Ouagadougou. A statement about the outbreak of AIDS by the "minister of social actions and familial solidarity" on December 1, 1988, mentioned twenty-six AIDS cases in 1986 and fifty cases the year after.[42] This suggests that the real numbers in

1986 and 1987 had not been known or had not been reported to WHO if we take into account the table of the AIDS cases from the national AIDS commission.[43]

- Public discourse condemned prostitution as the result of "bourgeois organization of society" and the basis of social depravity that were major factors in the expansion of HIV/AIDS. In May 1987, without evoking HIV/AIDS, *Sidwaya* qualified prostitution as the "head of bridge" to drug using, juvenile delinquency, and STDs.[44] But why not mention AIDS, which is also a STD?
- On November 30, 1990, the permanent secretary of the national AIDS commission, worried about the rapid progression of HIV/AIDS, declared that since 1985 clinicians had warned the authorities about the public health problem posed by HIV/AIDS and that Burkina Faso was at significant risk for increased infection rates.[45]
- The hypothesis that the fight against prostitution was a fight against HIV/AIDS is supported by the campaign in 1989–90 during the second part of the revolution, where HIV/AIDS clearly appeared to be a major concern, and the actions of the CNR regime were condemned as inefficient and revolting to the population.

Without underestimating other public health- and hygiene-related problems and the implementation of a previously political program and, above all, a prudent attitude in the management of concerns about AIDS,[46] which could also explain the campaigns against prostitution instead of AIDS, we can cautiously say that the concerns about HIV/AIDS informed the campaign against prostitution at a political level in 1986–87.[47]

The inclusion of imperialism and wealthy countries as factors contributing to the spread of HIV/AIDS and the early denial of the existence of HIV/AIDS in Burkina Faso by the CNR had been effected in order to show a difference between Burkina Faso and western countries with "depraved customs." This attitude stigmatized discussion of HIV/AIDS and forced the CNR into a corner whereby it could not retract its position, as to do so would have discredited the regime in the international community. This ideology also explains the non-publication of the earliest AIDS clinical case and the serological survey mentioned above.

The political significance of these events emerged through the pressure of international organizations, such as WHO, followed by the permission given by the president to the members of the AIDS committee to announce publicly in February 1987 the outbreak of the sickness in the country.[48] This announcement did not stop the release of articles defending the western origin of HIV/AIDS and the fight against prostitution. These assertions were continuously defended until the coup d'état of October 1987, and even beyond. Nevertheless, what the revolutionaries had feared was later revealed. In 1996, Michèle Cros remembered:

> In Burkina Faso, after the Revolution came the time of the Rectification and . . . for AIDS, of the notification. Since October 1987, Thomas Sankara is no longer alive and the publication of the first epidemiological data eventually denied the lively speech of Dedougou. . . . The epidemic, racist or not (Sabatier, 1989, 133 et s.)—is to be fought.[49]

However, this fight seems to have started earlier, during the CNR regime, without mentioning HIV/AIDS, and, contrary to some analyses, it had not only a medical aspect but a social one as well.[50] One must question whether Burkina Faso was in the minds of Jean-Pierre Dozon and Didier Fassin when they studied the approaches to combating HIV/AIDS in two unnamed countries where, in spite of the denial of the presence of HIV/AIDS in one of them, some measures had been taken to mitigate its impact. In other words, fighting a thing that did not officially exist[51] was a paradox in itself.

Under the CNR regime, the impact of AIDS in terms of notified cases seems to have been lower than in the following years, increasing from 0.12 to 0.24 per 100,000, according to the official data, and from 0.31 to 0.59, according to the unofficial data (table 13.1 shows the official data). This deduction is to be taken cautiously, because it is not possible here to make a reliable link between the policies and the prevalence. Because the data come from the earliest period of the outbreak, the number of HIV-positive cases was not accurately known.

After the collapse of the CNR, there was a break in the fight against prostitution, as well as an increase in new AIDS cases between 1987 and 1988. The increase in reported cases provoked some concerns in the last three months of 1989 and recalled the former fight against prostitution. The new authorities reflected on the concern about prostitution with the help of the media,[52] while clearly expressing worry over the progress of HIV/AIDS.

In January 1990, the government began to fight against the increase of commercial sex workers (CSW) and juvenile delinquency, which were considered as curses sustaining the development of HIV/AIDS and STDs.[53] Strategies to combat these curses were disseminated in a meeting attended by the state secretary for social actions and managers of various leisure venues such as bars, dance clubs, popular inns, and cinemas in Ouagadougou.[54] An initial two-year program was developed aimed at sensitizing the population through the dissemination of laws related to prostitution and juvenile delinquency.[55]

However, it did not take long for the authorities to notice the obstacles related to the abstract character of "prostitution by soliciting," the only aspect forbidden by the legislation, which continued to tolerate other forms of prostitution. Therefore, a matter of legality that threatened the campaign against CSWs was raised. To this end, a national commission was established to revise the penal code to allow the repression of CSWs in general.[56] Before the revision of the penal code, the lack of such legal support put the policy against prostitution in the same bottleneck that had existed during the CNR regime. But prostitution remained a concern at the governmental level. In 1995, Alice

Desclaux condemned the manner in which the political authorities dealt with prostitution, because it could have a negative impact on public-health policies designed to prevent the spread of HIV.[57] Focus had to be placed on further plans and proposals to tackle HIV/AIDS.

Following the official first cases of HIV/AIDS, a technical committee in charge of the fight against AIDS was set up at the Ministry of Health on October 27, 1986. It had limited personnel and scope. As a result, a short-term plan (PCT), which became the basis of the national emerging strategy of fighting HIV/AIDS (PNLS), was established in the middle of 1987. The PCT was to be carried out within nine months, and its aims were mainly the elimination of HIV/AIDS and the mitigation of the impact of sexually transmitted diseases in the entire territory of Burkina Faso through education, training, and reinforcement of health facilities. To change risky sexual behaviors, a program of condom distribution was planned and was to be carried out with international assistance.[58]

The public awareness campaign of the PCT in 1988–89 was noticeable. The messages that were disseminated early on, at times with the help of caricatures, promoted faithfulness and condom use.[59] These campaigns were restrictive, however, because they were advising wearing protection during sexual intercourse with prostitutes and "suspicious" people.[60] The question was whether an HIV-positive person without visible symptoms could be identifiable and suspected. That understanding was easily misinterpreted and reinforced the stigmatization reminiscent of the earlier fight against prostitution under the CNR, as well as demonstrated a lack of knowledge about HIV/AIDS in Burkina Faso. In addition, the condoms were not affordable because "the planned wide distribution" of condoms did not begin until September 1991 and only then under another plan. The target group of the public awareness campaign was limited because of the lack of skilled workers, finances, and inadequate infrastructures of education. In 1989, Bocar Kouyaté attributed the ineffectiveness of this work to the absence of a feedback channel that would have helped in evaluating and improving the strategies.[61] The political instability caused by the coup d'état of October brought the PCT to a standstill until 1989.

Thus, the PCT could not achieve its aims within its scheduled time. During its implementation, there was no reduction of patients' suffering from AIDS. On the contrary, the situation had worsened by 1988, with a ratio of new AIDS cases per 100,000 inhabitants of 4.5 compared with 0.12 and 0.24 in 1986 and 1987, respectively. Official figures indicating a decrease of AIDS cases between 1989 and 1990 (a decrease from 3.14 to 2.15 per 100,000 inhabitants) have to be judged carefully, since HIV-positive cases were not thoroughly studied. The CNLS permanent secretary assessed the PCT balance as "largely" positive.[62] However, the actions aimed at reducing the AIDS impact failed. Because of various difficulties, such as technical limits of health facilities and the lack of HIV tests, epidemiological studies could not be performed throughout the country and thus fail to provide a realistic figure of AIDS development.

In October 1989, a process reinforcing HIV/AIDS policies began when the PNLS and the PMT became the baseline efforts in the fight against HIV/AIDS as well as the basis for financial decisions, with the UNDP (United Nations Development Program) and WHO being the coordinators of the programs. Given the increasing cases of AIDS and the inadequacy of the first AIDS council in the Ministry of Health, in 1990, the government put into place a more autonomous organ, the National AIDS Council (CNL-SIDA), supervised by the Minister of Health, that aimed to elaborate, execute, coordinate, and evaluate all the potential strategies that would limit and even eliminate AIDS in Burkina Faso.[63] The creation of the council coincided with a democratic transition in the government, and, as a result, between 1990 and 1992, the CNL-SIDA implemented the midterm plan (PMT 1). Given the difficulties of the implementation of this plan, it was supported by a second midterm plan (PMT 2) between 1993 and 1995.[64]

The objectives of the midterm plans were to promote the fight against sexual transmission by reinforcing knowledge about HIV/AIDS. Education and communication about HIV/AIDS had to be promoted, and the implication of the government, community-based organizations like NGOs, associations, and religious and traditional communities had to be assessed. Safe blood transfusion had to be promoted and the national program against STDs and PNLS were joined into a single unit. Counseling and care of HIV-positive and AIDS patients had to be developed through specialist training. The supply of tuberculosis drugs, antibiotics, antiseptics, and medical gloves had to be improved, as well as the monitoring of research about HIV infection and AIDS. The management and the coordination of offices, meetings, and international conferences had to be conducted as well as the preparation of comprehensive dossiers on the subject of HIV/AIDS. Finally, the sensitization of the government and the national assembly of deputies, and the monitoring of the cooperative efforts with France were to be enhanced.

It is beyond the scope of this chapter to judge all of the objectives here; however, the program to improve laboratory facilities achieved substantial results. At that level, the major problems were the delays in supplying procedures and the lack of facilities for the storage and the management of pharmaceutical products for some delicate products. Medical doctors as well as journalists[65] began to be trained especially on AIDS parameters and how to prevent HIV/AIDS. Despite the increase in training of laboratory specialists,[66] there remained a lack of specialists at a time of increasing demand.[67]

To implement the public awareness campaigns successfully, workers needed knowledge about the sexual behavior of people, which, in itself, required the development of new communication skills between the government and the populace. The anthropological and sociological studies about sexual and cultural behaviors and subsequent training that responded to that necessity were intensified after 1992 (see figure 13.1). Thus, the advent of HIV/AIDS showed the disparity between a health system based essentially on limited

medical care and a system that integrated social parameters of diseases into the health system.

The balance of the activities of the whole midterm intervention shows many weaknesses compared with the objectives and the needs. Analysis of articles in the government-owned daily newspaper shows that the public awareness activities that took place after the London conference in 1988 were sharply reduced in 1991. The reduction of sensitization activities was also commented on by a student.[68] As far as the student was concerned, political concerns had become more important than HIV/AIDS, which seemed to have been forgotten. In fact, 1991 marked an important political transition. At the end of the year, at the occasion of the celebration of the fourth World AIDS Day, the traditional appeal for more awareness came from the political authorities. In addition, they required an improvement in the methods that were being used by mobile groups to disseminate information to the public.[69] One message of the CNL-SIDA pointed out the worrisome trend of HIV/AIDS and recommended to the people to remember the past recommendations.[70] All this points to the ineffectiveness of the activities that had been implemented.

Only nineteen of one hundred planned activities at the level of prevention adopted by the PMT 2 had been executed by 1994, just one year before the planned end of the program. This delay was explained by the lack of logistical support and the delays in allocating resources. The activities regarding training, surveys, sensitization, and production of didactic supports were not effective. The provincial and departmental structures that had to be put into place by the government in order to implement programs to fight HIV/AIDS were not functional.[71] Above all, excessive centralization of the different structures for the management of the PNLS in the CNL-SIDA offices was an obstacle to efficiency. The management appeared not to be transparent, and there was confusion at different levels of decision-making. The staff of CNL-SIDA showed little motivation. CNL-SIDA also appeared to have been a low priority for the government in terms of the coordination of activities related to the PNLS; on the other hand, their control by the government appeared to inhibit the completion of necessary activities, which in turn delayed many interventions.[72]

In this context of inefficiency and lack of strong political awareness about the danger of HIV/AIDS in the society, the increase in cases between 1990 and 1994 was drastic. The year 1991 coincided with a quick increase in the newly recorded cases of AIDS (835) to a ratio of 8.90 per 100,000 inhabitants compared with 2.19 in 1990. The prevalence was estimated at 3.4 percent, or about 3,400 HIV-positive people per 100,000 inhabitants. In 1994, the newly recorded AIDS cases were estimated at 18.77 per 100,000 inhabitants. However, the numbers could also have reflected people who had been sick many years ago, who because of the imperfection of data collection and analysis had only recently been detected, or immigrants who had just entered the country. But the data do not relate anything about these assumptions, and it

is clear that the first year of the political transition saw little improvement in the fight against HIV/AIDS. Taking into account that the impact of programs is not always immediately noticeable, it is notable that the trend of infection rates seems to correlate with periods of relative activity or inactivity of government programs.

Since 1996, the AIDS issue has been integrated into activities like population reduction policies (PPLS, 1996–2000), without abandoning the earlier objectives. The previous AIDS commission, the CNL-SIDA, became the CNLS-MST and is now also responsible for combating all STDs and seeking a way to integrate the fight against STDs into HIV/AIDS policies.

Under the new program, the financial contribution of the state rose with the help of borrowed money. This amount was very small initially and was meant primarily for staff and buildings. The state's contribution to the entire budget of the PCT, PMT 1, PMT 2, and PPLS reached 9.8 percent of the funds raised (about $29 million in the fight against HIV/AIDS between 1986 and 2000), but its financial contribution did not reach 2 percent between 1986 and 1995. It was in 1996 that the financial involvement of the state in the PNLS increased with the implementation of the PPLS.[73] However, many bilateral donors, such as France, Norway,[74] and Germany, and multilateral donors, such as the European Union,[75] the World Bank, and the World Health Organization (WHO),[76] alleviated the insolvability of the state by paying the difference between the state contribution and the funds raised. Two major stages appeared in the disbursement of the funds. Globally, 38 percent of the $29 million had been allocated in the ten years from 1986 and 1995 and 62 percent in the five years between 1996 and 2000.[77]

Innovations beginning in 1996 allowed the increase of community-based organizations, the introduction of a module called "éducation en matière de population" into the teaching curriculum, and the extension of training to the traditional chiefs[78] and in different districts. In Koudougou, a provincial capital, for instance, agricultural union members, local beer sellers, and Muslim women became trainees. The prevention message in this training was the ABC (Abstinence—Be Faithful—Condom Use) method.[79]

The period from 1997 to 2001 was an important turning point in understanding the burden of HIV/AIDS and the necessary actions to combat it. The prevalence rate was estimated at 7.17 percent in 1997 and 6.5 percent in 2001. One can notice that periods of low financial intervention coincided with the increase of AIDS cases and HIV prevalence. The decrease in prevalence rates by 1997 coincided with more financial involvement. But, in the absence of adequate medical care,[80] the decrease in prevalence also meant an increase in the impact of HIV/AIDS: more deaths and more orphans with their own impact on the AIDS commission, the health care system, and other socioeconomic processes. According to UNAIDS,[81] Burkina Faso had about 370,000 persons living with HIV/AIDS at the end of 1997. The number of AIDS deaths in the same year was about 44,000. The number of AIDS orphans under 15

was estimated at 270,000.[82] People living with HIV/AIDS were estimated at 440,000 persons, including 60,000 children, 380,000 adults, of whom 220,000 were women.[83] Thus, the burden of the epidemic had grown to include more people living with HIV and affected by HIV over time. It is obvious that the decrease in the prevalence of HIV and the decrease of the incidence of AIDS from 1997 to 2001 did not necessarily mean a decrease in the burden of HIV/AIDS on the country as a whole.

The increasing impact of the epidemic had resulted in constant reforms to the CNL-SIDA between 1994 and 2001 in order to adapt to trends in HIV transmission. The major reform appeared in 2001, when the CNLS-MST was replaced by a new AIDS commission (CNLS-IST), which integrated sexually transmitted infections (STIs), instead of STDs, into its AIDS programs. Combating STIs had been an aim since the beginning of HIV/AIDS programs, but only with the adoption of the "syndromic approach" suggested by WHO[84] did the program see some success by 1996.[85]

Because of the impact of persons living with HIV/AIDS, the political involvement in the fight against the epidemic reached a peak in 2001, seven years after the appeal of the General Assembly of the CNL-SIDA in 1994, fourteen years after the president had become the first leader of the state, and sixteen years after the outbreak of the HIV/AIDS epidemic in Burkina Faso. The new commission was placed under the president's office, with the president serving as head of the commission dealing with HIV/AIDS and STIs.[86] This resulted in the personal involvement of President Compaoré (later than Uganda's Museveni, who is said to have been involved since 1986) both in the public awareness operations and in leading the 2001 reforms for the AIDS commission. At this point, the AIDS issue seemed to have been normalized or accounted for in all structures of the society from the grassroots to the presidency of the republic. (Since then, activities have been streamlined with a strategic plan,[87] which is beyond the scope of this chapter.) In addition to the above process, it is worthy to point out the involvement of community-based organizations that deal directly with the population and HIV/AIDS patients.

In some developed countries like the United Kingdom, lobbying of gay associations contributed to the process of putting into place a national policy against HIV/AIDS and the stigma related to it.[88] An analysis of documents about Burkina Faso shows a different picture. Even if some associations engaged in the AIDS field did exist before the official outbreak of the epidemic (like Burkina Faso's association for family welfare—ABBEF—created in 1979), many other associations working in the HIV/AIDS area came into existence after its outbreak in the context of government programs and the government's international partners initiative. Indeed, in the government's PMT 2 of 1993–95, government subsidization of the activities of community-based organizations in the area of AIDS and family planning was established. The objective was to stimulate the creation of associations and to give new orientations to older associations in the area of HIV/AIDS. These groups became involved in

dissemination of information, education, and communication about HIV/AIDS.[89] The process of creating associations was already allowed by legislation of 1992,[90] in agreement with one of the visions of WHO. In fact, World AIDS Day in December 1993 was celebrated under the slogan of "involvement of communities" against HIV/AIDS. On that occasion, the regional director of WHO for Africa, Gottlieb L. Monekosso, exhorted the creation of associations of people living with HIV/AIDS and called upon them to support each other.[91]

Until 1994, there was no association of people living with HIV/AIDS in Burkina Faso.[92] From 1994 to 1997, there was an increasing trend of new associations working in the AIDS area in Burkina Faso. On July 31, 1997, Stéphanie Desconnets and Bernard Taverne made an inventory of ninety-four associations and NGOs involved in the fight against HIV/AIDS in Burkina Faso. Of these, seventy-eight were located in Ouagadougou, where there had been only twenty-six in 1994.[93] In Ouagadougou, therefore, the number tripled within three years. Furthermore, in 2002, 150 associations were identified. More than 80 percent were created between 1994 and 2000, and 85 percent were situated in urban areas.[94]

The progression in the number of associations between 1994 and 2000 reflects, on one hand, the increasing impact of HIV/AIDS[95] and, on the other, the progression of knowledge about HIV/AIDS and, subsequently, the progression of public awareness activities in the country. An important "offer effect" (the economic interest for associations) promoted by the public powers (CNLS/PPLS), private organizations, bilateral cooperation agencies, and western associations played a role in this progression.[96] The interventions of associations brought Bénédicte Fonteneau to say that, taking into account the weakness of the public health-care system, the associations were the only structures to offer adequate and adapted services to people living with HIV.[97] But the role of the public structures in the overall infrastructure of HIV/AIDS activity is not to be underestimated. Nevertheless, the context of creation of many associations and their financial and administrative dependence on the state and external donors indicate that many of them can be considered as appendices of the state and other donors and, as such, they cannot act as independent pressure groups. Thus, their autonomy in decision-making and action-taking processes has been open to discussion. This could explain the irregular and episodic interventions of some of them. In addition, the concentration of associations in urban areas, the lack of competence of some of them, and the use of moral and ideological messages in some public awareness processes have been weaknesses.

The boom of associations and subsequent activities supported by financial resources from the state and donors coincided with the decrease of the prevalence of HIV from 7.17 percent in 1997 to 6.5 percent in 2001 and 2.7 percent in 2004. They seem, then, to have played an important role in this trend. However, the trend of the HIV/AIDS epidemic and the decrease in prevalence can be questioned, because a discrepancy in the evolution of the prevalence of

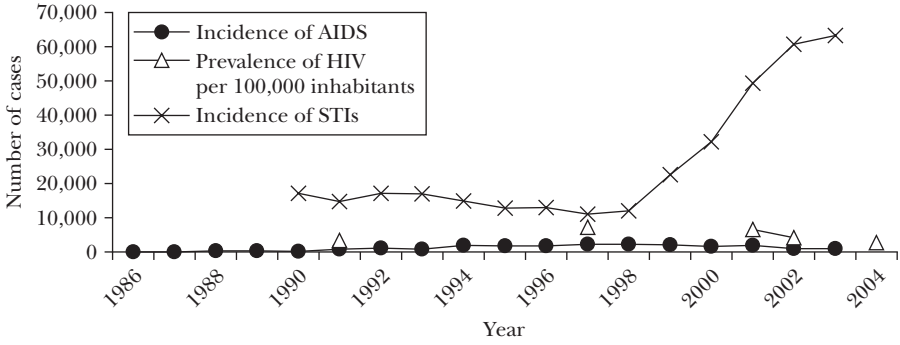

Figure 13.2. Case numbers of HIV, AIDS, and STIs in Burkina Faso. Data from CNLS-IST Burkina Faso, "Situation épidémiologique : Données statistiques sanitaires sur le VIH/SIDA et les IST" (January 2002), 3; CMLSanté/SPCNLS-IST, "Récapitulatif de statistiques sur le VIH/SIDA et les IST au Burkina Faso."

HIV (data from sentinel surveillance), the incidence of AIDS and STIs (data from the health management information system) appears between 1990 and 2003. Data on STIs in Burkina Faso between 1998 and 2003 are considered to be more reliable than older data. It is therefore interesting that while the prevalence of HIV and the incidence of AIDS decreased in Burkina Faso over this period, the incidence of STIs (data from CNLS-IST) increased very quickly (figure 13.2). A pertinent question is whether the statistical data that we have used previously indicates a real trend of the HIV/AIDS epidemic in Burkina Faso.[98] These issues are worthy of investigation given the epidemiological and biological similitude between HIV/AIDS and STI that scientists make evident nowadays and given the reliance of actions against HIV/AIDS on statistical data.

Another gap in the data is under-notification. UNAIDS estimated the number of people who died from AIDS in 2001 at 44,000; however, the total number of cumulative AIDS cases from 1986 to 2003 that the AIDS commission released was estimated at only 20,931 (see table 13.1). In 2004, UNAIDS made a note of this under-notification after enumerating another 29,000 AIDS deaths in 2003.[99] Further investigation could help to avoid errors similar to those that underestimated the growth of HIV/AIDS in Burkina Faso.

It is quite unlikely that the first debates in Burkina Faso, which were ambiguous as to the origin of HIV/AIDS, helped the population obtain true information about HIV/AIDS. The impact of such an attitude on the population has not been determined in this chapter, but much research, such as that of Michèle Cros[100] and Bernard Taverne,[101] shows the lack of early awareness of preventive methods of HIV/AIDS.

It is possible to assert that vicissitudes appeared in the state policies against HIV/AIDS caused in part by the political instability and in part by some ineffectiveness of states policies. This situation, of course, did not favor the mastering of the epidemic from 1985 to 1997, but allowed a dynamic behavior change in the institutional approach of HIV until 2001. Other socioeconomic and cultural factors are not to be neglected, even if they have not been taken into account in this chapter. Further questions worthy of investigation include whether the prevalence of HIV and the incidence of AIDS have slowed and whether the high political involvement achieved in recent years has contributed causatively to the alleviation of the impact of HIV/AIDS on socioeconomic conditions in Burkina Faso.

Notes

1. ONUSIDA, *Rapport sur l'épidémie mondiale de sida* 5 (2004), http://www.unaids.org/bangkok2004/GAR2004_html_fr/ExecSumm_fr/ExecSumm_fr.pdf (accessed September 13, 2004).

2. Jean-Baptiste Guiard-Schmid, "Le Sida au Burkina Faso: historique, epidemiologie, politique nationale, intervenants de la lutte contre le sida" (PhD diss., Faculty of Medicine, Limoges, 1994), 56–57.

3. Robert Soudré and Jean Gabriel Ouango, "Situation épidémiologique de l'infection à VIH/SIDA au Burkina Faso," Réseau Africain de recherche sur le Sida, Zone Afrique de l'Ouest et Centrale, Priorités de recherche sur le VIH en Afrique, Synthèse de l'assemblée générale, Dakar (1994), 28.

4. PNUD, *Rapport sur le développement humain durable: Burkina Faso 2001* (Ouagadougou: PNUD, 2001), 6.

5. Earlier documents on the PPLS gave the time of its implementation between 1995 and 1999. But on the Web page of the AIDS commission that is more recent, this program was from 1996 to 2000.

6. The Panos Institute, "Missing the Message? 20 years of learning from HIV/AIDS" (2003), http://www.panos.org.uk/PDF/reports/MissingTheMessage.pdf 7 (accessed September 10, 2004).

7. Adama Abdoulaye Touré, *Une vie de militant—Ma lutte du collège à la révolution de Thomas Sankara* (Ouagadougou: Editions Hamaria, 2001), 144–47.

8. The first two republics after independence lasted from 1960 to 1966 and from 1970 to 1974 respectively. The Third Republic began in 1977. The periods between 1966 and 1970 and between 1974 and 1977 were marked by military regimes that came to power by coups d'état or civil uprising rather than by democratic election.

9. Ibriga Luc Marius and Garane Amidou, *Constitutions Burkinabè* (Boland: Namur, 2001), 44–45.

10. Mirko D. Grmek, *Histoire du Sida* (Paris: Petite Bibliothèque Payot, 1995), 65.

11. Jean-Pierre Dozon and Didier Fassin, "Raisons épidémiologiques et raisons d'Etat: les enjeux socio-politiques du SIDA en Afrique," *Sciences Sociales et Santé* 7, no. 1 (February 1989): 21–36.

12. "International Conference on HIV/AIDS Epidemic in sub-Saharan Africa in a Historical Perspective" (unpublished speech, University of Louvain-la-Neuve, Belgium, March 11, 2003).

13. The intention of this chapter is not to speculate about the origin of HIV/AIDS but to know how the issue was tackled in Burkina Faso.

14. Ministère de la santé publique, "Le Sida, ce mal inconnu," *Sidwaya,* March 6, 1985.

15. Hamado Nana, "Les pays africains face au sida," *Sidwaya*, October 30, 1985; S. T., "Un contraceptif anti Sida?" *Sidwaya*, February 11, 1987; Auguste Mpassi-Muba, "L'Afrique bouc émissaire," *Sidwaya*, February 4, 1987.

16. Basile Guissou, *Burkina Faso, un espoir en Afrique* (Paris: l'Harmattan, 1995), 121.

17. TASS, "Le sida n'est pas une maladie naturelle," *Sidwaya,* April 8, 1987.

18. Jacques Prosper Bazié, "Réflexion: Sida, Entre nous . . ." *Sidwaya*, February 13, 1987.

19. Guissou, *Burkina Faso*, 121.

20. Wind-Lananm Ramde, "Lettre à un compagnon de lutte," *Sidwaya*, September 8, 1985.

21. The communiqué of the Ministry of Health dating from 1985 came out in a context of important discoveries about AIDS. Indeed, the AIDS virus was isolated in 1983. Its heterosexual transmission was demonstrated in 1983–84. However, there was no local research on that matter. The analysis of reports on AIDS shows a lack of knowledge about social factors related to AIDS spreading between 1985 and 1989. It is mainly after 1993 that a trend toward scientific methods of research can be noticed.

22. Robert Soudré, "Rapport de mission," *Sidwaya,* August 14, 1985.

23. Burkina Faso, Direction de la surveillance épidémiologique et des vaccins, Directives OMS pour la prévention du sida et de l'infection par le virus LAV/HTLV-III (January 31, 1986)," Ouagadougou, Library of the Ecole Nationale de la Santé Publique.

24. OMS, "L'OMS pour une information conséquente sur le sida," *Sidwaya,* November 18, 1986.

25. Hilaire Tiendrébéogo, "Gardons la tête froide," *Sidwaya,* September 2, 1987.

26. B. B., "Conférence de presse du comité de lutte contre le sida au Burkina Faso," *Sidwaya*, September 7, 1987.

27. A. Somé, "Addis Abeba—24ème sommet de l'OUA: Changer les mentalités," *Sidwaya*, July 27, 1987.

28. *Sidwaya,* "L'OMS, un rôle de coordination dans la lutte anti-sida," October 29, 1987.

29. Lion F., "Un espoir dans la Bataille contre le sida," *Sidwaya*, November 27, 1987.

30. According to Guiard-Schmid, local medical doctors as well as the first recommendations of the WHO influenced political leaders in their decision to create the first AIDS commission. In Guiard-Schmid, "Le Sida au Burkina Faso," 59–60.

31. I did no research into other media, such as radio and television. But, according to Nicolas Méda, "Suivi et évaluation des programmes nationaux de lutte contre le sida: examen de l'expérience du Burkina Faso 1987–1998" (CNLS-MST, OCCGE, Centre Muraz, 1998), 12, who did an important evaluation of AIDS programs from 1987 to 1998, modern media such as radio, television, theater, cinema, sports, sociocultural, economic, and political events, were largely used to inform, educate, and to communicate with a lot of people about STDs and HIV/AIDS. This strategy was intensified in 1998, but the process of using these media do not appear in his study.

32. *Sidwaya*, "Déclaration faite par le camarade secrétaire d'Etat à l'action sociale à l'occasion de la 1ère journée mondiale Sida," December 1, 1988.

33. Except for the celebration of the international AIDS day, the involvement of political leaders was not sensible if one differentiates between the involvement of political rulers as opinion leaders in direct public awareness operations and their actions to put into place institutional organs, even if this is also a political involvement. The task belonged to the national AIDS commission that had to "identify itself" first. However, in a developing country like Burkina Faso where the weakness of political, economic, social, and cultural structures and the lack of means in almost all areas is a matter of fact, voluntarism of leaders in respect of the rule of laws and political deontology can help to raise awareness about HIV/AIDS among the population whose majority (80 percent) is illiterate and consequently use less administrative and health facilities. At the time of the Popular Front in Burkina Faso, this kind of political involvement was questionable. However, if the involvement of the CNR against prostitution could be qualified as a political involvement against HIV/AIDS, this should also be applicable under the Popular Front in 1990; *Sidwaya*, November 30, 1989; *Sidwaya*, December 1, 1989.

34. Hamado Nana, "Journée mondiale de lutte contre le Sida," *Sidwaya,* December 2, 1988; *Sidwaya*, "Le Sida—mieux vaux prévenir que guérir," January 13, 1989.

35. Sita Tarbagdo and Marceline Sama, "Interview with Kpade Codjo Eugène," *Sidwaya*, September 21, 1989; Louis Hamadé Ouedraogo, "Le Sida au Burkina," *Sidwaya*, December 2, 1988. The author was a medical doctor.

36. *Sidwaya*, "Une seringue révolutionnaire pourrait limiter la propagation du Sida," May 17, 1988.

37. *Sidwaya,* "Discours du camarade Président du Faso à l'occasion du Meeting de solidarité entre les peuples malien et Burkinabè," January 6, 1986.

38. However, according to Wenceslas Paulin Sugremanegde Ouédraogo, "La prostitution à Ouagadougou de 1935 à 1994" (mémoire de maîtrise, Université de Ouagadougou, 1997), 128, a commission was put into place to make a "diagnostic" of the prostitution in Burkina Faso in 1984. The results allowed the establishment of the "Prostitution cell" (a department dealing with prostitution) in the Ministry of Social Action. In addition, there is no evidence that the doctoral thesis of a student of Robert Soudré presented in 1985 on sexually transmitted diseases (STDs) that underlined the highest rate of STDs among the commercial sex workers in Ouagadougou was unknown in some political groups. See Alain Marie Damiba, *Les Maladies sexuellement transmissibles: Problème de santé publique au Burkina Faso* (thesis of medicine, Université of Ougadougou ESSA, 1985). But according to the minister of family and social action, there were no statistical data to show the importance of prostitution, in *Sidwaya,* "Conférence de Presse du Ministre de l'action sociale et de la solidarité familiale," January 14, 1986.

39. *Sidwaya*, "Lutte contre la prostitution," May 12, 1987.

40. President of the first instance tribunal of Ouagadougou in 1987.

41. *Sidwaya*, "La lutte contre la prostitution," May 12, 1987.

42. *Sidwaya*, December 1, 1988.

43. Despite the incorrect data of the AIDS commission, we have used them, because our concerns with the numbers are only speculative and cannot be proved conclusively.

44. *Sidwaya,* "Libérons la prostituée," May 11, 1987.

45. Louis Hamadé Ouédraogo, "Situation au Burkina Faso," *Sidwaya*, November 30, 1990.

46. Guiard-Schmid, "Le Sida au Burkina Faso," 56, 59.

47. From interviews in Ouagadougou, it appeared that the council of the government of that time did not discuss the instruments to fight HIV/AIDS. In that case, the objectives of that policy were not officially linked to AIDS. It was clear that Sankara announced it in a surprising way during a "meeting of solidarity between people of Mali and Burkina Faso," *Sidwaya*, January 6, 1986.

48. Guiard-Schmid, "Le Sida au Burkina Faso," 59.

49. Original French text translated by this author. See Michèle Cros, "Araignée-sida et politique de santé en pays Lobi burkinabè," in *Le Burkina entre révolution et démocratie*, ed. René Otayek, Filiga Michel Sawadogo, and Jean-Pierre Guingané (Paris: Khartala, 1996), 61.

50. PNUD, *Rapport sur le développement humain durable*, 7.

51. Jean-Pierre Dozon and Didier Fassin, "Les Etats africains à l'épreuve du sida," *Politique Africaine* 32 (1988): 79–85.

52. Jacques Nonguierma, "Cleptomanie et prostitution," *Sidwaya,* September 6, 1989; *Sidwaya*, "Prostitution et MST," November 3, 1989.

53. *Sidwaya*, "La lutte contre la prostitution: doucement mais sûrement," January 15, 1990.

54. Ibid.

55. These laws were the Act of 13 April 1946 on penal code that punished the so qualified actions and the Act 11/64/AN that regulated the frequentation of minors in leisure areas.

56. Boniface Coulibaly, "La prostitution au Burkina—Une croissance inquiétante," *Sidwaya*, July 17, 1991.

57. Alice Desclaux, "L'Etat contre la santé publique? La désignation d'un groupe social dans le discours public sur le sida au Burkina Faso," *Sociologie santé*, no. 13 (1995): 84–91.

58. Ministère de la Santé, August 1987, "Projet SIDA, Plan à Court Terme Burkina Faso," Library of the Ecole Nationale de la Santé Publique, Ouagadougou, Raabo AN IV 062/CNR/M/SG/L.

59. CNLS, "Restons fidèles pour mieux nous protéger," *Sidwaya*, December 1, 1988.

60. CNL-Sida, "Comment porter vos capotes," *Sidwaya*, December 3, 1990.

61. Bocar A. Kouyaté, 1989, "Rapport de séminaire/Atelier 'Information, Education et Communication dans la lutte contre le Sida' du 6 au 30 Jun 1989 à Santa Cruz—USA," Library of the Ecole Nationale de la Santé Publique, Ouagadougou.

62. Jean-Gabriel Ouango, "La lutte contre le Sida au Burkina—La victoire est possible," *Sidwaya*, January 13, 1992.

63. "Portant création d'un comité de lutte contre le SIDA," *Journal officiel du Burkina Faso* (March 8, 1990): 197 (Government's general secretariat, Ouagadougou, Kiti AN VII-219 FP. SAN. AS du février 27, 1990).

64. *Rapport final de l'Assemblée Générale Annuelle du CNLS, Ouagadougou*, 19, 20, 21, 22, 23 (April 1994), 11–13.

65. Hamado Nana, "Seminaire-atelier sur le Sida," *Sidwaya*, November 20, 1990; Hamado Nana, "Seminaire-atelier sur le Sida," *Sidwaya*, November 28, 1990; Marcelline Ilboudo, "Séminaire de recyclage pour les journalistes," *Sidwaya*, September 9, 1992.

66. Hamado Nana, "La lutte contre le Sida—Les spécialistes de laboratoires se recyclent," *Sidwaya*, October 25, 1994.

67. *Rapport final de l'Assemblée Générale Annuelle du CNLS, Ouagadougou*, 19, 20, 21, 22, 23 (April 1994): 39–40.

68. Ousmane Victor Doussa, "Point de vue: Les étudiants et le Sida," *Sidwaya*, October 30, 1991.

69. Emmanuel Sama, "4è journée mondiale contre le Sida—Sida = unissons nos forces," *Sidwaya*, December 16, 1991.

70. Le S/comité S.E du CNL-SIDA, *Sidwaya*, December 18, 1991.

71. CNLS, Groupe Thématique ONUSIDA, "La lutte contre le VIH/SIDA au Burkina Faso, Profil de pays ONUSIDA," Document Provisoire, deuxième version (1997), 12.

72. H. Schneider and B. Schoepf, *Rapport de mission PPC/GPA-Côte d'Ivoire, Mali, Burkina Faso* (21/03–12/04/95, GPA), 4.

73. According to the data of Nicolas Méda in "Suivi et évaluation des programmes nationaux de lutte contre le sida," 12.

74. *Sidwaya*, "Population et Sida au Burkina—Attention le mal gagne du terrain," August 25, 1995.

75. Union Européenne, "Communiqué de presse," *Sidwaya*, July 1, 1994.

76. H. Schneider and B. Schoepf, *Rapport de mission PPC/GPA- Côte d'Ivoire, Mali, Burkina Faso*, 1.

77. Ibid., 4.

78. Kimségninga Sawadogo, "Prévention des MST—Les coutumiers s'en mêlent," *Sidwaya*, December 5, 1995.

79. Jacques Nongierma, "Séminaire de Formation Sensibilisation en MST et Sida," *Sidwaya*, March 14, 1995; Jacques Nongierma, "Rencontre entre le docteur Mété Bonkoungou et les femmes musulmanes de Koudougou," *Sidwaya*, October 20, 1995.

80. Modern medical care is not affordable for the majority of the population, and the antiretroviral drugs became available in 1998 but only for privileged people.

81. Décret 2001-251/PRES/PM/MS du 30 May 2001, *Journal officiel du Burkina Faso* 25 (June 21, 2001): 1070 (Government's general secretariat, Ouagadougou).

82. UNAIDS, UNICEF, WHO, Burkina Faso, "Epidemiology Fact Sheet on HIV/AIDS and Sexually Transmitted Infections 2002 update," http://www.who.int (accessed August 3, 2003).

83. UNAIDS, "Report on the Global HIV/AIDS Epidemic 2002, Table of Country-specific HIV/AIDS Estimates and Data, end 2001," 190, http://hivinsite.ucsf.edu/pdf/UNAIDS/barcelona_table.pdf (accessed April 24, 2005).

84. ONUSIDA, "Lutte contre les MST, mesures de santé publique," Collection Meilleures Pratiques de l'ONUSIDA (1998), 4, http://www.who.int/hiv/pub/sti/en/stdcontrol_fr.pdf (accessed March 2, 2005).

85. Nicolas Méda in "Suivi et évaluation des programmes nationaux de lutte contre le sida," 6.

86. Décret 2001-510/PRES/PM/MS du 1er October 2001, *Journal officiel du Burkina Faso* 41 (October 11, 2001): 1811 (Government's general secretariat, Ouagadougou).

87. "Cadre stratégique de lutte contre le VIH/SIDA—2001–2005," in Décret 2001-251/PRES/PM/MS du 30 May 2001, *Journal officiel du Burkina Faso* 25 (June 21, 2001): 1070.

88. Virginia Berridge, "The Early Years of AIDS in the United Kingdom 1981–86: Historical Perspective," in *Epidemic and Ideas, Essays on the Historical Perception of*

Pestilence, ed. Terence Slack and Paul Ranger, 303–13 (Cambridge: Cambridge University Press, 1992).

89. *Rapport final de l'Assemblée Générale Annuelle du CNLS, Ouagadougou*, 19, 20, 21, 22, 23 (April 1994), 10.

90. André Tioro, *Analyse de situation des droits humains dans le contexte du VIH/SIDA* (Geneva: ONUSIDA, 2002), 20.

91. Christophe Dabiré, "Message à l'occasion de la 6è journée mondiale du Sida," *Sidwaya*, December 2, 1993.

92. Alice Desclaux, "Evaluation des interventions dans le domaine social concernant le sida au Burkina Faso. Compte rendu de mission du 24.03 au 06.04.94," *Mission française de coopération* (1994): 27.

93. Stéphanie Desconnets and Bernard Taverne, "Annuaire des Associations et O.N.G. intervenant dans la lutte contre le sida au Burkina Faso, installées à Ouagadougou et Bobo-Dioulasso, 1996–1997," ORSTOM, CNLS, CCISD (69–70) (unpublished paper available at Library of CIRD Ouagadougou), http://www.ird.bf/prog/sida/ass.exe (accessed March 30, 2006).

94. PNUD, *Rapport sur le développement humain durable: Burkina Faso 2001* (Ouagadougou: PNUD, 2001), 130.

95. Stéphanie Desconnets and Bernard Taverne, "Annuaire des Associations et O.N.G. intervenant dans la lutte contre le sida au Burkina Faso," 69–70.

96. Bénédicte Fonteneau, "Les associations de lutte contre le SIDA au Burkina Faso," 29.

97. Ibid.

98. This discrepancy may be due to the improvement of the health-care system that adopted the "Syndromic approach" of STIs, as Jean Bidiga, a member of the National AIDS commission whom I interviewed on February 2, 2005, attested. A relevant question is whether there is a balance between the system of HIV/AIDS data collection and the one of STIs. Given the impossibility of performing a mass screening on HIV, the system used to calculate the prevalence in the population includes many assumptions that limit the credibility of the data even if they are very useful for the monitoring and evaluation of the epidemic and its related programs. Also, a national prevalence can hide regional differences.

99. UNAIDS, "Report on the Global AIDS Epidemic, 2004," http://www.unaids.org/en/geographical+area/by+country/burkina+faso.asp (accessed January 1, 2005).

100. Michèle Cros, "Les aléas de la perception du risque: la gestion de la transmission sanguine du sida en Pays Lobi burkinabè" (1994): 6–13 (unpublished dactylo available at the Library of CIRD, Ouagadougou).

101. Bernard Taverne, "Stratégie de communication et stigmatisation des femmes: lévirat et sida au Burkina Faso," *Sciences Sociales et Santé* 14, no. 2 (1996): 98.

14

FACTORS ASSOCIATED WITH DELIBERATE ATTEMPTS TO TRANSMIT HIV INFECTION AMONG PERSONS LIVING WITH HIV/AIDS IN TANZANIA

William N. Mkanta

Incidents of deliberate attempts to spread HIV infection have been reported among persons living with HIV in different parts of the world. Cases of different types of deliberate HIV transmission have been recounted, including use of force,[1] attempts made by one partner in a couple having a sexual relationship,[2] and serial attempts made by an infected person against different persons.[3] In those countries where cases of deliberate transmission of HIV infection have been reported, men with HIV/AIDS were more likely than women to be involved in performing acts consistent with deliberate attempts of spreading HIV infection.[4] Incidents involving women have been rare, and, when reported, tend to show that women may behave in this way as a form of retaliation against the presumption that their male partners deliberately exposed them to HIV infection.[5]

Increasing numbers of deliberate attempts to spread HIV resulted in public pleas for criminal sanctioning of the perpetrator's behavior. The pleas were mostly meant to help women, who were often the victims of willful transmission of HIV infection.[6] There have been several attempts to criminalize the deliberate spread of HIV. For instance, laws against HIV transmission include those passed in the United Kingdom,[7] Zimbabwe,[8] Australia,[9] and in at least thirty states in the United States, making it a criminal offense to knowingly or willfully expose someone to or transmit HIV infection.[10] Several studies have reported cases that have been decided, for example, in Cyprus, a man was sentenced to prison for not disclosing that he had AIDS to his British girlfriend, leading to her seroconversion.[11] In Finland, an American citizen was jailed for fourteen years after being found guilty of knowingly infecting five women.[12]

Previous studies have reported challenges, particularly in Africa, on enforcing the laws against willful transmission of HIV. Barrett[13] and Barrett and Strode[14] argue that legislation will not help control the spread of HIV and may discourage people from seeking education, counseling, or treatment; violate human rights; and fuel the stigmatization of people with HIV/AIDS. In addition, the law is likely to come into effect when an infection or an attempt of deliberate HIV transmission has occurred and thus, in a way, the law itself might not be the best solution to restrain the behavior.

A paucity of studies on deliberate spread of HIV exists. Issues of privacy, confidentiality, and HIV stigmatization surrounding HIV, as well as the sensitivity of the subject, may be attributed to the lack of research in this area. Through research we may identify relevant interventions to address the social and psychological processes that give rise to the dangerous behavior among people living with HIV/AIDS (hereafter referred to as PLWHA). To gain knowledge of these processes, we designed an exploratory, cross-sectional study to assess factors associated with deliberate attempts of HIV transmission. We used a sample of PLWHA who were receiving similar counseling services but with diverse demographic backgrounds. PLWHA who participated in this study were selected from areas with different HIV prevalence within Tanzania. The study aimed to address the following questions: Does the behavior of deliberate transmission of HIV infection exist among persons living with HIV/AIDS? What factors are associated with the behavior of deliberate attempts to transmit HIV infection among persons living with HIV/AIDS?

Methods

WAMATA (A Swahili acronym for "People in the Fight against AIDS in Tanzania") is a nongovernmental organization providing psychosocial and material support for people infected and affected by HIV/AIDS. WAMATA counseling centers were used for this investigation. With offices in most parts of Tanzania, WAMATA builds on the existing sense of community in the country to reach PLWHA and their families for a range of support services, including counseling, legal aid, home care, direct economic assistance, and community mobilization for HIV/AIDS prevention. Armstrong and Nongovernmental Organizations—Tanzania and Uganda have discussed the roles of WAMATA in more detail.[15] From October 2000 through February 2001, PLWHA attending counseling sessions through WAMATA were asked to participate in the interview.

We selected counseling centers from two high-prevalence regions of Dar es Salaam and Mwanza, and one low-prevalence region of Zanzibar to assess incidences of deliberate attempts of HIV transmission. The selection of these areas was based on the prevalence rates of HIV. While the estimated national

adult HIV prevalence among blood donors was 8.7% prior to our study, the selected regions had prevalence rates between 10 and 15 percent for Dar es Salaam and Mwanza, and 1.5 percent for Zanzibar.[16] We informed the PLWHA about the study when they visited the centers for weekly counseling sessions. Most PLWHA were enthusiastic to participate in the interviews and seemed very willing to share their experiences. HIV/AIDS education and the sense of community shared at the counseling centers seemed to be the major source of motivation for the PLWHA's participation in this study. Inclusion criteria were willingness to participate, residence of at least five years in the region, and being eighteen years of age and older. Of the 192 PLWHA informed of the study, 161 (84% participation rate) completed the interview. WAMATA headquarters in Dar es Salaam approved all study procedures, while area commissioners in the respective study areas furnished research clearance.

Participants completed face-to-face, structured interviews anonymously, lasting approximately thirty minutes, in a private setting within the center. At each study center, interviewers were nonresident HIV counselors. The interviewers received one day of training in eliciting honest responses and maintaining confidentiality of the participants and their responses. The author was present at each center for the interviews and collected the completed interview forms immediately after each interview as an additional strategy to protect participants' responses.

A series of questions designed to measure the likelihood of the willful spreading of HIV infections were asked first. The questions assessed whether PLWHA perceived deliberate HIV transmission as an existing problem among persons living with HIV in the country. Also, PLWHA responded as to whether they informed their sexual partners of their HIV serostatus. Next, we assessed the intent to deliberately attempt to transmit HIV through the question, "Since you started living with HIV have you ever attempted to deliberately infect another person?" This was the primary outcome variable elicited from the interviewees. Response categories were "Yes" and "No." If the participant answered, "Yes," the immediate follow-up question was, "What were your reasons for such attempts?" There were varied responses to this open-ended question, but they were all collapsed into three basic categories of "Intent not to die alone," "Lack of HIV education," and "Family or community discrimination."

We identified a set of covariates of attempts of deliberate transmission of HIV as follow-ups. Socio-demographic covariates included age, marital status, gender, education, and work status. We also assessed a class of HIV-related covariates including "family outlook after infection" and "duration of infection." Perceptive and psychosocial covariates included "perception of being a victim of deliberate infection," "perception of effectiveness of law against deliberate spreading of HIV infection," and "residence in an HIV-affected household." We included in the interview two items designed to

assess the extent to which participants concurrently or otherwise lived with other HIV-infected persons in the same household. The first question asked whether participants had ever lived in an affected household and the follow-up question assessed the relationship between the participant and member(s) of the household who were HIV-infected. Another question assessed participant's knowledge or suspicion of the mode of infection. Response alternatives were "sexual contact," "blood transfusion," "sharing sharp objects," and "caring for PLWHA." The follow-up question, selected as one of the covariates, asked those who knew or had suspicion of their mode of infection, "Do you believe you were intentionally infected?" Response options were "Yes" and "No."

The interview assessed the attitude of a participant's family after the participant was diagnosed or suspected to be living with HIV. We aimed to determine whether the family was supportive of the affected member. From a range of responses including provision of treatment, counseling, isolation, and stigmatization, we created a measure of family attitude with two basic categories of "supportive attitude" and "discriminative attitude." Last, to determine the duration of HIV infection, we asked the participant to give a number representing months or years that had elapsed since they were diagnosed with HIV.

We presented descriptive data on the sample characteristics by gender of PLWHA. We conducted descriptive analyses for all covariates selected in the investigation. Means and standard deviations were assessed; and we used t-tests for testing equality of means between genders for continuous variables. Categorical data were analyzed using chi-square tests of association. Bivariate associations between the selected covariates and risk of attempting deliberate transmission of HIV were assessed by the Mantel-Haenszel method. Odds ratios, corresponding 95% confidence intervals (CI), and p-values were computed using this method. We entered significant covariates into a multiple logistic regression model using the ENTER method, which forces all covariates into the model without any selection criteria. This method is suitable for an exploratory study because it allows the model to dictate which variables to enter for analysis. Correlation analysis showed that "age of participant" and "duration of HIV infection" were positively correlated. We determined duration of HIV to be a more important factor than age of participant for the purpose of this study. That is, we aimed to find out whether longevity of HIV infection contributed to the behavior patterns of the patients. We therefore included duration of HIV in the multivariate model, if both covariates were significant at the bivariate level. We developed two multiple logistic regression models to identify factors associated with attempts of deliberate transmission of HIV. The first model included all participants, regardless of their areas of residence, while the second model included only participants who lived in high HIV prevalence areas. A significance level of $p < 0.05$ was set for all statistical tests.

Results

Table 14.1 presents demographic characteristics and perceived modes of HIV transmission for PLWHA. Participants were 67% female, 94% from high-prevalence areas, and with an even age distribution between men and women. More than half of the participants (55%) had completed between five and eight years of education with equal gender distribution at this level of education. Only a small fraction of the participants (7%) had years of education equal to or more than thirteen. Between genders, somewhat more men (9.6%) than women (5.8%) had more than thirteen years of education, but the difference was not statistically significant.

Table 14.1. Background characteristics of PLWHA men and women in the sample (N = 161)

	All N (%)	**Men N (%)**	**Women N (%)**	***p***
All participants Site	161 (100.0)	54 (33.0)	107 (67.0)	< 0.001
Dar es Salaam	70 (43.5)	17 (31.5)	53 (49.5)	
Mwanza	81 (50.3)	33 (61.1)	48 (44.9)	
Zanzibar	10 (6.2)	4 (7.4)	6 (5.6)	0.093
Age				
Mean (*SD*)	37 (8.6)	38.0 (8.9)	36.4 (8.4)	0.240
Years of education				
None	11 (7.0)	2 (3.8)	9 (8.7)	
1–4	18 (11.5)	3 (5.8)	15 (14.4)	
5–8	86 (55.1)	31 (59.6)	55 (52.9)	
9–12	30 (19.2)	11 (21.2)	19 (18.3)	
≥ 13	11 (7.0)	5 (9.6)	6 (5.8)	0.337
Religion				
Moslem	38 (23.6)	14 (25.9)	24 (22.4)	
Christian	115 (71.4)	35 (64.8)	80 (74.8)	
Other	8 (4.9)	5 (9.3)	3 (2.8)	0.158
Work/Employment status				
Working	88 (54.7)	36 (66.7)	52 (48.6)	
Not working	73 (45.3)	18 (33.3)	55 (51.4)	0.030
Marital status				
Single	35 (21.7)	17 (31.5)	18 (16.8)	
Married	35 (21.7)	18 (33.3)	17 (15.9)	
Widowed	70 (43.5)	9 (16.7)	61 (57.0)	
Divorced/Separated	21 (13.0)	10 (18.5)	11 (10.3)	< 0.001
Lived in HIV-affected household				
Yes	112 (69.6)	39 (72.2)	73 (68.2)	
No	49 (30.4)	15 (27.8)	34 (31.8)	0.603

Table 14.1. (*continued*)

	All N (%)	Men N (%)	Women N (%)	*p*
HIV duration in years				
Mean (*SD*)	4.0 (2.7)	3.95 (2.7)	4.12 (2.7)	0.710
HIV transmission mode				
Sexual contact	103 (63.9)	31 (58.5)	72 (67.3)	
Transfusion	9 (5.6)	3 (5.6)	6 (5.6)	
Sharing objects	5 (3.1)	2 (3.7)	3 (2.8)	
Caring for AIDS patients	3 (1.9)	0 (0.0)	3 (2.8)	
Don't know	41 (25.5)	17 (32.1)	24 (22.9)	0.814
Perceive to be victim of deliberate HIV infection				
Yes	40 (24.8)	14 (33.3)	26 (30.2)	
No	88 (54.7)	28 (66.7)	60 (69.8)	0.436

Although the sample had 71% Christians, there were no gender differences in the distribution of the participants by religion. Male PLWHA were significantly more likely to be currently employed ($p = .030$).

Female PLWHA were significantly more likely to be widowed, while males were more likely to be single or married ($p < .001$). Nearly 70% of the participants had lived in households that had other persons living with HIV (e.g., spouses or parents). At the time of the interview, the PLWHA had lived with HIV for a mean of 4.0 years (range 1–9 years). Sexual contact was almost universally self-reported as the mode of HIV infection. About 66% of PLWHA reported this risk category, followed by 5.6% who reported blood transfusion. About 20% did not know how they got infected. Nearly equal proportions of men and women living with HIV/AIDS perceived being victims of deliberate HIV transmission (33% and 30%, respectively).

Bivariate Associations

Table 14.2 summarizes bivariate associations between the risk of attempting deliberate HIV transmission and the assessed covariates. Four covariates yielded significant associations with the risk of reporting attempted deliberate HIV transmission. Compared with women, men with HIV infection were about 3.5 times more likely to attempt deliberate transmission of HIV. When compared with PLWHA with no reports of discrimination, those who reported being discriminated against by their families or community on the basis of their HIV status were about nine times more likely to attempt deliberate transmission of HIV.

Table 14.2. Associations between sample characteristics and PLWHA reporting risk of attempting deliberate transmission of HIV infection

Characteristic	Subjects (%)	Percentage at risk (%)	Odds ratio	95% *CI*	*p*
Gender					
Men	50 (33.0)	28.0	3.54	1.44–8.69	0.009
Women	101 (67.0)	10.0	1.00	—	
Went to school					
Yes	140 (93.0)	16.0	0.84	0.17–4.15	0.830
No	11 (7.0)	18.0	1.00	—	
Currently working					
Yes	79 (52.0)	14.0	0.73	0.31–1.76	0.489
No	72 (48.0)	18.0	1.00	—	
Family outlook					
Discriminative attitude	77 (51.0)	27.0	8.88	2.52–31.27	0.001
Supportive attitude	74 (49.0)	4.0	1.00	—	
Ever lived in affected household					
Yes	106 (70.0)	21.0	5.63	1.27–25.07	0.023
No	45 (30.0)	4.0	1.00	—	
Perceive to be victim of deliberate HIV infection					
Yes	38 (31.0)	37.0	5.47	2.05–14.61	0.001
No	83 (69.0)	10.0	1.00	—	
Law can effectively address deliberate HIV infection					
No	49 (34.0)	14.0	0.78	0.30–2.02	0.601
Yes	96 (66.0)	18.0	1.00	—	

Finally, compared with PLWHA with no perception of being victims of deliberate HIV infection, PLWHA who reported having this perception were found to be 5.5 times more likely to engage in deliberate attempts of transmitting HIV. Two of the covariates, age and duration of HIV, were tested as continuous variables at the bivariate level. Neither age ($t = 0.83$, $p = 0.408$) nor duration of HIV ($t = 1.81$, $p = 0.073$) was associated with the risk of deliberate transmission of HIV, though the association with duration of HIV seemed to approach statistical significance.

Description of Deliberate Transmission of HIV

Information on factors associated with or leading to deliberate transmission of HIV is summarized in table 14.3. The data show that 42% of the participants believed there is high likelihood of attempts of deliberate transmission of HIV infection occurring in the population. Major reasons for this behavior were

Table 14.3. PLWHA description of deliberate transmission of HIV infection

Variable	Number	Percentage
Reasons for infecting other person (n = 113)		
Intent for others to die (Not to die alone)	65	58.0
Family discrimination	90	80.0
Lack of counseling	69	61.0
Have disclosed to new partner seropositive status (n = 50)[a]		
Yes	24	48.0
No	26	52.0
Have practiced protective sex with uninfected partners (n = 19)[a]		
Yes	6	32.0
No	12	63.0
Can not remember	1	5.0
Have knowingly attempted to infect partner with HIV (n = 62)[a]		
Yes	21	33.3
No	38	61.9
Refused to answer	3	4.8

[a]Includes only PLWHA who entered into sexual relationships after becoming HIV infected.

80% family discrimination, 61% ignorance/lack of counseling, and 58% intent for others to die (or not to die alone).

We also found that 52% of the PLWHA who entered into sexual relationships after becoming HIV infected did not disclose their seropositive status to their new partners. For those PLWHA who formed sexual relationships with uninfected partners, 63% (12/19) did not practice protective sex. About 33% of the PLWHA in sexual relationships admitted to have knowingly attempted to infect their partners with HIV.

Factors Associated with Deliberate Attempts to Spread HIV Infection

We used two multiple logistic regression models to determine factors associated with the risk of attempting deliberate transmission of HIV infection. Results from the two logistic models are presented in table 14.4. The first model included all participants and was controlled for prevalence area, gender, and marital status. This model was significant according to the model chi-square statistic (chi-square = 65.51, $p < 0.001$). Also the model correctly classified 68.2% of the participants who reported to have knowingly attempted to infect others with HIV, as well as 92.9% of those who did not

Table 14.4. Logistic regression model determining factors associated with deliberate attempts to transmit HIV infection among PLWHA

Variable	Model for all PLWHA			PLWHA in high-prevalence areas		
	OR	95 % *CI*	*p*	*OR*	95% *CI*	*p*
Gender	1.69	0.31–9.24	0.545	4.62	1.08–19.83	0.039
Married	1.67	0.25–11.10	0.596	1.11	0.19–6.54	0.909
Widowed	0.45	0.07–3.63	0.492	1.01	0.18–5.82	0.990
Divorced/Separated	0.37	0.02–8.84	0.537	0.55	0.51–5.95	0.625
Mwanza site	66.61	4.60–963.99	0.002	—	—	—
Was discriminated against	16.96	2.09–137.81	0.008	7.67	1.56–37.78	0.012
Lived in affected household	22.72	1.49–345.74	0.025	18.07	1.80–180.87	0.014
Perceive to be deliberately infected	23.18	3.92–137.00	0.001	12.17	3.12–47.50	<0.001

attempt deliberate transmission of HIV infection. Overall, the model correctly classified 88.4% of the participants.

Residence in high-HIV prevalence area is shown to be highly associated with the risk of deliberate attempts of HIV transmission (*OR, 66.61; 95% CI, 4.60–963.99*). Other factors associated with deliberate attempts of transmission of HIV infection, in order of magnitude, were perception of being a victim of deliberate infection (*OR, 23.18; 95% CI, 3.92–137.00*); residence in an HIV-affected household (*OR, 22.72; 95% CI, 1.49–345.74*); and family or community discrimination (*OR, 16.96; 95% CI, 2.09–137.81*). Gender and marital status were not significantly associated with attempts of deliberate transmission of HIV in this model.

Because of the high risk of deliberate attempts of HIV transmission in high-prevalence areas, a second logistic model including only PLWHA living in high-prevalence areas was constructed. All four covariates that were significant in the first model remained significantly associated with the risk of deliberate attempts of HIV infection. However, the level of significance for two factors (that is, perception of being a victim of deliberate infection and residence in HIV-affected household) increased in the second model. Moreover, gender was significantly associated with attempts of deliberate transmission of HIV. Compared with their female counterparts, men with HIV were found to be 4.62 times more likely to attempt deliberate transmission of HIV infection (*OR, 4.62; 95% CI, 1.08–19.83*).

Discussion

This study was designed to gather information on the factors associated with deliberate transmission of HIV infection among persons living with HIV in selected areas of Tanzania. To the best of the author's knowledge, this is the first reported study in Tanzania to examine the behavior of deliberate transmission of HIV among the infected persons. The results of the study indicate that among PLWHA living in high-prevalence areas, men who have ever lived in affected households and having perceptions of being victims of deliberate infections are more likely than any other patient group to make deliberate attempts to transmit HIV infection.

The findings strongly support the hypothesis that among PLWHA, male gender is statistically significant in association with the behavior of deliberate attempts to transmit HIV. Clearly, this finding supports the notion of gender power inequality (male dominance) prevalent in most of the African societies. For instance, a woman's economic dependency is likely to increase her chances of encountering sexual relationships with a man or men who might be at high risk of attempting deliberate transmission of HIV. Forced sex occurring as a result of a woman's economic deprivation as described by Smith Fawzi et al. and Garcia-Sanchez could indicate the manner in which some men knowingly spread HIV infection.[17] Similar to the findings of Ciccarone et al.,[18] our data show the tendencies of some PLWHA not to disclose their seropositive status to new partners and to have unprotected sex with uninfected partners. In our study, both genders have reported encounters of unprotected sex (50% men; 37% women). A larger proportion of male PLWHA practicing unprotected sex, however, may be indicative of the lack of sexual and economic power on the side of women. That is, by virtue of their power, men are more likely to be predisposed to initiating unprotected sex and along the way fuel tendencies of deliberate transmission of HIV.

The disproportionate number of female PLWHA at the counseling centers is another indicator of gender inequality in HIV issues. Most of the women at the centers were widows whose spouses died from HIV/AIDS. They are generally economically deprived and in need of assistance to sustain their lives and the lives of their children. We could not establish, however, whether a larger proportion of women at the centers was also indicative of higher rates of HIV disclosure among women living with HIV.

Although PLWHA in high-prevalence areas were more likely to engage in attempts to deliberately transmit HIV infection, it is important to note that the risk for this behavior is nationwide. As long as there is no cure yet for HIV or major advancement to increase access to treatment, the pandemic has the potential to spread more widely, and the attitudes of deliberate transmission of HIV are likely to grow. For instance, Zanzibar, which was used as a low-prevalence area in this study, has become an area of growing concern in Tanzania due to a steady increase in HIV prevalence among its residents.[19]

This is true of many other parts of the country initially labeled as low-impact areas. It is imperative for the government and other responsible organizations to provide HIV education in all areas regardless of their current HIV prevalence. This will control the spread of negative HIV perceptions that may promote the spread of HIV infection.

Perception of discrimination among PLWHA is strongly associated with the risk of attempting deliberate transmission of HIV infection through sexual contact. Families that have been affected by HIV tend to be in fear of stigmatization. This fear might lead to rejection or discrimination of the infected members of the family. As a consequence, PLWHA who do not receive support from their immediate family or community may retaliate against such attitudes by making deliberate attempts to infect other persons. Likewise, our data showed that PLWHA who perceived themselves to be victims of deliberate infection or those who lived in the same household with HIV-infected relatives had perceptions indicative of retaliatory behavior.

An important implication of this study is that an expanded HIV education to people in all areas of the country is needed to help overcome the high prevalence of HIV stigma. When HIV patients feel isolated and are at the same time facing certain death, they may engage in risky behaviors that could spread the infection. Participants in our study showed positive attitudes: they were generally easy to reach and able to respond comfortably to the interview questions. This is evidence that educational programs may influence PLWHA to behave or live positively with HIV. For instance, when compared with a matched population group (of persons living in the same areas as PLWHA and concurrently asked some similar questions), it was shown that the plurality of PLWHA perceived the lack of education as the major reason for attitudes of deliberate transmission of HIV (26% as compared with 8%). In contrast, the matched group indicated intent for other persons to die (intent not to die alone) as the major reason (58% as compared with 21%). These findings indicate that PLWHA who receive counseling and HIV education can potentially become more aware of the means of living positively with the disease. Such PLWHA are more likely to avoid involvement in risky behaviors.

Efforts to address the problem of deliberate HIV transmission through education have to consider the possibility of using PLWHA as peer educators. Persons with HIV who have attended counseling sessions are appropriately equipped with the concepts of positive living with HIV. Consistent with other studies, such as Bassett,[20] additional programs on necessary education and communication skills may support PLWHA to become educators with an important role of preventing risky behavior among their peers. In addition, the use of peer educators will increase the number of existing counselors and make it possible to reach more patients and affected areas.

Education, work status, marital status, and duration of HIV were not associated with the risk of deliberate attempts of HIV transmission. It is interesting to note that none of these is a behavioral covariate. That is, most of the factors

influencing the risk of deliberate transmission of HIV are behavioral factors that are closely associated with how patients perceive their disease, and are usually fueled by negative perceptions, self-perceptions, and fear of or stigmatization associated with HIV.

The most important limitations of our study were design, use of a convenience sample, and generalization. The cross-sectional design of this study limited our ability to adequately assess whether covariates selected in our analysis influence the risk of deliberate attempts to transmit HIV infection. A longitudinal study may help to establish causal relationships as well as measure the impact of interventions. For instance, although it is difficult to ascertain levels of HIV disclosure at a given point in time, a study that examined factors predictive of women's disclosure of an HIV-positive test result in Tanzania found that women's prevalence of HIV disclosure increased with time following counseling interventions.[21] Our study is also limited in the validity of PLWHA responses to the interview questions. These PLWHA had gone through the counseling sessions that taught them how to live positively with HIV. This knowledge might have motivated the PLWHA to please the interviewers in their response and consequently introduced (self-lifting) bias in the study. This means our study might underestimate the degree of PLWHA attempts of deliberate transmission of HIV infection.

The adequacy of the models used in this study might be limited by the small sample size that translates into low statistical power. For instance, because of the heterogeneity in the sample when low- and high-prevalence areas were combined, the first logistic model had very wide confidence intervals. However, as a result of homogeneity in the sample consisting only of patients from the high-prevalence areas, the confidence intervals were much smaller for the second logistic regression model. The results of our study may not be generalized to other populations of persons living with HIV. We only interviewed PLWHA who attended counseling sessions in the selected areas because it was the most convenient way to seek information on the sensitive subject of deliberate transmission of HIV. There are many more PLWHA who neither participate in counseling sessions nor disclose their HIV status, but who might be involved in attempts of deliberate transmission of HIV in a different manner than that examined in this study.

In summary, our findings suggest important variations in the risk of deliberate attempts of HIV transmission as a function of family rejection, perceptions of being a victim of deliberate infection, residence in an affected household, and gender in a cross-sectional sample of PLWHA. Gender inequalities in the risk of deliberate transmission of HIV require ongoing educational programs and new counseling approaches that are gender-sensitive to attain significant risk reduction. Coordinated educational programs for PLWHA and the public in general will be an important preventive tool against deliberate spreading of HIV infections in areas where negative perceptions (e.g., perception of being a victim of deliberate infection) and confusion

(e.g., living in an affected household) tend to predispose PLWHA to involvement in dangerous behavior. A longitudinal assessment of the risk of deliberate attempts of HIV transmission is highly recommended. Inclusion of important PLWHA and population factors in the longitudinal assessment will advance our understanding of the independent predictors of the behavior and provide means of evaluating the impact of educational and policy interventions.

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Notes

1. Albert et al., "Analysis of a Rape Case," 5918–24.
2. Mitchell, "Cypriot Sentenced for Infecting Woman," 422.
3. Engle, "It Oughtta Be a Crime?" 40–41; Mitchell, "Cypriot Sentenced for Infecting Woman," 422.
4. Albert et al., "Analysis of a Rape Case," 5918; *AIDS Policy & Law* 12, "Man Jailed for 30 Years for Having Unprotected Sex," 6; Engle, "It Oughtta Be a Crime?" 40–41.
5. *AIDS Policy & Law* 14 "Tennessee Woman gets 26 Years for Exposing Sex Partners to HIV," 90–92.
6. *AIDS Alert* 13 "Action Plans Needed for Willful Transmissions," 90–92; Elliott, "Criminal law and HIV/AIDS," 66–72.
7. Chalmers, "The Criminalisation of HIV Transmission," 949–54.
8. Barrett, "Criminalisation of HIV Transmission: For What Purpose?" 11; *Pacific AIDS Alert Bulletin* 12 "Zimbabwe to Criminalise the Deliberate Spreading of HIV," 15.
9. Wells, "Australia: Supreme Court of Western Australia Orders Retrial," 63–64.
10. National Conference of State Legislature, NCSL. *HIV—The Big Picture,* http://www.ncsl.org/programs/health/hivpict.htm (November 20, 2004).
11. See note 2.
12. Bennett et al., "Ignorance is Bliss?" 9–15.
13. Barrett, "Criminalisation of HIV Transmission: For What Purpose?" 11.
14. Barrett and Strode, "The Criminalisation of HIV Transmission: What Purpose Does It Serve?" 4.
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17. Smith Fawzi et al., "Factors Associated with Forced Sex," 679–89; Garcia-Sanchez, "Gender Differences in HIV/AIDS," 47–54.

18. Ciccarone et al., "Sex without Disclosure of Positive HIV Serostatus," 949–54.

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21. Antelman et al., "Predictors of HIV-1 Serostatus Disclosure," 1869.

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15

DEVELOPMENT AND ALTERNATIVE MITIGATION TREATMENT OPPORTUNITIES OF THE HIV/AIDS EPIDEMIC

Richard Beilock and Kaley Creswell

Despite years of struggle against the disease, UNAIDS' *Report on the Global HIV/AIDS Epidemic* concluded that "the scale of the AIDS crisis now outstrips even the worst-case scenarios of a decade ago. Dozens of countries are already in the grip of serious HIV/AIDS epidemics, and many more are on the brink."[1] If billions of dollars per year over a lengthy period of time were going into Africa as well as being spent by those on the continent for anything other than combating a sexually transmitted disease, all parties would view it as an opportunity to develop private business and advance these nations economically. The fact that it is for a sexually transmitted disease in no way diminishes that potential.

While the epidemic is global, it is currently most prevalent and its potential for spread greatest in developing countries. Sub-Saharan Africa accounts for nearly three-quarters of all those currently infected, hence, the discussion in this chapter will focus there. The next most severely affected region is the Caribbean, and there are indications that HIV/AIDS is spreading rapidly in South Asia and the formerly socialist nations of Eastern Europe and Central Asia. Reported infection rates in China are low, but many suspect they underestimate actual prevalence rates and that the risks of significant increases are high.

The picture is not entirely bleak. There have been more effective life-prolonging medicines developed, such as HAART; work continues to find a cure and immunization treatments; and cases such as Uganda and Thailand suggest that the progression of the disease can be stopped and, perhaps,

reversed. As the preceding quote from UNAIDS indicates, however, the stark, tragic reality is that mankind is losing the battle against HIV/AIDS. More resources are required, of course, and current mitigation and treatment approaches should continue. Indeed, it cannot be stressed enough that the ideas put forth in this chapter are not meant to condemn current approaches for combating the disease. Rather, the central proposition is that more resources merely to fund more of the same efforts would not be enough, certainly not cost-effective either financially or in terms of minimizing human suffering. Traditional approaches could be made more efficient through greater private-sector involvement. Moreover, traditional approaches should be augmented by new approaches that exploit the creativity and drive of the private sector to design and deliver products and services sufficiently attractive for client groups to adopt before societies are devastated and to continue to use after the storm has passed.

The reference in the title to the epidemic as a development opportunity may seem crass, even inhuman. It is not intended as such. On the contrary, this is a call to focus additional resources on the epidemic, to make it the concern of more than Ministries of Health and handfuls of bureaucratic NGOs. In societies where large numbers of individuals are at risk of sickening and dying from a preventable disease, reducing those risks (as well as lengthening and improving lives of those infected) is likely to rank among the best avenues for preserving and enhancing human welfare. That describes a business opportunity. To be profitable, however, demands must be effective; that is, there must be purchasing power. This frequently is a severe limitation in impoverished, developing nations. With regard to HIV/AIDS, the purchasing power problem is lessened by commitments of funds by their governments and international donors.

Moreover, even in the poorest societies, not everyone is poor, and the poor often have resources to commit if needs are sufficiently great and products or services sufficiently attractive. For local providers to thrive, the market should not be dominated by competition from more sophisticated, larger-scale offshore vendors. The offshore competition problem is mitigated, in part, by the nature of many products and services for disease prevention and treatment, which effectively require large shares of locally produced value added. Abetting this characteristic is the geographically dispersed clientele. The need to deliver and serve individuals in thousands of locations, large and small, magnifies the role of in-country distribution and marketing systems and, particularly when point of contact services or product modifications are required, tends to reduce advantages related to scale. Finally, there is stability. Even if a cure were discovered tomorrow, the impacts of the epidemic and needs for related goods and services would continue for years, if not decades.

The development opportunity aspect described in this chapter is a significant and positive side effect. The primary benefit and rationale for the proposed approach is its potential for saving lives and reducing human misery.

Current Approaches to Lower Infection Rates

For expositional ease, the discussion will focus on work to lower infection rates. The approach would also be applicable to treatments of those already infected. The fight against the HIV/AIDS epidemic is being waged primarily by governments and government-like NGOs, IGOs, and bilateral donors. A description of U.S.-funded programs is presented in figure 15.1. At the heart of these programs is behavior modification through education of individuals and strengthening of community commitments to promote prevention and treatment. Behavioral changes most typically sought are primarily those embodied in the ABC approach: Abstain—Be Faithful—Condomize.

These programs have been, and continue to be, of great value providing basic information, dispelling myths about the disease, and helping to destigmatize its victims. There is evidence that such programs have resulted in behavior modifications in some cases, but the strength and consistency of the link between these programs and reduced prevalence and the sustainability of gains remain unclear. Virtually all experts acknowledge that, even under ideal conditions, effecting the types of changes sought through these programs is an uncertain, difficult, and lengthy process. According to the *Economist*:

> Newspapers are full of advertisements warning against unsafe sex, and messages have been broadcast for so long that villagers call the illness the "radio disease." But after 15 years of public awareness campaigns to change sexual behaviour, the infection rate is still rising.[2]

Perhaps most disturbing—to the point that the full implications are almost always ignored—high prevalence rates and risky behaviors are found among groups with higher education levels and good access to information. This fact is starkly reflected in prevalence rates among medical professionals and

> Programs and projects aimed at combating the epidemic typically provide information on how HIV is spread—and on how it can be avoided—through the media, posters, lectures, and skits. Donor-sponsored voluntary counseling and testing (VCT) programs, where available, enable African men and women to learn their HIV status. Those testing positive are typically referred to support groups and advised on ways to protect others from contracting the disease; while the majority testing negative are counseled on behavior changes that will keep them HIV-free. The U.S. Agency for International Development (USAID) is currently supporting VCT centers in 10 African countries. AIDS awareness programs can be found in many African schools and increasingly in the workplace, where employers are recognizing their interest in reducing the infection rate among their employees. Many projects aim at making condoms readily available and on providing instruction in condom use. USAID is a major provider of condoms in Africa. Pilot projects have had success in reducing mother-to-child transmission by administering the anti-HIV drug AZT or Nevirapine, during birth and early childhood.
>
> Congressional Research Service

Figure 15.1. U.S.-funded programs to combat HIV/AIDS in Africa

educators. UNAIDS reports that "in the hardest hit countries, over one-quarter of the medical staff who are needed to help those living with HIV/AIDS are themselves infected with the virus."[3] McGeary notes that teachers in southern Africa have one of the highest group infection rates.[4] While there is some evidence that those with better educations and access to information about HIV/AIDS are more likely than others to adopt safer practices, high prevalence rates among groups with these characteristics suggest the link is not strong.

Nevertheless, perceptions are widespread among Africans and the assistance community that HIV/AIDS primarily is a disease of the impoverished. In part, this is due to the abilities of economically more-favored individuals to stay healthy longer by eating well and securing medications, and to cope with additional expenses and reduced work capabilities better than the poor. In part, it is due to efforts by middle- and upper-class individuals to conceal and deny to themselves and others the extent to which they have been affected by the disease. The perception that HIV/AIDS is a disease of the poor is unfortunate in two regards. First, it results in the misallocation of resources devoted to combat the disease. Second, at least from an economic standpoint, it makes the disease appear less important than is actually the case and, as a result, it gets less attention.

Culture: Part Reason, Part Excuse

There is considerable frustration in the assistance community about the often low and inconsistent degrees of success HIV-mitigation programs realize in altering behaviors. Why are individuals so slow to adopt risk-reduction approaches, particularly those who live in areas with high infection rates? Frequently, failures to embrace the offerings and advice of assistance providers are ascribed to culture. McGeary notes:

> Kennedy Fugewane . . . sits in an empty U.S.-funded clinic that offers fast, pinprick blood tests in Francistown, Botswana. . . . "If a man comes here, people will say he is running around" says Fugewane, though he acknowledges that men never do come. "If a woman comes, people will say she is loose."[5]

The *Economist* has also weighed in on this issue:

> In Botswana, some 300,000 adults are infected. Of these, 300,000 could benefit from HAART. . . . But only 9,000 people have requested it, because of the shame they suffer if they admit that they are infected.[6]

The extent of the stigma in African cultures regarding HIV/AIDS was perhaps epitomized in the 1998 stoning to death of Gugu Dlamini, a woman from Durban, South Africa, who admitted publicly that she was HIV positive. Certainly culture and habit are important factors that any program should take into account. But when there are compelling incentives, cultures adapt

and people learn. Gugu Dlamini's memory is now honored by many in South Africa,[7] and the 9,000 now requesting HAART in Botswana is eighteen times the number who did so a year before.[8]

Traditional, conservative, male-dominated cultures and habits can be impediments to success, but they may also be used as excuses for programmatic failures and codes for indicating these people are somehow different, irrational, and inferior. If culture or habit is to blame, while the message and product or service are right, it is reasonable to keep repeating the message and pouring on the product or service in the hope that people will become enlightened. Often, this is exactly what is done. As the *Economist* indicates, "The use of condoms is encouraged—one slogan advises 'Stay alive and condomise'—and the government says it gave out 12 m of them last year". But studies suggest few are used.[9] Virtually anyone who has been associated with HIV/AIDS assistance efforts in sub-Saharan Africa has seen the same organizations conducting questionably effective condom distributions, managing woefully underutilized testing facilities, while at the same time putting forth plans to build more.[10]

This, too, is a problem of culture, though of a different sort. In the private sector, if a product or service is not "selling," the response is not to declare victory and supply more. Rather, it is determined that if promotions poorly represent the product or service or if the attributes of the product or service are insufficiently attractive to justify their cost for potential clients, the problems are fixed. In other words, in the culture of business, people cannot be wrong but promotions and product or services can. In the culture of bureaucracies—government, NGOs, IGOs—people may not understand their own interests and have to be told what they need repeatedly. Free from the discipline of the bottom line, until people truly come to their senses, it suffices for government agencies or government-sponsored NGOs to report the number of condoms distributed, regardless of use, and the number of contacts at clinics, regardless of quality or intent. The bureaucracies may be correct and people will eventually adopt their offerings, though only after suffering high human and financial costs. Business would not be so patient and, in this case, patience is a costly virtue.

Explaining the Absence of the Private Sector

Through international assistance and the governments of affected nations and individuals who are affected or at risk, billions of dollars are flowing into the fight against HIV/AIDS. Yet, with the exceptions of pharmaceutical companies and some businesses adopting traditional mitigation/treatment programs to protect their own employees, in developing/transition countries there has been virtually no involvement by the private sector. This is almost certainly due to the sensitive, that is, sex-related, nature of the crisis leading governments and assistance organizations to insist on high levels of control

and to require, explicitly or implicitly, that they supply the assistance themselves or the providers be nonprofit NGOs. In other words, the for-profit elements of the private sector have not been given entrée to the work to the extent they would for, say, infrastructure projects.

Another factor dampening private sector involvement is the widely held view that HIV/AIDS is a disease of the poor. When this view is coupled with governments and assistance organizations closely controlling subsidized assistance to the poor, there appear to be few opportunities for the private sector.

The Epidemic *as a* Development Opportunity

The balance of this chapter will describe an alternative philosophy, more inclusive of the private sector, for addressing the epidemic. We argue there is potential for private sector vendors to improve delivery of current programs, as well as to create and operationalize alternative approaches. To demonstrate possibilities for alternative approaches, three examples of potential services are presented. It should be stressed that the feasibility of these specific examples, as presented, is not of central importance. Rather, they are presented primarily to show there is scope for "thinking outside the box" to develop new approaches to HIV/AIDS mitigation. This, coupled with the proposition that the private sector excels at such thinking and acting upon that thinking, is a key motivation for greater openness to private sector participation. Finally, a business model is described for including the private sector in a way that maintains necessary controls for governments and donors.

Combating HIV/AIDS requires the provision of vast quantities of goods and services. Providing these can and should be a significant business and development opportunity. Indeed, in at least three respects, fighting HIV/AIDS is an ideal development opportunity. First, there is assured effective demand. It is a near certainty that, for many years to come, the governments of the affected nations, international donors, and affected individuals will devote significant and increasing funds to secure goods and services for prevention and treatment. Second, protection from external competition can be developed. The nature of the goods and, in particular, services is such that having local providers for much of the value added is normally essential. Third, there is great potential for small to medium-sized businesses.

Goods and services must be supplied across all populated areas, which suggests the need for small, local providers. Given the technical requirements of some goods and services, and the potential economies related to the procurement and transport of equipment and supplies, small providers may be associated with a larger entity, perhaps under a franchise. The public health nature of the effort and that the large bulk of expenditures are from governments, international NGOs, and IGOs indicates the appropriateness of

regulatory or other oversights but not the virtual exclusion of the private sector.

Client Rationality

Businesses depend on their customers having identifiable wants and on acting rationally, at least predictably, to satisfy them. For Africans, particularly those in nations with high HIV-prevalence rates, to resist adopting safer practices may suggest irrationality or, at least, rigid cultural barriers. But even without reference to culture, there can be rational explanations. The costs of the radical changes in lifestyles proposed by programs such as ABC may not appear justifiable under some conditions. For example, Bloom reports that at current HIV-prevalence rates, a fifteen-year-old boy in Botswana has nearly a 90 percent chance of becoming HIV positive during his lifetime.[11] That boy likely has few sources of pleasure other than sex, at least relative to boys in economically more-favored countries, and he faces other health threats, such as river blindness, malaria, and tuberculosis. With a near-certainty of HIV infection as well as other dangers, it might be irrational for that boy to deny himself the certainty of pleasure now in return for a lowering of risk related to HIV/AIDS to levels that would still be extremely high: in other words, too much cost in return for very little benefit. To immediately assume irrationality or cultural constraints is unnecessary and possibly ethnocentric. The boy, like any human, seeks both pleasure and safety. Balking at a proposed trade off only indicates that those terms are unattractive, not that the individual is irrational or otherwise flawed or that better terms would be seen as unacceptable.

But even without better terms, given enough time, there can be the appearance of programmatic success. There is great merit in approaches such as ABC, and those adopting these philosophies enhance survival probabilities. Boys rejecting the terms of such programs will tend to die in larger numbers than their more timid, accepting counterparts. As the share of the timid in a society increases, infection rates will fall, but only after the society has endured catastrophic losses.[12] In other words, the "market share" of a beneficial program acceptable only to a portion of the society would increase over time due to the removal of non-adopters. This, in part, may explain what occurred in nations such as Uganda. Obviously, a more attractive program would lower losses before infection rates peak and decline. Moreover, in the long run, the less attractive a program, the higher the level prevalence rates are likely to cycle around or stabilize at.

Improved Quality and Efficiency for Currently Offered Goods and Services

Bureaucracies may accept high human and economic losses as inevitable, and accept slow improvements over time (as the non-timid die). In its never-ending

drive to increase the bottom line, the private sector would not be as patient. Relative to the public sector, the general superiority of the for-profit private sector in providing efficient, high quality goods and services is well known. For this reason and even without altering approaches for combating HIV/AIDS, greater openness to private sector involvement is warranted.

Expanded Range of Goods and Services: Three Examples

Perhaps the most promising aspect of increased private sector involvement in combating HIV/AIDS is the potential for using that sector's innovative drive to create and operationalize an expanded array of goods and services. Because of understandable political and bureaucratic pressures, programs designed by governments and nonprofit NGOs, while clearly beneficial and necessary, have tended to be narrowly focused and conservative. Prevention programs are particularly poor in this regard, involving little more than calls for abstinence or fidelity, condom use, and—when available—drugs to lower, though not eliminate, HIV-transmission rates from mothers to the unborn and nursing infants.

To convey the potential for alternative prevention and treatment strategies, three potential services are discussed. It should be stressed that the viability of the specific examples is not of central importance; rather, the examples are presented primarily to demonstrate there are possibilities beyond and complementary to traditional approaches that could be pursued. That pursuit would be facilitated by governments and donor groups taking a more business- and development-friendly stance to the fight against HIV/AIDS.

HIV-Status Service

Rethinking Motivations for Testing: Good Citizen or Desirable Service?

In many areas of Africa, HIV testing is readily available and free. Yet there are thousands of underutilized facilities[13] and millions of individuals unsure if they carry the virus. Those consenting to tests are applauded as being wise and civic minded because, if they are HIV positive, they will be better able to avoid infecting others and to seek care. In other words, with the traditional approach, the primary inducements to being tested are to (1) deny yourself pleasure in order to avoid infecting others who will live on after you die, and (2) to obtain medicines (when and if they are available) that might prolong your life, though perhaps only marginally and in misery. In an ideal world, both of these should be sufficient motivators for testing. As the nearly empty testing facilities attest, the reality is quite different.

There is another important and as yet almost entirely unexploited aspect of testing that could attract those at risk to submit to testing and even to pay for the privilege—to facilitate greater access to having sex. From clothing to anti-acne medicines to perfumes to cosmetics and cosmetic surgery, virtually every human being devotes large proportions of their income to goods and services designed to increase sexual attractiveness. It is impossible to imagine a factor less conducive to being sexually attractive than the knowledge of or suspicion by potential sexual partners that one has a deadly sexually transmitted disease. But the reverse also is true. That is, it is impossible to imagine a factor more conducive to being sexually attractive than the knowledge of potential sexual partners that one does not have such a disease when others may. This could be a powerful motivator for testing. For someone wishing to be sexually active, being able to demonstrate that she or he is HIV negative and to have a potential partner do likewise would be of considerable value.

The key element of this argument is that, without forever abstaining, being faithful, or using condoms—behavior modifications many are unwilling or unable to make—it would be possible to achieve reasonable levels of safety. However, the approach requires a modification in underlying philosophies regarding HIV/AIDS mitigation. The current approach is against risky behaviors and essentially all intercourse, particularly when unprotected and (or) outside the confines of that approved by conservative societies (that is, within marriage and (or) by fully mature adults in long-term, monogamous relationships). But the business of HIV/AIDS mitigation should be to reduce only those behaviors that risk HIV infection.[14] Sex among HIV-negative individuals, regardless of their ages, genders, or marital statuses, is not risky behavior.

If the HIV-negative status of sexual partners is certain, abstinence and precautions such as condoms are entirely unnecessary for the sake of preventing infection. As uncertainty increases, overall risk levels can be reduced through greater use of abstinence and precautions. To the extent that having and being able to demonstrate an HIV-negative status becomes a device for being more attractive sexually, individuals will value that status more and, as a result, adopt lower overall risk levels. In other words, given the level of risk inherent in a sexual act,[15] promoting HIV-negative status as a device to enhance sexual attractiveness would increase the use of safe sex practices.

A Commercial Testing Service

Consider the feasibility of an HIV-status service that provides testing and, on demand from the client, would make that individual's HIV status and date of last testing available, but only to those people selected by the client. The key difference between this service and testing services now common in Africa would be the emphasis on providing clients with a secure, replicable, and verifiable means of accessing and sharing his or her HIV-status information. Different methods for this may be used depending upon the circumstances.

This could range from the Internet or ATM-like machines in urban areas to telephone services, possibly automated, to photo identity cards. Naturally, security and the potential for fraud would have to be dealt with, probably through passwords and difficult-to-copy printing technologies.[16]

The system would not be foolproof because an individual might have become infected since his or her previous test. Moreover, there can be "windows" or lags between when an individual becomes infected and the HIV+ status is detectable.[17] Nevertheless, such a system would be a tremendous improvement over the current situation.

Considerable effort would be needed to identify markets and devise appropriate delivery and pricing systems. In some markets, such as among young professionals in large urban areas, the HIV-status service could use sophisticated information delivery methods—ATM-like machines, automated phone services with security codes, and even the Internet—and be marketed much like any other commercial service. Indeed, there may be levels of service (and charges), depending upon the frequency of testing or sophistication of the testing technology. At the other end of the spectrum, among the rural poor, the service would have to be subsidized and information delivery systems would be much lower tech; perhaps ID cards and non-automated phone systems. In other instances, participation might be mandatory, such as for sex workers.

The U.S. military and those of other nations sometimes provide STD testing and inoculations for sex workers in instances where their personnel may be located away from home, such as in liberty ports. The sex workers are provided identification, certifying that they have been tested. All other things being equal, rational clients prefer those with STD-free certification.

The Breast-feeding Debate

The other two examples address the issue of mother-to-child transmission of the virus through breast milk. The UNAIDS 2002 statement and two other quotations on the subject are presented below and then discussed to convey a sense of complexities regarding the problem in developing nations.

> In the absence of any intervention, about one-third of HIV transmissions from mother to child are attributable to breastfeeding. It is also increasingly clear that breastfeeding undermines the protective effect of antiretroviral treatment to prevent mother-to-child transmission of HIV. The UN Interagency Task Team on Mother-to-Child Transmission of HIV recommends that when replacement feeding is acceptable, feasible, affordable, sustainable and safe, HIV-infected mothers should avoid all breastfeeding. Otherwise, exclusive breastfeeding is recommended during the newborn's first months of life.

Most countries with a national policy on HIV and infant feeding follow the UN guidelines, but adapt them according to local resources and conditions. The best policies are those that offer choices to mothers. In Botswana and Côte d'Ivoire, as well as in a number of pilot sites in South Africa, more than 70 percent of women choose replacement feeding when counseled on the various infant-feeding options. The women are provided with free formula. In Brazil and Thailand, all HIV-positive women are advised not to breastfeed and are offered free formula.

Unfortunately, replacement feeding is not a viable option in many low- and middle-income countries. The vast majority of women breastfeed their children, either by choice or because they have no safe, acceptable or feasible alternative. Even when breast-milk substitutes are provided free of charge, serious obstacles may be present, such as lack of safe water and sanitary conditions, confusion as to appropriate use, and stigma from family or community due to association of formula feeding with HIV infection.[18]

There are cultural and even ethnocentric elements to the debate. Some argue that the promotion of alternatives to breast-feeding for the specific purpose of eliminating HIV transmissions will be interpreted in Africa as evidence of the overall superiority of alternatives. As Limson puts it: "It [providing free formula to HIV positive mothers] destroys the culture of breast-feeding by sending a strong message to all mothers, HIV positive or not, that it is better for the child to be bottle-fed than to be breast-fed."[19] Others worry about the ability of poor African mothers to prepare formula safely and correctly. According to Gelooin, "In a country where 60 percent of the women are illiterate, do not have access to clean water, and bottles are imported and expensive, it would be foolish to even begin to tell infected mothers to formula feed. They will kill their children by wrongly preparing or contaminating the formula."[20]

The first paragraph in the preceding UNAIDS statement indicates the magnitude of the problem. There is debate about the transmission rate but that it is significant is certain. Indeed, the UNAIDS assertion that about a third of mother-to-child transmissions are through breast milk tends toward the conservative end of the spectrum of estimates. For example, a study in South Africa found that for HIV-positive mothers, the infection rates of their infants were 17 percent when formula was used and 38 percent with breast-feeding.[21] The paragraph also notes the counterproductive nature of breast-feeding when antiretroviral treatments are given to the mother. With regard to antiretroviral treatments, increasingly zidovudine or nevirapine are used to lower mother-to-child transmission rates both during delivery and through breast milk. In lowering viral levels, particularly in the mother's bodily fluids, including breast milk, these drugs have been successful in lowering transmission rates by as much as half.[22] Certainly, such results are welcome, and when no other options are available these treatments should be employed. Extrapolating from the South Africa study results, however, this still means that approximately

10 percent of the HIV positive mothers taking these drugs pass the virus to their infants through their breast milk.

The second paragraph discusses programs in which HIV-positive mothers and prospective mothers are advised about trade-offs between breast-feeding and formula.[23] Significantly, note that 70 percent of women in these programs in Botswana and Ivory Coast decided against breast-feeding. This suggests that despite cultural factors often cited as reasons for nonacceptance, when offered a viable option to save their children, African women will do so in droves. Again, cultural factors are important and should be taken into consideration in any program, but most aspects of human behavior, such as a mother's devotion to her child, are universal.

The final paragraph of the UNAIDS citation, as well as two quotations later in the chapter, discuss problems with free formula programs. These are: cultural barriers, that is, traditions of breast-feeding [both as a barrier to adoption of formula and as something that should be protected from the threat of formula] and stigmatization when formula is used due to its association with HIV; confusion about proper use of formula; and unavailability of safe water and sanitary conditions to prepare formula. Culture as a barrier has already been addressed. Moreover, as the UNAIDS citation indicates, in two countries offering free formula there was a 70 percent participation rate. Certainly, cultural and linguistic factors in communications should be taken into account to ensure clarity about the use of formula, but arguing against formula because Africans will interpret its use specifically to prevent mother-to-child transmissions of HIV as evidence of the overall inferiority of breast-feeding is ethnocentric and demeaning to Africans. Opponents of infant formula cite confusion regarding usage as a reason to promote breast-feeding to HIV-positive women. Perhaps the problem is due to poor training of assistance workers charged with information. Improving the management (as well as the incentives) of assistance workers should be a tractable problem. Some organizations justify breast-feeding on the grounds that the peoples of these nations cannot follow directions. Assertions of this nature smack of ethnocentrism and have been largely disproved. For example, the results of several recent studies indicate that, with regard to often complex regimens of medicines to treat HIV/AIDS, between 80 and 85 percent of Africans take their medicines exactly as prescribed, compared with around 60 percent of patients in rich countries.[24] The final impediment, the unavailability of safe water or sanitary conditions, sadly is true in many cases.

The cost of formula sometimes is, or is perceived to be, an important issue. Certainly, there are millions of families in Africa for whom unsubsidized purchases of formula would be a hardship. For example, enough formula for an infant for one month in Zambia would cost about $40, and the average Zambian family earns less than $100 per month.[25] In such instances, support would be needed for the purchases. But whether the funds are from donors, NGOs and governments (DN&G), or the families, the potential for programs

using formula seems evident. For example, the South African study cited above by UNAIDS indicated that the infection rate was 17 percent for infants of HIV positive mothers who used formula, compared with 38 percent when those mothers breast-fed their children. Using the Zambian cost estimate for formula and assuming six months of either breast-feeding or formula, $1,143 of formula is needed for every infection prevented.[26] In addition to the cost of the formula, impoverished families are unlikely to have access to safe water or sanitary conditions for mixing formula. Therefore, some means for ensuring formula is prepared safely and correctly would be necessary.

It should be quickly acknowledged that $1,143 per infection prevented for the formula plus costs associated with assuring sanitary preparation is exorbitant compared with estimates as low as $138 per infection avoided for nevirapine to reduce transmission rates during birth as well as through breast milk.[27] Nevirapine does reduce HIV-transmission rates through breast milk, perhaps by as much as half, but it does not eliminate it. So, a combination of nevirapine to lower the probability of transmission during birth and an alternative to breast-feeding, such as formula, would offer the best protection for infants,[28] even though nevirapine-resistant strains of HIV have been identified in some women's breast milk.[29] If such strains become increasingly common, the importance of breast-feeding alternatives will increase.

Several lessons can be drawn from the above. First, transmission of the HIV virus through breast-feeding is an important problem, particularly in situations such as in Africa where the preponderance of those infected are women and fertility rates are high. Second, programs offering viable feeding alternatives can be highly successful because, contrary to commonly held perceptions regarding culture and the poor, the large majority of African women will accept such alternatives, and Africans are as adept at following medical instructions as those in rich nations. Third, ensuring sanitary conditions and safe water for formula preparation is essential. Based upon the above, two examples are offered of potential alternative feeding programs.

Formula Preparation Services

HIV-positive mothers can pass the infection to their babies through breast milk. In developed countries, HIV-positive mothers are always counseled to use formula. In developing countries, even with the same HIV-positive diagnosis, a mother has limited options. Formula is one option, but because of concerns over the water quality and temptations to dilute the formula, breast-feeding is still portrayed as the best source of nutrition. Medications, such as nevirapine, are another option. In recent years, there have been limited programs to supply nevirapine, a drug that lowers, but does not eliminate, the risk of infection through breast milk. In return for being tested and perhaps

learning that she will die, a mother in a developing country is offered choices which may or may not improve the survival prospects of her child.

Consider a formula preparation service with water purification capabilities, sanitary preparation areas, and tamper-proof bottles, that is, bottles that cannot be opened without leaving evidence. Depending on the circumstances, formula could be commercial formula, familiar in developed nations, or modified cow or goat milk.[30] HIV-positive mothers could receive filled bottles in return for untampered empties. Clients could have an amount of milk consistent with the dietary needs of their unweaned children.

It should be noted that this system would make cheating difficult, though not impossible. For example, an individual could suck milk out of bottles, spit it into a bowl, and dilute it. The potential for this would depend on the sizes of the bottles and pricing of the service. If this were viewed as a serious concern, mothers might be required to be monitored while they feed their children. It seems unlikely, however, that the value of the milk would be sufficiently high to warrant such behavior, particularly if it is known that it places children at risk.

Wet Nurse Services

While sometimes listing wet nurses among possible substitutes to breast-feeding, rarely do health ministries or assistance organizations promote the practice. Indeed, commentaries on wet-nursing tend to be cautionary, if not clearly negative, as per the following statement:

> **Wet-nursing.** Wet-nursing in the family context is traditional in some cultures. There is a risk of HIV transmission to the infant if the wet nurse is infected, and a possible risk of transmission to the wet nurse if the infant is infected. If a family considers this option, both mother and wet nurse should be fully informed about the risks. The wet nurse should be offered counseling and testing, and be able to practice safe sex to remain HIV negative while breast-feeding the infant.[31]

Certainly, the precautions suggested are prudent. However, wet-nursing has been put forth as a possibility only when families might already be employing this practice, rather than as an approach to be encouraged and even (re-)introduced into societies. Instead of treating wet-nursing as a less-than-desirable alternative, with proper management it could become a high-quality service. From economic, social, and development perspectives, wet-nursing has the following advantages:

- virtually all value added is locally produced, with few requirements for importing inputs;

- creates employment opportunities for a potentially large group of individuals;
- eliminates issues related to availability of safe water, sanitary conditions, and storage facilities for producing and holding the alternative food source;
- low technology; and
- the HIV-negative status of a wet nurse becomes an economically exploitable asset, which encourages that individual and her spouse to adopt safer sexual practices. The individual and her family have added incentives to ensure she receives adequate nutrition.

A less quantifiable, but potentially important advantage of wet-nursing could be increased understanding of and consideration for the HIV/AIDS victims in communities. Wet-nursing would establish a venue for interaction and mutual dependence. Those employed as wet nurses would owe their employment to the fact that some mothers are infected. Wet nurses would discover, in one of the most intimate ways possible, that the infants of the infected mothers are like their own and experience the devotion and courage of those mothers. And for the infected mothers, the wet nurses would offer their babies life.

As stressed by UNAIDS, ensuring that both the wet nurse and the child are HIV negative is vital. A testing service could be established for this (if one does not already exist). That service, or another firm, could arrange matches between wet nurses and infants, ensure the wet nurses regularly update their testing, and provide them with information regarding safe sexual practices and nutrition.

Operationalizing a Private Sector and Development-Friendly Approach to HIV/AIDS Mitigation

An important part of this call for more private sector involvement in combating HIV/AIDS is to encourage DN&G to be more open to permitting and using private sector vendors because of their potential for providing high value at a reasonable cost as well as the economic and development benefits. This is not meant to imply that such vendors are never used. For example, private stores are often used as outlets for so-called social marketing of condoms. The use of the private sector,[32] however, with regard to most aspects of HIV/AIDS prevention and treatment in developing nations is markedly less than for virtually any other type of project.

Expanded private sector involvement in the struggle against HIV/AIDS would complement and alter DN&G involvement but not replace it. Indeed, for private sector involvement to realize its full potential, it is vital for DN&G to be deeply involved in the struggle against HIV/AIDS. Reasons for this include the following.

- The reality that, for the foreseeable future in sub-Saharan Africa as well as other developing nations, the large majority of funding will come from DN&G. As such, in most cases private sector providers would be paid from DN&G funds, either directly or through vouchers or other payment vehicles provided to intended beneficiaries.
- Legitimate government interests in assuring that this health threat is dealt with expeditiously, acceptable health-care standards are maintained, and assistance is available to all economic classes and across all regions. There is potential for substandard, even fraudulent goods and services; inconsistent qualities and availabilities, particularly of technically complex goods and services, across regions and income groups; and socially unacceptable pricing schemes in all private sector involvement.
- The importance of continuing to provide information about the disease as a public service and maintaining statistics regarding the disease. While it may be possible, in some cases, to hire private sector vendors, the public sector would be the source for both the payments and the demands (i.e., the public sector, in effect, acts as the beneficiary on behalf of the society as a whole).
- The best providers may include foreign firms. Regulating activities of such firms may be viewed as imperative from political, economic, or cultural standpoints.

For some functions, such as compiling statistics, the roles of DN&G may be largely unchanged. For others, DN&G would primarily become monitors and regulators rather than direct providers of goods and services.

We now turn to a potential model for ensuring effective control by DN&G at reasonable costs, providing for necessary technical skills, promoting development of local firms, and encouraging competition and flexibility.

Franchise Concession

As indicated above, goods and services related to the struggle against HIV/AIDS may require considerable technical knowledge on the part of suppliers and have to be delivered across all areas of a nation. High technical requirements, particularly in a developing country, suggest the need for a larger firm, possibly from another nation. Such a firm also would be needed, in most cases, to handle logistics and monitor performance across geographically dispersed outlets where the goods and services are provided to clients. Many of these outlets would most likely be small because of high proportions of people living in sparsely populated rural areas, mobility constraints among client groups, and the labor intensive, personal nature of some services that would tend to favor smaller-scale outlets.

For some goods and services, there may be hundreds or even thousands of outlets. Having one firm directly managing these outlets could prove difficult. One source of such difficulties is the sheer complexity of overseeing the internal workings of thousands of geographically dispersed outlets, which may have considerable variations with regard to size, technologies employed, and the cultures and economic conditions of their clientele. Under such conditions, much of the operational responsibility would have to devolve to local managers. To the extent that the incentives of those managers vary from those of the parent company, principal–agent problems can arise. And having a single, distant firm operating local outlets that offer socially and culturally sensitive services could dissuade potential clients and reduce the potential for adapting to local needs within the bounds necessary to ensure maintenance of quality standards.

For these reasons, a franchise-like structure seems appropriate, with the franchisees being locally owned outlets.[33] An outline of franchiser, franchisee, and DN&G roles is presented in table 15.1 and discussed below.

The Franchiser

- Directly operates or oversees warehouses and other facilities necessary to serve outlets for which there are significant economies of scale and (or) technical requirements may exceed local capacities.
- Handles logistics between the centralized facilities and individual outlets, including delivery of supplies from central locations within the country as well as imports.
- Provides franchisees with equipment and technical or managerial procedures necessary to provide the good or service.
- Monitors performance.

The Franchisee

- Interacts directly with client groups to provide the goods or services.
- Is allowed to vary noncritical aspects of the goods or services subject to approval by the franchiser.

Franchiser as Provider of Small to Medium Enterprise Assistance

As would be true for any type of franchise in any part of the world, the franchiser would supply its franchisees with the equipment, input, and technology directly related to its products and services. Franchisers may also offer their franchisees some general assistance regarding management, accounting, marketing, and such. In developed nations particularly, these more generic franchiser offerings are of secondary importance and may be totally absent. However, with regard to the use of franchises for HIV/AIDS mitigation and treatment in the countries of sub-Saharan Africa (or other developing

Table 15.1. Summary of franchise approach for HIV/AIDS mitigation

Roles	Functions
Franchiser functions	Select and contract with franchisees Oversee contracts between franchisees and other entities, such as agreements with existing HIV-testing services Provide franchisees with: Technology & training re: • Technical aspects, such as HIV testing, data storage/retrieval, formula preparation/storage, water purification, etc. • Management & marketing Supplies Monitor performance
Franchisee functions	Operate outlets In conjunction with franchiser, determine best technologies for providing the service and for monitoring client health and compliance with program requirements
Donor, NGO, and (or) Government functions	Select firm to have the concession to be the franchiser Establish performance standards, including technical minimums, geographic areas, eligibility requirements for clients, pricing restrictions, and payment methods Monitor franchise performance Periodically renew the concession or solicit for a new concessionaire. The choice between renewal or re-bidding the concession may depend on the incumbent realizing contractually stipulated performance thresholds giving it the right to be renewed
Complementarity with traditional HIV/AIDS and development programs	Franchiser or franchisees may contract with existing HIV-testing services and (or) these services may, themselves, become franchisees. The franchise's work and that of traditional HIV/AIDS information programs would be mutually reinforcing. In effect, residual claimants on returns across the entire system, franchisers would have incentives to assure the success of their franchisees. As part of this, franchisers would want franchisees to have access to information, training, credit programs, etc., which would facilitate adherence to sound business practices. When existing [traditional] programs are available to promote small to medium-sized businesses, franchisers would have incentives to encourage their use
Comments	The choice of technology, approach for interacting with and overseeing clients, and compensation levels and sources would depend on local economic, cultural, and

Table 15.1. (*continued*)

Roles	Functions
	physical conditions. Subject to standards stipulated by DN&G, franchisers would develop alternative approaches from which franchisees could select and adapt. By taking note of these adaptations, franchisers would add to the menu of alternatives available to future franchisees
	In some instances, clients will be able to pay the full cost of the services. In others, DN&G will provide partial or full subsidies. The mechanisms for such transfers (e.g., vouchers to clients, direct payments to franchiser, etc.) would depend on the type of service and local economic or cultural factors

nations), giving business assistance to its franchisees will be an important part of a franchiser's functions.

Because franchisers share in returns to franchisees, it is in their interests to ensure franchisees understand and follow sound business principles and procedures. Naturally, it is in the best interest of franchisees to do so. The coincidence of incentives, coupled with their knowledge of the enterprise, make franchisers ideal purveyors of management and marketing expertise. This is not meant to imply that franchisers would supplant traditional small to medium enterprise assistance efforts. Indeed, franchisers would have cost-saving incentives to encourage franchisees to use traditional SME assistance services, rather than supplying these services themselves. As the point of having franchisees acquire business skills to enhance their bottom lines, the franchiser would be motivated to ensure that the assistance sought is relevant and that the lessons are understood and incorporated.

DN&G Control

For DN&G, control would be primarily through regulation of and agreements with the franchiser. Certainly, DN&G could, and in most circumstances would, also do some monitoring of outlets, but the existence of the franchiser would relieve DN&G from the primary, day-to-day burden of reaching out across all sites. Through the franchiser, DN&G could effect system-wide changes.

The right to become the franchiser could be handled as a concession. For a nongovernment entity, such as an international donor, the equivalent arrangement would be an exclusive contract. For exposition simplicity, only concessions will be discussed.

Over some geographic area, perhaps even the entire country, and for some functions, the concession should be exclusive. Exclusivity would normally be desirable, at least in the initial stages of a program, because revenue-generating potentials may be low and financial risks high, particularly in the beginning.

Exclusivity—the conveying of monopoly rights—increases a firm's revenue-making potential and reduces risks. Having greater assurance regarding revenues can be particularly important when the franchiser must make investments to develop or expand the system. Second, scale considerations may make having one provider cost effective. Finally, the franchiser acts both as a supplier and as DN&G's agent vis-à-vis the franchisees. Having a single agent within a geographic area helps ensure consistency and simplifies DN&G oversight.

Exclusivity need not be unduly anti-competitive. First, concessions would be for finite time periods. If a concession continues beyond the contracted period, the incumbent franchiser would have to compete with other bidders to continue.[34] Second, when franchisers have to make investments to develop or expand systems, a period of exclusivity may be viewed as akin to patents or other agreements designed to allow providers time to recoup the cost of contributions, which will subsequently devolve to more general usage. Indeed, a franchiser may be contractually obligated to train other entities to use their systems after the contract period.[35] Third, in return for an exclusive contract for providing upstream services, a franchiser may have limits on its ability to own and operate outlets directly. Ideally this would lead to the realization of upstream scale economies and at the retail (i.e., outlet) level, an atomistic, competitive structure. Fourth, depending on the nature of the service, the proportion of all value added performed by a franchiser may be small. That is, de facto, the primary function of a franchiser may be its role as DN&G's agent. Fifth, as the exclusive upstream supplier, a franchiser could extract monopoly rents from its franchisees. The concession could stipulate limits on the franchiser's ability to do so. Finally, as programs are successful and as the revenue-generating potential and pool of qualified, interested potential franchisers expands, exclusive rights may be granted over smaller areas or franchisers may be allowed to compete directly (exclusivity may be eliminated).

The contract period and geographic extent would depend upon several factors, including:

- the amount of time and investment needed to establish, expand, or upgrade a system;
- the revenue generating potential of the activity for the franchiser—t should be noted that this might differ from the revenue generating potential from the clientele as the system may be subsidized, entirely or in part, from government or donor sources; and
- economies of size regarding franchiser functions.

Services required would be specified, along with minimum performance standards, employment goals, pricing parameters, etc., and bids sought. Periodically, bidding would be reopened and concessionaires could be removed by mutual consent or if performance levels are unsatisfactory. It is important to note that

switching to a new concessionaire (i.e., franchiser) would not necessitate changing the local firms (i.e., the franchisees). In this way, DN&G could effect needed changes without negatively impacting the local firms.

Incentives

For private sector involvement to be advantageous, it is of paramount importance that there are profit-making incentives consistent with individual beneficiary and overall societal goals. These incentives should be taken into account when drafting the concession agreement (including, if applicable, its stipulations regarding franchiser–franchisee agreements). In addition, DN&G should have rights and opportunities to monitor adherence to the conditions and to exact sanctions, up to and including contract termination, if there are shortfalls. Moreover, agreements should provide for adjustments as underlying conditions change.

Developing an appropriate and balanced system of rewards and penalties is a crucial and potentially complex requirement, but it is almost always feasible and need not be onerous, for two reasons. First, contracting for goods and services is done all the time, both among private sector entities and by governments with the private sector. The public health and public interest nature of the work may require special restrictions by or payments from governments or donors, as is commonly done when governments grant concessions or licenses for private sector operators of hospitals, utilities, transit systems, railroads, highways, and prisons. Second, in some instances governments will be able to use the discipline of the market instead of or in addition to their own monitoring and judgment. This is particularly true to the extent beneficiaries have both choices among vendors and purchasing power, either from their own resources or vouchers.

If a concessionaire is certain or believes there is a significant possibility of nonrenewal, as the contract period approaches its end, the concessionaire may become increasingly less willing to make new investments in and to maintain facilities under its control and to ensure high and consistent quality of services. To compensate for this, there can be a combination of sticks, that is, enforced contractual obligations, and carrots, for example, points toward renewal based upon end of contract performance and compensation (perhaps paid by the next concessionaire) for the present value of improvements made. Of the two, carrots are more important because the ability to sanction a concessionaire declines as the end of the contract period approaches.

Concession Examples

The three examples of potential services, discussed earlier in this paper, will be employed to illustrate how concessions might be structured as well as

complementarities between such efforts and traditional HIV/AIDS mitigation and treatment programs.

HIV-Status Service

The HIV-status service (HSS) is intended to provide clients with a secure means of granting and controlling access to information about his or her HIV status. The service would have two main components. First is the HIV Testing Service. The technical aspects of operating a testing service are well known. Also, as noted earlier, many testing facilities already exist and new ones continue to be established throughout Africa. In all too many cases, they are underutilized. Rather than replicating these efforts, when an already established testing facility exists, the HSS could contract for testing of its clients. Indeed, existing testing services might become outlets. Having testing centers associated with the HSS could have the added benefit of lowering stigmas associated with going to testing centers because an individual could be getting tested because he or she is convinced there is no problem and wants to use the HSS to attract and reassure sexual partners and not just because an individual believes he or she might be infected.

The second component is the Information Retrieval Service. The heart of the service would be providing clients with control over access to information about their HIV status. The system used for effecting that access would likely vary depending on the physical circumstances (e.g., rural or urban, availability of Internet or phones, etc.) and economic status of clients. At one end of the spectrum, Internet, ATM-like machines, and automated telephone services may be employed, while at the other end of the spectrum information may be available on identification cards or other hard copy records, held by the client or available at a local outlet.

The HSS would be retailed at thousands of locations throughout a country. A single retailer might control one or a small number of outlets. These would be the franchisees. There would be need for a single coordinating entity, the franchiser. For the HSS to be credible, the technical aspects and security of both the testing service and the information retrieval service must be perceived as being first-rate. At the local level, these capacities may not always be available. Moreover, it would be burdensome and not cost effective for these systems to be developed anew at every locality.[36] Operating costs for independently developed and operated systems would likely be high, as there would be limited opportunities for realizing economies of size. Systems would vary across outlets, making it difficult for an individual familiar with one outlet's offerings to discern the nature and quality of offerings from another outlet.

As the franchiser's income would be based on sales across all outlets, the franchiser would have incentives to advertise the service generically, rather than on behalf of a single outlet in order to ensure consistency of standards

across outlets[37] and to root out and prosecute those who may create fraudulent services. Having a franchiser would give DN&G a single point of entry into the system to effect changes.

Formula Preparation Service

As discussed earlier, one of the most promising approaches for reducing HIV infections in Africa is by reducing mother-to-child transmissions. Antiretroviral treatments can lower the probability of prenatal infections. These drugs can be employed also to reduce viral loads in breast milk and, therefore, transmission rates to babies. The drugs lower, but do not eliminate, transmission risk through breast milk, and drug-resistant strains of the HIV virus have recently been discovered in breast milk. In developed nations, HIV-positive mothers are never advised to breast-feed their infants. Instead, commercially prepared formulas are almost always employed. In developing nations, because of concerns about the availability of safe water and sanitary conditions for preparing formula, as well as temptations to economize by over-dilution, formula is not widely used and HIV-positive mothers are frequently counseled to breast-feed, with or without antiretroviral drugs.

A formula preparation service (FPS) would provide premixed formula in bottles, which would reveal attempts to open the bottles for purposes other than feeding an infant. The bottles would not be foolproof because the contents could be emptied though suction that mimics a feeding infant. This might be done to increase the volume of milk through dilution. Factors discouraging such tampering would include the availability of sufficient quantities of formula to meet an infant's needs, the effort involved in emptying bottles, and the information provided to mothers about the dangers of diluting formula, particularly with unsafe water or in unsanitary conditions. In situations in which there are significant concerns about tampering, mothers may be required to be observed when feeding their infants.

The elements of an FPS would include, first, an HIV-testing service. The FPS would need either its own testing facilities or some association with existing services to identify mothers who are HIV positive and infants who are not. Periodic testing of infants in the program may be desirable. As with the HSS, use of existing testing services would avoid duplication of effort and broaden the scope of offerings for that service.

The second component would be formula preparation. The FPS would prepare formula in bottles that could not be opened without leaving evidence of tampering. Eligible mothers would receive sufficient formula for their infants.[38] Additional formula would be available upon return of empty, untampered bottles. To prepare the formula, the facility would need access to safe water or the ability to purify water, sanitary areas for preparing formula, cleaning facilities for bottles, and refrigeration to store formula before distribution.

Third, the FPS would need a distribution and monitoring system. The FPS would give bottles of prepared formula to eligible mothers and collect used bottles to be cleaned and reused. To account for economic and social factors, each site would need to determine the appropriate method of payment, for example, cash or vouchers directly from clients or from DN&G, and the best means to effect distribution, taking into account mobility constraints of beneficiaries (particularly if the service area is large) and possible sensitivities (for example, fear of stigmas) to being enrolled in the program. At each outlet, there would have to be policies and procedures established for the periodic retesting of infants and dealing with incidents of bottle tampering or other violations of program rules. While these would have to be consistent with the minimum requirements for all outlets, as with distribution, the approaches taken for monitoring and enforcement should take physical, economic, and social factors of the locale into account. To minimize further the dangers from breast-feeding by the HIV-positive mother, the feasibility of requiring and administering medications to suppress milk production should be explored.

In any country, there would potentially be thousands of outlets, locally owned and operated by franchisees. These local entities would likely be more sensitive than outsiders to prevailing customs and be able to use this knowledge to adopt the most appropriate distribution and monitoring system. The franchiser would provide equipment for sanitizing and water purification, supplies such as bottles and formula, and technical assistance. The franchiser would monitor performance, both to ensure that minimum standards are maintained and to communicate successful modifications for distribution and monitoring to other franchisees.

Wet-Nursing Service

Though sometimes mentioned as a potential alternative to having an HIV-positive mother breast-feed her infant, wet-nursing has received little attention and virtually no support by health ministries or the assistance community. The two most frequently given reasons for this are concerns about transmission of the virus if either the wet nurse or the infant is HIV positive and the belief that wet nurses would be acceptable only in cultures where they are already common. The first issue can be managed through testing and appropriate nursing protocols and monitoring. With regard to the second, perceptions about wet-nursing could be investigated and strategies developed to mitigate possible reticence. In some instances, undoubtedly there would be reluctance, but to conclude that the introduction of wet-nursing is impossible is precipitous, to say the least.

A wet-nursing service (WNS) would have the following components. First, as with the other operations discusses, there would be need for an HIV-testing service. The WNS would need either its own testing facilities or some association with existing services to identify mothers who are HIV positive and infants who are not, as well as to certify the HIV-negative status of wet nurses.

As infants and wet nurses could infect one another during breast-feeding, protocols would have to be developed for periodic retesting as well as testing if there are reasons to believe that an infant or wet nurse may have been exposed to the virus.

Second, wet nurse health and milk adequacy testing would be needed. In addition to checking for the HIV virus, wet nurses would undergo other testing, as appropriate, to ensure their health is good and to determine that an adequate volume of milk, with good nutritional content, is produced, and that the milk is free of disease or other contaminants. These functions might be performed directly by the WNS or through an association with a local clinic. Another possibility would be for existing HIV-testing services to add these tests. As with the previous examples, broadening the offerings of HIV-testing services could improve both their utilization and image.

The third component would be matching and monitoring of infants and wet nurses. Much like a dating service, WNS would match women wishing to act as wet nurses with infants. Wet nurses would be given instructions regarding the best practices for nursing. In addition, wet nurses would be counseled regarding nutritional requirements to ensure their own health and their ability to produce sufficient volumes of high-quality milk.

A drawback of wet-nursing is that it removes the mother from one of the most vital and intimate aspects of childcare. To give the mother the sense and reality of involvement and to take advantage of her interest in the welfare of her infant, she should have a central role in establishing feeding schedules and monitoring performance. The WNS would consult jointly with the mother and wet nurse to establish schedules and performance standards (such as the minimum amount of time per feeding session) and would arbitrate any disputes.

As with the other examples, the outlets would be operated by franchisees, with the franchiser setting minimum standards, providing supplies, and providing information and guidance regarding procedures and general business management. In these ways, entrepreneurship holds the possibilities for both alleviation of the HIV/AIDS crisis and development potential in sub-Saharan Africa.

Notes

1. UNAIDS, *Report on the Global HIV/AIDS Epidemic*, 6.
2. *Economist*, "AIDS in Botswana," 36–37.
3. UNAIDS, *The Global Strategy Framework on HIV/AIDS*, 4.
4. McGeary, "Death Stalks a Continent."
5. Ibid.
6. *Economist,* "Trick or Treatment," 65.
7. Durban named a park in her honor and, a year after her death, Secure the Future established fellowships named after her for health professionals in Natal.

8. It might be well to remember that not very long ago in the United States, condoms were hidden behind drugstore counters, requested only by those intent on committing sin, rather than openly advertised and displayed for impulse buying alongside candy bars and batteries.

9. *Economist*, "AIDS in Botswana," 36–37.

10. In 2001, the author had an assignment with USAID in Namibia. Its capital, Windhoek, had a 31 percent HIV prevalence rate. A trivial part of USAID's condom distribution program involved placing boxes of 50 to 100 condoms in their building's unmonitored bathrooms. The seven-story building, in the busiest part of Windhoek, housed several other businesses. The large bathrooms were used by all occupants of the building, including guards and cleaning staff, and were sometimes used by the general public. So, there were high traffic levels by a mix of the most and least economically privileged and HIV informed. In the men's rooms, a box of free condoms was not emptied for more than a week and two to three times that span in the women's rooms. This suggests that the market value of condoms was effectively nil.

11. Bloom, "The HIV/AIDS Pandemic." If the nation's prevalence rate is halved over the next fifteen years, the probability of that boy becoming infected is still very high: .67.

12. In addition to the issue of the attractiveness of the terms of a program, adoption across a population can take prolonged periods of time. For example, depending on the U.S. state, it took between five and ten years for adoption rates by farmers for hybrid corn seed to go from 10 to 80 percent. Remarkably, the rise in adoption rates was not faster in states beginning later whose farmers presumably could have learned and gained confidence from the experience of areas adopting earlier. See Grilches, "Hybrid Corn."

13. For example, during a three-hour midday visit the author made in 2001 to a large testing and counseling facility in Namibia's second city, Walvis Bay, no clients visited.

14. More strongly stated, any lowering of the effectiveness of HIV/AIDS mitigation efforts for the sake of forwarding moral agendas is at the cost of human suffering and death.

15. Risk both from uncertainty regarding the HIV status of a sexual partner and the type of sexual activity.

16. Security and fraud are potential, though controllable, problems. If this were not true, money, credit cards, Internet transactions, etc. could not exist.

17. Windows differ according to the type of test. This raises the possibility of different levels of subscriptions to the service, with the more expensive version being associated with testing having the smallest window.

18. UNAIDS, *Report on the Global HIV/AIDS Epidemic*, 130

19. Limson, "Free Formula."

20. Gelooin, "HIV and Breastfeeding," 3.

21. UNAIDS, "Children Living in a World with AIDS."

22. UNAIDS, *Report on the Global HIV/AIDS Epidemic*.

23. The text refers to "various infant-feeding options" but then indicates that women opting not to breast-feed are given free formula. This suggests that the primary, perhaps only, option actually pursued in the programs is formula.

24. *Economist*, "Trick or Treatment."

25. Gelooin, "HIV and Breastfeeding."

26. $1,143 = (6 months * $240)/(.38 – .27).

27. Marseille et al., "Cost Effectiveness," 803–9.

28. Such an approach is being explored in a program in Soweto, South Africa. See British Broadcasting Company, "Soweto HIV Transmission Success."

29. Mitchell, "Drug-Resistant HIV Passed through Breast Milk."

30. WHO et al., "HIV and Infant Feeding," 29.

31. Ibid., 18.

32. Private sector meaning other than government-like NGOs and international consulting firms.

33. Precedents exist for such an approach. For example, Zimbabwe's New Start program uses a franchise system for its HIV testing and counseling services. See UNAIDS, *Report on the Global HIV/AIDS Epidemic*. These facilities offer same-day testing results and standardized counseling and testing protocols. The program is advertised nationally using a common logo and name.

34. An exception to this would be if the concession agreement stipulated performance minimums or other factors (such as the franchiser making investments), which would allow for automatic renewal.

35. For example, some countries granted concessions to private firms to update and operate their customs services, with obligations to prepare government workers and (or) in-country firms to assume these functions after the contract period. See Beilock et al., "Caucasus Transportation Strategy."

36. Including having each retailer develop entirely separate contracting agreements with established testing services.

37. In contrast, an individual outlet might have incentives to lower its own standards and extract rents based on client perceptions of overall system standards. This, of course, would create a negative externality to all other vendors.

38. The frequency of dispersals to mothers would depend on the shelf life of prepared formula and the conditions under which the bottles would be kept (i.e., sanitary conditions and availability of refrigeration or other means of cooling).

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CONFUSION, ANGER, AND DENIAL

RESULTS OF HIV/AIDS FOCUS GROUP DISCUSSIONS WITH URBAN ADULT ZIMBABWEANS

Mandi Chikombero

This chapter reports the results of focus groups conducted with urban adults in Zimbabwe. The focus groups were designed to extract information about people's knowledge of HIV/AIDS as well as information about people's preventive behavior and their responses to televised HIV/AIDS public service announcements (PSAs). Premised by the Extended Parallel Process Model,[1] the focus groups produced illuminating results. In this chapter I begin by giving some background information about the HIV/AIDS situation in Zimbabwe. Next I examine the Extended Parallel Process Model (EPPM), a model that was initially designed to explain fear appeal processes in HIV/AIDS messages. Finally, I outline the methods of data collection and data analysis that were used and the indicators of rigor that were used to assess the quality of the research before relaying the results of the focus group discussions.

Because past research sufficiently documents that women are more at risk of HIV infection, I augment those findings by arguing that women in Zimbabwe are at a disadvantage regarding the practice of safe sex as a result of cultural practices that increase their chances of infection. Such practices include gender hierarchies, sexual cleansing, polygyny, the preference for dry sex, and the importance of female fertility. Although these issues are not directly addressed in mass-mediated HIV/AIDS prevention messages, women are aware of them and are largely aware of the high risk that these practices pose. Specifically, there were six objectives in this study: (1) to determine the levels of HIV knowledge among urban adults in Zimbabwe, (2) to assess people's preventive behavior regarding HIV/AIDS, (3) to determine urban adults understanding of the roles of social/cultural norms and practices in heterosexual HIV transmission in Zimbabwe, (4) to determine through using the EPPM the current state of people's reactions to messages about HIV/AIDS

based on the concepts of threat and efficacy, (5) to determine the relationships between gender and self- and response-efficacy as well as between gender and susceptibility, and (6) to formulate suggestions for the design of mass-mediated and non-mediated HIV/AIDS interventions.

Zimbabwe was chosen as the site of this study because of my experience and familiarity with the cultural practices of Zimbabwe and the HIV/AIDS scourge there, particularly as it affects women who find themselves in vulnerable positions. Further, as later sections of this research project will support, Zimbabwe is one of the areas of the world with the highest incidence of HIV/AIDS rates.

HIV/AIDS is one of the most serious issues the world has experienced. In medical, economic, political, and social circles the HIV/AIDS pandemic has led to fractious debate. The origins of HIV remain unknown; its effects, however, are very visible and cannot be ignored. Once deemed to be a homosexual problem, current statistics show that this is no longer so. Once viewed as the concern of a few countries in the developing world, HIV/AIDS has now ravaged almost the entire developing world and, if not urgently contained, threatens to do the same in the developed world.

Medical research is facing its greatest challenge. In the race to find a cure, it appears medical researchers are lagging behind the rapidly increasing cases of infection and the resultant deaths. Even though some treatments have been developed, access to drugs remains largely a political affair with those in urgent need of medication being the least likely to get access to it. In the battle against the epidemic, however, all are in agreement that behavioral change is the only sure cure. Changing behavior is problematic, however, because behaviors are manifestations of cultural values and norms. Change in such cases is always contentious. Understanding cultural values and norms as they pertain to the spread of HIV may help us understand the success or failure of interventions.

Health issues are eternally important. Because of the toll that AIDS has taken on human lives, AIDS has become a topic of importance to researchers, economists, and policymakers, among others. Most AIDS victims are productive members of society in terms of age and skill. Rates of infection are alarming and serious population concerns are obvious. Kalipeni noted, "the optimistic projections of a decade ago about dramatic increases in life expectancy and declines in infant mortality rates seem to have been completely out of line given the current and anticipated devastating effects of the HIV/AIDS pandemic in Southern Africa."[2]

From a global perspective, the HIV/AIDS problem is severe. According to UNAIDS, more than 20 million people have died worldwide from AIDS, and tens of millions are living with HIV/AIDS. Also according to UNAIDS, 95 percent of people infected with HIV/AIDS are living in the developing world.[3] Hardest hit is Africa, particularly sub-Saharan Africa, and more precisely southern Africa in which Zimbabwe is found. AIDS has hit Zimbabwe harder than any other country.[4] This is because the AIDS problem is compounded by the political and economic turmoil that the country is currently facing.

The HIV/AIDS figures are alarming. An ABC documentary noted that in Zimbabwe, one in four adults is infected.[5] HIV rates in Zimbabwe continue to increase despite government efforts to curb the impact of the epidemic. In Zimbabwe, government and nonprofit organizations have been at the forefront of the battle against HIV/AIDS. Much of their effort has been directed at outreach programs in the cities and rural areas of Zimbabwe. In most African countries mass media are used to spread information about the prevention of HIV/AIDS. Media campaigns in these countries center around the reduction in the number of sexual partners as well as avoidance of sex with people known to be HIV positive. New research areas emerge that may be approached by the use of models such as the Extended Parallel Process Model.[6] This represents a response to the suggestions by some researchers that social science research in HIV/AIDS has focused on "Anglo middle- and upper-middle-class college students, to the detriment of our current need for knowledge of the populations of women most at risk for HIV/AIDS, who are non-Anglo, poor, and less educated."[7]

Statement of the Problem

Although there is extensive research on HIV/AIDS in Africa, and although this research spans several disciplines, much of this research has marginalized the topics most central to understanding HIV infection. A review of the literature shows that researchers have artificially neutralized the role of culture in HIV transmission and in people's responses to AIDS campaigns. Underemphasizing the importance of culture is a shortcoming of the research particularly in contexts where cultural practices and norms are not necessarily positive or may be aiding the rapid spread of infection.

Kesby found that unequal gender relations and a lack of communication about sexual matters between men and women have played a role in the rapid transmission of HIV in Zimbabwe.[8] Loewenson et al. quoted a workshop participant: "Sex is happening but people are not talking about it. Sex is not discussed in relations and society as a whole. If a woman is open about sexual issues, she gets a label, maybe as a prostitute."[9]

Yet another cultural aspect that hinders prevention efforts is the practice of polygyny. Polygyny is legal yet even in monogynous marriages it is quite acceptable for men to have multiple sex partners. As Kesby noted, "Social conventions require that men promise material support but not fidelity to their partners."[10] Researchers also have found that women are largely economically dependent on and socioculturally inferior to their husbands or partners and are therefore not in a position to overcome their partners' dislike of using condoms or their partners' unwillingness to talk about prior or current sexual affairs.

Time reported that in instances where women attempt to control their sex lives, the result can be violent physical abuse.[11] Gregson et al. found that effective behavior change is obstructed by low female autonomy, male labor migration, some religious beliefs, and alcohol consumption.[12] Yet another cultural practice is widow inheritance. Sadly, all these issues are not treated as agents in transmission and are downplayed in intervention programs.

Most research on AIDS in Africa has focused on commercial sex workers and women with the aim of empowering women to make informed decisions about their sexual health. It may be necessary for the focus to expand to include men. In a study of barriers to condom use along the TransAfrica Highway (a highway notorious for prostitution because of the number of truckers plying the route), Cameron et al. found that men held culturally supported biases against condom usage. In such a context it is clear that it is necessary to convey messages that counter traditional cultural beliefs regarding safe sex.[13]

Zimbabwe is fighting a losing battle against AIDS, which seems to be hampered by cultural practices that are not directly addressed in the society as well as in the media messages that are transmitted. If the success story of Uganda is any indication, directly tackling the cultural beliefs and practices that hinder societal change may be the best way forward. Many parts of Africa are currently trying to follow the Ugandan approach, which involved a radical overhaul of cultural attitudes, practices, and taboos. Today, Uganda is the only country on the African continent that is facing a decline in HIV/AIDS cases.

HIV/AIDS in Zimbabwe

The human immunodeficiency virus (HIV) weakens the cells of the human immune system. It destroys the body's ability to ward off infection and disease. As such it is a condition, not a disease. The HI virus is slow-acting and can lie dormant for years, while mutating. It is this ability to mutate that makes it difficult to find a cure for HIV.[14] There is still no cure for HIV, which can be transmitted from person to person by exposure to contaminated body fluids such as blood or semen. HIV causes an even more serious condition, acquired immunodeficiency syndrome (AIDS), an immunological dysfunction that renders the human body susceptible to opportunistic infections and cancers. AIDS is a manifestation of HIV infection. Once HIV turns into AIDS, death is the likely outcome.

There has been a great deal of speculation about the origins of HIV/AIDS. Researchers have traced the development of HIV, but today its origins still remain unknown.[15] As Williams notes, although its origins are poorly understood and cannot be proved, there are references to the presence of HIV infection going back as far as the 1950s. Despite some widely held beliefs that

HIV can be traced to Africa, there are reports of the presence of the virus during the 1960s in people who had never been to Africa.[16]

Whatever its origins, HIV/AIDS is "a human and economic disaster of extraordinary dimensions."[17] The World Health Organization (WHO) estimates that the HIV/AIDS pandemic started in the late 1970s or early 1980s. Since then, no part of the world has been spared from the effects of the pandemic. Researchers are faced with the difficulty of providing accurate estimates of the number of total AIDS cases. This difficulty can be explained in part by the issue of the long incubation period between HIV infection and the development of AIDS, and by the fact that AIDS surveillance systems that largely rely on AIDS case reporting are not effective.[18] Millions, however, continue to die worldwide. For example, a World Bank report asserts, "only 10 percent of the illness and death that this epidemic will bring has been seen. The real impact on people, communities, and economies is still to come."[19] It is naïve, however, to assume that the various regions of the world will be uniformly affected by the pandemic. This is because the differing economic, political, and social infrastructures will render certain parts of the world more able than others to deal with HIV/AIDS.

In looking at global trends of HIV, as early as 1988, Mann identified three patterns of HIV/AIDS infection. The first pattern involves homosexual transmission (e.g., North America, Western Europe, Australia, New Zealand); the second involves heterosexual transmission (e.g., most of Africa, the Caribbean); and the third pattern involves cases in which the virus appeared only recently (e.g., Asia, the Middle East, north Africa).[20] These distinctions are important because, as Barnett and Blaikie note, the impact of AIDS will differ across societies. The impact of the epidemic has already been felt and is being felt in parts of the world such as Africa in ways that may, fortunately, never be experienced in other parts of the world.[21]

Although the whole African continent has been hard hit by AIDS, nowhere has its impact been as severe as in sub-Saharan Africa. Gilbert and Walker argue that the HIV/AIDS pattern in sub-Saharan Africa is unique in three distinct ways: (1) the epidemic is predominantly a heterosexual one, (2) rates of infection are very high, and (3) the percentage of infected women is greater than men. UNAIDS estimates that women account for 60 percent of all HIV/AIDS cases in Zimbabwe.[22]

By the year 2000, more than 11 million people had died and 22 million more were living with HIV/AIDS in the sub-Saharan region.[23] Akeroyd notes that by late 1994, Africa accounted for 70 percent of the estimated total of global AIDS cases and about 34 percent of the total reported cases.[24] More recently, Cameron et al. write that the majority of AIDS cases are found in the sub-Saharan region.[25] And according to the 2000 World Bank report, the sub-Saharan region carries two-thirds of all the world's HIV/AIDS cases and the 21 countries with the highest HIV prevalence are in Africa.[26]

This presents a problem in that the majority of these countries are not in any economic position to deal effectively with the problems that these statistics

represent. As Ramanathan et al. note, the capacity of most sub-Saharan African countries' health infrastructure is limited.[27] Further, Williams reports that in this region, the majority of physicians are in the capital cities and other urbanized areas where less than 30 percent of the population reside.[28] This means that the majority of those infected and affected by HIV/AIDS, those in most critical need of medical attention, are in the less developed rural areas. In many cases, such people are forced to fall back on extended families to take care of the sick and dying. Even this presents a problem because as Hope notes, "In many parts of sub-Saharan Africa, the extended family system, which has traditionally absorbed orphans, will come under severe strain as parents die of AIDS, leaving aged grandparents to cope with large numbers of young children."[29] Early statistics showed that "an estimated ten million uninfected children [would] lose one or both of their parents to AIDS" by the year 2000.[30] In fact, an ABC documentary noted that the fastest growing business in Mbare, a high-density suburb of Harare, Zimbabwe, is the making and selling of coffins.[31] The situation may be no different in other parts of the country.

According to UNAIDS, HIV/AIDS is the single greatest threat to Zimbabwe's future. With an adult infection rate of 33.7 percent,[32] this small southern African country with a population of 11.5 million is one of the most affected countries in the world. In a little less than two decades since HIV, the virus causing acquired immunodeficiency syndrome (AIDS), was discovered in this country, population growth has been at a standstill. Results from the last (2002) population census indicate that Zimbabwe's population, for the first time in its history, has not increased. In fact, trends show that the population may be declining and, according to WHO projections, is expected to decline even more by 2010. According to WHO, life expectancy is expected to drop from the 66 years it was in 1997 to 35 years by 2010. In 2000, life expectancy had already dropped to 49 years.[33]

In Zimbabwe, there are 7,692 people per doctor.[34] According to the 2003 Zimbabwe Human Development Report, between 1995 and 2001, access to health care declined by 43 percent in eight of Zimbabwe's ten provinces.[35] In addition, the HIV/AIDS scourge has had devastating effects on the development of the hardest hit countries. As Hope observed, "The development impact of the AIDS pandemic in developing countries, and in Africa in particular, is now a matter of great global concern."[36] In addition to being a health concern, AIDS has now become a development issue. Researchers have risen to the task of studying HIV/AIDS in sub-Saharan Africa with the goal of understanding how best HIV/AIDS can be minimized in these countries.[37] The story of Zimbabwe is a tragedy. According to an ABC report, out of all the African countries, Zimbabwe's future at independence (April 18, 1980) was the most promising, yet, "In today's global pandemic, Zimbabwe is the epicenter of hell."[38]

The statistics for Zimbabwe are alarming. According to a World Bank report, one in four adults in Zimbabwe is infected with HIV.[39] In Zimbabwe,

as in other African countries, HIV/AIDS is predominantly transmitted heterosexually and perinatally (from mother to child during and after pregnancy). Heterosexual transmission accounts for more than 80 percent of cases in Africa.[40] This may be because homosexuality "appears to be relatively uncommon in the indigenous Black African societies."[41] When considering that perinatal or vertical transmission is itself a result of heterosexual contact, figures for heterosexual transmission of HIV/AIDS rise to 99 percent.[42]

What are some reasons for this gloomy picture? The situation in Zimbabwe and other African countries is exacerbated by economic, political, sociocultural, and infrastructural factors. Politically, for years after the first cases of AIDS were discovered in Zimbabwe, there was a reluctance to acknowledge the extent of the problem.[43] Although the HIV virus was first detected in Zimbabwe in the early 1980s,[44] the government only seriously acknowledged the threat posed by the virus as late as 1999. Only in 2002 did the government declare an HIV/AIDS "state of emergency."[45] Prior to 1999, however, some nongovernmental agencies, donor agencies, and private corporations had already begun a series of campaigns against HIV/AIDS. These campaigns included televised public service announcements (PSAs).

Outside of politics, Mufune argues that sub-Saharan Africa has a pattern of HIV infection that is unique only to this region, as cultural practices in Zimbabwe and other African countries have worsened the AIDS situation.[46] As Mufune contends, "AIDS is primarily a sexually transmitted disease in Africa and no behavior is more open to emotions and habit than sex."[47] Indeed, the emotions and habits surrounding sex may be culturally derived.

In a comparative study of the attitudes of men from the United States, Mexico, and Zimbabwe toward the introduction of vaginal microbicides in an effort to increase protection against HIV/AIDS, Coggins et al. found that men required that the products should not only be safe and effective but that they should not have a negative effect on sexual pleasure. Interestingly, Zimbabwean men considered themselves to be at risk of HIV infection. In focus group discussions, they even identified factors that placed them at risk, including marrying an infected woman, having multiple partners, and not protecting themselves. They knew of preventive methods such as the use of condoms, however, they mentioned that suggesting condom use outside of family planning with a primary partner was not feasible as this could be seen as an indication of infidelity or supporting infidelity. In addition, Zimbabwean men viewed condoms as an impediment to sexual pleasure.[48]

Another interesting finding from the study by Coggins et al. is that Zimbabwean men felt that if the microbicides were safe, women could use them but only as long as they had permission from their partners. Also, Zimbabwean men were enthusiastic about a product that could prevent infection but still allow conception, although they expressed strong sentiments against a product that increased lubrication during sex. According to the

study, this is because vaginal lubrication is associated with disease and promiscuity. To quote one of the focus group participants, "you see if the product enhances wet sex, it would not be a successful sex act . . . when you manufacture [this product] make sure that it does not promote wet sex because women might be thrown out of their homes."[49]

This preference for dry sex is an indication of some of the cultural values that are at play in Zimbabwe. Civic and Wilson found that dry sex is still extremely popular. In a survey of commercial sex workers in the capital city, Harare, they found that 80 percent used drying agents with their clients. According to Civic and Wilson, drying agents used range from the relatively harmless cold water to more serious agents such as Dettol antiseptic, toothpaste, potent "traditional" herbs, and minerals such as blue stone and Kariba stone. Dry sex is problematic because it has been linked with cervical cancers; more immediate to this discussion, it may lead to condom breakages as a result of vaginal dryness and tightness.[50] Stevens and Bogard note, "efficiency of vaginal HIV transmission is increased if there is a cut, lesion, abrasion, or ulcer in the vaginal lining or on the cervix, as these conditions allow HIV easier access into the bloodstream."[51] Also, because drying agents are widely believed to be magical (in that they supposedly ensure that the sexual partner does not stray), a significant number of women fear that using condoms with them will prevent the magic from working.

Researchers have demonstrated that, today, there are high levels of knowledge regarding HIV/AIDS. It is safe to say that most people are aware of HIV/AIDS and how it is contracted. In the case of Zimbabwe, however, despite this knowledge, AIDS statistics continue to rise. Even though AIDS awareness is high, the prevalent sexual behaviors still foster ongoing HIV transmission.[52] For example, some research has shown that married men are averse to using condoms with their spouses.[53] This is not a situation unique to Zimbabwe; condom use in Africa generally tends to be low.[54] In a study of AIDS in Tanzania, Setel found that levels of knowledge were high but, sadly, "high levels of knowledge do not necessarily translate into effective forms of protective action."[55]

Similarly, in a study of barriers to HIV prevention in a sample of college students in Sierra Leone, Stewart and Richter found that, although knowledge of HIV/AIDS was high and despite the fact that the majority of students felt that HIV/AIDS was a serious and immediate threat, condoms appeared to be underutilized; 61 percent of the sample indicated that most people would not use condoms. Such a situation is indicative of other phenomena that need to be studied.[56] For example, Ortiz-Torres, Serrano-Garcia and Torres-Burgos argue that one of the most important challenges that researchers and program planners face is promoting change in social norms in specific cultural contexts.[57] In the case of Zimbabwe it is still useful to assess levels of knowledge, particularly as HIV/AIDS is more widely addressed in the mass media.

Mass Media Campaigns

It is now widely acknowledged that "the only currently recognized cure for the disease is risk prevention."[58] Similarly, Perloff notes that

> Even today, in an era of great medical discovery, the best hope for AIDS prevention lies in education, communication, and persuasion—in teaching people how HIV is transmitted, counseling them on steps they can take to protect themselves from contracting the virus, and convincing them that they must change their attitudes toward drugs and alluring, but dangerous, romantic liaisons.[59]

In this regard the role of the mass media in the fight against AIDS has been an important one. Increasingly, people are moving toward a reliance on the media, including the Internet, for health information. DeJong et al. provide support for this argument.[60] In the case of Zimbabwe, television, newspapers, and radio are the primary vehicles for information seeking. Although Internet use is increasing, especially among professionals, prohibitive costs and limited access to computer technology limit use of the Internet in Zimbabwe. Media such as television, radio, and newspapers, therefore, remain the primary media. According to Wellings and Macdowall, mass media such as radio, television, newspapers, and magazines are important sources of health information because not everyone can be reached by interpersonal and community approaches.[61]

In the case of Zimbabwe, mass media have an important role because the discussion of certain topics is taboo, especially regarding sexual behavior. This is unfortunate given the current trends in HIV/AIDS, which, as previously established, are largely linked to sexual conditioning in Zimbabwe. The media can address some of these important but under-discussed issues as a way of generating knowledge and encouraging healthier lifestyles. In addition, the media can be used as "a vehicle for public service messages aimed at changing individual health behaviors by targeting the attitudes and beliefs on which these behaviors are based."[62] The present study aimed at identifying these attitudes and beliefs as well as discussing whether Zimbabwean media have been successful at altering such attitudes.

Yanovitzky and Stryker argue that mass communication can be effective in promoting healthy behavior if it is used to encourage sociocultural changes that, in turn, serve to motivate people to alter their risky behaviors positively. Specifically, they argued that "changes in the characterization of risky health behaviors in the media may provide additional motivation for behavior change by clarifying and reinforcing social norms against these behaviors."[63] Closer to the HIV/AIDS context, Agha and Van Rossem conducted a study assessing whether a mass media campaign (print and radio) encouraging use of the female condom had the desired results. Through interviews, focus groups, and surveys they found that exposure to media messages did not affect women's

intentions to use the female condom.[64] Similarly, a study of prevention campaigns in South Africa found that mass media campaigns are sometimes not as effective as hoped for several reasons, one of them being that media campaigns have tended to ignore cultural factors determining responses to media messages.[65] In fact, as Signorielli argues, the success or failure of campaigns depends largely on the cultural context into which they are introduced. Indeed, "few campaigns can succeed without knowing what they are up against."[66] Without the cultural dimension, it remains only a biomedical entity.

Yet another reason for campaign failure, which is directly linked to the present study, is that the media seem to have ignored the gendered nature of HIV/AIDS transmission. This may be because of audience sensitivity, which has been identified as a barrier to health campaigns.[67] In analyzing the popular ABC campaign (Abstain, Be Faithful, Condomize), which researchers generally recognize as targeting key behaviors, Kebaabetswe and Norr found that the "Abstain" message assumes that women have a choice in whether or not they will abstain. The "Be Faithful" message erroneously suggests that women have control over how many extra partners their partner or spouse may have. And last, they note that the "Condomize" message ignores the reality that women are usually not in a position to determine condom use by their partners.[68]

Extended Parallel Process Model

Researchers have developed many models explaining the process behind persuasive messages such as those in mass media campaigns. The following is a discussion of the extended parallel process model (hereafter referred to as EPPM). The EPPM was developed as a model for creating effective fear appeal/risk messages, specifically messages relating to the threat of HIV/AIDS.[69] Based on Leventhal's danger control/fear control framework,[70] the EPPM was created to explain the successes and failures of fear appeals.[71] Conceptually, the EPPM represents the combination of early fear appeal theories and models. Originally used in HIV/AIDS contexts, the EPPM has evolved to apply to several different message appeals and a number of other health issues.

The EPPM has two key, related components: threat and efficacy. Witte explained the relationship between threat and efficacy as well as the major assumptions of the EPPM. (1) Cognitions about threat and efficacy cause attitude, intention, or behavior change; (2) when the perceived threat is low, there is no further processing of the message, regardless of the levels of efficacy; (3) message acceptance increases when the perceived threat increases, if the level of perceived efficacy is high; (4) as the perceived threat increases when perceived efficacy is low, people will do the opposite of what the message advocates (i.e., a boomerang effect); and (5) as the perceived threat

increases when perceived efficacy is moderate, message acceptance will initially increase then decrease.[72]

Threat

A threat is an external stimulus variable.[73] Within the context of the EPPM a threat has two dimensions: perceived severity and perceived susceptibility. In persuasive messages the perceived threat is viewed as more important than the actual threat.[74] Perceived severity is an individual's assessment of the seriousness of the threat. Perceived susceptibility is an individual's perception of his or her likelihood of experiencing the threat. Fear appeal messages usually present a threat to the individual. It is this threat that is supposed to lead to attitude or behavior change. Messages differ in that they could be high-threat messages or low-threat messages. According to Witte, threat initiates and motivates message processing.[75]

Efficacy

Bandura argues that psychological procedures of any kind alter the form of efficacy. Persuasive messages, particularly fear appeal messages, are psychological procedures. As such, they play a major role in acquiring and retaining new behavior patterns. They also alter efficacy. In Bandura's theoretical explanation, self-efficacy plays an important role in analyzing changes in fearful and avoidant behaviors.[76]

Self-efficacy

Rimal further notes that self-efficacy plays a major role in maintenance of health behaviors. In a study hypothesizing that the correlation between knowledge and behavior would be greater for those with high self-efficacy than for those with low self-efficacy, Rimal found significant results.[77] Jemmott et al. studied the relationship between self-efficacy and condom-use intentions in a small sample of inner city black women. Following a social cognitive approach, the results of their study suggest that self-efficacy is an important determinant of behavior.[78]

Self-efficacy is "the degree to which one believes they [*sic*] are able to effectively, feasibly, easily, do a recommended response that would impede or avert a threat."[79] Although fear is an important factor in the effectiveness of messages, self-efficacy has been viewed as the most important variable for determining preventive health care.[80] It refers to beliefs or perceptions about one's ability to perform a recommended response. Maibach and Flora note that perceptions of self-efficacy are dynamic and are the result of "ongoing cognitive, behavioral and communication processes."[81]

Response efficacy

Response efficacy is the belief or perception about the effectiveness of a recommended response. Smith differentiated between self-efficacy and response

efficacy. Self-efficacy is an individual's perception of his or her ability and motivation to perform some preventive action presented by a campaign message. Response efficacy is the perception of the advocated response as realistic, affordable, and safe. According to Smith, fear appeal messages should induce perceptions of response and self-efficacy for them to be effective. The EPPM shows the relationship between threat and efficacy in the processing of persuasive messages.[82]

High levels of both perceived threat and perceived efficacy lead to danger control processing by individuals. People are motivated to control the danger presented in a message (i.e., protection motivation) by averting the threat. This leads to a positive result in the form of message acceptance, that is, adaptive outcomes.[83] In contrast, when a perceived threat is high but perceived efficacy is low, fear control processing sets in. People are motivated to cope with the fear created by the message (which is defensive motivation) by engaging in such actions as denial of the message (which are maladaptive outcomes).[84] This idea that efficacy determines coping behavior is in keeping with Bandura's conceptualization of efficacy as it relates to behavioral change.[85] The critical point in the distinction between danger and fear processing occurs when a perceived threat exceeds perceived efficacy. This is when fear control begins to dominate over danger control.

Gender and Self-Efficacy

According to Bandura, self-efficacy derives from an individual's experiences with a threat.[86] The EPPM is useful in presenting the relationship between threat and efficacy in the evaluation of campaigns. For example, campaigns and media messages can be evaluated based on whether they effectively balance information relating to efficacy and threat. In practice, however, the picture may not be as clear. It is one thing for a message to present the right levels of efficacy and threat. It is another to produce efficacy in the consumers of such media messages. Although self-efficacy can exist even before exposure to a message, the way a message presents efficacy information can lead to heightened levels of self-efficacy.

It is obvious that HIV/AIDS prevention campaigns in Zimbabwe need to present high levels of efficacy. But, as shown earlier, women are not always in a position to feel efficacious—cultural expectations reduce their levels of efficacy. Women generally do not feel that they have the ability to control the behaviors of their partners. As such, prevention campaigns and programs must aim at increasing self-efficacy in women. As Stevens and Bogard note, "prevention programs for women must assist women to successfully influence the behavior of their partners."[87] Some campaigns may not have taken this into account. Other issues, such as women's roles in their families as well as

the possibility of violence, should also be examined as they relate to self-efficacy on the part of women.

Keeping in mind that perceptions of efficacy may result from learning experiences, the implications in the Zimbabwean context are tremendous.[88] As Weeks et al. argue, "it is necessary to recognize individual HIV risk as located within social structure and historically constructed social relationships, that is, as *part* of these larger forces that are generally outside the individual's immediate control."[89]

Again, the position of women in such an environment is tenuous in the face of HIV/AIDS. Cameron et al. note how, in their study of commercial sex workers and truckers along the TransAfrica Highway (a cultural context in which women are not efficacious about HIV/AIDS preventive behaviors), the women largely expressed feelings of powerlessness or lack of control. To quote one of the interviewees in the study, "we are women, we are weak and shy, we cannot ask them to use condoms."[90] Akeroyd came to similar conclusions.

> Cultural constraints surrounding condom promotion and use, on who may discuss sexual matters with whom and who should provide sex education, arise frequently when sexuality and AIDS prevention measures are discussed. . . . powerlessness of women in conjugal and regular sexual relationships to safeguard themselves from the consequences of their partner's extra-marital relationships or other marriages in polygamous unions—or, indeed, from risks in their own sexual liaisons.[91]

Gender/Vulnerability

Although the issue of women's vulnerability to HIV/AIDS transmissions is in no way unique to the African region,[92] and although researchers note that even men are rendered vulnerable by biased cultural practices,[93] Zimbabwe presents an interesting case study of these phenomena. As Hope wrote:

> Women are particularly at risk in Africa because traditions, customs, and culture virtually render them willing and submissive partners who are unable to deny sexual intercourse to their male partners. As a matter of fact, the majority of women who have become victims of HIV/AIDS were infected by their husbands. Wives have very limited ability to autonomously control their personal risk of exposure to HIV/AIDS infection. They are powerless and defenseless in the control of their own sexuality in the context of most African societies.[94]

In a similar vein, Hope also notes:

> In Africa, 30 to 50 percent of married women are currently in polygynous marriages and nearly all wives must be emotionally and economically adjusted to the possibility of finding themselves in polygynous marriage at any time. This means that African women are aware that the greatest danger comes from their spouses.[95]

Even in those regions of Africa where monogamy is favored, social norms expect women to remain monogamous while turning a blind eye to men's infidelities. Baylies and Bujira aptly note, "AIDS in Africa is transmitted largely through heterosexual sex in a context of gender inequality."[96] They state that in the African context, "all are at risk, and yet women are the most powerless to resist."[97] Ateka writes, "fidelity is not a virtue in African men, and it is estimated that between 60 percent and 80 percent of women currently infected with HIV in sub-Saharan Africa have had only one sexual partner."[98] In fact, as Latre-Gato Lawson states, "women are . . . more often the victims than the active propagators of infection."[99] Consequently, as Latre-Gato Lawson argues, this complicates the problem of the woman's self-protection because even if a woman knows that her companion or husband has other sexual partners, it is difficult for her to demand the man use a condom during sexual intercourse because her upbringing does not allow her a say in the matter.[100]

In a study of university students in Sierra Leone, Stewart and Richter found that as many as 20 percent of their sample were convinced that AIDS was not a real threat but rather "a conspiracy to keep Africans from having sex and children."[101] Interestingly, all 20 percent who held this view were men. None of the women sampled shared their beliefs. This is noteworthy because it helps to place gender sexual relations in context. Another finding in this study is that women respondents were generally apathetic and reluctant to answer questions about their own sexuality; 58 percent of the women did not answer questions about their personal attitudes toward sexual intercourse. Issues of power and gender inequality have not been adequately studied as risk factors in HIV transmission.[102]

In a study of the risk behaviors of women in the United States, Stevens and Bogard criticize the models that are used in the development of HIV prevention programs.

> Theoretical models used to develop HIV prevention programs have generally not taken into account the gendered nature of sexual behavior and risk reduction, and gender-specific medical, social, economic, and legal issues that affect women's ability to engage in risk reduction or protective behavior have not been adequately addressed.[103]

They also discuss "efficiency of HIV transmission" that is, due to biological/physiological differences, a woman is more likely to become infected by a man than a man is by a woman.[104]

Yet another criticism is that, historically, the majority of HIV prevention programs have targeted "at risk" groups. In Zimbabwe, such groups include truckers and commercial sex workers. There is a need to acknowledge that women in general, not just commercial sex workers, are a high-risk group. Susser notes that in Africa today, the AIDS epidemic has spread far beyond the usual target groups of commercial sex workers and truckers to include married

women and young girls. Women, in general, are a high-risk group because they often find themselves in situations where they exert very little control over their HIV-prevention efforts.[105] As Stewart and Richter report, 59 percent of college students felt that it was the man's responsibility to discuss safe sex.[106] Indeed, "prevention programs for women must assist women to successfully influence the behavior of their partners."[107]

Situating women's experiences with HIV/AIDS and HIV/AIDS prevention programs/campaigns within a sociocultural context is necessary because "women's experiences with HIV and AIDS, as with all other epidemics, are shaped by an array of complex social, economic, and political factors."[108] These factors are usually very complex especially as they relate to risk-taking behavior. Wojcicki and Malala argue for the necessity of studying and understanding such factors.[109]

Akeroyd argues that risk-taking behavior is not solely an individual matter but rests on social and economic factors.[110] This is noteworthy because we usually think of reckless individual behavior when we think of risk-taking behaviors. However, in some cases people engage in risk-taking behaviors unwillingly or not out of their own volition. This is especially true in the case of women who may be continually engaging in risky behaviors, even without their knowledge or desire to do so. Sometimes, social and cultural expectations leave them powerless to object, even if they have the knowledge that their behaviors are risky. For example, Mitchell and Smith note that the policy documents resulting from research neglect to mention that women do not necessarily engage in risky sexual activity voluntarily.[111] Neither do such reports link women and their powerlessness in social relationships with HIV/AIDS risk.

In the case of Zimbabwe, women's position under customary law is extremely vulnerable. This vulnerability manifests itself in risky practices and behaviors. Latre-Gato Lawson argues that it is necessary to identify such practices and behaviors because identification can help explain some of the problems that women face.[112] Examples of such behaviors include dry sex, widow inheritance, and sexual cleansing. Widow inheritance is criticized because:

> The tradition demands that if a woman is widowed, she must be inherited either by a younger brother-in-law, or by an older stepson in some cases, in order to safeguard the property of the deceased for his children. This also ensures that future children stay within his clan. However, in this new union either partner may infect the other and thereby increase the spread of AIDS.[113]

The practice of sexual cleansing requires the surviving spouse to engage in sexual intercourse with a selected member of the deceased's family before the surviving spouse is free to get on with her life. Such culturally sanctioned practices render women vulnerable to HIV infection.

This vulnerability is linked to women's "economic dependency on men, their lack of control over sexual relations, and their need to conceive to gain

social recognition."[114] As Baylies and Bujira argue, "controlling the AIDS epidemic therefore requires the transformation in gender relations as much as it requires miracle cures or technological 'fixes.' "[115] Lesetedi echoes these sentiments by arguing that one of the most effective ways of combating HIV/AIDS is through the advancement of women's socioeconomic status, which would work to rectify some of the culturally driven inequalities behind the HIV/AIDS epidemic.[116] In fact, Gilbert and Walker write that "social inequality is the greatest transmitter of HIV/AIDS."[117] Using the vulnerability theory, removing inequalities is the only way of achieving declines in rates of infection.

Empowerment of women is not always viewed positively. Kaler, in a study of the use of the female condom as an empowerment tool in Kenya, recounts an encounter she had in the field. When interviewing a primary health-care provider in Kenya about women's responses to the then-recent introduction of the female condom, the provider mentioned there were problems with the women's husbands and boyfriends: "[The men] think it's some kind of women's empowerment. . . . They don't like it for that."[118]

Such a situation is unfortunate because it may leave the women vulnerable to chastisement and violence should they insist on using the female condom. Coggins et al. note that women's attempts to control their partner's behavior may pose a personal risk that is more immediate than contracting HIV.[119] As Kaler observes, anything that is potentially empowering to women is viewed as threatening to men.[120] As with the male condom, women find it easier to use in commercial sex than in marital unions. The concept of vulnerability is interesting because it situates empowerment in a political framework. Researchers have used this concept in conjunction with susceptibility, which plays a key part in the Extended Parallel Process Model.

This review has shown the path that past research has followed as well as the gaps that remain. The present study sought to add to the existing data by examining intricate details of the culture of Zimbabwe and how they relate to the HIV/AIDS phenomenon, particularly in the context of PSAs. Some of the cultural understandings of AIDS and sexual practices may run contrary to what AIDS PSAs are advocating. This incongruence between the messages and the cultural reality has not been adequately addressed in the research, yet it may help answer questions about the effectiveness of such PSAs.

Data Collection for the Study Presented in This Chapter

Data were collected through focus group discussions and followed recommended formats for health-related topics. Focus groups are widely used in health research and are advantageous because they are relatively inexpensive and can serve to complement data collected through quantitative methods.[121]

Focus groups are also suited to topics that have not been extensively studied.[122] This was the case in the present study, which examined PSAs, the responses to them, and the sociocultural practices that may hinder effectiveness of PSAs within particular groups, such as women.

Two focus groups (one all-female and one all-male) were conducted at the University of Zimbabwe on May 2, 2004, and May 3, 2004, respectively. Focus group participants were volunteers. The University of Zimbabwe was chosen as the site for the meetings because of its central, accessible location and its ready availability of equipment (television monitor and videocassette recorder) that was needed during the focus group. In addition, the principal research assistant maintained an office at the University of Zimbabwe. This provided added assurance in case of equipment breakdown or problems during the focus group meetings.

In terms of procedures, the research assistants invited survey participants and members of the University of Zimbabwe community to participate in the focus groups. Participants were offered limited compensation for their participation. After a date was set for the meetings, the focus group moderators and note takers were briefed by the principal investigator on ethical research practices and procedures, including the distribution and collection of general and audiotape consent forms, TV/VCR and audiotape recording, and note-taking procedures. In addition to the briefing, moderators were given written instructions outlining procedures and providing contact information. Note takers were volunteers. In each focus group discussion, moderators and note takers were the same gender as the participants.

Each focus group session was at least ninety minutes in length and had ten participants ranging from twenty to twenty-four years of age. To start off, participants were asked to introduce themselves briefly. The vast majority of participants were university students. Some participants were from out of the city of Harare but were currently living in Harare to attend the university or to work. They were all familiar with televised PSAs.

Focus groups were conducted in English, although participants were told that they could respond in either the Shona or Ndebele language if they so wished. With the exception of a few words and phrases, responses were almost entirely in English. At the beginning of the focus group discussions, the moderators welcomed all participants, thanked them for their participation, and facilitated the reading, signing, and collection of consent forms. In addition, focus group moderators described the purpose of the discussion and study, and clearly emphasized the voluntary nature of participation. They also reassured participants that their responses would be treated in a confidential manner and informed them that they were free to withdraw their participation at any time without penalty.

Focus group participants watched a selection of televised PSAs during the focus group session. Both focus group sessions were recorded on audiotape. Although it is possible that the recording and the note takers may have affected

participant interaction and responses in the focus groups, this possibility was minimized by the moderator who assured participants that their responses were confidential and would be used only for research purposes. Soon after the focus groups, all tape recordings were professionally transcribed verbatim.

Results

HIV/AIDS Knowledge

Although there was some indication of misinformation regarding HIV/AIDS transmission, participants in both focus groups generally had high levels of knowledge regarding HIV/AIDS transmission and prevention. Participants in both groups were aware that HIV is an immunological condition leading to AIDS. They also were aware that, although there is no cure for HIV or AIDS, there are antiretroviral (ARV) treatments available to those infected. As an example, participants in the female group named nevirapine, a drug that recently became available to expectant mothers in Zimbabwe, as an example of antiretroviral treatment. Participants also mentioned the prohibitive cost of ARVs. Participants were knowledgeable about methods of transmission and were able to cite these, including unprotected sexual contact with infected persons, exposure to infected body fluids, the use/sharing of infected sharp instruments such as needles and razor blades, perinatal transmission, and unsafe blood transfusions.

To illustrate, a male participant responded, "this virus is spread through mixing of blood between someone who is infected and another who is not." Another male participant noted, "It is transmitted through sharing blood, let's say through sexual contact, blood transfusion, or sharing needles or sharp objects." In addition to these causes, a female participants noted, "It's passed from mother to baby."

Participants in both groups named some sociocultural practices as agents in HIV transmission. For example, a participant in the female group mentioned that traditional healers sometimes gave men instructions to sleep with young virgins as a way of curing HIV infection: "There are some traditional healers who say 'If you sleep with a young girl . . . you can get cured.' That actually helps in the spread of HIV/AIDS." Similarly, a male participant cited traditional rituals such as circumcision (both male and female) in which there is the mixing of blood, as an agent in HIV transmission. Further, in the male group, religious institutions were also named as agents of transmission: "I think the churches play a role [in the spread of HIV] because they actually promote people to have sex without condoms." Polygyny also was cited in the female group as a practice that furthered the spread of AIDS.

Last, the current economic conditions in Zimbabwe were seen as aiding the rapid spread of HIV in that they encouraged risky practices such as

prostitution and relationships between young girls and "sugar daddies." To illustrate, a female participant noted, "Because of poverty here . . . our sisters [are] going out there to prostitute." A male participant noted, "Most of the ladies are not economically empowered so they turn to prostitution."

Despite such high levels of HIV/AIDS knowledge, there is still some misinformation about HIV/AIDS transmission. In the female group, a participant argued that HIV could be transmitted through sharing bathroom facilities. The participant, a university student, noted how the facilities they currently had in the residence halls were conducive to the spread of HIV:

> I believe I am at risk especially if you look at the facilities that we use here at the college. If I didn't know, I could just use the tub in the bathrooms. I could get AIDS through using that tub if someone who is positive used it. You can actually get it as long as it is not disinfected. You can actually contract [HIV] from the tub. HIV can live as long as the place is wet. We don't dry the tubs after using them. We leave them wet like that. [You can get AIDS] even on the chambers [the toilet bowl].

The same female participant argued, with the support of one other participant, that HIV could be transmitted through kissing "if someone [with HIV] has got a wound [in the mouth] and they kiss you, even if you don't have the wound." In the male group, a participant cited oral sex as a method of preventing HIV/AIDS, citing that the chances of infection through oral sex were lower than through penetrative sex. Also, in the male group, some participants felt that PSAs were misleading the public by having them believe that a person could live a full, healthy life after HIV infection. Despite this lack of knowledge, however, the high levels of knowledge about HIV/AIDS in both groups allowed participants to share some of their concerns regarding HIV/AIDS.

When asked about these concerns regarding HIV/AIDS, lack of a cure for HIV/AIDS and the number of AIDS orphans resulting from AIDS deaths were common replies. Statistics show that by 1997, 500,000 children had lost one or both parents to AIDS and that by the end of the following decade there would be 1.1 million orphans in Zimbabwe.[123] Most distressing is that some of these children may themselves be HIV positive. Participants showed concern about HIV illness and both groups related concern about the stigma that surrounds HIV infection. A male participant argued, "dying is not an issue because any disease can kill you. The main problem is what you are associated with once you show symptoms." Other participants reiterated such feelings: "People tend to shun you when you are HIV positive" (female group) and, from a participant in the male group,

> Personally, I am worried about the stigma. I am waiting for a day when HIV is treated like any other normal disease, when everyone does not have a panic about it. It's a killer just like cancer and I want everyone to treat it like that. The problem nowadays is that everyone is going around searching for AIDS symptoms. You are looking

> at someone and already saying, "Look at his ears, look at that" and that keeps perpetrating the stigma. As a result everyone is now afraid even to get tested and to admit that "OK I am suffering [from HIV]" because of that. It's just a condition and people should understand that.

Male participants noted their concern about calls for abstinence saying, "This thing about abstinence . . . we are just talking about something which is farfetched. I think basically let's come to reality and say let's reduce number of partners because abstinence . . . it's not practical." Another concern mentioned was the issue of not knowing their HIV status. A female participant said that "the idea of going to be tested and told that you are positive. It's really scary."

Participants in both groups were overwhelmingly concerned about the rates and rapid spread of infection. They were able to give information on current HIV/AIDS statistics in Zimbabwe. The general fear was that because of the high rate and spread of infection, everyone was at risk. A female participant noted that everyone was at risk, including those people who are not promiscuous, "even if I am faithful, I can be infected." It is clear there are high levels of knowledge about the HIV/AIDS situation in Zimbabwe. Such high levels of knowledge also enabled participants to discuss their own susceptibility to HIV infection.

Susceptibility

To gauge participants' perceptions of their own risk, participants were asked whether they believed they were at risk and how likely it was they would get HIV infection. They were also asked to identify practices that would make people highly susceptible to HIV infection. As previously mentioned, there were concerns about the high rate of infection, which were important to the participants because of their implications in selecting marriage partners. When asked when they thought about HIV/AIDS, female participants replied that they thought of it when considering whom to date and when deciding whether or not to engage in sexual intercourse with romantic partners. In response to the same question, male participants presented varying responses with some indicating that they never thought of it, whereas others revealed they thought seriously about HIV when they saw posters and advertisements. Some male participants said they thought about HIV/AIDS only after engaging in sexual activity without protection.

In terms of susceptibility, all female participants indicated they felt they were highly susceptible to HIV infection. Reasons for this included that some of the women were not confident of the fidelity of their partners, "It [HIV] affects people who are not promiscuous. The very innocent." Female participants also noted that being safe from infection was difficult for married women because, "if you are married you are not supposed to use protection because you are now married." In response to a suggestion that married

couples should get tested and then decide accordingly whether or not to use protection such as condoms, some female participants countered with, "But our traditional beliefs! Do they agree to that? Even if you resort to us[ing] the condom in marriage, it might not work. How about when you start planning your family?" As past research suggests, the importance of conception in marriage frequently undermines the practice of safe sex in marriage.[124]

Interestingly, despite high HIV/AIDS knowledge, and despite understanding the widespread occurrence of HIV, three of the ten male focus group participants maintained they were not at risk of HIV, even after they disclosed that they sometimes had unprotected sex. The rest of the male participants gave valid reasons for why they believed themselves to be highly susceptible to HIV infection. Reasons varied from having sexual partners who had never been tested for HIV, not being tested themselves, being very sexually active, not using protection consistently as a result of unexpected sexual liaisons or because of intoxication from alcohol, and from HIV being transmitted in other ways besides sexual activity such as through cuts from infected razor blades.

Severity

Participants generally agreed that the HIV/AIDS issue was severe. Its severity was attributed to the fact that there is no cure for HIV as yet. Because of this, severity was felt in several ways. First, death was viewed as inevitable once an individual contracted HIV: "Once you get it, that's it. You will die" (female group). Death due to HIV was seen as particularly horrible by some participants: "It's serious because you die many times before the actual death" (male group). The illness resulting from AIDS was viewed particularly negatively. Participants in both groups mentioned they had lost friends and relatives to AIDS. Second, the severity of HIV/AIDS was attributed to the high cost of antiretroviral treatment and the high cost of living, which renders AIDS victims helpless even in maintaining the recommended natural diet. "People who are HIV positive cannot afford drugs. They cannot afford the right food" (female group). The economic impact of HIV as a result of the loss of skilled labor also contributed to the perceived severity of HIV/AIDS.

Response Efficacy

As previously mentioned, participants in both focus groups demonstrated a high level of knowledge about HIV/AIDS and preventive methods. Overall, most participants indicated they felt that some responses to HIV/AIDS, such as abstinence and responsible behavior such as fidelity, were effective in preventing infection. However, participants questioned the efficacy of the most widely encouraged prevention method—condom usage. In both groups the effectiveness of condoms was questioned. Participants knew that condoms are not 100 percent effective in eliminating the risk of HIV. To illustrate, a female

participant noted, "using condoms doesn't necessarily guarantee that you are safe." In large part, the response efficacy or effectiveness of condom use was compromised by other behaviors such as inconsistent condom use or improper condom use, as well as by condom breakage. As a male participant noted, "I don't think condoms will help if today you use condoms and tomorrow you forget to use them." In addition to these concerns, other barriers to condom use emerged, which will be discussed later in the chapter.

The advocated response of maintaining a single sexual partner was questioned by female participants who noted male infidelity. Asked why she doubted that maintaining a single sexual partner was an effective preventive method, a female participant responded, "Within that relationship some other people will come up. You will be single to him but that doesn't mean you are the only one to him."

Another response that was discussed was getting tested for HIV. None of the participants indicated they had been tested for HIV. This was the result of fears associated with finding out undesired results and the ensuing stigma associated with being HIV positive. Some female participants indicated that HIV testing was futile if even after both partners tested negative, there was still the high likelihood of infidelity on the part of one's partner. Again, this is in keeping with the notion of female vulnerability in the face of HIV infection. Even when female participants demonstrated knowledge of preventive methods they did not feel efficacious enough to have faith in these responses.

Self-Efficacy

Self-efficacy was generally high regarding use of condoms. Participants felt they were able to use condoms. They also felt that condoms were readily available, widely accessible, and affordable enough for them to use. Self-efficacy was also high regarding HIV testing, with participants indicating that they knew where the testing facilities were and what the testing procedures were. Women were more self-efficacious about their ability to maintain a sexual relationship with only one partner. This was not the case for male participants, some of whom indicated they could not always control "chance sex" or unexpected sexual encounters with women who were not necessarily their partners. Self-efficacy was low regarding abstinence with participants noting how abstinence was not practical. As will be observed in the following section, self-efficacy was compromised by several barriers to HIV/AIDS preventive measures.

Barriers to Safe Sex

Several barriers to the practice of safe sex were identified in both focus groups. The majority of these barriers related to condom usage. Participants indicated that they and other people did not use condoms for several reasons, and a number of myths regarding condom use emerged. First, some participants viewed condoms as inherently defective.

> When they [condoms] were made, they were made for preventing pregnancy, but now we are using condoms that were meant to prevent pregnancy to protect ourselves from the virus AIDS. Why can't we have specifically condoms that were designed for AIDS virus because we really don't know whether the AIDS virus penetrates through the condom or what? (Female group)

Second, a myth emerged that condoms contained worms. A female participant maintained that she had tested this myth for herself and found it to be true: "If you take a condom, put some water [in it] and hang it overnight, you see [*sic*] some worms the following morning. Actually moving, not just still. . . . The point is maybe those worms will also get into me if I use the condoms." Similarly, a male participant mentioned the belief that condoms are actually spreading HIV/AIDS. This was also tied to some beliefs that condoms were actually pierced and broken at manufacture.

Other barriers pertained to lack of knowledge about how to use condoms and intoxication. Asked about his ability to use condoms easily, a participant responded, "I can't say I don't know how to use them but it depends on my condition. Like when I'm over drunk, I've lost all my senses [and] I can forget to put them on but sober as I am, I can use them." And still other identified barriers included spontaneous, unplanned sex in which "you won't get any chance to wear a condom because if you don't utilize the chance then you won't win" (Male group), or being ill-prepared for sexual encounters.

> I think sometimes we really want to practice safe sex but then you go ill-prepared. Like you go to a girl's room and she tells you, "you are going to spend the whole night in here" and then maybe you only have two condoms then you use them all and so you have no choice because at the end you will have sex with no condom. You will have no choice.

Yet another identified barrier was the belief that sex with condoms is not as pleasurable as sex without. As a female participant noted, "I have heard some people say that the use of condoms reduces satisfaction. It's not really the same as when you are not using condoms. Satisfaction becomes the obstacle. Condoms are not satisfaction guaranteed." This belief was reiterated by male participants, "It is sweeter to have fresh sex than that from a condom."

Last but not necessarily least, both groups mentioned that condoms bred distrust in relationships. Male participants noted:

> Sometimes you are with a girl . . . and she hears you tear the paper and then she asks you "Uenzani?" (What do you think you are doing?) Then you no longer know what to say. At the end you look stupid. They see you with a condom and say "you came all the way from your house for sex only." They ask you "what is this for? You came here prepared for sex." If you always have condoms she will say "so you come to me for sex only."

Female participants reported that, "If I suggest to my boyfriend that let's use a condom, he will say 'you don't trust me' or 'you don't trust yourself.' " Other female participants revealed, "some have this romantic idea that having sex without condoms makes the bond grow stronger . . . more love." Female participants also mentioned the problem of condoms breaking or coming off during intercourse.

Interestingly, the issue of power relations came up in the discussions with participants noting that in some relationships the male partner is dominant and may refuse to wear condoms. According to the participants, power relations within romantic relationships were important because they dictated who initiated discussion of safe sex between couples. Participants illustrated this issue by noting how in extreme cases some women were physically threatened as a result of insisting on condom use.

PSA Effectiveness and Suggestions for Improvement

The last topic of discussion in the focus groups was PSA effectiveness, which was intended to answer more accurately our questions about how viewers understood the messages they watched given the constraints and barriers they had already mentioned. During the meeting, participants watched a few PSAs. They were then asked to respond to the PSAs by sharing their thoughts on the strengths and weaknesses of the PSAs. They were also asked to offer suggestions for increasing the effectiveness of the PSAs. All participants were familiar with the PSAs that were shown. One participant, however, mentioned that she was only exposed to televised PSAs when she was in the city for work. In her rural home, she had no exposure to the PSAs. Although some participants argued that person-to-person communication about HIV/AIDS was preferable in the rural areas, others mentioned that they would like to see mediated PSAs introduced into the rural areas.

Results of the discussion show that although participants credited the PSAs with reminding them about the dangers of AIDS and for encouraging people to get tested for HIV, the general attitude was that PSAs were not effective. This lack of effectiveness was attributed to several factors. Among them, participants found the PSAs accounted for little of their HIV/AIDS information, were disseminating information that viewers already had, and were not describing HIV/AIDS or being explicit about the causes and effects of HIV/AIDS infection. In addition, PSAs were viewed as presenting only superficial information at best and misleading information at worst. To illustrate, participants noted:

> the problem is they really don't get to the seriousness of the disease because half the time, the people [shown in the PSAs] will be smiling. They will be smiling. It is not

> serious. Most of the time they use those people who are active and healthy and laughing. I think we need the real people who have the HIV to be on the adverts to really tell us. We don't feel anything when we see those people jumping and laughing. We just take it as a joke. They should show people at their different stages of HIV and those who are at their last stages because if you see them you will know that it is really bad. . . . They don't appeal to me at all because it really looks so fake. The way they are, it's not the real AIDS we know. We really need to see the AIDS. (Female group)

In addition, participants felt some of the information on the PSAs was blatantly misleading. For example, some male participants argued, "some of the information in the adverts is actually misleading. They talk about living healthy life after counseling when you are HIV positive. I don't think you can live a healthy life just by going to counseling. You need money."

Another criticism of the PSAs related to the amount of airtime accorded the PSAs. Participants talked about the level of repetition as well as the mistiming of the PSAs. A male participant complained, "I don't want to see them anymore. I'm tired of seeing them." They complained that the PSAs were shown during prime time: "You are watching this soccer match. All of a sudden someone just cuts and he throws in such an advert. They end up not serving the purpose that they initially intended to because it's boring. They are too monotonous. Then you don't even listen." (Male group)

A final criticism of the PSAs was their lack of information. Participants cited the fact that the PSAs called for condom use without presenting any information about how condoms were used. They also complained that the PSAs were encouraging people to get tested without giving any further information: "They concentrate more on going to be tested [to find out] if I have AIDS. Then what do I do next after I know I have it?" (Female group)

PSAs, then, were seen as not giving thorough information or presenting realistic information about HIV/AIDS and its effects. The images of HIV/AIDS on television are not consistent with the reality that people are experiencing on a daily basis. PSAs can become more effective by improving some of the production and direction techniques to show HIV/AIDS as it really is. They can also be more effective by offering more detailed information and by being less monotonous overall.

Some of the most significant findings from the focus group discussions include the discrepancy between very high levels of HIV/AIDS knowledge and the low perceptions of susceptibility particularly among male participants. Also important are results indicating participant awareness of sociocultural practices aiding the spread of HIV. Such practices include the traditional healers giving HIV-positive men instructions to engage in sexual activity with young virgins as a cure for HIV/AIDS. Also important was the emphasis placed on the role of current economic conditions in aiding HIV infection by leading poverty-stricken individuals into prostitution. Other

important results include the presence of myths regarding HIV transmission and condom use. Such myths can be directly addressed in PSAs.

The study presented in this chapter emerged out of a concern regarding the HIV/AIDS crisis in Zimbabwe. In a country already mired in political and economic turbulence, the HIV/AIDS epidemic has ravaged the Zimbabwean population. In a country where enormous amounts of money have been spent trying to curtail the spread of HIV, it appears that campaign planners and researchers alike may have overlooked the role of sociocultural and communication variables in the design of messages intended to alter risky behavior.

Attempting to introduce health campaigns that ignore such cultural issues and practices as polygamy, widow inheritance, and sexual cleansing, and the preference for risky sexual practices such as dry sex will yield only short-term, peripheral results. For meaningful, long-term results, producers of campaign messages may need to tackle these issues more aggressively and more directly. Formative evaluation will allow for more effective tailoring of messages to address the various differences in audiences. As Flora and Wallack note, "The mass media can be a powerful ally or a weak partner in health promotion."[125] Their effectiveness or ineffectiveness in promoting healthy behaviors and lifestyles is directly linked to how well they respond to the health needs of the consumers. Through this study, we argue that the EPPM is a useful model in varied contexts. It effectively guided focus group discussions of HIV/AIDS and HIV/AIDS PSAs in Zimbabwe. It is apparent, however, that the EPPM does not provide a central role to sociocultural and communication factors that may help in understanding responses to mass media messages.

Notes

1. Witte, "Putting the Fear Back," 329–49.
2. Kalipeni, "Health and Disease," 966.
3. UNAIDS, *AIDS in Africa.*
4. LaMonica and Marash, *AIDS in Africa (2000).*
5. Ibid.
6. Witte, "Putting the Fear Back," 329–49.
7. For example, see Jenkins, "Introduction to the Special Issue," 467.
8. Kesby, "Participatory Diagramming," 1723–41.
9. Loewenson et al. "Reproductive Health Rights in Zimbabwe" as cited in Kesby, "Participatory Diagramming" 1723.
10. Kesby, "Participatory Diagramming," 1724.
11. "Death Stalks a Continent," *Time* (accessed April 29, 2003).
12. Gregson et al., "Is There Evidence for Behavior Change," 321–30.
13. Cameron et al., "Perceptions of Condoms," 149–63.
14. Barnett and Blaikie, *AIDS in Africa: Its Present and Future Impact.*

15. For example, see Dawson, "AIDS in Africa: Historical Roots"; and McCombie, "AIDS in Cultural, Historic, and Epidemiological Context," 9–27.
16. Williams, *AIDS: An African Perspective*.
17. Hope, Preface to *AIDS and Development in Africa*, xv.
18. Stanecki and Walker, "Current Estimates and Projections," 281–96.
19. World Bank, *Intensifying Action*, 5.
20. Mann, "Worldwide Epidemiology of AIDS," 3–7.
21. Barnett and Blaikie, *AIDS in Africa: Its Present and Future Impact*.
22. Gilbert and Walker, "Treading the Path of Least Resistance," 1093–110.
23. World Bank, *Intensifying Action*.
24. Akeroyd, "Sociocultural Aspects of AIDS," 11–30.
25. Cameron et al., "Perceptions of Condoms," 149–63.
26. World Bank, *Intensifying Action*.
27. Ramanathan et al., "Access to HIV and AIDS Care," 436–57.
28. Williams, *AIDS: An African Perspective*.
29. Hope, "The Socioeconomic Context of AIDS in Africa," 2.
30. Ibid., 11.
31. LaMonica and Marash, *AIDS in Africa (2000)*.
32. World Health Organization, Epidemiological Fact Sheet: Zimbabwe (Geneva: WHO/UNAIDS, 2002).
33. Kalipeni, "Health and Disease," 965–83.
34. Ibid.
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17

THREE PROPOSALS FOR ANALYZING THE ECONOMIC GROWTH EFFECTS OF HIV/AIDS IN SUB-SAHARAN AFRICA

Richard Beilock

Not since the bubonic plague in the fourteenth century has there been an infectious disease as devastating as HIV/AIDS. While the epidemic is worldwide, the overwhelming majority of its impacts currently are in sub-Saharan Africa. In some of these societies, a third or more of adults in their economically active prime (age fifteen to forty-nine) are HIV positive. Contrary to beliefs held by many that this is an affliction of the destitute, HIV/AIDS in Africa is remarkably egalitarian. Indeed, in some cases infection rates are higher among highly trained workers, such as teachers, health-care workers, miners, and truckers, than in the general population. Given this, the impact of the epidemic on economic growth in sub-Saharan Africa should be readily detectable and markedly negative.

Certainly there are numerous studies of specific countries or industries in specific countries that point to the disease's negative effects.[1] These studies primarily employ economic engineering or simulation approaches for determining HIV/AIDS' impact. Current and projected infection rates among workers are estimated and based on these studies; treatment and training costs and occasionally values of lost production are calculated. In such studies, it is assumed that all adjustment mechanisms are captured by the researchers' models. For processes as complex as an economy's reactions to an epidemic, clearly, this is not the case. No researcher, a priori, can know, for example, to what extent less labor-intensive crops will be resorted to if agriculturalists sicken or if shifts would be primarily to more capital-intensive approaches for producing the same crops. At best, economic engineering and

simulation approaches provide approximations of what could happen given a limited menu of possible responses. To measure what has actually happened as the disease varies in severity requires studies across societies with different infection rates. Almost always, such studies investigate cross-country differences in overall growth rates of income or per capita income.

Considering the enormity of the emergency in Africa, as well as the potential for similarly severe outbreaks in other parts of the world, we find surprisingly few cross-country studies on sub-Saharan Africa. What studies there are frequently include non-African nations, raising questions about, and to what extent, the explanatory powers of the models reflect Africa versus rest-of-world differences, rather than the effects of the disease per se.[2] Moreover, in some of these studies the impacts of HIV/AIDS are modeled in unusual manners. For example, Bonnel uses the HIV-prevalence rate as an independent variable to explain macroeconomic policy ratings, and then the policy ratings are employed to help explain economic growth. The argument presented for this approach, while plausible, seems strange when it is noted that parallel treatment is not given to Africa's other great plague, malaria.[3] And for all of this, the results across these studies range from mildly negative to somewhat positive effects from the disease on economic growth. Even assuming the presence of surplus labor in many of these countries, it is difficult to imagine there would not be a marked negative relationship between the progression of the epidemic and economic growth.[4]

Three Proposals

In this chapter, three proposals or propositions are made regarding the analysis of the economic impacts of HIV/AIDS. All three are, or should be, obvious and, with the possible exception of the third, have been pointed out by others. They are:

1. Data on the extent of the epidemic in sub-Saharan Africa are so poor that, at the end of the day, even the most sophisticated analysis is little better than guesswork.
2. Particularly in developing nations, when attempting to ascertain the economic impact of a disease, sickness rates matter, not infection rates. This is important for a disease, such as HIV/AIDS, with very long incubation periods.
3. During the same time period in which HIV/AIDS became an epidemic in sub-Saharan Africa, the region has been subject to numerous, exceedingly violent conflicts. Cross-country assessments of economic growth should take this into account.

In the following sections, the three proposals are briefly discussed. This is followed, for the sake of demonstration, by our own estimates of HIV/AIDS

impacts on economic growth in sub-Saharan Africa, taking into account the second and third proposals.

Inadequacy of Data on the Epidemic

Virtually everyone would agree that resources devoted to combating HIV/AIDS are woefully inadequate and that nowhere is this truer than in sub-Saharan Africa. Moreover, poverty, institutional and infrastructural shortcomings, and political instability render sub-Saharan Africa one of the most difficult areas of the world in which to conduct any endeavor, including the campaign against HIV/AIDS. Under these exceedingly unfavorable conditions, UNAIDS, as well as some African governments, have accomplished much to reduce infections, care for those already infected, and understand the extent of the epidemic. It is not easy to assert that data regarding the extent of the disease are inadequate without appearing unmindful of the difficulties and ungrateful to those who have worked and continue to work under those hardships. As resources are severely limited, a case made for greater emphasis on information gathering necessarily implies reduced efforts on mitigation and treatment. Nevertheless, that is exactly what will be argued in this section.

Looking at sub-Saharan Africa as a whole, the data situation appears bad, though tolerably so. According to UNAIDS' *2004 Aids Epidemic Update*, between 23,100,000 and 27,900,000 people in sub-Saharan Africa are HIV positive. The low estimate is 83 percent of the high estimate.[5] Assuming the low and high estimates truly give the possible limits of the actual prevalence rate, a point estimate at the midpoint of that range would be accurate, plus or minus about 10 percent. If that were the case for each country, virtually every statistician in the world would deplore the level of uncertainty but would grudgingly admit that the estimates are potentially useful.

In deriving its low and high estimates for sub-Saharan Africa, clearly UNAIDS did not simply sum all of the low and high estimates for each country. If that had been done, the region's high estimate would have been nearly twice that of the low estimate.[6] While it is reasonable to assume that the variation between low and high estimates for an aggregation of countries would be less than the simple summation of their low and high estimates, the range determined for the region by UNAIDS seems unrealistically narrow. Of the thirty-eight nations included in UNAIDS' sub-Saharan data, only two, Botswana and Swaziland, have ranges for the low and high HIV-prevalence estimates as narrow as for the region (figure 17.1). Botswana and Swaziland are two of the region's smallest nations, together accounting for barely 5 percent of total population. For thirty of the countries, the high estimate is at least twice the low estimate, and for fifteen countries the high estimate is between three and fourteen times the low estimate.

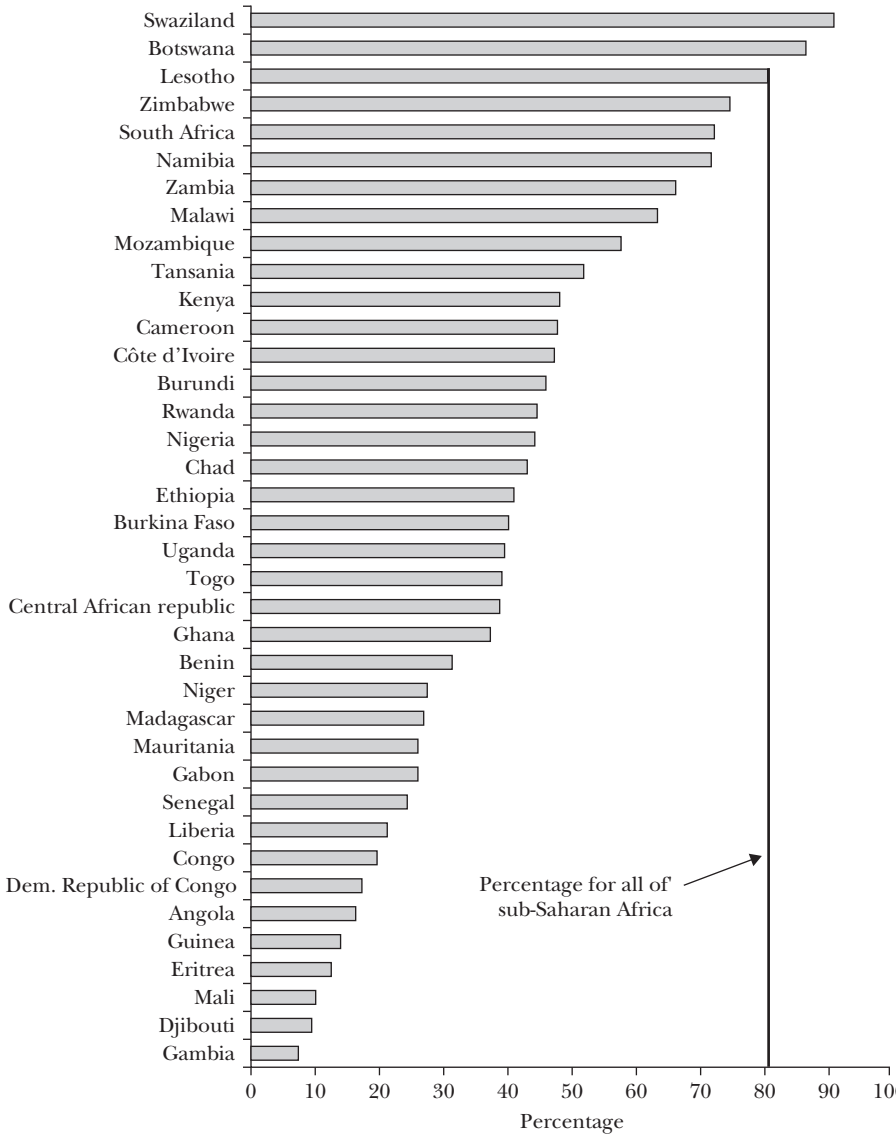


Figure 17.1. Percentage low HIV-prevalence estimate is of the high estimate in sub-Saharan Africa

Source: Adapted from UNAIDS, *Report on the Global HIV/AIDS Epidemic: 2004*.

Regardless of the degree of variation between low and high estimates, some compromise between the two can be selected for use in statistical analyses to determine the impacts of HIV/AIDS on economic growth (or any other dependent variable) and the degree of certainty about those impacts. Such

analyses, however, are based upon the assumption that the data are accurate and unbiased. Considering the extreme imprecision in the country-level estimates of HIV prevalence, cross-country statistical analyses using these data, however sophisticated, approximate the old adage "garbage in, garbage out," albeit very nice-looking garbage. As a result, it is effectively impossible to determine the impact of HIV/AIDS on economic growth in sub-Saharan Africa. The realization of this and the resulting frustration from using such poor data may explain, at least in part, the surprisingly small number of cross-country studies and their sometimes unusual approaches to modeling.

Without good information about the economic impacts of the disease, it is difficult for local governments and international groups to determine appropriate relative levels of effort for programs promoting disease control versus development. Beyond economic costs, imprecise estimates make it difficult to determine the extent of the health threat and to develop efficient countermeasures. For some countries the range of estimates runs the gamut from minor to epidemic. For example, in Eritrea, as few as one person in two hundred may be HIV positive, a rate well below that in many developed nations, or as high as one in every twenty-three persons.

The potential is obvious for those wishing to emphasize or minimize focus on the disease to use this range to advance their positions. The potential is also there for false determinations of what approaches work and do not work. For example, Uganda and, more recently, Kenya are pointed to as having successfully lowered HIV-prevalence rates. UNAIDS' estimates for the adult HIV-prevalence rate in Uganda and Kenya in 2003 are 4.1 percent and 6.7 percent, respectively. But they may be as high as 6.6 percent and 9.6 percent, respectively.[7] If actual prevalence rates in those countries are toward the high end of the range and (or) earlier prevalence rates were toward the low end, the extent of progress would be much less, if existent at all.

An Alternative Data Collection Approach

The profound difficulties in determining HIV-prevalence rates are well recognized. To date, the primary data source has been blood samples from syphilis tests of pregnant women in antenatal clinics, known as "sentinel surveillance." The representativeness of this group across the entire population is open to question. Augmenting these data, in some cases, are blood samples from sex workers and other specific groups, which again raise questions about representativeness. To avoid these problems, there are efforts to move to national household surveys.[8]

In an ideal world, large-scale, nationwide household surveys are preferable. But such efforts are extremely costly, well beyond the means of a large share of sub-Saharan nations, even with international assistance. Moreover, unless

participation is mandatory, the potential for biased results is high. Finally, they are arguably inefficient, at least outside of nations with extremely high HIV-prevalence rates. For example, suppose the actual HIV-prevalence rate in a nation is 2 percent. To determine this in a national household survey, forty-nine tests with negative results for HIV would have to be administered for every positive test. As most of those with negative results for HIV would have no other problems detectable through blood tests, their tests would have no other use.

Ultimately, the biggest problem in determining HIV prevalence is the need to identify those who are infected but as yet have few or any overt symptoms of the disease. If one has a time series of HIV-prevalence rates in a population and knowledge of how the disease progresses, it is possible to estimate AIDS (i.e., sickness) prevalence rates. The reverse is likewise true and that is the basis of our suggestion. We do not propose abandonment of current activities, such as sentinel surveillance, however, in lieu of national household surveys, we propose that the cost effectiveness be considered of mandatory blood testing for all patients in clinics and hospitals, with the possible exception of those with problems clearly not related to HIV, such as snakebites and mechanical injuries. Such an approach has the following advantages.

1. Clinics and hospitals have, or should obtain, the capacity to take samples of blood.
2. As these individuals are sick, they are more likely than overtly healthy individuals to have AIDS or for their blood to be useful in diagnosing different ailments.
3. As these individuals are seeking treatment, they are likely to be willing to "pay" for it with blood samples.
4. As the sampling would be mandatory and routine for all ailments, it would not have the same stigma as blood testing specifically for HIV.

Coverage would not be complete. All people who are HIV positive eventually will sicken but not all will seek treatment. Even in the most underdeveloped nation, however, the very large majority of those seriously ill will, at some point, seek medical care. The remainder, in all likelihood, would not be covered under any strategy.

AIDS, Not HIV, Prevalence Rates Should Be Used

Most, though not all, studies on cross-country impacts of the epidemic on economic growth use estimates of HIV-prevalence rates.[9] This approach is not problematic for diseases with incubation periods that are short, absolutely and relative to the amount of time individuals are symptomatic. This certainly is

not the case for HIV/AIDS, particularly in environments such as sub-Saharan Africa, where treatment options are limited. If incubation periods are lengthy, it still might be appropriate to include estimates of the numbers of those who are asymptomatic if they tend to alter their productive activities and (or) the society devotes considerable resources to their care. Again, this is not the norm in sub-Saharan Africa. From the standpoint of the impact of HIV/AIDS on the economy of an African country at any point in time, it is important to know how many are sick, not how many will be sick. That is, AIDS prevalence, not HIV prevalence, matters.

Regardless of the length of incubation periods, if those who are sick account for a fairly constant proportion of all those infected, on one level it makes little difference if HIV- or AIDS-prevalence rates are employed. For example, suppose the HIV-prevalence rate is always twice the AIDS-prevalence rate. If the former is employed as an explanatory variable, the resulting parameter estimate will be absolutely half that if the AIDS-prevalence rate had been employed. But the algebraic sign and significance level of the parameter estimate will be identical.

It is extremely unlikely, however, if there is a constant relationship between HIV- and AIDS-prevalence rates. Indeed, both within countries across time and among countries at any point in time, wide variations are likely in the relative magnitudes of these two measures. To demonstrate this, a hypothetical example is presented in figure 17.2 of a country that experiences a steady growth in HIV-prevalence rates from .5 percent to 23 percent, five years at that level, followed by a steady, though slower, decline. Three things are of particular note.

1. During periods in which HIV-prevalence rates are increasing, AIDS-prevalence rates rise more slowly, both absolutely and as a proportion of the HIV-prevalence rate. So, for example, the nations in southern Africa that experienced very rapid rises in HIV prevalence rates beginning in the 1990s have relatively low AIDS-prevalence rates.
2. The same effect works in reverse when HIV-prevalence rates are declining. In such cases, AIDS-prevalence rates fall more slowly. Indeed, if the decline in HIV prevalence follows an increase, AIDS-prevalence rates may continue to rise for several years before finally turning down. Therefore, in nations in which HIV-prevalence rates are declining, such as Uganda, AIDS-prevalence rates are relatively high.
3. The successive dips and rises in the AIDS-prevalence rate are artifacts of the assumed starting point for the infections, the rate at which infected individuals acquire AIDS and then die, and population growth rate. If these factors remain unchanged, these dips and rises become smaller over time. These factors are likely to change, however, generating additional ripples on the profile across time of the AIDS-prevalence rate. For example, the disease may mutate or underlying population dynamics may change or treat-

ments for those infected may change or become more available. Whether such changes occur or not, the point to be gleaned from the dips and rises in figure 17.2 is that the relationship between HIV- and AIDS-prevalence rates can be complex—in no way can the latter be considered to be a constant or even regularly changing proportion of the former.

An implication of points 1 and 2 is that using HIV-prevalence rates to indicate sickness levels related to the epidemic understates the situation in nations with declining HIV-prevalence rates and overstates it when HIV-prevalence rates are rising. Given the very rapid rise in HIV-prevalence rates, this effect would be most pronounced among the nations of southern Africa. This may explain some unusual approaches resorted to by researchers using HIV prevalence. For example, in some of his estimates, Bonnel employed a dummy variable for southern Africa, along with HIV prevalence, as explanatory variables. The author provided no explanation for the southern Africa dummy.[10] We speculate that Bonnel included the southern Africa dummy because of some hypothesis that the region's mineral wealth, government institutions, or other characteristics were qualitatively superior to those in the rest of sub-Saharan Africa and would impact on the dependent variables. The positive and statistically significant parameter estimates for the dummy would have lent credence to this line of reasoning, with the appropriately negative parameter estimates related to HIV prevalence as a welcome dividend. And all of this may have been entirely correct. However, the dummy variable also had the effect of correcting for the overestimate of the impacts of the epidemic in southern Africa from using the HIV-prevalence rate.[11]

Accounting for Conflicts and Disasters

Researchers such as ourselves usually develop and estimate models of economic performance in sterile offices, pulling data from elegantly formatted datasets. In these datasets, Canada, Cameroon, Chad, Cambodia, China, and Chile all appear in similar fashion. We select the variables and, perhaps consulting an atlas to check which countries are in sub-Saharan Africa, draw out the desired values. Underlying this process is the hope that there are no other factors systematically influencing economic performance. However, arguably, sub-Saharan Africa is different in ways rarely reflected in our datasets. For example, it is by far the most vulnerable to natural disasters and conflicts.

Sub-Saharan Africa has approximately 10 percent of the world's population. In 2002, the region had 20 percent of all natural disasters and one-third of all deaths related to natural disasters.[12] Half of the planet's famines regularly occur in sub-Saharan Africa. Appreciating the importance of India's agriculture and the extreme effects of its highly variable weather conditions, Keynes

once commented that the Indian economy was a wager on the monsoons. To the extent this was (or is) true, the same should hold for many sub-Saharan African countries, such as the nations of the Sahel and the Horn of Africa, which have a large agriculture base and are drought prone.

Dwarfing and compounding the impact of natural disasters are the region's numerous conflicts. Over the past thirty years, in excess of three million people have died in Sudan's civil wars, with the ongoing situation in Darfur being a tragic continuation and expansion of the seemingly endless carnage. Between 1998 and 2002, the Democratic Republic of the Congo was the arena for the so-called African World War, involving at least six nations. The major fighting ended in 2002. A recent report, however, indicates that one thousand civilians die daily from causes related to a continuing though lower-level conflict. To date, it is estimated that 3.8 million have died, the bloodiest conflict since World War II.[13] That war began with an invasion by Rwanda, and Rwanda again is threatening invasion. There are also the massacres and continuing problems in Rwanda and Burundi and the mosaic of civil wars in West Africa. The list goes on. The point is that modeling sub-Saharan economic performance without accounting for conflicts is like doing the same for Europe in the 1940s.

Demonstration Estimates of HIV/AIDS' Effects on per Capita Income

In this section we present estimates of the impact of HIV/AIDS on per capita economic growth in sub-Saharan Africa between 1995 and 2001. Our approach takes into account the second and third points made in the preceding section, that is, the appropriateness of using AIDS rather than HIV-prevalence rates and the importance of accounting for disasters and conflicts. The unusual description of the estimates as "demonstration" reflects our appreciation of their shortcomings. They are offered primarily to suggest directions for future research rather than to create citable point estimates of disease's economic impacts. There are three reasons for this disclaimer.

1. The inadequacies of HIV-prevalence estimates described in the preceding section preclude having reasonable levels of confidence in any estimation effort, even one using the (ultimately unknowable) perfect model.
2. The modeling approach, while reasonable, is simplistic.
3. A crude methodology was employed to convert HIV-prevalence rates into AIDS-prevalence rates (the same as described in figure 17.2). Natural disasters were not taken into account. The approach used for incorporating conflicts into the model does not capture cross-country differences in their intensities.

Model Description

Per capita growth in income, measured as the percentage change in real per capita gross national income between 1995 and 2001 (INCCHG), was assumed to be a function of:

1. Per capita endowments of physical and human capital
   CAPCHG: Physical capital effects were represented by a measure of the cumulative change between 1995 and 2001 in gross capital formation.
   FDICHG: On the assumption that there may be qualitative differences from foreign versus domestic investments, a measure of the cumulative change between 1995 and 2001 in FDI.
   LITERACY: The adult literacy rate in 1995.
2. Changes in the terms of trade for exports
   TERMCHG: The 2001 export weighted terms of trade as an index with 1995 equal to 100.
3. Openness of the society
   OPENNESS: Recognizing the importance for economic growth of access to information and the freedom to use it, Freedom House's score for openness for 2000.
4. Conflict
   WAR: A binary variable equal to 1 if there was significant conflict within the country between 1995 and 2001, zero otherwise.
   PASTWAR: A binary variable equal to 1 if conflict levels within the country were higher during the five years prior to 1995, zero otherwise.
   1. HIV/AIDS
   2. PREV95: The adult prevalence rate in 1995
   3. PREVCHG: The change in adult prevalence rate between 2001 and 1995.

These variables are discussed in greater detail in the appendix at the end of the chapter.

Results

The results are presented in table 17.1. In Models 1a, 2a, and 3a, AIDS-prevalence rates were employed. Models 1h, 2h, and 3h are identical, respectively, to the first three models except they use HIV-prevalence rates.

Models 1a and 1h

Model 1a is the full model, employing all explanatory variables and using estimates of AIDS-prevalence rates. The two most striking aspects of the results are the high percentage of squared deviations from the mean, which are

Table 17.1. Regressions of percentage change in real per capita GNI: sub-Saharan African countries, 1995–2001

Variables	AIDS-prevalence rates			HIV-prevalence rates		
	Model 1a	**Model 2a**	**Model 3a**	**Model 1h**	**Model 2h**	**Model 3h**
Intercept	21.83	26.20	30.24**	22.50	23.67	27.00*
	(19.24)	(17.8)	(13.51)	(19.39)	(18.78)	(14.20)
CAPCHG	2.47	2.28		2.95	2.70	
	(2.96)	(2.91)		(3.12)	(2.99)	
FDICHG	1.42**	1.40**	1.41***	1.19*	1.28**	1.31**
	(0.57)	(0.56)	(0.51)	(0.63)	(0.58)	(0.54)
TERMCHG	0.11	0.071	0.087	0.066	0.060	0.093
	(0.15)	(0.14)	(0.11)	(0.15)	(0.14)	(0.12)
LITERACY	−0.28*	−0.23*	−0.27**	−0.27*	−0.24*	−0.28**
	(0.14)	(0.12)	(0.10)	(0.14)	(0.12)	(0.11)
OPENNESS	−3.18*	−4.07**	−4.11**	−3.22	−3.41*	−3.39*
	(1.88)	(1.81)	(1.70)	(1.89)	(1.79)	(1.67)
WAR	−21.34***	−21.07***	−21.40***	−19.56***	−19.65***	−20.94***
	(6.52)	(6.42)				
			(5.26)	(6.73)	(6.60)	(5.59)
PASTWAR	15.37**	14.53*	15.61**	12.73	12.96*	14.02*
	(7.33)	(7.12)	(6.64)	(7.56)	(7.39)	(6.86)
PREV95	0.53			0.12		
	(0.80)			(0.30)		
PREVCHG	−1.44	−1.63*	−1.64*	−0.61	−0.69	−0.74
	(0.99)	(0.93)	(0.84)	(0.62)	(0.57)	(0.53)
Equation						
F Value	***	4.08***	5.08***	3.13**	3.65***	4.53***
R^2	0.61	0.60	0.58	0.57	0.57	0.55
N	30	30	30	30	30	30

* Denotes stastically significant at 0.10 level.
** Denotes stastically significant at 0.05 level.
*** Denotes stastically significant at 0.01 level.

explained, 61 percent (i.e., $R^2 = 0.61$), and that the variables related to conflict are the most important contributors to this performance. With the exception of the negative sign for the parameter estimate associated with LITERACY, the signs and magnitudes of the parameter estimates appear reasonable. There are several possible explanations for this result. It may be that the adult literacy rate is correlated with some other relevant variable not included in the regression. Alternatively, in some cases, a lower literacy rate may be due to greater emphasis on higher education, which might have greater economic payoffs. Moreover, there may be lagged effects not captured in our specification and (or) we should have estimated changes in literacy or some other measure of human capital over the period.

As would be expected, the parameter estimates associated with PREV95 and PREVCHG are both negative, suggesting harmful impacts on income from HIV/AIDS. However, neither parameter estimate is significant.

In virtually all regards, the results for Model 1h, which uses HIV prevalence rates, are similar to those for Model 1. However, overall the results are somewhat weaker. For example, the R^2 is 0.57, versus 0.61 using AIDS prevalence estimates. While the difference in explanatory power is not great, it is suggestive of the advantage of using AIDS, rather than HIV, prevalence.

Models 2a and 2h

This model is identical to Model 1 except that PREV95 has been dropped as an explanatory variable. The justification for this is that only changes in prevalence rates over a period, rather than or in addition to the initial prevalence rate, may impact on per capita incomes. The results suggest the appropriateness of this modification. The explanatory power of the equation is virtually unaffected: R^2 drops from 0.61 for Model 1 to 0.60 in Model 2. The signs and magnitudes of the parameter estimates are largely unchanged.

The parameter estimate for PREVCHG is -1.63 and is significant at the 10 percent level of confidence. It suggests that for every 1 percent increase in the AIDS prevalence rate over the period, per capita incomes fell by 1.63 percent.

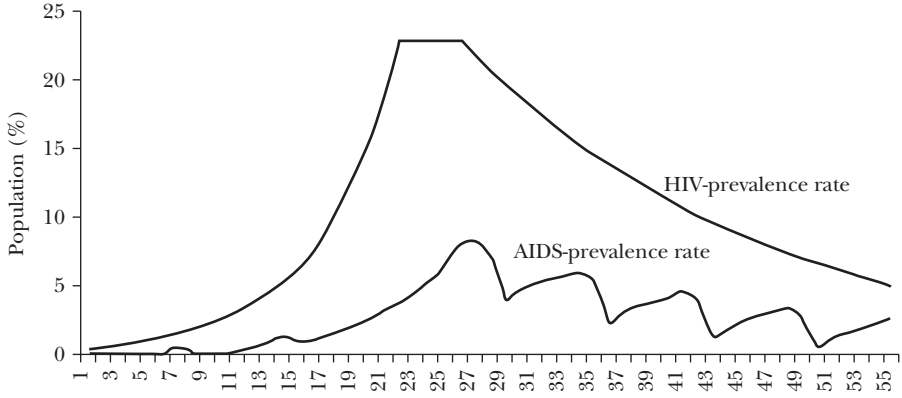
Again, the corresponding model using HIV-prevalence rates, Model 2h, is similar, but somewhat weaker, R^2 equal to 0.57. The parameter estimate for PREVCHG in Model 2h is insignificant (attained significance level at the 24 percent level).

Models 3a and 3h

In the final modification, CAPCHG is dropped. In the previous models it was insignificant. Moreover, it and FDICHG capture much of the same effect and, not unexpectedly, are highly correlated (simple correlation of 0.61).

Relative to the previous models, Model 3 has somewhat reduced overall explanatory power: R^2 equals 0.58. However, the statistical significance of many of the parameter estimates is improved. As would be expected, the parameter estimate associated with FDICHG benefits, becoming significant at the 1 percent level. Even the parameter estimate for PREVCHG improves, though not enough to clear the 5 percent significance hurtle. As before, the corresponding model using HIV prevalence is somewhat weaker and the parameter estimate associated with PREVCHG is still insignificant.

Cross-country analyses to determine the impact of HIV/AIDS on economic growth in sub-Saharan Africa have been surprisingly few and, on the whole, unsatisfactory. Results have been generally weak and conflicting from study to study. Moreover, some models have been specified in unusual manners,



Assumptions:

Population growth rate: 1.5% less AIDS deaths.

HIV-prevalence rate: Begins year 1 at 0.5% of population. The rate increases by 20% per year until it reaches 23% of population. It then remains constant for 5 years. Thereafter, it falls by 5% per year.

AIDS: Present with one third of those in their 5th year of being HIV+, two thrids of those in their 6th year of being HIV+, and all those in their 7th year.

AIDS deaths: All those at end of their 7th year of being HIV+ die.

Figure 17.2. Relationship between HIV and AIDS prevalences, hypothetical example. Chart by Richard Beilock.

probably reflecting frustrations with problematic data. In this paper, we have made three suggestions to improve this situation.

The first is to recognize that data regarding infection rates lack sufficient precision to form the basis for credible estimates. The ideal solution would be large-scale national blood testing. Financial and confidentiality problems make this unlikely in the foreseeable future for all but a few countries. We suggest, as a possible alternative, routine blood tests for patients with all ailments, excepting those resulting from causes such as mechanical injuries. This would not facilitate a direct estimation of HIV-prevalence rates but would for AIDS-prevalence rates. Moreover, with a time series of AIDS-prevalence rates, HIV-prevalence rates could be estimated.

Second, we argue that for the sake of estimating the impact on economic performance, sickness rates matter, not infection rates. For that reason, AIDS-prevalence rates should be employed. Finally, more than any other region of the planet, Africa is prone to disasters, most notably famines and conflicts. Estimates of economic performance ought to take these into account.

To demonstrate how the second and third points might be incorporated into a model, we present estimates of real per capita income growth for sub-Saharan Africa for 1995 through 2001. While the results were broadly in line with expec-

tations, the tentative nature of the estimates should be stressed. They were intended only to suggest directions for future modeling efforts. Moreover, even with the best model, definitive estimates will not be possible until such time as more accurate data on the extent of the disease in these countries are available.

Notes

1. Kambou, Devarajan, and Over, "Economic Impact of AIDS in an African Country," 109–30; Over, *Macroeconomic Impact of AIDS in Sub-Saharan Africa*; Cuddington, *Macro-economic Impact of AIDS in a Dualistic, Labor-Surplus Economy with an Application to Tanzania*; Cuddington and Hancock, "Assessing the Impact of AIDS on the Growth Path of the Malawian Economy," 363–68.

2. Bonnel, "HIV/AIDS and Economic Growth," 820–55; Bloom and Mahal, "Does the AIDS Epidemic Threaten Economic Growth?" 105–24.

3. Rather, indicators of malaria's severity enter the model directly in the growth equation. See Bonnel, "HIV/AIDS and Economic Growth," 820–55.

4. It should be noted, however, that Bloom and Mahal argue that it is reasonable to assume that HIV/AIDS does not lower growth rates, at least, per capita.

5. UNAIDS, *Report on the Global HIV/AIDS Epidemic.*

6. The sum of UNAID's low HIV-prevalence estimates for all sub-Saharan countries is 17,962,600. The corresponding figure for the high estimates is 35,505,000.

7. UNAIDS, *Report on the Global HIV/AIDS Epidemic.*

8. Ibid.

9. For example Bloom and Mahal, "Does the AIDS Epidemic Threaten Economic Growth?" models AIDS prevalence from HIV-prevalence data for their estimation.

10. Bonnel, "HIV/AIDS and Economic Growth," 820–55.

11. We cannot stress enough that we are not suggesting Bonnel intentionally included the dummy for the purpose of "improving" the results for the parameter estimates associated with HIV prevalence. Bonnel's use of HIV prevalence strongly suggests that he was unaware of the issues discussed in this section or believed them to be unimportant.

12. International Federation of Red Cross and Red Crescent Societies, *World Disasters Report: 2003.*

13. International Rescue Committee, *Mortality in the Democratic Republic of Congon.*

Appendix: Variables for Regression Estimates

INCCHG

Definition: The percentage change in real per capita income (GNI) between 1995 and 2001.

Source: World Bank.

Discussion: The dependent variable.

CAPCHG

Definition: Index of cumulative change in gross capital formation from 1995 to 2001.

Source: World Bank.

Discussion: Gross capital formation is reported by World Bank as a percentage of GDP. This was treated like a percentage rate and the index formed by multiplying 1 plus that value (expressed as a proportion) for each year to the other years.

FDICHG

Definition: Index of cumulative change in foreign direct investment from 1995 to 2001.

Source: World Bank.

Discussion: Foreign direct investment is reported by World Bank as a percentage of GDP. This was treated like a percentage rate and the index formed by multiplying 1 plus that value (expressed as a proportion) for each year to the other years.

In some sense this measure is redundant to CAPCHG. Its inclusion is based on the premise that FDI may be qualitatively different from investments of domestic origin.

TERMCHG

Definition: Index of the terms of trade in 2001 weighted by the country's exports. The index equaled 100 for 1995.

Source: World Bank.

Discussion: Inclusion of this variable was based upon the premise that as the value of a nation's exports rise (fall) relative to imported goods, real per capita incomes should be positively (negatively) affected.

LITERACY

Definition: Adult literacy rate for 2001.

Source: World Bank.

Discussion: A higher literacy rate should facilitate adoption of new technologies, with attendant positive impacts on real per capita incomes.

OPENNESS

Definition: Freedom House score for openness for 2000.

Source: Freedom House.

Discussion: Freedom House assigns scores from 1 through 7, with lower values indicating higher levels of openness. This index was employed directly as an explanatory variable on the assumption that greater openness facilitates economic activity and growth.

The Freedom House scoring is an ordered qualitative index but not a quantitative index. For example, a nation with a score of 4.5 is deemed to be less open than one with a score of 2. However, this does not mean that it is 44.4 percent as open as the other nation. Our use of the scoring implicitly assumes that

it approximates a quantitative index. A more proper approach would have been to create one or more binary variables from the scoring, such as a binary variable equal to 1 if the scoring were 1.5 or less, zero otherwise. Experimentation with this approach neither improved the fit of the model nor affected parameter estimates of the other explanatory variables and the use of multiple binary variables used up additional degrees of freedom. For these reasons, as well as because the regressions are intended to demonstrate possible avenues for future research rather than provide definitive findings, the scoring was employed directly as an explanatory variable.

WAR

Definition: Binary variable equal to 1 if significant conflicts during the 1995 through 2001 period, zero otherwise.

Source: CIA and various news sources.

Discussion: One of the three main points made in this paper is the importance of accounting for conflict in sub-Saharan Africa. To our knowledge, this has not been done in any other cross-country study of economic performance in the region. The approach employed was, at best, a reasonable first approximation. Relying primarily on descriptions of conflicts contained in various editions of the *CIA World Factbook*, augmented by various news sources, WAR was assigned a value of 1 if any conflicts occurred which appeared sufficiently intense to create significant destruction and (or) disruption of economic activity. This determination was based on our best judgment and not a predetermined, replicable standard. More seriously, perhaps, the approach does not account for differences in the intensities and durations of conflicts.

PASTWAR

Definition: Binary variable equal to 1 if conflicts during the five years preceding 1995 were more intense than between 1995 and 2001, zero otherwise.

Source: CIA and various news sources.

Discussion: The approach was the same as for WAR, with the same inherent problems. The underlying assumption for including this variable was that reduced conflict levels promote faster economic growth.

PREV95

Definition: Adult prevalence rate for HIV or AIDS in 1995

Source: UNAIDS and U.S. Bureau of the Census (for population estimates)

Discussion: HIV prevalence rates for 1995 are the estimates provided by UNAIDS. Employing the assumptions described in figure 17.2, AIDS-prevalence rates were estimated, including those for 1995.

PREVCHG

Definition: The difference between the adult prevalence rate for HIV or AIDS in 2001 and in 1995

Source: UNAIDS and U.S. Bureau of the Census (for population estimates)

Discussion: HIV prevalence rates for 1995 and 2001 are the estimates provided by UNAIDS. Employing the assumptions described in figure 17.2, AIDS-prevalence rates were estimated.

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CONTRIBUTORS

OBIJIOFOR AGINAM, PhD, is Professor of Law at Carleton University, Ottawa, Canada. Born in Nigeria, he holds a PhD in Law from the University of British Columbia, Canada. Aginam is an Attorney & Research Associate with the leading Nigerian firm of Olisa Agbakoba & Associates, has served as a legal consultant to numerous governmental and civil society organizations in Africa, and has served as Global Health Leadership Officer for the World Health Organization, Geneva, Switzerland from 1999–2001. He was Global Security and Cooperation Fellow of the Social Science Research Council (SSRC) of New York, 2003–4. Widely published, Aginam is co-editor of *Humanizing Our Global Order: Essays in Honour of Ivan Head* and author of *Global Health Governance: International Law and Public Health in a Divided World.*

YACOUBA BANHORO was born in Dédougou, Burkina Faso, and studied African history at the University of Ouagadougou. He has worked as a secondary school teacher in his country since 1992. He conducted his PhD research at the University of Hamburg in Germany from 2002 to 2005 on the history of sexually transmitted diseases, particularly HIV/AIDS, in Burkina Faso.

RICHARD BEILOCK, PhD, is a professor in the Food and Resource Economics Department at the University of Florida. He has worked in Africa, Latin America, Europe, and Asia on various aspects of development.

CHARITY CHENGA is a PhD candidate at the University of Kent undertaking a comparative study of local black and migrant youths in their transition from school to work in a South African mining community. Charity's academic background includes an MA in Migration and Social Care studies, a BS in Economics, and a Diploma in Mental Health Nursing. Chenga has two papers, "Health in the South African mining communities" and "Critical factors affecting sustainable development projects in the mining communities," which have been accepted for publication in a book and an accredited journal, respectively.

MANDI CHIKOMBERO, PhD, is an Assistant Professor of Communication and Development Studies in the School of Telecommunications at Ohio

University. She holds a PhD (2004) in Communication Studies from Kent State University and an MA (1999) from the University of Zimbabwe. She teaches courses on HIV/AIDS, Health Communication, Women in African Development, Media in Africa, Health Program Evaluation, and Media for Social Change. Chikombero has conducted award-winning research focusing on HIV/AIDS in Africa, specifically the impact of mass-mediated HIV/AIDS messages and sociocultural factors surrounding HIV/AIDS.

KALEY CRESWELL is a Registered Nurse and is currently working on her Master's Degree in Food and Resource Economics at the University of Florida.

FREEK CRONJÉ, PhD, is Senior Lecturer in the School of Social and Government Studies at the North West University in South Africa. He is also Chair of the Subject Group Sociology of the School. His main field of specialization is sustainable social development. Cronjé has worked and published on issues such as migration, health, and community development. His two latest publications are "The Interaction between HIV/AIDS and Poverty: A Psycho-social Perspective" and "Critical Factors for Sustainable Social Projects," co-authored by Charity Chenga.

FRANK N. F. DADZIE, MA, MPH, is a Lecturer in the Department of Economics, Clark Atlanta University.

GABRIEL B. FOSU, PhD, is an Adjunct Associate Professor of Sociology at the University of Maryland, Baltimore County. He was the United Nations Chief Technical Adviser to the National Population Commission of the Federal Government of Nigeria, where he published eight volumes on the 1991 *Population Census of Nigeria*. His research focuses on HIV/AIDS and reproductive health program development, management, monitoring and evaluation, social structure and health, and access to and utilization of population and health services, particularly among minority and disadvantaged populations.

STEPHEN OBENG-MANU GYIMAH, PhD, is currently an Assistant Professor in the Department of Sociology, Queen's University, Kingston, Ontario, where he teaches Quantitative Methods. He obtained his PhD in Sociology and Demography from the University of Western Ontario. He is a former Population Council Fellow whose research interests focus on the social demography of sub-Saharan Africa. Some of his recent work has focused on migration, family dynamics, maternal and child mortality, and morbidity patterns.

MATTHEW M. HEATON is a PhD candidate at the University of Texas at Austin. His work focuses on mental illness and migration in Nigeria. A Patrice Lumumba Fellow, his publications include "African Cities and the Globalization of Disease: The Influenza Pandemic of 1918–19" and two historiographical publications

forthcoming: one on the influenza pandemic of 1918–19 in Africa and another on the works of A. E. Afigbo. He is currently co-authoring a book on the history of Nigeria for Cambridge University Press with Toyin Falola.

KATHRYN H. JACOBSEN, PhD, earned an MPH in International Health and a PhD in Epidemiology from the University of Michigan. She is currently an Assistant Professor in the Department of Global and Community Health at George Mason University in Fairfax, Virginia.

W. BEDIAKO LAMOUSÉ-SMITH, PhD, is Professor of Africana Studies at the University of Maryland, Baltimore County. He has previously taught at the Free University of Berlin, Makerere University, and Syracuse University. Co-author of *Africa Interactive Maps*, his research interests are in sub-Saharan African demography and health, comparative religions, tourism and economic development, the trans-Atlantic slave trade, diasporan relations, and contemporary politics.

WILLIAM N. MKANTA, PhD, received his BS in Mathematics and Statistics from the University of Dar es Salaam, his Master of Statistics in Biostatistics from Makerere University, Kampala, and his PhD in Health Services Research from the University of Florida. His research topic for the PhD degree was the use of health-care services among AIDS patients with long-term survival. Dr. Mkanta has participated in various research projects within and outside Tanzania under different capacities such as statistical consultant, collaborating investigator, and principal investigator. His research interests include health services in HIV/AIDS, access and utilization of health care services, chronic disease, and health informatics. His most recent peer-reviewed publication on HIV/AIDS is "Use of Health Care Services among Persons Living with HIV Infection: State of the Science and Future Directions." Mkanta is currently working as a research/programs coordinator at the Department of Health Services Research, Management and Policy, College of Public Health and Health Professions at the University of Florida.

GERALD M. MUMMA, PhD, works for the Prevention Effectiveness and Health Economics Branch, U.S. Centers for Disease Control and Prevention, in Atlanta.

KALALA NGALAMULUME, PhD, is an Associate Professor of Africana Studies and History at Bryn Mawr College. His research interests are in the sociocultural history of disease and medicine, urban history, and Francophone West Africa. He is currently completing a book manuscript on epidemics and public health in Saint-Louis-du-Senegal from the mid-nineteenth to early twentieth centuries.

RAPHAEL CHIJIOKE NJOKU, PhD, holds a joint position as Assistant Professor of African History in the Departments of History and Pan African Studies at the University of Louisville. He has previously taught at the Department of

History, Alvan Ikoku College of Education, Owerri, Nigeria. Njoku is the author of *Culture and Customs of Morocco* and has published in several international journals and edited volumes. His second book, *African Cultural Values: Igbo Political Leadership in Colonial Nigeria, 1900–1966*, is forthcoming.

Cecilia S. Obeng, PhD, is an Assistant Professor at Indiana University, Bloomington, in the Department of Applied Health Science. She teaches Human Development (Middle Childhood to Adolescence), Atypicality in Development in Children, Health Education in K-6, and Children's Health. She has published two books, an edited volume, and articles in refereed journals and book chapters.

Iruka N. Okeke, PhD, is Assistant Professor of Biology at Haverford College, Pennsylvania. She has previously served on the faculty at the University of Bradford, UK, and at Obafemi Awolowo University, Nigeria. Okeke studies the microbiology of diarrheal disease and antimicrobial drug resistance, particularly in bacterial isolates from Africa. She is also interested in human activities that contribute to drug resistance. She has published several peer-reviewed papers in scientific and medical journals. Okeke is currently a Branco-Weiss Fellow of the Society in Science.

Akpen Philip, MA, is currently a PhD student at Bayero University, Kano, Nigeria. His research interests are in the area of social services or infrastructural facilities, town and urban development, and precolonial economies of the borderline communities between the Benue and Cross River states of Nigeria. He has contributed to the edited volume, *Issues in Nigeria's Political and Economic Development.*

Baffour K. Takyi, PhD, is an Associate Professor of Sociology at the University of Akron. He conducts research on reproductive-related behavior, including HIV/AIDS in Africa, African families, and recent African immigrants in the United States. His published works have appeared in such journals as *Journal of Marriage and the Family, Social Science and Medicine, Journal of Comparative Family, Sociological Focus, Family Perspectives, Ethnic and Racial Studies, Western Journal of Black Studies*, and *Sociology of Religion*.

Melissa K. Van Dyke earned an MPH in International Health and is currently a doctoral candidate in Epidemiology at the University of Michigan. Her dissertation research is based in Kenya.

Sophie Wertheimer is a PhD student in the Faculty of Communication and Culture at the University of Calgary, Alberta, Canada. Her work is centered on social and cultural aspects of the HIV/AIDS pandemic in African and western contexts and at their sites of intersection and interconnection.

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HIV/AIDS, Illness, and African Well-Being highlights the specific health problems facing Africa today, most particularly the HIV/AIDS pandemic. Taking a multidisciplinary approach, the book presents not only the health crises facing Africa today but also the larger historical and contemporary contexts within which they must be understood and managed. Chapters offering analysis of specific illness case studies, and the effects of globalization and underdevelopment on health, provide an overarching context in which HIV/AIDS and other health-related concerns can be understood. The chapters on HIV/AIDS grapple with the problematics of national and international policies, the sociological effects of the pandemic, and policy options for the future. *HIV/AIDS, Illness, and African Well-Being* thus provides a comprehensive view of health issues currently plaguing the continent and the many different ways that scholars are interpreting the health outlook in Africa.

Toyin Falola is the Frances Higginbotham Nalle Centennial Professor in History at the University of Texas at Austin. A Fellow of the Nigerian Academy of Letters, his books include *The Power of African Cultures*, *Economic Reforms and Modernization in Nigeria, 1945–1965* and *A Mouth Sweeter than Salt: An African Memoir.* He has also edited and co-edited many books including *Yoruba Creativity, African Urbanization in Historical Perspective*, and *The Yoruba Diaspora in the Atlantic World.* He is the co-editor of the *Journal of African Economic History*, Series Editor of Rochester Studies in African History and the Diaspora, and Series Editor of the Culture and Customs of Africa by Greenwood Press. Falola has served on the board of the African Studies Association, and has received various awards and honors, including the Jean Holloway Award for Teaching Excellence, the Texas Exes Teaching Award, and the Ibn Khaldun Distinguished Award for Research Excellence. In recognition of his monumental contribution to African studies, his students and colleagues have presented him with two Festschrifts edited by Adebayo Oyebade: *The Transformation of Nigeria: Essays in Honor of Toyin Falola* and *The Foundations of Nigeria: Essays in Honor of Toyin Falola.*

Matthew M. Heaton is a PhD candidate at the University of Texas at Austin. His work focuses on mental illness and migration in Nigeria. A Patrice Lumumba Fellow, his publications include "African Cities and the Globalization of Disease: The Influenza Pandemic of 1918–19" in *Urbanization and African Cultures.* He has two historiographical publications forthcoming: one on the influenza pandemic of 1918–19 in Africa and another on the works of A. E. Afigbo. He is currently co-authoring with Toyin Falola a book on the history of Nigeria for Cambridge University Press.

"Falola and Heaton have edited a timely and useful book that will be of crucial interdisciplinary benefit to a wide spectrum of scholars and students, and to the general reader. The carefully selected contributors have produced essays on the HIV/AIDS pandemic and its vast implications, providing a scholarly gateway to the disease's further study in Africa and other developing societies."

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—George Ndege, Saint Louis University

"Falola, Heaton, and their associated contributors have made a profound contribution to our understanding of HIV/AIDS in Africa. By addressing this difficult topic in historical and global context, and by keeping a constant eye to African understandings and perspectives towards disease, the editors and authors provide insights that are both scholarly and profoundly human. This is African Studies, and interdisciplinarity, done right!"

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