Health Situation in the South-East Asia Region 2001–2007

World Health Organization
Regional Office for South-East Asia

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Acronyms and abbreviations

ADB	Asian Development Bank
AFR	African Region of WHO
AFP	acute flaccid paralysis
AFTA	ASEAN Free Trade Area
AMR	American Region of WHO
APEC	Asia Pacific economic cooperation
APSED	Asia Pacific Strategy for Emerging Diseases
ARI	acute respiratory infection
AR4	The Fourth Assessment Report of IPCC
ART	Anti-retroviral therapy
ASEAN	Association of South East Asian Nations
AI	avian influenza
BAN	Bangladesh
BHU	Bhutan
BHUP	Bangalore Healthy Urban Project
BIMS	Bay of Bengal Multi-sector Technical Cooperation
BIMST-EC	Bangladesh India Myanmar Sri Lanka Thailand Economic Cooperation
BIST-EC	Bangladesh India Sri Lanka Thailand Economic Cooperation
BOHS	Basic Occupation Health Services
BRAC	Bangladesh Rural Advancement Committee
BSS	Behavioural Surveillance Surveys
CDC	Centers for Disease Control and Prevention
CD	communicable diseases
CIDA	Canadian International Development Agency
CMH	Commission for Macroeconomics and Health
CO_2	carbon dioxide
CFR	case fatality rate
CPR	contraceptive prevalence rates
CSDH	Commission on Social Determinant of Health
CVD	cardiovascular diseases
DALY	disability-adjusted life years
DF	dengue fever
DFID	Department for International Development
DHF	dengue haemorrhagic fever
DOTS	directly observed treatment, short-course

DM	diabetes mellitus
DPRK	Democratic People's Republic of Korea
DHS	Demographic and Health Survey
DSF	demand-side financing
DTP	diphtheria, tetatnus, pertusis
EMR	Eastern Mediterranean Region of WHO
EUR	European Region of WHO
FAO	Food and Agriculture Organization of the United Nations
FCTC	Framework Convention for Tobacco Control
FDI	foreign direct investment
FSSA	Food Safety and Standards Authority
GATS	Global Agreement on Trade in Services
GAVI	Global Alliance on Vaccine Initiatives
GBD	global burden of disease
GDP	gross domestic product
GEF	Global Environment Facility
GEM	global environmental monitoring
GFATM	Global Funds to fight AIDS, Tuberculosis and Malaria
GHG	greenhouse gas
GIS	geographical information system
GIVS	Global Immunization Vision and Strategies
GMP	Good Manufacturing Practices
GMO	genetically modified organism
GMS	gender mainstreaming
GNI	gross national income
GOF	global drug facility
GOARN	Global Outbreak Alert and Response Network
GPP	good pharmacy practice
GSHS	Global School Health Survey
GYTS	Global Youth Tobacco Survey
HACCP	hazard analysis and critical control points
HDI	Human Development Index
HDR	Human Development Report
HFA	Health for All
HFMP	Healthy Food Markets Programme
Hib	Hemophillus influenza type b
HIS	health information system
HIV	human immunodeficiency virus
HMN	Health Metrics Network
HPV	human papilloma virus
HRH	human resources for health

HSS	health systems and services
HSV	herpes simplex virus
ICD	International Statistical Classification of Diseases and Related Health Problems
ICDDR,B	International Centre for Diarrhoeal Disease Research, Bangladesh
IDD	iodine deficiency disorders
IDF	International Diabetic Federation
IDU	injecting drug users
IEC	information, education and communication
IND	India
INO	Indonesia
IGT	impaired glucose tolerance
IHR	International Health Regulations
ILO	International Labour Organization
ITM	Institute of Tropical Medicine
IMCI	Integrated Management of Childhood Illnesses
IMPACT	International Medical Product Anti-Counterfeiting Taskforce
IMR	infant mortality rate
IPCC	Intergovernmental Panel on Climate Change
IPR	intellectual property rights
IRS	indoor residual spraying
ITN	insecticide-treated nets
IVM	integrated vector management
IVMS	International Centre for Vetinerary Medical Sciences
IYCF	Global Strategy for Infant and Young Child Feeding
JE	Japanese encephalitis
JRF	joint reporting form
kcal	kilocalories
KNCV	The Royal Foundation for Tuberculosis in the Netherlands
LLIN	long-lasting insecticide treated nets
MAV	Maldives
MDG	Millennium Development Goals
MDR	multidrug resistance
MDT	multidrug therapy
M&E	monitoring and evaluation
MMR	maternal mortality ratio
MMR	Myanmar
MNT	maternal neonatal tetanus
mOPV	monovalent oral polio vaccine
MOU	Memorandum of Understanding

MPH	Master of Public Health
MSM	men who have sex with men
MTCT	mother-to-child transmission
NAP	National AIDS Programme
NCD	noncommunicable diseases
NEP	Nepal
NFHS	National Family Health Survey
NGOs	non-governmental organizations
NHA	National Health Accounts
NRHM	National Rural Health Mission
NTI	The National TB Institute
OOP	out-of-pocket
ORMT	Occupational Risk Management Toolbox
OTC	over the counter
PDS	public distribution system of food
PHC	primary health care
PHFI	Public Health Foundation of India
PHI	public health institute
PICT	provider-initiated testing and counseling
PIP	project implementation programmes
PKDL	post-kala-azar dermal leishmaniasis
PLWHA	people living with HIV/AIDS
PMTCT	preventing mother-to-child transmission
POP	persistent organic pollutant
PROLEAD	Health Promotion Leadership Training
RCC	referral coordinating centre
RC	Regional Committee
RDK	rapid diagnostic kit
RDT	rapid diagnostic test
RTAG	Regional Technical Advisory Group
RTI	road traffic injury
SAARC	South Asian Association for Regional Cooperation
SAPTA	South Asian Preferential Trade Agreement
SARS	severe acute respiratory syndrome
SARS-CoV	severe acute respiratory syndrome-associated coronavirus
SBP	systolic blood pressure
SEA	South-East Asia
SEAR	South-East Asia Region of WHO
SEARO	Regional Office for South-East Asia
SEAPHEIN	South-East Asia Public Health Education Institutes Network
SEWA	Self Employed Women's Association

SEARHEF	South-East Asia Regional Health Emergency Fund
SOPs	standard operating procedures
SIA	supplementary immunization activities
SPS	sanitary and phytosanitary
SRL	Sri Lanka
STI	sexually transmitted infection
TAG	Technical Advisory Group
TB	tuberculosis
THA	Thailand
TLS	Timor-Leste
TFR	total fertility rate
tOPV	trivalent oral polio vaccine
TRC	TB Research Centre
TRIPS	Agreement on Trade Related Aspects of Intellectual Property Agreement Rights
TRM	traditional medicine
TTG	Tsunami Technical Group
TWG	Thematic Working Group
UC	universal coverage
UN	United Nations
UNCTAD	United Nations Conference on Trade and Development
UNDP	United National Development Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNFPA	United Nations Population Fund
UNICEF	United Nations Children's Fund
USA	United States of America
USAID	United States Agency for International Development
UTs	Union Territories
VAD	vitamin A deficiency
VCT	voluntary counseling and testing
VCTC	voluntary counseling and testing centre
WEF	World Economic Forum
WHA	World Health Assembly
WHO	World Health Organization
WIPO	World Intellectual Property Organization
WKC	WHO Kobe Centre
WPR	Western Pacific Region of WHO
WSP	water safety plans
WTA	World Trade Agreements
WTO	World Trade Organization
XDR-TB	extremely drug resistant tuberculosis

Foreword

Transformation of data into information and its timely presentation in the desired format for use is essential for setting health policy, for programme planning and management. The rapidly changing national health systems of Member countries in the South-East Asia Region are generating a wide variety of data. Gleaning this data for evidence, which is consistent and linked to past trends and also with alternate scenarios and future projections, is being increasingly sought by stakeholders in health development. In this context, national health information systems are contributing substantially to help portray the situation and the trend of progress in health development.

Member countries have made remarkable progress in improving the health of people through 60 years of collaboration with WHO in the Region. The Regional Office has also been supporting countries in strengthening health information systems and in disseminating regional and global health information at regular intervals. As part of this process, the Regional Office periodically publishes information on the regional health situation. The present edition is the 11th in the series.

This publication presents the health situation in Member countries, as reflected by epidemiological and statistical data primarily covering the period 2001-2007. The health situation is presented with a regional perspective and, where appropriate, comparisons have been made with other Regions of WHO and with world averages. *(Core indicator brochure 2005, MDG Indicators brochure 2005, 11 Health questions about the 11 SEAR countries, the concurrent WHO publication on health in Asia and the Pacific and the anniversary volume Sixty years of WHO in South-East Asia complement this publication and therefore this edition is published in a shorter version.)*

The latest available information from various sources is incorporated in this publication. *(These include country health bulletins, health survey reports, other country health reports, and specific programme areas of the Regional Office as well as from the publications of other UN and donor agencies)* Due to the different time-frame and methodology used for data collection, it is probable that the data

value for the same point for the same indicator may differ. Therefore, intercountry comparisons should be made with caution.

The changing context of health priorities of the Region demands more and better evidence. The Regional Office is continuously collaborating with Member countries to meet these demands. It is hoped that this publication will stimulate Member countries to improve the quality of their health information and in analysing their individual country health situation, encourage them to monitor health status and health system performance, and provide a sound evidence base to support health policy debate and decisions.

Samlee Plianbangchang, M.D., Dr. PH
Regional Director

Regional health situation at a glance

Strengthening Health Systems

The importance of public health has been recognized as a crucial factor in improving health systems. This need is being increasingly addressed in the Region. Long-term investment in health systems will save financial resources and make international and national health goals achievable. There are, however, constraints facing the health systems of the Region. This means that, while a significant proportion of the population does not have access to health services of the patients that do have access, a substantial proportion does not receive quality health care, leading to unnecessary morbidity and mortality, not only in remote areas and among vulnerable populations but also in hospitals. There is limited coverage by various health insurance schemes in many countries of the Region, resulting in high out-of-pocket expenditure. Health data analysis and capacity of data management at sub-national levels is a continuing issue in health information. The Region has an acute shortage of trained health workers, including community-based workforce, which can play an effective role in empowering the community. The capacity of some training institutions to train medical, nursing and other technical staff remains low.

Promoting a healthy life-course

The majority of countries were on track towards achieving the target in reducing under-five mortality as per the Millennium Development Goals, but there is no room for complacency as half of the countries need to make concerted efforts to reach the target for improving maternal health. In reducing the prevalence of mild and moderate malnutrition, some progress has been observed; however, more efforts are needed, taking into consideration the “double burden” of malnutrition. In the area

of health of adolescents, reproductive and sexually transmitted infections expose youth to reproductive health problems, as well as early pregnancies and their consequences. In the area of immunization, countries are making efforts to protect children for life through vaccination. Polio cases are being reported in some countries and specific measures are being taken to stop wild polio virus circulation.

Addressing challenges in healthy environments

Countries made significant progress towards increasing water supply coverage. Environmental factors including climate change and global warming pose a challenge for the Region, with possible long-term health implications. Nine hundred million people still lack access to improved sanitation. More than 70% of workers are not covered by occupational health provisions. Public awareness of food hygiene related to food standards is limited, as is the food safety surveillance system. More than half of the global number of deaths due to natural disasters occur in the Region. Floods and cyclones kill tens of thousands and affect millions.

Tackling risk factors and preventing noncommunicable diseases

Chronic noncommunicable diseases continue to be the major causes of death and morbidity in the Region. Cardiovascular diseases contributed to almost 30% of total deaths in the Region, which is also the major cause of overall mortality in South-East Asia. With its share of 9% of total deaths in the Region, cancer has become an important public health priority. More than 50 million people in the Region are diabetic. High levels of modifiable risk factors for noncommunicable diseases have been detected in the populations of South-East Asia, indicating the potential for effective prevention. Tobacco use kills more than one million people in the Region annually. The treatment gap for neuropsychiatric conditions is large. One-third of the global burden of injuries is accounted for by the Region.

Preventing, controlling, eliminating and eradicating communicable diseases

Remarkable progress has been achieved in the Region in the area of communicable diseases. The global targets for tuberculosis case detection and treatment success were met in a majority of countries. Leprosy prevalence declined remarkably, and, while detection of new cases continues, only two countries have yet to achieve the goal of leprosy elimination. Progress was made in interrupting the transmission of lymphatic filariasis, with mass drug administration covering 60 % of the target population. A remarkable decline in yaws was observed. Case management of visceral leishmaniasis has improved. However, the burden of communicable diseases is still high. Diarrhoeal and respiratory infections cause substantial mortality. Dengue continues to pose a major public health problem. Almost half of global avian influenza cases are reported from the Region. In terms of HIV infection, the Region is the second-most affected WHO Region. Chikungunya fever is re-emerging and outbreaks of Nipah virus infections are being reported. Drug-resistant malaria has spread.

Introduction

"The social goal of Health for All is yet to be realized everywhere in the world. The age-old scourges such as malaria, tuberculosis, encephalitis and dengue are still unabatedly rampant. The spread of HIV/AIDS is still continuing, especially in the developing world. There are added health challenges due to environmental, ecological, demographic and epidemiological transitions. There have been new and emerging diseases, communicable and noncommunicable. Climate change poses a real health threat for the whole world. We have to be ready to protect the health of our population from this daunting global change."

Dr Samlee Plianbangchang, Regional Director,
WHO South-East Asia Region, [June 2008]

The publication responds to the mandate given to the World Health Organization to analyze and disseminate information on health situation and trends in the Region. The WHO Regional Office for South-East Asia has been publishing reports on health situation and trends since 1980. The present publication describes the progress in health development, critically evaluates impact of health programmes and assesses the overall performance of health systems in the countries of South-East Asia Region during the period 2001 to 2007. It attempts to document the effects of socioeconomic inequalities on the peoples' health, particularly the relationship between income distribution and health status. It also documents the effects of the dual impact of the demographic changes and shifts in the epidemiological profile and provides a perspective on the disease control priorities in the Region. The publication offers an updated assessment of overall health conditions in the Region and highlights the effectiveness of the health policies and the performance of health systems, and contributes to a better understanding of its determinants.

Governments and other key stakeholders are aware of the need to reduce the gaps in health outcomes and in access to health services. At the same time, they are paying more attention to the international dimensions of public health in the process of regional integration and their intimate links to the national and local health situation.

It is hoped that this publication will highlight the need for concerted action to improve the health of over 25% of the world's population residing in the Region. Policy makers, health authorities, scholars, researchers, health personnel and those committed to the advancement of public health in the South-East Asia Region would find this publication a valuable resource. It may contribute to improvements in public health practice, paving the way for promotion of institutional development and the strengthening of public health infrastructure in the Region.

1. Major health determinants and general morbidity and mortality

Demographic trends

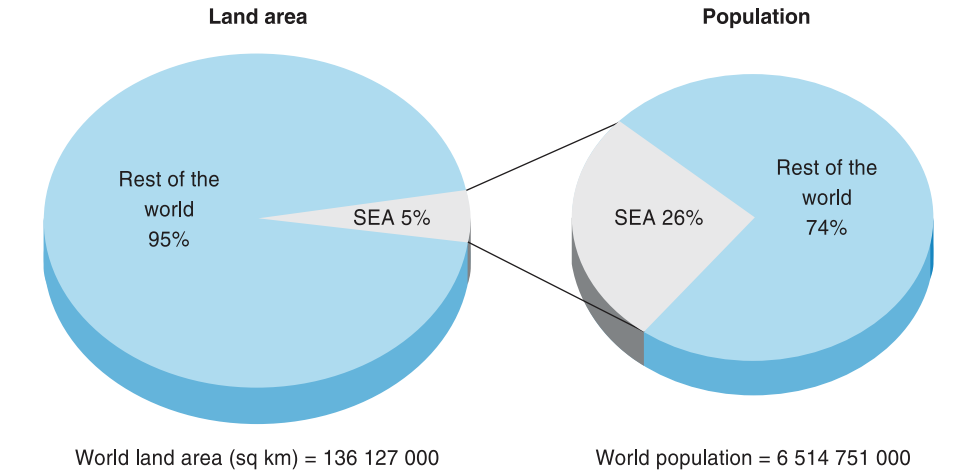
The population of the Region, estimated at almost 1.572 billion in 2000, exceeded 1.696 billion in 2005 (Table 1). While this Region has only 5% of the earth's land mass, it has over a quarter (26%) of the global population (Figure 1). The Region's population is projected to approach two billion by 2025. India's population, which exceeded one billion in 2000, crossed 1.134 billion in 2005. With a projected population of 1.506 billion by 2030, India may emerge the most populous country in the world.

Table 1: ***Trends in mid-year population in the South-East Asia Region, by country, 1990-2005***

Country	Mid-year population (in thousands)			
	1990	**1995**	**2000**	**2005**
Bangladesh	113 049	126 297	139 434	153 281
Bhutan	547	507	559	637
DPR Korea	20 143	21 715	22 946	23 616
India	860 195	954 282	1 046 235	1 134 403
Indonesia	182 847	197 411	211 693	226 063
Maldives	216	248	273	295
Myanmar	40 147	43 134	45 884	47 967
Nepal	19 114	21 672	24 419	27 094
Sri Lanka	17 114	18 080	18 714	19 121
Thailand	54 291	57 523	60 666	63 003
Timor-Leste	740	850	819	1 067
SEA Region	**1 308 403**	**1 441 719**	**1 571 642**	**1 696 547**
World	**5 294 879**	**5 719 045**	**6 124 123**	**6 514 751**

Source: UN, *World population prospects: The 2006 revision*.

Figure 1: ***Land area and population of the SEA Region, 2005***



Source: UN, *2004 Demographic Yearbook.*

Source: UN, *World population prospects: The 2006 revision.*

Table 2: ***Trends in selected demographic indicators of SEAR countries 1970-75 to 2000-05***

Country	Population annual growth rate (%)		Crude death rate/ 1000 population		Crude birth rate/ 1000 population		Life expectancy (years)		Total fertility rate (per woman)	
	1970-1975	2000-2005	1970-1975	2000-2005	1970-1975	2000-2005	1970-1975	2000-2005	1970-1975	2000-2005
Bangladesh	2.5	1.9	19	8	44	28	45	62	6.1	3.2
Bhutan	3.7	2.6	22	8	46	22	42	63	6.7	2.9
DPR Korea	2.4	0.6	6	9	30	15	64	67	3.7	1.9
India	2.2	1.6	15	9	37	25	51	63	5.3	3.1
Indonesia	2.3	1.3	16	7	39	21	49	69	5.3	2.4
Maldives	2.5	1.6	16	6	40	22	51	66	7.0	2.8
Myanmar	2.5	0.9	14	10	39	19	53	60	5.9	2.2
Nepal	2.2	2.1	20	9	42	30	44	61	5.8	3.7
Sri Lanka	2.0	0.4	7	7	30	16	65	71	4.1	2.0
Thailand	2.5	0.8	9	9	34	15	60	69	5.0	1.8
Timor-Leste	2.1	5.3	23	10	44	42	40	58	6.1	7.0
Less developed regions	**2.4**	**1.4**	**12**	**8**	**36**	**23**	**55**	**64**	**5.4**	**2.9**
Least developed Countries	**2.5**	**2.4**	**20**	**13**	**46**	**38**	**45**	**53**	**6.6**	**4.9**
World	**1.9**	**1.2**	**11**	**9**	**31**	**21**	**58**	**66**	**4.5**	**2.6**

Source: UN, *World population prospects: The 2006 revision.*
Note : For country reported data, please refer to WHO/SEARO publication *11 Health questions about the 11 SEAR countries,* 2007.

Table 3: ***Selected demographic indicators for the countries of the South-East Asia Region***

Country	Under-5 mortality rank 2005	Under-5 mortality rate		Infant mortality rate		Neonatal mortality rate		Annual number of births (thousands) 2005	Total adult literacy rate 2000-2004
		1990	2005	1990	2005	2000	2004		
Bangladesh	**57**	149	73	100	54	36	36	3 747	...
Bhutan	**53**	166	75	107	65	38	30	64	...
DPR Korea	**70**	55	55	42	42	22	22	342	...
India	**54**	123	74	84	56	43	39	25 926	61
Indonesia	**83**	91	36	60	28	18	17	4 495	90
Maldives	**74**	111	42	79	33	37	24	10	96
Myanmar	**44**	130	105	91	75	40	49	976	90
Nepal	**54**	145	74	100	56	40	32	787	49
Sri Lanka	**137**	32	14	26	12	11	8	329	91
Thailand	**108**	37	21	31	18	13	9	1 009	93
Timor-Leste	**68**	177	61	133	52	40	29	49	...
Developing countries		**105**	**83**	**71**	**57**	**33**	**35**	**120 128**	**79**
World		**95**	**76**	**65**	**52**	**30**	**28**	**133 449**	**80**

··· Data not available.
Source: UNICEF, *State of the world's children 2007.*
Note: For country reported data, please refer to WHO/SEARO publication *11 Health questions about the 11 SEAR countries,* 2007.

Extreme diversities in demographic, economic and health parameters which characterize the Region affect the prioritization of health issues, allocation of public resources for health, formulation of effective strategies, and implementation of health programmes.

Population structure

Population size: Member countries in the Region vary widely in population, from a country like Maldives with a population of 295 000, to India, with a population of over 1134 million (Table 1). In fact, 10 states in India had a population of over 50 million each in 2001. Three countries in the Region figure among the top 10 countries globally in terms of population in 2005 – India, Indonesia and Bangladesh.

Population density: The population density per square kilometre in the Region varies from an estimated 14 in Bhutan, 71 in Myanmar to 991 in Maldives and

1064 in Bangladesh (Annex Table 6). There are often large variations in the population densities within a country. The population density for the world in 2005 was 48.

Population growth and projections: The annual population growth rate showed a decline in the countries between 1970-1975 to 2000-2005, except in the case of Timor-Leste where it increased from 2.1% to 5.3% (Table 2). The growth rate in India declined from 2.2% in 1970-1975 to 1.6% during 2000-2005. India's annual population growth rate for the period 2015-2020 is estimated at 1.14%. Population projections for future years based on the component projection method and taking the "medium variant" as the likely scenario show that 157 million will come from India's growth alone, 26 million from Bangladesh, and 24 million from Indonesia. The population growth rates show significant intra-country variations. For example, the population growth rates in 1991-2001 among 15 large states in India ranged from 0.9% and 1.1% in Kerala and Tamil Nadu, respectively, to 2.8% each in Bihar and Rajasthan.[1]

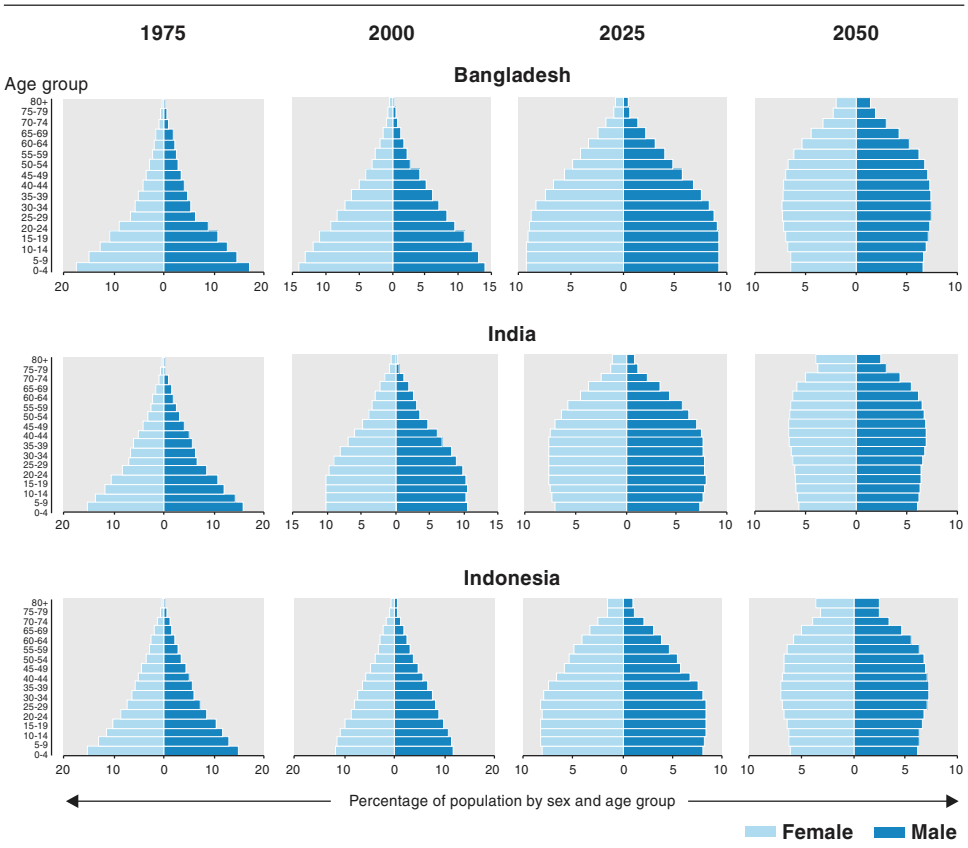
Life expectancy: The South-East Asia Region witnessed significant improvements in life expectancy, with many countries recording a gain of over 15 years between 1970 and 2005 (Table 2). Life expectancy in Bhutan, in particular, increased by 21 years in the past three decades. In five countries [Democratic People's Republic of Korea (DPR Korea), Indonesia, Maldives, Sri Lanka and Thailand], life expectancy is above 66 years. In 2005, life expectancy in Timor-Leste was 58 years, while in Sri Lanka it was 71 years.

Life expectancy in Indonesia increased by 20 years, owing to improved health services, such as immunization, community participation and health promotion. Sri Lanka's rapid improvement in life expectancy despite its low income level shows that while human development is necessary, it is not sufficient condition for economic growth, and that well-targeted social policies, including increased resource allocation for the health sector, contribute in a big measure towards improving health outcomes. A similar relationship can be seen in Thailand, a middle-income country. In these economies, life expectancy has improved largely as a result of public sector pro-health and pro-poor policies.

Sex ratio: The population sex ratio, defined as the number of males per 100 females is expected to be below 100 in a population without any gender-based discriminatory practices. Female deficit syndrome is considered adverse because of social implications that transpose to adverse health consequences. A very high sex ratio for 2005 (Annex Table 3) seen in Bhutan (111.1), India (107.5), Maldives (105.3), and Bangladesh (104.9) indicates strong male-child preference and consequent gender inequities. In smaller countries the variations may be due to gender selective migrations.

Adverse sex ratio in a population can occur only either by fewer births of females or by their higher mortality. Abortions in any case carry a high risk for women but the risk becomes higher when abortions are carried out by untrained personnel using by unsafe methods and in unhygienic conditions.

Figure 2: ***Trends in age pyramids of three large countries in South-East Asia, 1975-2050***

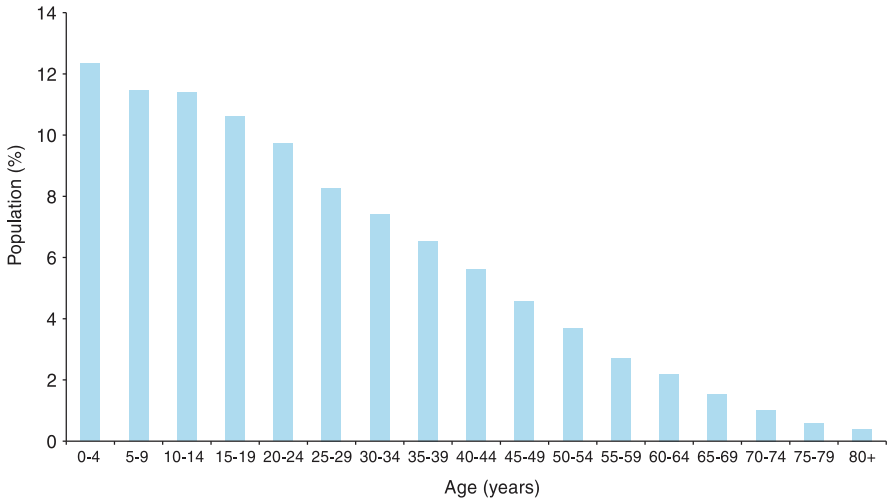


Source: UN, *World population prospects: The 2004 revision.*

*Age structure***:** With the rapid demographic transition in some countries of the Region during the past three decades, the age structure of the population is rapidly changing with the median age steadily increasing. From the age pyramids for the years 1975, 2000 and projected for 2025 and 2050 (Figure 2), it can be seen that Bangladesh, India and Indonesia are likely to have similar structures by 2050. The age-distribution for Bangladesh (Figure 3) shows a much higher proportion of population in the lowest age group. Population estimates for year 2005 by age and sex are provided in Annex Table 1.

In 1975, the percentage of children below age 15 was about 44.3% in Bangladesh, 40.1% in India and 41.8% in Indonesia. By 2000, these percentages had declined to 37.2% in Bangladesh, 35% in India and 30.3% in Indonesia,

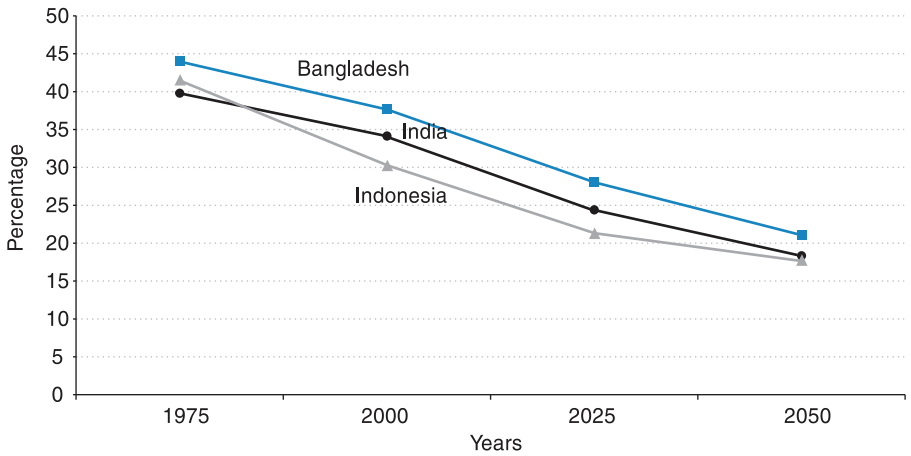
Figure 3: ***Age distribution of population in Bangladesh, 2005***



Source: UN, *World population prospects: The 2006 revision.*

largely due to declining fertility rates. Projections indicate that these percentages would decline further (Figure 4).

Figure 4: ***Trends in proportion of 0-14 years group population in selected countries, 1975-2050***

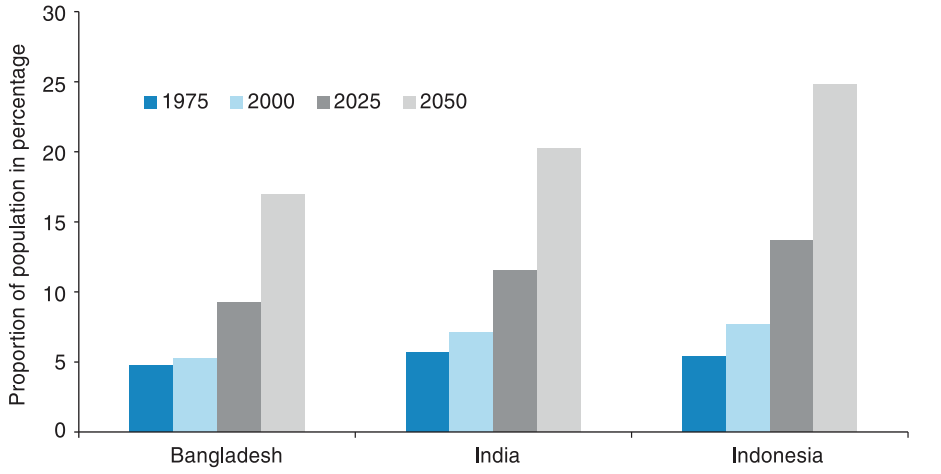


Source: UN, *World population prospects: The 2006 revision.*

While the age distribution in some countries was almost similar in 1975, wide disparities developed by 2000. This occurred largely due to the differential decline in fertility levels and to a lesser extent due to increased longevity. In 1975, the percentage of the population above 60 years was 4.7 in Bangladesh, 5.6 in India

and 5.4 in Indonesia (Figure 5). By 2000, it changed to 5.2 in Bangladesh, 7.1 in India and 7.7 in Indonesia. By 2025 it is projected to increase to 9.2 in Bangladesh, 11.5 in India, and 13.7 in Indonesia and further to 17.0, 20.2 and 24.0 respectively by 2050.

Figure 5: ***Proportion of 60+ years age group population in selected countries, 1975-2050***



Source: UN, *World population prospects: The 2006 revision.*

Ageing causes somatic and psychological problems. To maintain quality of life in old age needs more attention. The health systems have to be prepared to meet the burden associated with geriatric problems, especially chronic diseases in the elderly. Taking care of the elderly is not an insurmountable problem so long as the working population is growing and the dependency ratio is falling.

*Dependency ratios***:** For international comparisons, the child, old and total dependency ratios are used to study the dependency burden of the population. The total dependency ratio tends to decrease in the earlier stages of development when rapid declines in fertility reduce the child population more than the increase in the older persons, but subsequently the increase in older persons far outweighs the decline in the child population. All countries in the Region would shift from child dependency to old age dependency as fertility declines and life expectancy increases.

The rapid decline in countries' dependency ratios, especially the child dependency ratio, has been identified to be a key factor underlying their rapid economic development. The term "demographic bonus" connotes the period when the dependency ratio in a population declines because of declining fertility until it starts to rise again because of increasing longevity. This period depends on the pace of decline in the fertility levels of a population. If the switch to small families

is fast, the demographic bonus can give a considerable push to development. If investments in health care and education for skill development are made during this period, maximum advantage is taken of the demographic transition with high economic growth rates. Changing demographic structures present similar opportunities and challenges in the South East Asian countries which seem poised for similar growth in the coming decades.

The term “demographic burden” is used to connote the increase in the total dependency ratio during any period of time, mostly caused by increased old age dependency ratio. This is an inevitable consequence of demographic transition, and every country has to face this problem sooner or later.

Fertility: Lowering fertility requires intensive and coordinated intersectoral efforts to change human values. External interventions, educational or otherwise, take time to show impact.

Birth rate: In 2005, the crude birth rate in countries of the Region varied from 15 for DPR Korea and Thailand to 30 for Nepal and 42 for Timor-Leste (Table 2). The number of births estimated to have taken place in the Region during 2005 was approximately 38 million (Table 3). India accounted for 69% of these births and this proportion is expected to remain the same during the next 15 years.

Total fertility rate: With nearly an equal chance of male and female births, a total fertility rate of 2.0 children per woman is considered replacement level. Timor-Leste showed high fertility (TFR of 7.0) during 2000-2005 (Table 2). Bangladesh and India are two populous countries where the pace of decline has slowed down. In India, the fertility rate declined with total fertility reaching 3.4 children per woman at the end of the 1990s and 2.7 in 2005.[2] Although there are disparities in TFR among countries, it had dropped to below four children per woman in all countries by 2005 except Timor-Leste. However, the trends were diverse. There appear to be four groups of countries: (i) those with stable, low TFR, such as DPR Korea and Thailand; (ii) those where the TFR continues to decline, such as Indonesia and Sri Lanka; (iii) countries where the decline in the TFR appears to have slowed down and the fertility rate has approached three children per woman (Bangladesh, and India); and (iv) countries where the TFR is high (over 4) and the decline rate is slow (Timor-Leste). Enormous differentials may exist in fertility levels within a country and also between ethnic groups or rural to urban, especially in the larger countries.

Determinants of fertility decline

Industrialization, urbanization and modernization, including wider access to education, improved child survival and increased adoption of contraception are

the major factors contributing to a delicine in fertility. The decisive role of education in fostering fertility decline has been recognized. Studies in 51 developing countries have indicated that among women with secondary or higher education, the total fertility rate is much lower than among women with primary or no education.[3] Education provides knowledge; increases exposure to information and media; builds skills for gainful employment; increases female participation in family decision-making; and raises the opportunity costs of women's time.

Changes in marriage patterns, postponing marriage, and increasing divorce rates may lead to smaller families because couples have fewer years of child-bearing. Women who delay the onset of childbearing also have smaller families. Lower TFR is closely related to age at marriage. Increased use of contraception is the most important factor influencing fertility levels.

Urbanization and migration: The population of the South-East Asia Region continues to be predominantly rural with agriculture as the main occupation for the majority of the people. In 2005, compared to 48.6% of the global population who lived in urban areas, among the countries in the Region the proportion of the urbanized population varied from a high of 61.6% for DPR Korea and 48.1% for Indonesia to a low of 15.8% in Myanmar and 15.1% in Nepal (Annex Table 13).

Demographic change and development: Through national programmes of family planning run and supported by governments of countries of this Region to reduce spiralling population growth rates, the demographic transition occurred at a faster pace. The imbalance between socioeconomic development and demographic transition in some countries was in turn reflected in their health conditions. In many countries, old infectious diseases continue to be prevalent and, at the same time, the newer lifestyle diseases have emerged because of urbanization and ageing. Large inequities in economic and health conditions between different segments of the population have also emerged. The opportunity must be seized to increase investments in education, increase levels of saving and investment, and provide impetus to economic growth, to convert the population into a resource. Countries where this has been done have shown rapid development.

Socioeconomic trends

The Human Development Index (HDI), propounded by the United Nations Development Programme (UNDP), is a composite index of achievements in basic human capabilities in three fundamental dimensions–a long and healthy life, attaining high knowledge, and a decent standard of living. The HDI value and rankings of countries in the South-East Asia Region for 2005 are provided in

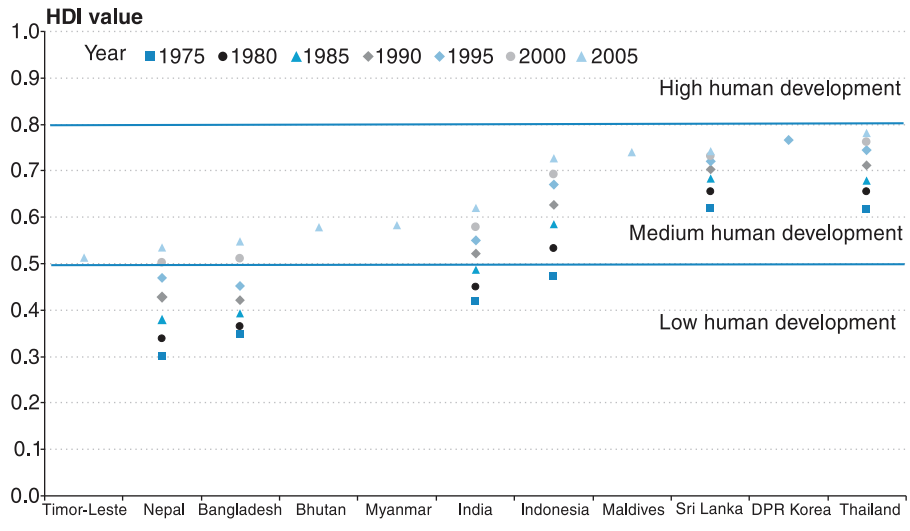
Table 4. While on one end, Thailand has an HDI value of 0.781, Timor-Leste has achieved a value of 0.514. The trends in HDI for countries in the Region (Figure 6) show a steady improvement in the last three decades.

Table 4: ***Human Development Index and rank in countries of the South-East Asia Region, 2005***

Countries	HDI 2005	Rank 2005
Bangladesh	0.547	140
Bhutan	0.579	133
DPR Korea	0.766[a]	…
India	0.619	128
Indonesia	0.728	107
Maldives	0.741	100
Myanmar	0.583	132
Nepal	0.534	142
Sri Lanka	0.743	99
Thailand	0.781	78
Timor-Leste	0.514	150

[a] HDI value for year 1995 with HDI rank of 75 as available in HDR1998.
Source: UN, *Human development report, 2007/2008. ... Data not available*

Figure 6: ***Trends in human development in countries of the South-East Asia Region***



Note: HDI for DPR Korea from HDR 1998.
Source: UNDP, *Human development report 2007/2008.*

The Millennium Development Goals present health as both an outcome and a determinant of countries' development. Three of the eight goals refer explicitly to health issues, while 7 of the 18 more specific targets fall directly within the responsibility of the health sector. Health is a key component of human capital, which in turn is an important determinant of economic growth. Until recently, most studies defined human capital narrowly as educational achievement. The report of the Commission on Macroeconomics and Health (2001) (CMH) was instrumental in making an economic argument for investing in health. Thereafter, many studies on the relationship between health and economic growth, both empirical and analytical, have found evidence that health has a strong, positive impact on economic growth. Several others find that economic growth improves health.

Improved health is not just a consequence of economic growth but a crucial tool for tackling poverty. Economic growth increases the resources available to health systems and the supporting social infrastructure. With higher incomes, people are enabled to improve the quality of their diet and environment and to afford health care and education. Improved health enhances workers' productivity by raising their physical and mental capacities. Health contributes to economic growth by facilitating a higher labour supply, improved skills that result from better access to education and training, and capital formation, through higher savings. Higher income, both individual and national, resulting from economic growth also influences health outcomes, as higher income can increase demand for (health consumption) and supply of health services (investment).

Health and economic outcomes in the South-East Asia Region have not only improved significantly in recent decades but have also proved to be mutually reinforcing. Sri Lanka and the Indian state of Kerala have shown that dramatic improvements in health can occur even in the absence of high growth. In these settings, allocation of scarce resources and public expenditures on health have played important roles in health outcomes. This evidence shows not only the two-way causal relationship between health and growth but also the role of other factors as determinants of health.

Resources play a critical role in shaping the Region's socioeconomic development, including improvements in health. Low income can be a serious constraint on good health outcomes. Health expenditure in most countries in the Region as a percentage of GDP has remained low in relation to the Region's advanced economies, let alone those of Europe and North America.

However, health outcomes in the Region are determined not only by the level of income but also by the policy environment and the resulting quality of service. Sri Lanka and Thailand have shown how good and targeted social policies can result in relatively better health outcomes, even when income levels are lower.

Socioeconomic determinants of health

The major socioeconomic determinants of health and behavioural risk factors lie outside the domain of the health sector. The need to apply a holistic, multidisciplinary and multisectoral perspective to address these determinants is being increasingly realized. Underlining social, economic, cultural and political determinants of health, such as those related to rapid globalization and trade liberalization, uncontrolled urbanization, improved communication and technology, and population ageing, are to be clearly understood so that appropriate policy and programme interventions can be initiated. Since human behaviour occurs in a specific milieu, policy interventions that improve the physical and economic environments and modify social norms have proven to be far more effective in reducing the disease burden and improving health, rather than focussing mainly on behavioural change at the individual level and fuelling unregulated growth of expensive highly specialized health care services focused on managing people in advanced stages of disease. Modification of unhealthy behaviours through social, economic and environmental interventions by adopting appropriate policy interventions is less expensive and more permanent than individual-level lifestyle change.

Globalization, trade and health

Most Member countries in the Region are undergoing extensive and radical reforms in national health systems. Trade liberalization processes are in progress to attract foreign investment leading to economic growth. There is a vast range of country experiences on the impact of globalization on health, including those related to multilateral trade agreements. While some countries are undertaking policy actions to address the issues of national capacity-building, many others need concerted action to strengthen national capacity.

Bangladesh, India, Indonesia, Maldives, Myanmar, Nepal, Sri Lanka and Thailand are World Trade Organization (WTO) members, and Bhutan is an observer. Health implications from the three main World Trade Agreements (WTAs) affect countries, mostly developing ones, in one way or the other. There is therefore a need to be aware of these implications. Among the pressing regional issues are the lack of awareness in the health sector of the health implications of WTAs, and inadequacy of legislation to optimize the use of flexibility provisions allowed by the WTAs, such as compulsory licensing and parallel importation during public health emergencies in the case of Trade-Related Aspects of Intellectual Property Rights (TRIPS).

Though the four main pharmaceuticals-producing countries in the Region—India, Indonesia, Sri Lanka and Thailand—have worked on their patent

legislations, much of this was before the advent of the WTO and for meeting the demands of bilateral agreements. There is, therefore, a need to have a re-look at these to include the benefits and flexibilities provided by TRIPS. The opportunity and transitional time provided by the Doha Declaration need to be used before time runs out. Patent legislations require serious and urgent review and revision; trade-related sectors, including health, should engage in more frequent and deeper dialogue to ensure future access and affordability of drugs to the poor.

The rapid liberalization of trade in various sectors including health services underscores the importance of the General Agreement on Trade and Services (GATS).[4] In the South-East Asia Region, only a few countries have made market access commitments on major sectors out of the 12 broad service sectors that could be classified. Thailand has committed 10 sectors (business, communication, construction, distribution, education, environment, finance, tourism, recreation and transport services), while India has opened six sectors (business, communication, construction, finance, tourism and health). India is the only country in the Region that has made a commitment in the health sector and this also is limited to hospital services. Under the present schedule of specific commitments and given a binding, Mode 3 (commercial presence) is the only mode in which this can be done.[4]

Similarly, Indonesia allows six sectors (business, communication, construction, finance, tourism and transport). Myanmar has opened up two sectors (tourism and transport), while other countries have made commitments for a single sector, i.e. Bangladesh and Sri Lanka for tourism, and Maldives for business. This reflects the fact that in many countries the health sector is still regarded as an essential public function of the State and an area where there is hesitation to permit foreign investment and services.

While developing countries have the opportunities and strengths, they lack an appropriate legislative framework and have some systemic constraints, including the necessary infrastructure to promote cross-border trade in services (Mode 1),[4] especially in e-health. Empirical evidence shows that a substantial amount of money is spent by both the public and governments for sending people abroad for medical treatment (Mode 2)[4] in Bhutan, Maldives, Myanmar and Nepal. Following rapid liberalization during the late 1990s, a few middle-income countries (such as India, Indonesia, Sri Lanka and Thailand) opened their markets for Foreign Direct Investment (FDI) in the health sector. These included mainly the hospital and insurance sectors, mostly through bilateral agreements or private sector investments for achieving better services, containing costs and supplementing the public sector.

The results of case studies undertaken in India, Indonesia and Thailand to review the situation following commercial presence in the hospital sector under GATS show that while opportunities and potential for foreign investments exist in private and public hospitals, there are considerable difficulties (administrative, financial and legislative constraints) in implementation. The initial study of movement of medical professionals from India was conducted in 1997, which needs to be updated.

Despite these few country case studies, the effect of GATS on the dynamics of health systems has not been adequately observed, and no real conclusions can be drawn. The indicators for measuring such changes should be identified clearly and soon. Potential issues include the marginalization of the poor from access to basic services and the commensurate rise in health care costs. India, Indonesia and Thailand were on this track. Bangladesh and Nepal produced doctors for export, despite inadequate staffing of their own health systems.

There is a wide gamut of “national patent laws” in countries of the Region which are WTO members. India, Indonesia, Sri Lanka and Thailand have extensive patent legislation. Bangladesh, Maldives, Myanmar and Nepal have yet to enact the necessary national patent laws. Bhutan, which has an observer status, would need some more time to enact the necessary legislation.

Policy coherence among participating sectors within the country and planning for the protection of the health of their communities requires that policy-makers in countries of the Region address some challenges. These concern the financing of the public sector to accommodate the gap created by brain-drain and/or gravitation of the cream of qualified staff and other resources towards the private sector, as well as the cost of curbing the outflow of patients seeking medical care abroad. It is also feared that the cost of care might go up as a result of more sophisticated diagnostic and other technologies adopted into the health system, and whether the revenues would cover the cost of the investments made.

The Sanitary and Phytosanitary Measures (SPS) Agreement is important for the Region with countries striving to penetrate foreign markets for their food exports—Bhutan for jams, canned fruits and juices, etc. Maldives for fish, and the larger countries for a variety of local produce. The hindering factor would be the stringency of standards demanded by the importing country, and the limitations of national capabilities for scientifically demonstrating the quality of the food production processes and their adherence to standards. The international marketplace requires strict compliance with standards and some South-East Asia Region (SEA Region) countries still had no membership in Codex.

The use of the provisions of basic rights and obligations coded into the SPS Agreement require a thorough understanding of the issues of transparency, equivalence of standards, harmonization of methods, and concept of disease-free

areas. Many countries lack the capacity to frame and implement food safety programmes on these lines. Their intersectoral coordinating mechanisms are very weak or nonexistent. Avian flu, severe acute respiratory syndrome (SARS), Genetically Modified Organisms (GMOs) and other emerging concerns in the Region pose serious threats that could destabilize economies and decimate populations. This was exemplified by the plague outbreak in India in 1994 when the country suffered losses of billions of dollars.

The South Asian Association for Regional Cooperation (SAARC) came into existence in 1985 and was formed by Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan and Sri Lanka. It aimed to promote the well-being of their populations by improving their standards of living, coupled with economic growth, social progress and cultural development. In 1995, the regional economic cooperation among SAARC countries came into existence following the establishment of the South Asian Preferential Trade Agreement (SAPTA)—SAARC Preferential Trading Arrangement—in order to promote and sustain mutual trade and economic cooperation among the contracting states through exchanging concessions. SAARC raised the issues on TRIPS and health.

Another regional cooperation mechanism was initiated in mid-1997 by four participating countries through the establishment of the Bangladesh–India–Sri Lanka–Thailand Economic Cooperation (BIST-EC). In 1998, Myanmar also joined in and it became Bangladesh–India–Myanmar–Sri Lanka–Thailand Economic Cooperation (BIMST-EC). This grouping serves as a bridge between three SAARC countries and two Association of Southeast Asian Nations (ASEAN) countries. In early 1998, business representatives from the five BIMST-EC countries formed an expert group known as BIMST-EC Business Forum, with the aim of enhancing private sector cooperation among countries in the BIMST-EC region in identified sectors and sub-sectors. BIMST-EC is yet to do significant work on trade-related health issues.

Some regional workshops/training courses are being conducted for policy-makers, managers and senior strategists. These include courses organized at the College of Public Health and the Centre of Health Economics, Chulalongkorn University, Thailand and Padjajaran University, Bandung, Indonesia.

Countries in the South-East Asia Region have a rich heritage of traditional systems of medicine which form part of the national health systems. Despite the fact that globalization and modernization have made western allopathic medical systems widely available during the past century, traditional medicine programmes (TRM) are still extensively used by the poor and covers a sizeable component of health care. Member States, realizing the high potential of TRM to improve the accessibility of health care, have taken steps to promote its extensive use, and also invested in TRM policy formulation, research, standardization, regulation and

quality control, human resource development and, finally, integration of TRM services into national health systems. Some countries (Bhutan, India, Myanmar, Nepal, Sri Lanka and Thailand) have established a wide network of TRM services with both inpatient and outpatient facilities. They have set up or expanded and strengthened national drug safety systems to monitor herbal medicines and other traditional practices, and provide adequate support for research on traditional remedies.

Developing appropriate policies for Intellectual Property Rights (IPR) and TRM is very complex, for a variety of reasons. While patent rights for TRM and TRM knowledge might foster further promotion and development of TRM, concerns have been expressed that the possible effect of IPR protection on TRM could impinge on access to health care by the poor. Some countries have attempted to adopt *sui generis* regimes for the protection of TRM and TRM knowledge. Thailand has developed a comprehensive *sui generis* regime for TRM. It has been argued that the very long period of protection could create an unnecessary burden on society and provide unreasonable profits to owners of TRM knowledge.

The demand for herbal medicines has grown tremendously in recent years and is estimated at US$ 60 billion, with an annual growth rate of between 5% and 15%. In some countries, a large percentage of traditional medicinal plants and herbal preparations are being lost due to deforestation and overexploitation for export earnings. A few countries have taken steps to reverse the trend by establishing and promoting more plantations and gardens, and creating legislation to control the export of plants and products of herbal origin that are overexploited. Most countries need to make greater efforts towards conserving the biodiversity in medicinal plants; this biodiversity, after all, represents a part of their national heritage.

A recent study has shown that while many agencies, such as WHO, Food and Agriculture Organization of the United Nations (FAO), United Nations Conference on Trade and Development (UNCTAD), United Nations Educational, Scientific and Cultural Organization (UNESCO), World Intellectual Property Organization (WIPO), WTO, the Convention on Biodiversity and the Convention on the Preservation of the Intangible Cultural Heritage, have addressed this issue, no consensus has been reached on the best way of protecting traditional knowledge including TRM.

Gender, women and health

WHO introduced a gender policy in 2002 which was aimed at contributing to better health for women and men through health research, policies and

programmes which would pay attention to gender issues and considerations, and promoting equality and equity between men and women. One of the policy objectives is to promote health equity and gender equality between men and women throughout the life-course. There is a general lack of understanding of the gender perspective with regard to the implementation of basic human rights. In this context, the poor health status of women arising from various factors, such as maternal mortality, domestic violence, female trafficking, adolescent pregnancy, sexually transmitted infections, and the conditions of women suffering from HIV/AIDS and tuberculosis should be considered. Such a poor health status of women is caused by the lack of decision making power among women with regard to their economic, educational and social status.

Some studies were done during 2002–2005 by Bangladesh, Bhutan, India, Indonesia, Maldives, Myanmar and Thailand on women's health and violence against women and on gender and rights in reproductive health. In Indonesia, a health and human rights tool for maternal and newborn health was developed. In Thailand, commercial sexual exploitation and trafficking of children and women was also studied. All the studies identified patriarchy culture as a cause for health inequity.

Some countries in the Region introduced gender targets related to violence against women, female foeticide and women's empowerment in maternal and reproductive health into health education. The challenge here is a lack of understanding on gender perspective in the health sector and among stakeholders. The plurality in the today's world has led to choices in family life that involve women in public arena; however, tolerance to the women's burden is still questioned.

The gender perspective has been emphasized in many areas of health, such as reproductive and sexual health, HIV/AIDS, disasters and complex emergencies, healthy diet and physical activity, nutrition, child health, adolescent health, maternal and community health, health promotion, health services and health workforce. Examples from the area of environmental health have shown that the factors beyond health have an effect on the health of mothers and children,[5] such as: potential prenatal exposure, exposure through lactation and exposure of children accompanying mothers, which would later involve the children helping their working mothers.

A study from India has shown that violence during pregnancy may have contributed to 16% of maternal deaths.[6] The same study revealed that sex selection and female foeticide are prevalent, leading to female to male sex ratio (0-6 years) reduction from 976/1000 to 927/1000 (1991-2001).[7]

Sri Lanka and Thailand have shown the importance of women's education in decreasing the maternal mortality ratio (MMR). In addition, studies in Thailand have shown that active participation of men in maternal health issues has also given a positive impact in reducing maternal deaths. In India, participation of men during the antenatal care has also been encouraged.

The World Health Assembly (WHA) through resolution WHA60.25 adopted in May 2007 further highlighted the need for integrating gender analysis and actions into the work of WHO and Member States and formulated four global gender strategic directions as follows: (1) building WHO capacity on gender analysis and planning, (2) bringing gender into the mainstream of WHO's management, (3) promoting the use of sex-disaggregated data and gender analysis and (4) establishing accountability.

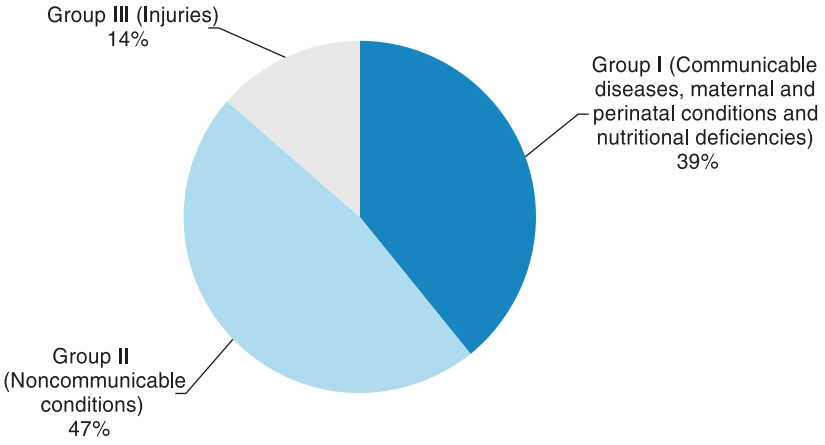
In order to implement resolution WHA60.25, Member countries have formulated seven regional strategic directions for gender, women and health, as follows:[8] (1) national action plan, (2) capacity building, (3) data, information and analysis networking, (4) accountability system for gender equality in health, (5) adaptation models, (6) implementation of gender mainstreaming (GMS) in health, and (7) monitoring and evaluation.

Further challenges for work in the area of gender, women and health include awareness and capacity building within the health sector and collaboration with other sectors of society on gender issues. Gender disparities in health have come from biological differences and socio-economic determinants. The achievement of Millenium Development Goal–3 (MDG 3) needs to be seen as a joint effort of the society and its success would have a crucial role in improving and sustaining the health status of both men and women.

General morbidity and mortality

As per 2005 estimates, the South-East Asia Region accounts for over 28% of the disease burden in terms of disability-adjusted life years (DALYs) lost and over 25% of the mortality overall worldwide. Analysis of the burden of disease in the Region (Figure 7) shows that of the 412 171 270 DALYs lost, 39% were due to communicable diseases, maternal and perinatal conditions and nutritional deficiencies (Group I conditions); 47% due to noncommunicable conditions (Group II conditions); and 14% due to injuries (Group III conditions). The Region's share of the global disease burden was 28.5% among Group I, 27% among Group II and 30.5% among Group III.[9]

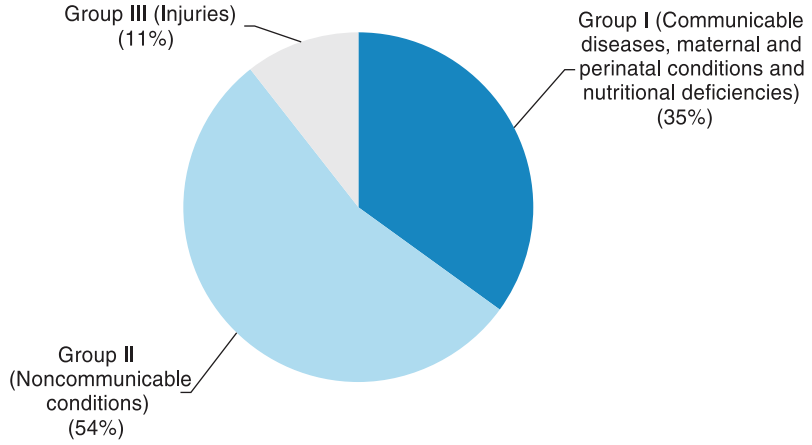
Figure 7: ***Disease burden in terms of DALYs in the South-East Asia Region by major cause groups, 2005***



Estimated total DALYs lost in the South-East Asia Region = 412 171 270

Source: WHO Geneva, Estimates of disease burden for 2005.

Figure 8: ***Estimated proportion of total deaths in the South-East Asia Region by major cause groups, 2005***



Estimated total number of deaths in the South-East Asia Region = 14 588 809

Source: WHO Geneva, Estimates of disease burden and deaths for 2005.

Of the total estimated deaths in 2005 in the Region, 54% were due to non-communicable diseases followed by 35% due to Group I conditions and 11% due to Group III conditions (Figure 8). WHO projects that over the next 10 years, 89 million people will die from chronic diseases in the Region,[10] while deaths from infectious diseases, maternal and perinatal conditions, and nutritional deficiencies combined would decrease by 16%, deaths from chronic diseases would increase by 21%.

The age at death and the cause of death are important factors in assessing the health of populations. In 2002, India with 10.4 million estimated deaths accounted for 71% of the total deaths in the Region. Age-standardization removes the discrepancies arising from age-differentials, and makes rates comparable across countries. Cause-specific age-standardized death rates of selected diseases for countries in the Region for 2002 are shown in Table 5. Region-wide, the rates per 100 000 population vary from 106 for injuries and 111 for cancer to 395 for cardiovascular diseases and 719 for noncommunicable diseases, indicating great inequalities in cause- specific death rates.

The most significant health outcome in countries of the Region since 1960 is the sharp drop in the infant mortality rate (IMR), which has contributed to the Region's higher life expectancy. Maldives and Nepal surpassed other countries in reducing the IMR between 1960 and 2005. They recorded the largest drop in absolute number of infant deaths per 1000 live births (from 212 in 1960 to 33 in 2005 for Maldives and from 180 in 1960 to 56 in 2005 for Nepal) an achievement that is all the more impressive given their resource constraints. However, some countries still have relatively high IMRs compared with other countries of the Region. While economically advanced countries in the Region can be expected to have lower IMRs, it is noteworthy that Sri Lanka, a lower middle-income country, has been exceptional in this respect, having brought its IMR down to the relatively low level of 12 per 1000 live births by 2005. This achievement is the result of public sector emphasis on attaining universal health-care coverage.

Table 5: ***Age standardized mortality rates of selected diseases in the Sout-East Asia Region, 2002***

Country	Age standardized mortality rate (Per 100 000 population)			
	Noncommunicable diseases	**Cardiovascular diseases**	**Cancer**	**Injuries**
Bangladesh	762	428	111	101
Bhutan	771	441	112	112
DPR Korea	691	371	102	65
India	750	428	109	117
Indonesia	727	361	132	87
Maldives	864	484	123	70
Myanmar	796	432	115	105
Nepal	796	436	118	108
Sri Lanka	711	314	118	82
Thailand	559	199	129	74
Timor-Leste	814	441	118	112
South-East Asia Region	**719**	**395**	**111**	**106**
World	**624**	**315**	**132**	**87**

Source: WHO Geneva, *World health statistics 2007.*
Note: for country reported data, please refer to WHO/SEARO publication *11 Health questions about the 11 SEAR countries,* 2007.

2. Strengthening health systems

Addressing public health

The challenges that many developing countries experience in improving their health systems are, to a large extent, the result of long-term neglect in the planning and management of capacity building in public health. This need is being urgently addressed. The landmark Calcutta Declaration, adopted at the *Regional Conference on Public Health in South-East Asia in the twenty-first Century* in November, 1999 attended by international experts emphasized the importance of public health as an inter-disciplinary endeavour to meet the health needs of the people. It also called for promoting public health as a discipline and an essential requirement for health development.

Strengthening and reforming public health education and training and research supported by networking of institutions and use of information technology for improving human resource development was endorsed as an important strategy for enhancing health development in the Region in the twentyfirst century. Specific recommendations were made for building public health capacity in the Region, including the creation of appropriate career structures and strengthening public health education, training and research.

Some important initiatives related to public health strengthening have been carried out in the Region and include:

- Review of the progress made since the Calcutta meeting at an informal consultation on *Future Directions in Public Health-Calcutta and Beyond* held In December 2003. This consultation set the future agenda for strengthening health systems in general, and public health in particular, in countries of the Region.
- *Development of accreditation guidelines* for Public Health Institutes (PHIs), and guidelines and formulation of a plan of action for networking

of PHIs. Some countries adopted/adapted the regional accreditation guidelines, while others are promoting development of guidelines and standards for public health education.

- Organization of an *International Executive Programme in Public Health* in collaboration with the University of Padjajaran at Bandung, Indonesia in November 2002. Invitees from public health institutes of Member countries were enthusiastic about conducting such courses at their institutes; they recommended developing a standardized package of curriculum and prototype course materials. The idea to establish a regional Masters in Public Health (MPH) programme evolved.
- Development of *core curricula in Family Medicine*. Specific mechanisms were recommended for promoting family medicine programmes, which bridge public health with clinical medicine. Nepal and Thailand have taken the initiative in networking public health institutes at the national level.
- Convening an International Forum of the South-East Asia Public Health Education Institutes Network (SEAPHEIN) in 2004. It worked out the details of networking between public health education institutes. The network, coordinated by the Mahidol University in Thailand, seeks to promote exchanges between institutes and between countries, and to share experiences and expertise in public health education and training. It will catalyse a public health movement that can impact positively on public health policies and practices in the Region.

*The South-East Asia Public Health Initiative 2004-2008***,** launched by the Regional Director for South-East Asia, aims to assist the countries strengthen public health. The initiative aims to place public health development and strengthening high on regional and national health development agendas, with the emphasis on public health workforce. While it focuses primarily on strengthening public health education, it will also address other urgent public health needs in the Region towards the long-term goal of strengthening the overall public health infrastructure, services and management within the broader context of health systems development.

Challenges to strengthen public health encompasses in different domains: conceptual, policy-related, technical and managerial. An intercountry meeting, convened by WHO/SEARO in Bangkok in November, 2006, deliberated on strengthening public health policy and practice in the Region and recommended horizontal collaboration within each country to establish a multisectoral national commission on public health.

Box 1: **Public Health Foundation of India plans for building capacity of health system**

Widely articulated demands to infuse greater public health expertise in health services as well as to make policy development and research more responsive to India's public health needs led to establishing the Public Health Foundation of India (PHFI). This new private-public partnership has the mission to establish six world-class Indian Institutes of Public Health, benchmark quality standards for public-health education, and undertake health research for policy development. It began with an initial capital of over US$50 million from three sources: eight Indian philanthropists joining together to pool more than $20 million, matched by $15 million each from the Indian Government and the Bill & Melinda Gates Foundation.[11]

Inaugurating the PHFI in New Delhi on 28 March 2006, India's Prime Minister Dr Manmohan Singh exhorted it to produce managers of people's health rather than simply clinicians to manage disease. Structured as an independent foundation, the new initiative plans to promote demand for, as well as supply of, public-health leaders for both private and public sectors.

An early priority will be tackling the challenge of training some 600 000 Accredited Social Health Activists for the National Rural Health Mission.

PHFI is evolving a tripartite strategy focused on curriculum development, research, policy and advocacy. Apart from establishing new institutes, the PHFI will assist the growth of existing and other emerging public health training institutions, and facilitate the creation of a nationwide network of public health capacity-building institutions. The PHFI will benefit from a wide range of international partnerships, with public health training and research institutions from all parts of the world. The foundation will help India craft its own public health future, shaping Indian health capabilities to the challenges of the 21st century.

Revitalizing primary health care

Strengthening the health system is fundamental to achieving the health-related Millennium Development Goals and other national health targets in Member countries of the Region. In the absence of efficient and equitable health systems, countries would not be able to scale up the disease prevention and control programmes that are required to meet health goals. Recently, there has been growing acceptance of the important role of primary health care (PHC) and its revitalization in helping to strengthen health systems to improve in equity, efficiency, effectiveness and responsiveness of national health systems. The

strength of a country's PHC system is associated with improved population health outcomes for mortality, particularly cause-specific premature mortality from major respiratory and cardiovascular diseases. Furthermore, increased availability of PHC is associated with higher patient satisfaction and reduced aggregate health-care spending. Health systems in low-income countries with a strong primary care orientation are likely to be more pro-poor, equitable and accessible.

PHC is defined as essential health care based on practical, scientifically sound and socially acceptable methods and technology made universally accessible to individuals and families in the community through their full participation and at a cost that the community and country can afford to maintain at every stage of their development in the spirit of self-reliance and self-determination. Primary health care was made a core policy for WHO in 1978, with the adoption of the Declaration of Alma-Ata and the strategy of "Health for all by the year 2000". In the years since the Declaration, the configuration of health systems at country level in South-East Asia has changed considerably. The PHC approach is not just about the development of health infrastructure alone; instead it combines three major components: health services, community involvement and joint action with other sectors.

Member countries adopted the PHC approach and this has had a significant impact on health systems development, despite different demographic profiles and widely varying economic and social challenges. Each country adopted and adapted primary health care on its own terms and in accordance with its own health situation and socioeconomic conditions. The physical infrastructure in many countries has expanded significantly, particularly at the primary and first referral levels. Most countries have given priority to upgrading the health infrastructure, particularly in rural areas. Nepal, Sri Lanka and Thailand have comprehensive networks of health facilities extending to the village level.

Most countries in South-East Asia were turning to community participation as a part of the action needed to reinvigorate the PHC strategy. In India, community participation being encouraged for the procurement of medical equipment for hospitals, and cost-sharing schemes have been introduced for the maintenance of health facilities. In Indonesia, dominant community participation efforts were led by the women's welfare movement. For improving drug accessibility and affordability, community cost-sharing schemes were implemented in Indonesia, Myanmar, Nepal and Thailand.

In most countries in South-East Asia, health expenditure has remained at a relatively low level with 60-75% of its total accounted for by the private sector. Direct out-of-pocket (OOP) spending by households appears to account for a major portion of private spending. This means that households bear a substantial

proportion of health-care costs while having little or no financial protection in the event of major illness or injury.

Most countries in South-East Asia have also taken steps to increase production of certain categories of health personnel, including voluntary workers, in order to improve and expand coverage, especially at the community level. Absolute and relative numbers of most categories of health personnel have increased. Most countries in the Region have formulated and implemented plan for human resource development that include capacity building of the education and training institutions.

Recent initiatives in the Region

Bangladesh: National health systems development has given high priority to ensure universal accessibility to and equity in health care, with particular attention to the rural population.

Bhutan: Strategies have been evolved to reach the un-reached through decentralization of planning and management systems. In recent years the country has also been able to shift the focus from expansion to improvement of quality of services.

DPR Korea: All the health establishments are run as public and state responsibilities. Now, with an improved national economic situation the country is also witnessing some progress in the health sector with prospects of better health indicators.

India: The National Rural Health Mission (NRHM) launched in 2005 aims to provide accessible, affordable and accountable quality health services even to the poorest households in the remotest rural regions.

Indonesia: Coverage and accessibility of essential health services has significantly been scaled up through a medium of financial protection for its population. In 2006, the Government launched an initiative to develop Alert Villages (Desa Siaga) nationwide.

Maldives: The government has expanded curative services to establish a multi-referral system, which is more decentralized, and which has greater nongovernmental organization (NGO) and private sector involvement in service delivery. Efforts are also being made to establish a social security system that includes basic health care, and to encourage individual organizations to establish mechanisms for covering the health expenses of their employees.

Myanmar: High priority has been given to the development of an adequate workforce of qualified health personnel. To ensure equity in health care and reduce disparities between different geographical areas, new medical universities have been opened in Central and Upper Myanmar.

Nepal: The Government is (a) working to make essential health care services available to all people through primary health care services, (b) decentralizing health systems management to encourage greater people's participation, (c) promoting and facilitating public-private-NGO partnership in the delivery of health services, and (d) making efforts to improve the quality of health care through total quality management of human, financial and physical resources.

Sri Lanka: The country scaled up accessibility and coverage of primary health care. To tackle the increasing problem of noncommunicable diseases, the Ministry of Health will lead in planning and sponsoring a major national behaviour change communication programme and set off activities aimed at healthy lifestyle changes in targeted population groups. It will be carried out through intersectoral and multisectoral collaboration with relevant departments and agencies.

Thailand: Recent initiatives in strengthening primary health care include: (a) giving primary health care a new look through renovation, refurbishment of physical structure of public health facilities with adequate supply of medical and non-medical equipment, establishment of some public primary care centres operated with full-time physicians and involvement of private clinics by using the financing mechanism of the 30 Baht scheme, (b) increasing competency of health personnel at primary care centres through upgrading the general Practitioner Residency training programme to Family Physician Training programme, (c) establishment of Referral Coordinating Centres (RCC) to manage referral systems effectively and providing financial incentives to hospitals that reserve beds for admissions, and (d) integrating community-based preventive and health promotion and Thai traditional medicine in primary care centres.

Timor-Leste: The government has adopted a policy of integrating health systems with other sectors; targeting groups to achieve the greatest health impacts; developing policies on human resources for health, appropriate to the needs of the country; promoting access to basic health care by vulnerable groups; mainstreaming gender health concerns in all programmes; and working with relevant sectors/organizations to advocate an improved status for women by promoting equal rights for men and women in access to care.

Key challenges

- Resources, particularly with respect to operational and development budget, to build and operate primary health centres in optimum numbers
- Skill mix, shortages and distribution of health workforce
- Competencies of health service managers
- Organization and management of health service delivery systems
- Human resource management
- Health management information systems
- Community involvement and intersectoral collaboration

Increasing quantity and quality of health workforce

Trained health personnel are crucial for the delivery of health services, improving health system performance, scaling up health interventions, and achieving the health-related MDGs. The skill mix and numbers of health workers determine the type and range of individual and public health interventions that can be provided. In the South-East Asia Region, health workforce situations vary to a great extent between and within countries with regard to supply, demand, distribution, mobility, working conditions, supervision, motivation and performance related to various economic, social and political factors. The density of workers in a population impacts the effectiveness of health-related MDG interventions.

Shortages of health professionals and lack of systematic deployment and incentives policy are increasingly being felt in some countries in the Region, hampering health service delivery. The greatest shortage of healthcare professionals in absolute terms is in Bangladesh, India and Indonesia who have an increasing need (Table 6). In relative terms, however, countries such as Bangladesh, Bhutan and Timor-Leste have the lowest levels of skilled health-care personnel in the Region, each with less than 20% of births attended by skilled health staff. Meanwhile, countries with the lowest relative need have the highest number of health workers.

The availability of health-care workers in South-East Asia is 43 per 10 000 population, compared with 189 in Europe and 248 in the Americas. Among the underlying reasons for this gap are maldistribution of human resources, ineffective training policy, weak institutional infrastructure, lack of incentives for, and motivation of, health professionals and financial constraints. An integrated approach to address critical sectoral needs while taking into account resource

Table 6: ***Human resources for health in Member States of the South-East Asia Region****

	Per 10 000 population								
	Doctors	**Nurses**	**Midwives**	**Dentist**	**Pharm**	**PH&En**	**Lab.Tech**	**Others**	**Total**
BAN	3.0	1.4	1.8	0.2	0.6	0.4	0.3	3.5	11.2
BHU	2.0	8.0	0.8	0.2	0.3	0.3	2.0	2.5	16.1
DPR	32.0	37.0	2.7	3.7	6.0	1.2	0.4	30.0	113.0
IND	7.0	8.0	4.7	0.6	5.6	3.8	0.2	15.1	45.0
INO	2.0	13.0	2.0	0.3	0.3	0.3	2.5	4.6	25.0
MAV	13.0	33.0	...	0.4	7.3	...	5.1	28.4	87.2
MMR	3.0	4.0	6.0	0.3	...	0.4	0.4	10.5	24.6
NEP	2.0	2.0	2.4	0.1	0.1	0.1	1.2	7.0	14.9
SRL	6.0	14.0	1.6	0.6	0.6	0.8	0.7	9.8	34.1
THA	3.0	14.0	...	1.7	2.5	0.4	...	2.9	24.5
TLS	2.5	7.0	4.0	0.5	0.2	0.3	0.4	20.4	35.3

* Year of data varies around 2005 by country; ... Data not available.
Source: WHO-SEARO, *11 Health questions about the 11 SEAR countries*, 2007.

availability is needed. Opening up the health sector to private investment, while attending to equity issues, would provide room for strengthening public health institutions as well as increasing overall efficiency in health service delivery.

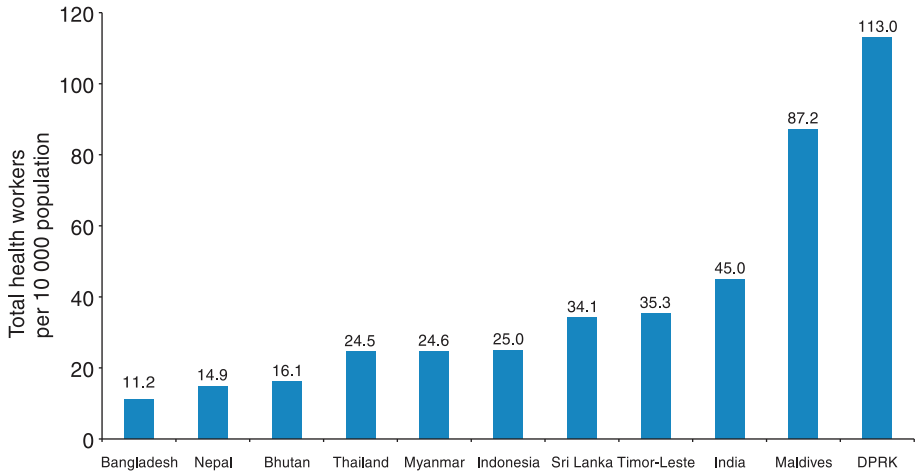
Public spending on the health workforce, including wages, salaries and allowances accounts for between 35% and 45% of government health expenditure in the Region.[12] Despite the large sums spent, and the acknowledged importance of providing good health care services and confronting health crises, support for HRH development ranks low on the health policy agenda of many national governments and international agencies.

Health workforce challenges include the demand for workforce, its response to population and service needs, workforce supply (size, distribution, retention, and training) and workforce governance and management. Countries in the Region have to ensure numerical and geographical balance of the various categories of health workers, the relevance of training and technical skills and the efficient skill mix of the health workforce to address national health needs. They have to develop good personnel management practices, appropriate career development structures, effective staff supervision and development, as well as adequate support, and good working conditions.

Overall workforce shortages: The most critical problem in the Region is an overall shortage of health workers due to low production, attrition and restricted staffing levels, insufficient investment in pre-service education and in-service training, ineffective coordination between the health, education and employment

sectors and the development partners, poor workforce planning, and out-migration in search of better emoluments, career structures and working conditions. A study on six South Asian countries shows that Bangladesh, India, Nepal and Sri Lanka have a high rate of international migration of doctors. There are also variations in the structure of health service providers within countries. Greater numbers of physicians than nurses or midwives are registered in Bangladesh, while in Bhutan, Maldives and Nepal community health workers represent a high proportion of all health service providers. Health force (all types) availability in the South-East Asia Region varies from 11.2 per 10 000 population in Bangladesh to 113 in DPR Korea (Figure 9). Each country should create and maintain an effective workforce size that is appropriate and relevant to its own specific needs. Those with health work force availability below 30 per 10 000 population may need to double or triple their current numbers if they are to maintain health gains and make good progress towards the health-related MDGs. Strong political commitment and international development partner support aligned to national priorities, structural changes and increased mobilization of resources for health workforce development are all vital in this effort.

Figure 9: ***Density of health workforce in countries of the South-East Asia Region***



Source: WHO-SEARO, *11 Health questions about 11 SEAR countries*, 2007.

Skill and distribution imbalances: Skill imbalances within and between occupational groups result in inefficiencies, and low capacity for meeting local health needs and changing circumstances. In Bangladesh, the skill mix depends highly on medical doctors and specialists, with more doctors than nurses. Indonesia and Sri Lanka have shortages of health professionals capable of

treating chronic and emerging diseases. Many countries lack the expertise in epidemiology, infection control, and other public health specialities to deal with the emergence of SARS and the continuing threat of avian influenza. Geographical imbalances may also exist, as in Nepal; only 20% of rural physicians posts are filled compared with 96% in urban areas. Other issues that compound skill imbalances include gender bias, an ageing health workforce and inappropriate use of skills. Task shifting within the health workforce is an option which can enhance the efficiency of the health system. Countries are working on maximizing the use of their workforce and revamping their health plans towards a workforce that more closely reflects the health needs of their populations.

Working conditions and excessive workloads with poor remuneration and/or high-risk working conditions, lack of incentives and limited career advancement opportunities, lack of proper equipment and supplies, workplace injuries, violence and abuse, poorly defined job descriptions and role conflicts, inadequate supervision and support, and inappropriate rules and regulations, as well as ineffective performance management result in poor utilization of skills, and inhibit flexible deployment of staff. Nearly all countries need to improve work environments by scaling up good practices to strengthen the management of existing resources, assure adequate supplies and facilities, and create monetary and other incentives to retain and motivate health workers. Member countries are currently developing country-specific health workforce strategic plans to address the problems and to strengthen the health systems. National strategies for education and training, however well-conceived, are insufficient to deal with the realities of health workforce challenges. National leadership and global solidarity can result in significant structural improvement.

National governments, agencies and development partners have made large investments in the training of health workers and managers in some countries of the Region. However, variable quality and standards, mismatch with health service requirements, inadequate focus in curricula for primary care and prevention, limited capacity in the education sector; inadequate and poorly coordinated in-service education; lack of linkages to career development pathways, and poor linkages between service needs, in-service education and performance evaluation pose major challenges. Lack of appropriately trained educators and resources and outdated teaching and learning methodologies have further compromised the quality of education. Continuing and in-service education and training opportunities for staying abreast of international health developments in medical knowledge and technology are very limited in most countries.

Evidence from countries and institutions in the Region indicates the need for:

- An education and training system embedded and integrated within the health system that links teaching with services and research, and builds leadership and management for health workforce.
- The curriculum that is both hospital and community oriented, and emphasizes action learning and modular education, to develop appropriate competencies—skills, knowledge and attitudes—to address current health priorities from an early stage.
- A flexible system to produce health workforce with an appropriate skill mix, and ensure an appropriate distribution of workers across the country.
- Early focus on reducing attrition and increasing enrolment of all cadres but particularly community and mid-level cadres, and increasing the number and efficiency of teachers.
- Economies of scale, and increased efficiency, through national and international long-term investment in health workforce education, training and management and better use of existing facilities as well as, introduction of innovative and regional approaches to solve health workforce imbalances.
- Policies and regulation that improve the quality of education and training, and provide incentives for career development in the health service for students and health workers.
- Integration of health programmes for a holistic approach and inclusion of the private sector and nongovernmental organizations in health development efforts.

Public health education has received significant attention in the Region since the Regional Conference on Public Health in South-East Asia in 1999 and its "Calcutta Declaration." The South-East Asia Public Health Education Institutes Network coordinated by Mahidol University in Thailand has been active in promoting public health education. The objectives include strengthening curricular relevance, quality improvement, research, and promoting leadership in public health. This network assists in upgrading curricula, strengthening teaching faculties, supporting new schools of public health, and developing accreditation policies. The South-East Asia Public Health Initiative offers support for strengthening public health education, developing new schools of public health, and facilitating a network of public health schools. The University of Colombo Post-Graduate Institute of Medicine (Sri Lanka) has initiated a network of

postgraduate medical education for seven SAARC countries. In addition, the South-East Asia Network of Nursing and Midwifery Educational Institutes, the South-East Asia Network of Medical Councils, the South-East Asia Network of Medical Education, and the Asia Pacific Action Alliance for Human Resources for Health provides a platform for information sharing on HRH development. Table 6 provides information on human resources for health in Member countries of the South-East Asia Region per 10 000 population.

Continuing journey in essential and traditional medicines

The 30-year journey (see Box 2) to provide access to safe essential medicines of adequate quality to people of the Region continues, as countries face new challenges.

Box 2: Thirty years of implementation

The 30th anniversary of the WHO Model Essential Medicines List was commemorated in Sri Lanka in 2007. All Member countries have a National Essential Medicines List in some form, and have implemented it in their health care systems to varying degrees. Where the State has a predominant role in health care it has been easier to implement the concept and the List than in countries where the private sector provides a major part of health care and where there are strong commercial forces which do not necessarily support the concept and the List.

Rational use

Implementation of the essential medicines concept and list has to be accompanied by appropriate and rational use of the medicines. There is an increasing consumer awareness on the issues involved in rational use which have highlighted the areas requiring a different approach. For example, some countries have successfully implemented over-the-counter (OTC) medicines, allowing consumer access to a safe, well-defined list of medicines available for sale outside a pharmacy. This has contributed to independence by the consumer in use of these carefully defined medications. While this could be a useful example to follow, in some countries it is felt that the practice might encourage self-medication which at times could be inappropriate. The increased awareness and enthusiasm is now being harnessed into projects and activities which involve civil society and are focused on the consumer.

Quality, safety and efficacy

Countries in the Region have continued to promote production of essential medicines in their pharmaceutical industries. DPR Korea now produces essential medicines in a pharmaceutical factory developed with WHO assistance. Bangladesh has been provided with WHO assistance to enable it to reach the standards required by the United Nations (UN) prequalification system (and hence for supplying UN agencies); it is likely that a final inspection will be carried out in late 2008.

Detection and management of adverse reactions to medicines (pharmacovigilance) is an important part of the functions of the ministry of health. Nepal, Sri Lanka and Thailand have vigorous activities that have contributed to the global database on pharmacovigilance in Uppsala, Sweden. Bhutan has initiated these activities and will soon begin to contribute to the global system. India has a system in place but is yet to implement it completely.

Concerning the regulation of medicines, countries continue to face major challenges. Counterfeit medicines have been considered as an important issue. Countries are yet to clearly define in their legislation what a counterfeit medicine is; such a definition aids in detecting counterfeits as well as in comparing the situation across countries. The International Medical Products Anti-Counterfeiting Taskforce (IMPACT), coordinated by WHO, is now actively involved in the Region, and activities in the area will increase.

After establishing its drug regulatory authority, Bhutan has moved ahead with developing detailed regulations such as the list of OTC medicines and the information to be provided with these medicines. This will improve access to and rational use of medicines.

Access

Medicines for children is an area that has been neglected. Medicines for adults have of course been developed, and it is expected that these medicines could also be used for children. However, there is increasing realization that more needs to be done in children's medicines, and that products appropriate for this group need to be specifically developed. These products must be affordable for this vulnerable group. Baseline information on the situation is lacking and surveys have been initiated in Bhutan, India, Sri Lanka and Thailand to assess the situation.

Good Pharmacy Practice (GPP) is the universal professional standard of service developed as a professional tool for pharmacists. Countries in the Region have taken GPP and modified it according to their requirements, and implemented it with varying degrees of success. Thailand has been the most successful, and has been able to demonstrate that pharmacies with GPP were better patronized and commercially more successful than those which did not practice GPP. However, the major difficulty in practicing GPP is the pricing of medicines; all countries in the Region expect medicines to be sold as products with a mark-up as the income. The better method would be to add a service fee to the cost of the medicines (a common practice in most developed countries); this would encourage pharmacies to provide medicines independent of their price. These are fundamental structural problems outside the health sector that have an important bearing on health.

The continuing struggle and challenges

Medicines are an important part of health care, but at the same time, they need to exist within society as commercial products. While WHO, other partners and ministries of health do try to influence the issues and disputes to produce the maximum benefit of medicines for health, it is this constant struggle which frames the work in the area of medicines. The challenges include addressing access, regulation, production and use of medicines in the context of commerce and globalization, and in ensuring the maximum benefit for health through National Medicinal Drug Policies based on the Essential Medicines concept.

Traditional medicine

Member countries have a rich heritage of traditional medicine. While recognizing the key role of this system of medicine in the provision of health care today, it has been emphasized that to ensure undisputed health benefit to the patient, the patient's safety must be the overriding consideration while using traditional remedies. In the poorest parts of the Region, over 50% of populations do not have access to essential medicines. In order to improve access to basic health-care services, especially for the poor, underserved, and indigent sections of the population, traditional medicine may find a proper place in the national health-care systems. This approach would promote the required complementarities between traditional and the modern system of medicine. The following is a summary of some of the important features in the area of traditional medicine in Member countries:

In *Bangladesh*, the Directorate of Homeopathy and Traditional Medicine has prepared uniform treatment guidelines for rational and cost-effective use of traditional medicine.

In *Bhutan*, traditional medicines system was considered as one of the most sustainable methods for health care delivery, and the Institute of Traditional Medicine Services with its three units fulfils its mission of development of human resources for traditional medical services, production of traditional medicines and provision of quality traditional medical services.

In *DPR Korea*, traditional medicine and Koryo medicine are unique national systems of medicine, and treatment coverage by traditional medicine at different levels of health facilities was approximately 30–40% at the central level, 40-60% at the city/county levels and 70% at the peripheral level.

In *India*, there are approximately 21 000 dispensaries of traditional systems of medicine (of which 14 000 are for Ayurveda). The Indian Medicine and Homeopathy Pharmacy Council has been established, in addition to an amendment to the Central Council of Indian Medicine Act, to cope with the present demand for traditional medicine.

In *Indonesia*, the national policy on Indonesian Herbal Medicines Development covers a strategic plan that includes classification of Indonesian herbal medicines into three schemes. A master plan for Indonesian herbal medicines to speed up implementation of the national policy and strategy has been developed.

In *Myanmar*, the University of Traditional Medicine has been established, and the Department of Traditional medicine owns seven herbal gardens with the objective of conserving rare species, demonstration for practical training of students and supply of raw materials for drug production.

In *Nepal*, the Government has established up to 300 institutions for delivery of traditional health care services, and the Ministry of Health and Population is involving traditional medicine human resources in national programmes such as immunization and family planning.

In *Sri Lanka*, the Ministry of Indigenous Medicine and the National Institute of Traditional Medicine play crucial roles in traditional medicine, particularly with regard to use in primary health care in terms of availability, affordability and accessibility.

In *Thailand*, the Department for Development of Thai Traditional and Alternative Medicine has been established as a new department under the Ministry of Public Health, comprising the Institute of Thai Traditional Medicine, Division of Alternative Medicine, and the Office of the Secretary.

The use of traditional medicines in primary health care is an appropriate step to ensure the realization of health for all in the most cost-efficient and cost-effective manner. It may be ensured that traditional systems of medicine are socially recognized and culturally acceptable, in order to facilitate their assimilation as an integral part of a comprehensive national health care setting. There is a need for collecting and updating information on human resources in the field of traditional systems of medicine available in individual countries. In addition, conditions, ailments and diseases that were successfully treated by using traditional remedies should be duly recorded. These in turn would be reviewed and assessed to facilitate the preparation of important sources of information, such as a formulary or pharmacopoeia.

Aiming at universal coverage in health financing

Health financing remains a critical challenge to strengthening and scaling up health systems in the Region. The following update on health expenditure and financing details the situation in countries.

With the common goal of universal coverage, countries differ in the magnitude and nature of investment in health and associated health outcomes. These expenditure patterns (Figure 10) highlight three key issues which financing strategies in the Region need to address for universal coverage:

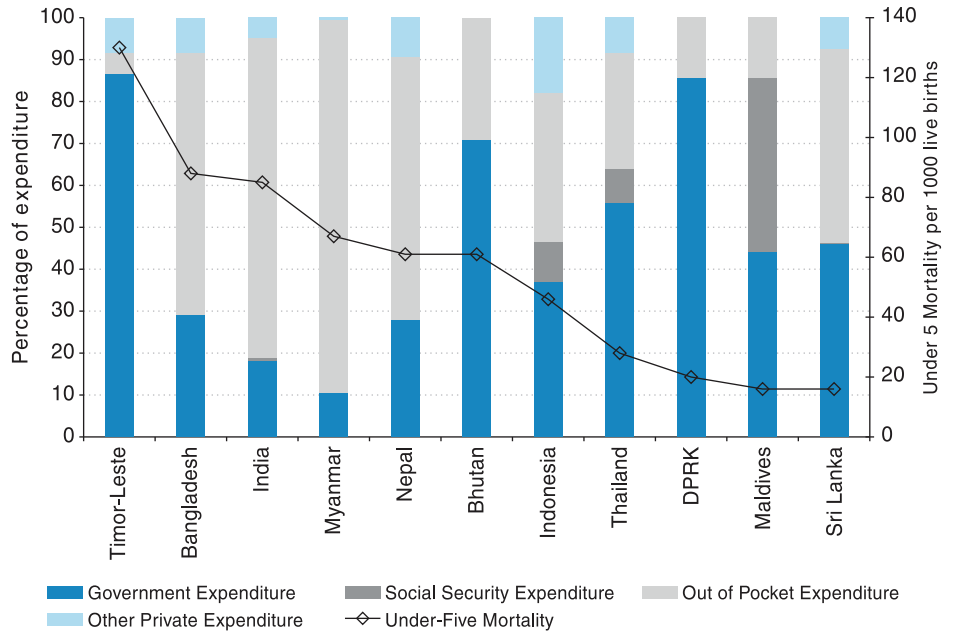
Some countries in the Region have exceptionally high out-of-pocket expenditure (OPPs) is the most inequitable financing option. It also appears to have a correlation with health outcomes. Conversely, countries with proportionately high public spending have better public health outcomes.

- *Financing strategies need to find ways to increase public investment in public health, especially primary care for the poor; and, any supplementary mechanisms must secure financial protection for the poor.*

Countries with similar spending patterns have different outcomes.

- *Financing strategies need to address inefficiency in use of all resources, and*
- *Engaging the private sector in the public health effort.*

Figure 10: ***Health expenditure and under-five mortality, 2006***



Source: National Health Accounts unit, Health System Financing, HSS, WHO, www.who.int/nha; WHO-SEARO, *11 Health questions about 11 SEAR countries*, 2007.

The CMH estimated that an expenditure of US$34 per capita is required to deliver a 'minimum' package of basic public health and clinic services, including the provision of public goods (preventative and promotive services).[13] CMH further recommended that, to deliver this basic package of services, particularly to the poor, government spending needed to be increased substantially, to 2% of gross national income (GNI) by 2015. This emphasis on public investment is because governments can direct such resources most effectively towards health priorities.

Increasing public resources for health poses the first critical challenge in health financing. While governments now acknowledge health as a "productive" sector with a central role in development, it is not a revenue raising sector and remains one of many competing priorities for government revenues – revenues that are constrained, even in countries where economic growth is comparatively rapid. The scope to increase the share of health spending from general government revenues is therefore limited.

Sustainability in health financing is emphasized by all countries and, accordingly, any additional resources would need to be raised domestically. The most comprehensive effort at national level in the area of health financing for universal coverage has been in Thailand. This policy was a response to the 20 million (30% of total population) people without financial protection for health. Universal Coverage (UC) is financed through government revenues and multiple mandatory contribution funds. The often cited "30 baht" scheme initiated in 2001

extends protection to the informal sector as well – official identification allows registration with the scheme and, for a co-payment of 30 baht, access to a benefit package that covers most services except advanced care (e.g. kidney transplants). The Thai financing reforms are still in transition in terms of both coverage and consolidation of schemes. Nonetheless, the experience is an important one for the Region. Maldives is in fact using horizontal assistance from Thailand to develop a national health insurance scheme.

As with the Thai system, the financial feasibility of the Region's health system is being further challenged by the demand for high cost personal care linked to the increasing burden of noncommunicable diseases. Sri Lanka for example has met the primary health care needs of its population very effectively through general government revenues but now needs to find alternative mechanisms to finance the higher cost of emerging noncommunicable diseases.

Further, in low income settings, mandatory schemes are often restricted vis-à-vis coverage of the poor by the existence of a large informal sector. Indonesia's *Jamkesmas* attempts to include the poor in the national social insurance effort by including a social aid programme financed by the budget and targeted specifically at the poor. Voluntary contributory initiatives, modelled on social insurance and implemented at community level, have also proved effective in providing financial protection to the poor in the informal sector. Bangladesh's Grameen Bank model has been applied in microcredit based health financing in other countries as well –for example Nepal. This is in fact a feature of "successful" community based health financing–that health-related aspects are secondary to the core, income generation related activities. The Self Employed Women's Association (SEWA) in India too initiated health insurance after it was well established as an employment association. The experience from the Region is that community initiatives do have the potential to provide the poor and informal sector populations with financial protection for basic health care. However, contributions and capacity to pool resources are limited in these initiatives and, therefore, so is the benefit package.

Service-specific financing schemes have also been piloted in the Region. Demand-Side Financing (DSF) is being implemented in Bangladesh for maternal health vouchers. India has also piloted a voucher for antiretroviral treatment (ARTs). Assessments of these schemes are yet to be completed–these will provide important lessons learnt vis-à-vis concentrated efforts at improving financial equity in priority areas as well as the potential for their future expansion and integration into broader mechanisms.

The potential for improving efficiency in use of resources may be assessed by examining components and items of current country expenditures with respect to priority health needs. A simple resource sources and uses table for India (Table 7) illustrates how allocative and distributional inefficiencies in public

Table 7: ***Summary NHA findings for India, 2001***

Resource Sources	Health expenditure	
	Rupees (in millions)	% of Total
Ministry of health and family welfare	24 629	2
Other central ministries	2 132	<1
State department of health	141 699	13
Other state department	2 311	<1
Panchyathi raj institutions & urban local bodies	31 784	3
Social security fund	790	<1
Employees state insurance schemes	17 954	2
Central government health schemes/central government employee schemes	25 797	2
State government employee schemes	5 119	<1
Insurance companies	8 025	1
Households	744 225	70
Household health expenditure by service providers		
NGOs	7 849 (1%)	
Private	736 376 (99%)	
Household health expenditure by type of health services		
Curative	651 941 (88%)	
Reproductive and Child health	92 284 (12%)	
NGOs	8 540	1
Firms	44 336	4
Total	**1 057 341**	**100**

Source: National Health Accounts India, 2001-02.

investment impact public health outcomes and systems equity. In spite of long-standing government policy of free basic health care for all, households in India finance 70% of expenditure on health services, having to purchase even primary public health services like reproductive and child health care. Corroborative evidence from benefit incidence studies indicates that public spending is in fact not reaching priority groups.[8] With respect to the stated national goal of subsidized universal access to primary care, significant efficiency gains can be made by better targeting public spending at primary care, in terms of both level and type of services, particularly for the poor. The NRHM has been a strong response in this direction, supported by major increases in the budgetary outlay for health.

Managing public finances and expenditures is an important aspect of securing a match between resources and priorities. Indonesia is developing performance-based budgeting as a mechanism for results-based management of public funds within the broader context of decentralization and district health systems. Lessons from this experience would be useful for the strategic use of

contracting between public-public entities in other countries as well. Also, as illustrated by the case of India in Table 7, private providers are in fact an important feature of the Region. Supply-side provider payment mechanisms may also be used here to effectively use private sector resources for the public health effort. It is important to note in this context that separating financing and provision of public health services and assigning a major role in the latter to the private sector *does not* imply privatization of health nor a diminished role of government. On the contrary, effective state stewardship is critical to successful contracting between the public and private sectors, requiring additional legislation, regulation and capacity development in the public sector.

Important progress has been made toward universal coverage through equitable and efficient health financing in the Region. National Health Accounts (NHA), now undertaken by all countries of the Region, provide a sound evidence base to review expenditure patterns and revise financing policy revisions. Significant steps have been taken to find contributory, demand-side mechanisms to augment tax-based health funding. However, some key challenges remain.

Health is not a tax-generating "productive" sector and the overall tax base in countries of the Region is limited, making it difficult for ministries of health to voice for a larger share for health in government spending or profile health in the macro agenda. Improving collection and pooling mechanisms to advance equity within the sector through contributory mechanisms is constrained by the size of the formal sector. This means that those who need financial protection most – the poor in the informal sector – are left out. Some islands of success can be found, especially in community-based insurance. However, more effort is needed to replicate and scale these up. Better financial management can itself release resources be it in the public-public context, i.e. better management of public funds within and between levels of government, as well as in the public-private context. Useful experiences are available from the Region in improving efficiency in resource use and engaging the private providers through effective use of contracting and provider payment mechanisms. These need to be studied more systematically for wider application.

Making national health information systems effective

A strong national health information system (HIS) is essential for sound programme development and implementation, and a prerequisite for strategic decision-making. There is a gradual evolution of the national health information systems in South-East Asian countries, from the routine service statistics and communicable diseases data, using composite health indexes and summary

measures of health, to monitoring of national achievements related to the global initiatives including Millennium Development Goals. HIS has emphasized availability, quality, value and use of timely and accurate health information, particularly for evidence-based decisions.

Some important tools developed and their use for strengthening the national HIS have been notable in the Region. The generic protocol for monitoring and evaluation of HIS was developed and used in the countries. As a result, reviews of country health information systems were conducted and summarized in a regional framework for strengthening national HIS. Reviews of the countries' vital registration systems resulted in in-depth understanding of the operational characteristics of vital registration systems and the current situation of mortality statistics in the countries. After the Health Metrics Network (HMN) as a partnership platform to strengthen national HIS was launched, more than a half of the countries in the Region have started to use the HMN framework for planning to strengthen their HIS, in the context of the 10-Point Regional Strategy for Strengthening Health Information Systems.[15]

The common and main challenges in health information systems strengthening in a majority of countries in the Region are as follows:

- data collection systems are overloaded with details which may not be required for policy decision-making;
- linkage in data transmission from one level to the next;
- timeliness and completeness, causing non-usability for evidence-based action;
- feedback mechanism;
- data analyses limited;
- useful disaggregated data often not available at the point of delivery of health service;
- human resources not sufficiently trained in data analysis and synthesis for decision-making; and
- capacity (human and other resources) in HIS area.

Mortality statistics

While the magnitude of premature mortality in South-East Asia (about 8 million deaths below 60 years in 2005) is very large, existing vital registration systems do not record a vast majority of these deaths. Where recorded, there are concerns about the quality of information on causes of death, with only a fraction

of these deaths being medically certified as to cause. Only four of the 11 countries in the Region have useable data from vital registration systems.

Important challenges in mortality statistics facing countries in the Region include low proportion of medical attention at death, quality of medical certification of cause of death, wide variation in registration procedures within and across countries, inadequate registration infrastructure, and inadequate inter-sectoral collaboration between different agencies involved in death registration and statistical processing.

A “gold standard” mortality statistics system based on complete vital registration with medical certification is achievable through an incremental strategy based on sample registration. However, efforts in countries of the Region could be based on the approaches to utilize complementary methods including strengthening vital registration, using verbal autopsy methods in sample registration systems or household surveys, and adjusting facility-based cause of death data in estimating population-wide cause specific mortality.

Maintaining the leadership and governance role of the health sector

Although large and highly populated countries of the Region, the role of the private sector in service delivery becomes significant, however, governments have a clear role to play in the health sector, which includes issues of equity, efficiency, quality and cost control. The public sector is required to deliver services on a reasonably large scale, to ensure services for the poor and underserved. The State, in its role of governance, faces a paramount responsibility. To ensure that the health system functions in the best interest of the beneficiaries, the state needs to establish and operate an appropriate framework of statutory controls. Good governance includes the strengthening of policy and planning functions, setting of standards for health care provision and development of appropriate systems for monitoring performance (including quality assurance initiatives), introducing new management policies and practices, defining national and provincial disease priorities and introducing effective health interventions.

During the last few years, many countries have implemented different forms of reorienting and restructuring their ministries of health. These can be categorized as follows: (a) making the ministries smaller and less hierarchical (as in most cases of decentralization efforts in Indonesia, Nepal, Sri Lanka and Thailand); (b) separating the functions of service provision and service financing to enable better performance through competitive measures (allocation of resources and financial management, e.g. expansion of health insurance coverage, service

contracting, autonomous hospitals, functional groupings, integrating central health budget, setting up management boards at large public hospitals, joint ventures, etc., carried out in India, Indonesia, Myanmar, Sri Lanka, and Thailand); (c) shifting the mix of staff and skills from an emphasis on technical and medical training to that of management, finance, and planning of human resources for health in most countries; and (d) legislation and regulations for production and deployment of various categories of health workers including the medical profession also, e.g. new Health Act of Nepal, large-scale contracting of village midwives and other categories of health workers in Indonesia; compulsory conscription of medical doctors in Myanmar; and the hospital accreditations in Thailand.

The usual focus of reform by governments and, more particularly, donors has been on the reduction of the overall size of the civil service, including the health sector. Reducing the total number of health staff, introducing new pay scales, grading structure and incentive schemes, separating political and executive functions, decentralization and privatization efforts are examples of civil service reforms introduced in many countries, including those of the Region.

As part of political and civil service reforms, decentralization is most common in almost all countries of the Region. Decentralization usually refers to three different types of processes. The first concerns the devolution of authority and responsibility from the central government to local government agencies in political and administrative areas. For example, state or provincial or district governments are responsible for their local development including health and other social sectors such as in India, Indonesia, Nepal and Sri Lanka. Bhutan, Myanmar and Thailand have also started their devolution process. The second process of decentralization is to de-concentrate the functions from higher to lower levels within the administrative apparatus of the countries. Many countries have introduced this process of delegation of responsibility for managing financial resources, deployment of human resources, and for managing hospitals and health centres. The third way is the delegation of responsibility and functions from central government units to other more autonomous and/or specialized types of government agencies or specialized functional agencies in almost all countries. The establishment of national health research institutes, national nutrition centres, national and regional research and training institutes, or institutes of policy studies are a few examples. In some cases, decentralization also refers to the transfer of functions from government (public responsibility) to nongovernmental organizations, including private for-profit enterprises and NGOs in the established sense of the term.

Efforts in decentralization require fulfilling a number of objectives — political, economic and managerial, which are not always compatible. Although decentralization has been used as a strategy to promote efficiency and public

accountability, it is important not to overlook the role of the central authority, particularly the need to establish equitable means for allocating resources and to ensure the existence of effective mechanisms for managing the health market. Experience has shown that in the field of essential drugs, there are various central government functions that may not be decentralized, e.g. selection of drugs that the centre authorizes for circulation in the national territory (drug regulation and registration), quality of standards and drug pricing policies, etc. This example illustrates that policies concerning the decentralization of various functions, responsibilities or authority are policy tools, and not merely policy objectives. Each country has to consider or identify an appropriate mix of centralized and decentralized functions, responsibility or authority to best meet policy objectives. The issue of decentralization cannot, therefore, be viewed by ministries of health in isolation from the overall civil service and political reform.

With the increasing participation of other sectors and agencies including the community in health development, there is a need for the health sector to create a wider base for appropriate health action. Since the Alma-Ata Declaration and HFA strategies were adopted, intersectoral action and community action for health have been recognized as major strategies for health development. However, a few major constraints have hindered progress. Some deterring factors are: (a) sustaining political commitment and translating it into operational means; (b) lack of common understanding of a comprehensive health system development framework resulting in *ad hoc* perceptions and sporadic decisions; (c) inadequacy of analytical and action-oriented information and clear directions for action and feedback; (d) absence of appropriate mechanisms for planning, implementation and monitoring; and (e) inadequate research support to provide information on the impact of public policies on health.

There is no denying that many development programmes of other sectors can contribute to health development. There are numerous examples, such as educating people on health promotion and protection; promoting no tobacco or alcohol use; having proper nutrition; empowering women to improve their health and development; initiating poverty reduction etc. What is more important is how the health sector maintains its leadership role. It may not be enough to indicate what the others can do for health, but to indicate what the health sector can do for others. The health sector reforms should foster new partnerships and strengthen existing ones in order to place health at the centre of development activities.

With the globalization and liberalization of international trade, there is growing concern on the part of health decision-makers, regarding the impact of international trade on health services. The current international trade negotiations have given importance to opportunities for promotion of international trade in

services, including health care. At the same time, market exploitation of international investment in health care could jeopardize national health systems, including resource allocation. Thus, countries may be aware of the impact of increased international trade in health services. They may also take full advantage of the potential benefits that can arise from agreements on regional integration such as Asean Free Trade Area (AFTA), Bay of Bengal Initiative for Multi-sector Technical and Economic Cooperation (BIMS) and Asia Pacific Economic Cooperation (APEC) or from the general agreement on trade in services (GATS) and the trade-related intellectual property rights (TRIPS). The countries of the Region have varying experiences in international trade in health care. Also, there is very little information on international trade in health care. There is a need, therefore, to review the current situation in the Region and to define the main issues so that appropriate policy options could be formulated for strengthening regional technical cooperation.[16]

Implementing the key regional health research strategies

Inequities exist among the Member countries of the Region which are at different stages of development regarding health research systems. Research is often viewed as involving considerable expenditure and governments of many countries are reluctant to provide the required degree of attention to research and health research in particular. Health research systems and infrastructure are yet also to be further improved in several countries and a wide gap exists between the producers (researchers) and the end users (mainly policy-makers) of the research corpus. This gap continues to persist in most and tends to widen in some countries.

Leadership in research management is still not strong and research capacity needs strengthening in some countries. Various health problems and environmental health hazards in countries of the Region have increased the scope and opportunity for research but the lack of adequate capacity and other resources have prevented its promotion. The situation, however, has drawn expatriate researchers and prompted international agencies to invest in research. The absence of a strong ethical review system and lack of adequate controls in the area of research ethics have increased the frequency of drug/vaccine trials funded by multinational pharmaceutical companies in various countries of the Region.

Given the inadequate level of understanding accorded to the importance of research in health development, policy-makers of many countries are generally

not in favour of funding research activities from the revenue, or regular budgets. Consequently, health research depends heavily on funds from the development aid budget and therefore suffers from inconsistencies that stem from unwarranted terms and conditions that may be sometimes framed by the funding agencies.

Effective and efficient delivery of health care systems demands that health managers have the necessary information to solve problems that are encountered by service providers and the community. Therefore, promotion of problem-based, decision-linked or utilization-oriented research is required, apart from considering the relevance, timeliness, cost-effectiveness and participation of multidisciplinary teams. These are some important characteristics of research identified under Health Systems Research.

Member countries of the Region are at different phases in the process of integrating the use of health systems research in decision-making. Even India, with reasonable capacity in health research, has recognized the low level of prioritization accorded to health systems research and planned certain activities to strengthen this area.

The World Health Organization has recommended an increase in investment in health research with a focus on health systems research. A major initiative is urgently needed to support research aimed at strengthening health systems, improving health care delivery, and achieving high and equitable coverage of health services. Research in the Region needs to focus more on equity issues including gender, community participation in health research and operational studies of health systems. In addition, through operational research, standardized, practical and simple indicators need to be developed in order to monitor the performance of health systems.

Key issues in health research in Member countries can be indicated through a set of words where initials form the acronym “research” as indicated below:

R -esources (individual and institutional capacity, research fund)

E -nvironment (culture)

S -tewardship (leadership)

E -ducation (capacity development related to research methods/ management)

A -pplication (utilization)

R -ecognition and reward (career development)

C -ollaboration (networking)

H -ealth information system (research information management)

The following are the *key regional health research strategies* agreed upon by the Member countries:

(a) *Analysing national and local health research systems:* Countries need to analyse the situation in regard to the role of their health research system within the overall national and local health systems, identify their strengths and weaknesses, and develop case studies indicating successes and failures, using the strategic framework of the objectives, functions and structure of health research systems. These will allow countries to look at possible options to improve their own health research systems and help them choose a strategy to take their health research systems forward. The first step to make an appropriate analysis of the existing national and local health research systems is to organize health research meetings periodically. These would provide avenues for health researchers, policy-makers, the public and other stakeholders to make an overall assessment of the health research systems, health research priorities and provide guidance for research and collaboration. Such guidance and collaboration is a key input for the development of national and local strategies and plans of action for health research system development, so that health research can be the "brain" of a health system.

(b) *Strengthening research capacity:* Strengthening of technical and managerial capacity ranges from improving management of health research, exploring new frontiers of health sciences and biotechnology to updating health research-related legislation and policies. On the demand side (senior executives, funding agencies, community, media), management strengthening is required on issues dealing with absorptive capacity for research. On the supply side, there is a need to expand and improve the management capacity of researchers and managers in the areas of leadership, negotiation, team building etc.

(c) *Managing knowledge:* Generating, validating and using knowledge as well as services resulting from research should be in the public domain in order to make it accessible and for it to be effectively used. With the emerging developments in the scientific and social arenas, exploring new frontiers in research becomes essential. A balance between research to generate new knowledge and research to apply existing knowledge at the local level is needed. Effective health research information for technical and monitoring purposes for building institutional networks has to be supported, using available information and communication technology.

(d) *Strategic support to the national health research system:* Strategic support to the countries includes resource-flow analysis, enhancing partnerships for resources, capacity building, and information sharing.

Ensuring good governance and creating conditions conducive to a good research environment are the key to making use of the opportunity to support national and local health research systems. Two key strategic areas to expand resources for health research systems development include improvement in coordination at the country level and proof of impact assessment.

(e) *Ensuring good governance:* Good governance of health research begins with the involvement of society in identifying the research problems and priorities and, to some extent, deciding on resource allocation. How this will be achieved is a big challenge. How it will happen in an equitable way may become a bigger challenge. Another challenge is how the public can become more involved in the determination of the broader systems?

Specific directions need to be worked out for translating the strategies into action depending on the need of each country.

Building capacity in health promotion

Health promotion requires leadership for policy development, health promotion practice, content and skill base, research and documentation, knowledge transfer and health literacy. Health promotion practices require support and action by all sectors and stakeholders to make concerted efforts in advocacy, investment, capacity building, regulation and legislation, and partnership and alliance building to promote health. Furthermore, health promotion encourages various players to contribute to promoting health including civil society groups, communities, the private sector and all ministries. In addition, the leadership and authority for providing technical guidance in promoting health remain the role and responsibility of the Ministry of Health.

The Bangkok Charter for Health Promotion, adopted at the Global Conference on Health Promotion held at Bangkok in August 2005, confirms the need to focus on health promotion actions to address the determinants of health. It also expands the five action areas identified in the Ottawa Charter, and encourages stakeholders in all sectors and settings to: (a) advocate for health based on human rights and solidarity; (b) invest in sustainable policies, actions and infrastructure to address the determinants of health; (c) build capacity for policy development, leadership, health promotion practice, knowledge transfer and research, and health literacy; (d) regulate and legislate to ensure a high level of protection from harm and enable equal opportunity for health and well-being for all people; and (e) partner and build alliances with public, private, nongovernmental and international organizations and civil society to create sustainable actions.

The Bangkok Charter also identifies four commitments essential for implementing health promotion by Member States and other partners, to make health promotion: (a) central to the global development agenda; (b) a core responsibility for all of government; (c) a key focus of communities and civil society; and (d) a requirement for good corporate practice. The policy actions and commitments contained in the Bangkok Charter form the nucleus of the strategic directions for this Regional Strategy.

Thailand adopted the "Health Promotion Act" in 2000 to have sustainable financing for health promotion, through the use of dedicated taxation from sales of tobacco and alcohol, managed by an autonomous body called the Thailand Health Promotion Foundation or ThaiHealth. Nepal adopted a similar legislation a few years ago. In Sri Lanka, new legislation for the establishment of a National Tobacco and Alcohol Authority has been discussed in Parliament since 1994.

The WHO Regional Strategy for Health Promotion consists of eight strategic directions:[17] (1) infrastructure for coordination and management; (2) capacity building; (3) regulation and legislation; (4) partnerships, alliances and networks; (5) evidence for health promotion; (6) policy advocacy and social mobilization; (7) health promotion financing; and (8) management of change.

Infrastructure for coordination and management

All Member countries of the Region have designated national focal points in each Ministry of Health (MoH), who are directly responsible for planning, implementation, coordination and monitoring of health promotion programmes. While several countries have established a division or section headed by a senior person at the level of Directorate with specific assignments on health promotion, some have converted their health education units within the ministry to work as health promotion focal points.

Several countries have established national working groups on health promotion and/or NCDs and in some instances these include tobacco control within their purview. Member countries also assign their own designated focal points within the MoH for specialized areas such as school health promotion, nutrition and mental health promotion. There is a clear structure for coordination of all health promotion activities at national, regional (provincial) or district levels that facilitates implementation and follow-up.

Capacity building

Training at various levels has been the major focus both nationally and regionally. There is a greater effort to move away from traditional training on information, education and communication (IEC) to a broad approach that incorporates principles for health promotion such as social determinants, behaviour change, policy and advocacy, and social and community mobilization, among others. Several countries have organized national and subnational workshops on health promotion capacity strengthening, with specific focus on the settings-based approaches for communicable and noncommunicable diseases, and new threats to health such as avian influenza. Behavioural change interventions and communication have been conducted across sectors for dengue, malnutrition and HIV/AIDS, among others.

Re-orientation of the academic faculty in institutions responsible for training health promotion professionals was conducted so that the curriculum is aligned with the latest concepts and strategies in health promotion delivery.

Several educational materials on communication strategies and techniques were developed and disseminated. At the regional level, a guide for developing behaviour change interventions in the context of avian influenza was published and distributed in 2007. The Regional Strategy for Health Promotion was published in early 2008.

Regulations and legislation

All countries in the Region except one have ratified the WHO Framework Convention for Tobacco Control (FCTC) and national legislations have either been adopted or drafted for effective implementation of the FCTC. All Member countries have also adopted various types of legislative measures for injury prevention, control of harmful use of alcohol and other substance abuse.

In Sri Lanka, the Alcohol and Tobacco Authority Act was passed in late 2006 for enforcing measures on control of alcohol and tobacco use. Thailand has recently promulgated the Alcohol Consumption Control Act, which aims to reduce harm from alcohol use. A draft strategic plan for health promotion, called “Thailand Healthy Lifestyle Strategic Plan for 2007-2016”, has been debated upon and reviewed for endorsement, and will soon be implemented. Health promotion programmes in Member countries facilitated the community-based initiatives for effective implementation of these legislations.

A Regional Conference of Parliamentarians on legislative and policy action for promoting health was organized at Bali, Indonesia, on 8-9 October 2007. The Conference adopted a Call for Action for Control of Tobacco and Alcohol Use through strengthening health promotion and improving financing for health promotion. The conference highlighted the need for parliamentarians to consider promulgating legislation for allocating financial and technical resources for health promotion.

Partnerships, alliances and networks

Concerted efforts at the country level focused on engaging other ministries and nongovernmental organizations in health promotion through the "all-of-government" approach. There has also been marked progress in intersectoral action, particularly in working with the Ministry of Education in the promotion of health in schools. Other government sectors, such as health planning, agriculture, environment and social welfare, have also shown keen interest in addressing health inequities and other social determinants of health. Health equity analysis was conducted by six countries in the Region. Indonesia and Maldives held national conferences on health promotion involving players from various disciplines and organizations.

The WHO Regional Office is also working closely with the WHO Centre for Health Development at Kobe, Japan (WKC), in matters of capacity strengthening of NCD prevention and control, health of the elderly (healthy aging), health promotion leadership training (PROLEAD I and II), and the Bangalore Healthy Urbanization Project (BHUP). The BHUP also forms part of the collaborative work of the WKC for the Commission on Social Determinants of Health (CSDH). The Bangalore project is one of the six global sites for the health urbanization project which is totally supported by the WKC with full technical cooperation of WHO at global, regional and country levels.

Evidence for health promotion

Nine countries in the Region participated in the Global School Health Survey (GSHS) training in 2007 and proceeded with data collection in 2008. A majority of countries in the Region have completed case studies on the successes with and challenges in implementing school health promotion. A few countries have also attempted to assess the effectiveness of the health promotion interventions that have been implemented.

Policy advocacy and social mobilization

Policy options for financing health promotion, especially the option of levying dedicated taxes on tobacco and alcohol have been discussed by the Member countries. The annual events of World Health Day and World No Tobacco Day remain important calendar fixtures for advocacy and social mobilization on the subject at the country level. Several IEC materials on the subject have been developed and disseminated. India, Maldives and Sri Lanka have developed national health promotion policies including a school health policy. Maldives also conducted national training for promoting health using the mass media. This involved nongovernmental organizations (NGOs) and mass media groups. Those involved included radio, television, newspaper and internet service providers and government policy-makers.

Health promotion financing

Case studies were concluded in late 2007 in five Member countries on health promotion financing using a common framework. The need for improving investment in health promotion with the help of a dedicated tax on alcohol and tobacco was discussed as an option. India and Thailand represented Member countries of the Region at a meeting on financing health promotion using health promotion foundations, which was held in Manila July 2007.

Management of change

Efforts continue to fully establish mechanisms for implementing and sustaining intersectoral action, particularly to integrate health promotion activities across all sectors in order to address social determinants of health associated with risk factors for communicable and noncommunicable diseases, new threats to health such as avian influenza, and also neglected diseases such as dengue. There is need to focus on settings-based approaches and at the same time, not to ignore specific disease threats such as avian influenza, TB, HIV/AIDS and malaria.

Challenges

While there has been significant progress in the implementation of the Regional Strategy for Health Promotion in countries of the Region including the involvement of other sectors, several challenges that require a multifaceted approach remain. There is a need to continue building capacity of both health and non-health professionals to deliver health promotion activities in various sectors. The focus

should be on enhancing the capacity of training institutions engaged in health promotion training including diploma courses.

There is a need to strengthen the capabilities of countries in the Region to collect, analyse and disseminate the evidence associated with the effectiveness of health promotion interventions in order to apply such evidence in influencing healthy public policies and intervention programmes. The evidence should be gathered from health promotion interventions focusing on specific diseases or population groups or settings. Furthermore, the evidence base should also include social and behavioural research.

There is need to identify sustainable mechanisms for financing health promotion activities including the allocation of sufficient funds from the government budget as well as the provision of dedicated taxes from alcohol and tobacco.

3. Promoting a healthy life-course

Addressing the challenges in reproductive health

Pregnancy, childbirth, post-partum and health of newborns

Pregnancy and childbirth and their consequences are the leading causes of death, disease and disability among women of reproductive age in developing countries – more than any other single health problem. Maternal mortality in developing countries is more than 100 times higher than in industrialized countries. The Region accounted for 170 000 maternal deaths[18] in 2005 and over 1.3 million neonatal deaths in 2004,[19] which were 32% and 35% of the global figures, respectively. About one million neonatal deaths occur within the first week of life and two thirds of these, around 700 000, within the first 24 hours. In addition, over one million stillbirths occur in the Region. More than 95% of neonatal deaths in the Region occur in Bangladesh, India, Indonesia, Myanmar and Nepal.

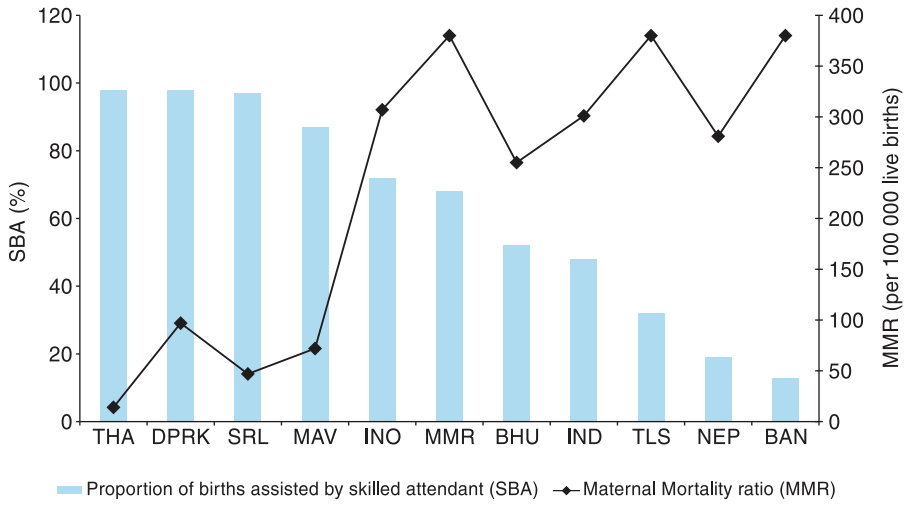
Globally, 60-80% of maternal deaths are due to obstetric haemorrhage, sepsis (infection), obstructed labour, hypertensive disorders of pregnancy (including eclampsia), and complications of unsafe abortion. In the South-East Asia Region, available data show that the causes of death are similar to the global picture with severe bleeding being a major cause of death in all the countries. Data from three countries of the Region show that 5-8% of pregnancies end in abortion and more than 2% in stillbirths.

Neonatal infections, such as sepsis, meningitis, pneumonia, tetanus and congenital syphilis are responsible for 33% of newborn deaths, while birth asphyxia and trauma account for about of 28% of deaths and contribute to life-long disability of those infants who survive.[20] Pre-term birth and low birth weight are associated with approximately 24% of newborn deaths, commonly due to asphyxia or infections.

Immediate and effective professional care before, during and after delivery can make the difference between life and death for both women and their newborns. There are sharp differences in antenatal care coverage (given by doctors, midwives and nurses) in different countries of the Region. Findings of the surveys show that not only are more women receiving antenatal care, they are also seeking more visits than before. A marked increase has been observed in Bangladesh, Indonesia and Maldives over a period of 5-10 years. Urban women are more than twice as likely as rural women to have four or more antenatal visits. In general, however, antenatal care services currently provided in many countries fail to meet the standard recommended by WHO.

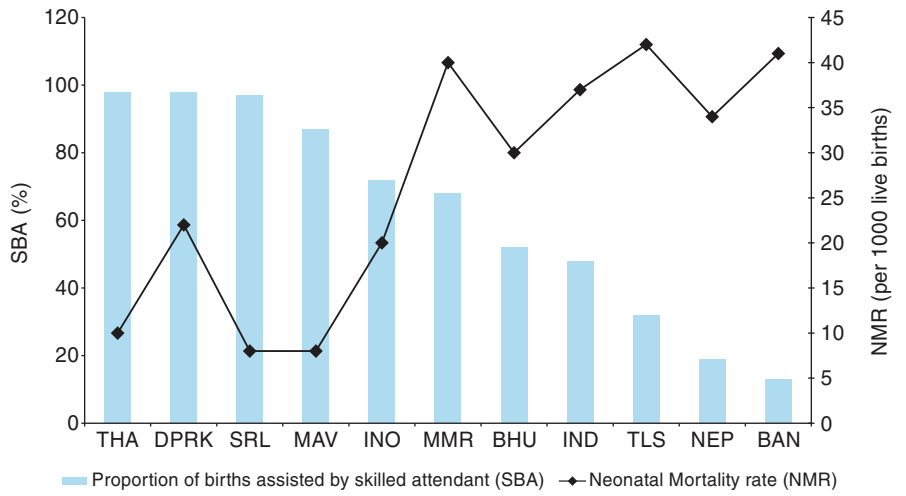
There is a lot of disparity within the Region with regard to the proportion of deliveries by a skilled attendant, which ranges from 13% in Bangladesh (2004) and 19% in Nepal (2005) to almost universal coverage in DPR Korea, Sri Lanka, and Thailand. An analysis of the relationship between the proportion of deliveries assisted by skilled birth attendants and maternal/neonatal mortalities in the Region shows that both newborns and mothers have a better chance of survival if they have skilled attendance at birth (Figures 11 and 12). The higher the proportion of deliveries by a health professional, the lower is the maternal mortality ratio and neonatal mortality rate. Maternal morbidities, such as fistula, are also more frequent in countries with a low proportion of deliveries by skilled attendants.

Figure 11: ***Relationship between proportion of births assisted by skilled attendant and maternal mortality ratio, 2005***



Source: WHO-SEARO, *11 Health questions about 11 SEAR countries*, 2007.

Figure 12: ***Relationship between proportion of births assisted by skilled attendant and neonatal mortality rate, 2005***



Source: WHO-SEARO, *11 Health questions about 11 SEAR countries*, 2007, and World health statistics 2008, WHO.

Many deaths of neonates are related to the poor health of the woman and inadequate care during pregnancy, childbirth and the postpartum period. It has been argued that nearly three quarters of all neonatal deaths and stillborn deliveries could be prevented if women were adequately nourished and received appropriate care during pregnancy, childbirth and the postpartum period. Furthermore, a mother's death can seriously compromise the survival of her children.

Postpartum care often receives less attention by service delivery systems, especially after the discharge of women and their newborns from the facility. If postpartum complications occur outside the health facility, the role of established active health service delivery practices in the immediate postpartum as well as within the period of six weeks becomes crucial. Provision of high quality postpartum care also helps to address post-abortion care and counselling for contraception. Strengthening the supply side should be linked to the efforts focussed on building capacity of individuals, families and communities to help them recognize danger signs and seek timely professional care for both the mother and her newborn.

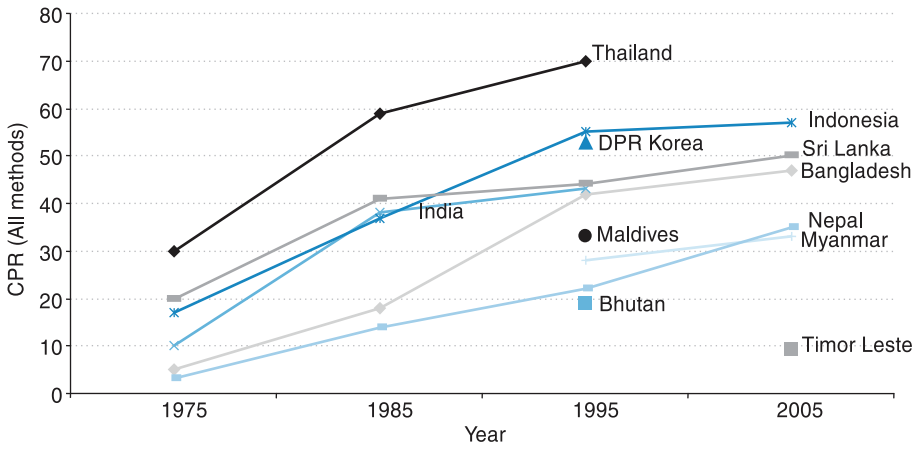
Family planning

It is estimated that guaranteeing access to family planning alone could reduce the number of maternal deaths by 25% and child mortality by up to 20%. The decline in fertility levels in all countries of the Region is a consequence of the

increasing use of modern methods of contraception among women. Some countries, for example Bangladesh, Bhutan, Indonesia, Myanmar and Nepal, have demonstrated a marked increase in their contraceptive prevalence rates (CPR). However, in some of these countries, there is a tendency for CPR to stagnate.

All countries in the Region support family planning programmes aimed at making contraceptive services widely available at affordable costs. CPR among married women in the 15-49 year age group varies widely among countries. While in 2005 more than 70% of women used any modern method of contraception in Thailand, only 7% are using them in Timor-Leste and about one third are using them in Maldives, Myanmar and Nepal (Figure 13).

Figure 13: ***Percentage of married women using modern contraception in the South-East Asia Region, 1975-2005***



Source: UN, World population data, 2005.

The use of any method is usually influenced by availability, or the method promoted by the family planning programme of the country. For example, injectable contraceptives are popular in Indonesia (28% in 2002-2003) and Thailand (22% in 2000), but are not available in India.[21] Female sterilization is the most popular method (37.3%) used in India.[2] The negligible use of male methods for contraception, such as condoms and male sterilization, is the only similarity in all the countries. This does not, however, include condom use for prevention of STIs and HIV infection.

Notwithstanding the increase in contraceptive prevalence in recent years, the large proportion of births in some countries of the Region is unplanned, mistimed or unwanted. Despite the state-supported family planning programmes in many countries and the availability of modern methods of contraceptives free of cost

or at subsidized rates, the unmet need is still high. The proportion of women reporting unmet need ranged from 8.6% in Indonesia in 2003 to 28% in Nepal in 2001 and 34% in Maldives in 2003.[22]

Unsafe abortions

A significant proportion of unwanted pregnancies result in induced abortion under unsafe conditions.[23] A few studies exploring the context of abortion among young women in the Region indicate a widespread prevalence of unsafe abortions, serious adverse consequences to women's health and a significant contribution to the deaths of women, who are either on the verge of adulthood or are in the prime of their lives. It has been reported that 22 abortions per 1000 women annually take place in South-East Asia and unsafe abortion is particularly an issue for young women in some countries of the Region.

The legal situation of abortion varies considerably within the Region. Abortion is legal in DPR Korea, India and Nepal, while in most other countries of the Region abortion is permitted only to save a woman's life. Even when the abortion laws are in place, the access to safe services remains limited for a vast majority of women. For example, in India, where a liberal abortion law has been in place since 1972, unsafe abortions, including sex selective abortions, still outnumber safe abortions.

Sexually transmitted infections, including HIV and reproductive tract infections

In general, the rates of STIs are high in the Region. Epidemiological patterns of STIs vary, with some countries reporting high prevalence of curable STIs, and others indicating high rates of ulcerative STIs or high prevalence of gonorrhoea and chlamidya. Sex-workers, high-risk men and pregnant women represent high-risk population groups for acquiring and spreading STIs. Overall, STI control programmes in the Region need further strengthening, with particular attention to improving surveillance, which is incomplete in most countries, and intervention coverage with selective approaches based on the country-specific epidemiological patterns.

The 2006 report on the global AIDS epidemic estimates about 6.9 million people living with HIV in the South-East Asia Region with an increase of about 0.5 million since 2003. About 2 million out of the total cases are women aged 15 plus. About 5.7 million of the total cases are contributed by India. An estimated 0.5 million have died due to AIDS in the Region.[24]

Although HIV prevalence among pregnant women remains relatively low in many countries in the Region, it has been increasing for several years. In 2004, in Asia there were an estimated 155 400 pregnant women infected with HIV and 46,900 children became infected with HIV while about 31 000 children developed AIDS. The situation will become worse if there is no adequate intervention, because more women of reproductive age are contracting HIV infection. Between 2001 and 2004, the estimated number of HIV-infected women increased by 16% to over two million – compared to the average global increase of about 8%. The ratio of infected women to men is also increasing, from 25% at the end of 2001 to 28% at the end of 2004. The low status of women often makes them especially vulnerable to HIV and makes it difficult for them to protect themselves.

There is a great disparity in the countries of the Region about the knowledge related to HIV/AIDS. Women living in countries where the literacy rate is high have better knowledge. Generally, younger men and women are more likely to have this knowledge. A low level of knowledge among ever-married women of India explains high prevalence of HIV in the country. Inequalities exist within the countries. In Bangladesh, for example, only 29% of women belonging to the poorest wealth quintile had heard of HIV/AIDS, compared to 92% in the richest quintile.

Challenges

Inequalities related to access to skilled health care

Besides disparities among countries in the Region, a marked difference can be observed in access to skilled attendance at birth by urban and rural populations and the rich and the poor within the countries. In Nepal the urban population has five times more access to skilled care than the rural. The richest quintile is 14 times more likely to have a skilled birth attendant at delivery than the poorest in Bangladesh. Similarly, poor women are much more likely to deliver at home in India, Indonesia and Nepal.

Adolescents' exposure to risks

A large proportion of girls marry early in Bangladesh, India, Indonesia and Nepal. More than half of girls are married before they are 18 years old bearing the risks associated with early sexual activity, i.e. sexually-transmitted infections and pregnancy. Adolescents lack information and skills and often engage in risky behaviours including higher proportion of sexual experiences before marriage, high unprotected sexual activity, low rates of condom use, and unsafe injection practices among injecting drug users (IDUs), thus making them one of the most vulnerable groups in terms of growing HIV infection. In Thailand, the 2001 estimates of HIV prevalence among youth of age group 15-24 years were as high

as 0.88% among males and 1.32% among females; and 0.22% and 0.46% respectively in India in 2001.[25]

Data in 2005 showed that childbirth among women aged less than 20 years was highest in Bangladesh, Timor-Leste, Thailand and India, ranging from 15% to 25%. For both physiological and social reasons, girls aged 15-19 years are twice as likely to die in childbirth as those in their 20s as observed in Bangladesh, India and Indonesia. In Nepal 19% of maternal deaths occur during adolescence. Girls under 15 are five times as likely to die due to pregnancy and childbirth as those in their 20s.

Expenditure on reproductive health

Often a sufficient proportion of GDP is not made available for expanding the availability of reproductive health services. Adequate financing and efficient management of those resources is not observed in countries with the poorest reproductive health status. Total government expenditure on health in 2004 ranged from 2.2% to 11.2% of GDP in countries of the Region.[26] In many countries, out-of-pocket expenditure on health constitutes a large percentage of total health expenditure. The poor are particularly vulnerable having to spend large proportions of their income on health. Nevertheless, some countries, for example Maldives and Thailand, provide social security on health to their people and contribute a large proportion of general government expenditure to provide services.

Human resource for reproductive health

It is generally agreed that appropriately trained human resources in the right quantity in both the public and private sectors, and their optimal use is the key to the provision of comprehensive health care. The correlation between the number of the health workforce and coverage of health interventions, such as deliveries by skilled birth attendants, shows that the health of the population suffers when the workers are scarce. According to international estimates, 22.8 health care providers (doctors, nurses and midwives) per 10 000 population is a threshold to achieve 80% coverage for skilled attendance during deliveries.[27] Two countries of the Region (Bangladesh and Nepal)[28] have less than 10 health care providers per 10 000 population (Table 6). Only DPR Korea and Maldives have more than 22.8 health workforce per 10 000 population.

Inadequate skilled health workers are often a reality in countries of the Region. The work environment and conditions of employment, training and supervision, including the levels of remuneration are also inadequate in some settings. The resulting poor motivation means that retaining skilled health personnel becomes a problem. Migration of the health workforce in the context

of the South-East Asia Region began several years ago, particularly from Bangladesh, India, Nepal, and Sri Lanka. Recent studies indicate that out of the annual output of qualified medical professionals in India, 2.8% had gone abroad for employment. In Sri Lanka, out of a total of 826 graduates, 22% (185) did not return from their postgraduate training abroad during 1993-2000.

Added to the problems of supply and distribution of the health workforce, inadequate skill-mix, lack of cultural and interpersonal skills, inadequate technical knowledge and skills are also major challenges in many countries of the Region. Health staff in some countries of the Region are not able to rely on a functioning health infrastructure that can ensure suitable facilities, continuous availability of reproductive health commodities, essential medicines and supplies.

Inequalities related to gender

Violence, which includes physical, sexual and emotional abuse against women, often persists and sometimes may start during pregnancy, with serious implications for the mother and child. Studies in the Region show that in some countries, 4-10% of women who had ever been pregnant had experienced physical violence during their pregnancies or physical abuse became worse during a pregnancy. In almost all cases the perpetrator was an intimate partner.

Organization of health service delivery

While each country in the Region has its own problems in organization of service delivery, there are a few common features related to the provision of reproductive health services. Inefficient use of resources is one of the issues. Often, allocation of resources in the health sector is heavily skewed, with major regional disparities and with most resources spent on inpatient care.

In some countries the full package of essential reproductive health services is not available at primary health care level with some elements missing or given less attention (i.e. safe abortion, prevention of STIs/HIV infection, management of STIs, etc). Further, there is a poor functioning referral system. Lack of linkages between reproductive health and other health programmes and services, including nutrition, prevention and treatment of frequent diseases, such as malaria is common.

Dealing with malnutrition through a life-course approach

The nutrition profile of a population is inextricably linked with overall health status and national development. Poor nutrition severely hinders personal, social and

national development. The problem of undernutrition is more obvious among the poor and the disadvantaged. It is thus imperative that national governments and international health organizations recognize the nutrition problems that are afflicting the different segments of a country's population, particularly the vulnerable groups like infants, young children and pregnant women.

National nutrition plans and programmes

In the context of various emerging and re-emerging nutrition issues and their close bearing upon the overall health of the population, policy-makers and programme managers are confronted with significant challenges. The development and implementation of national food and nutrition policies require a critical analysis of the existing food and nutrition responses in order to understand the increasing complexity of food and nutrition policy development.

Countries of the South-East Asia Region are at different stages of development and implementation of their national nutrition policies and plans of work. Bangladesh, India, Indonesia, Myanmar, Nepal and Sri Lanka have established national plans and policies including appropriate revisions. Bhutan established nutrition programmes as a fundamental component of the national primary health care. In Thailand, the national food and nutrition policy was incorporated under the health development plan and the Healthy Lifestyle strategy. While Maldives had evaluated its national nutrition strategic plan and developed a new one, DPR Korea and Timor-Leste had been concentrating on nutrition management and crisis situations.

Infant and young child feeding

In 2002, WHO and UNICEF jointly endorsed the *Global Strategy for Infant and Young Child Feeding* (IYCF)[29] which recommended that based on available evidence, infants should be exclusively breastfed for the first six months of life to achieve optimal growth, development and health.[30] Thereafter, to meet their evolving nutritional requirements, infants should receive nutritionally adequate and safe complementary foods while breastfeeding continued for up to two years of age or beyond. It urged countries to formulate, implement, monitor and evaluate a comprehensive national policy on infant and young child feeding.

The latest available rate of exclusive breastfeeding was estimated to range from a low of 5% (Thailand) to a moderately high of 65% (DPR Korea) among Member countries of the Region with a regional average of 45%. This was an increase from the previous year's regional average of 38%. A combination of aggressive marketing by the infant formula manufacturers, poor adherence to the

Infant Code of Marketing of Breast-milk Substitutes, insufficient education and knowledge of the caregivers and traditional practices contributed to this situation.

Successive global and regional level meetings of health ministers have taken note of this poor performance and urged Member States to establish an environment promoting the optimum duration of breastfeeding followed by appropriate complementary feeding. This also included the adherence and compliance with the International Code of Marketing of Breast-milk substitutes and participation in the Codex Alimentarius. By the end of 2007, ten Member countries of the South-East Asia Region had become members of Codex Alimentarius along with the formation of national Codex committees.

Under-nutrition

The incidence of low birthweight reflects intrauterine growth retardation and is commonly encountered among mothers who are undernourished. The prevalence of low birthweight ranges from over 30% (Bangladesh and India) to 7% (DPR Korea) and 9% (Thailand), with a regional average of 18%. This fact again emphasizes that mother and infant should be treated as one single entity for all nutrition interventions and optimum nutrition ensured from six months of pregnancy to the first two years of life to provide the most desirable nutritional response. However, since much of the information on birth weights is taken from hospital records and not from representative community-level data at the national level, some caution should be exercised in interpreting these data.

While several Member countries have made significant progress in addressing the problem of malnutrition in children, it is also a disturbing fact that over two thirds of the world's malnourished children live in this Region. It has been estimated that well over 50% of all child deaths in the Region may be attributed to different forms of malnutrition in children. In several countries of the Region, household food security and lack of access to basic health services remain the critical problems. The system of appropriate growth monitoring was not well-established in several Member countries of the Region where the health workers did not often realize the significance of the different cut-off levels of the growth standards. With the introduction of its new growth standards for children under five years in 2006, WHO has embarked on wider usage and interpretation of these growth standards in the Member countries.

Accurate, representative data on the prevalence of different forms of malnutrition are not easily available in Countries of the Region. Lack of regular, representative national surveys and variations in the adopted methodologies preclude accurate intercountry and intra-country comparisons. Undernutrition, commonly represented as weight for age is a crude indicator representing both

long-term and short-term malnutrition challenges. Available information from the WHO global database (updated Feb 2007) indicates that the prevalence of under-nutrition is around 27% among the under-five population of the Member countries of the Region with a high level of over 35% (Bangladesh, India, Nepal and Timor-Leste) to a low of 5% (Thailand).

Stunting is failure to grow to normal height caused by chronic undernutrition during the formative years of childhood. It has been estimated that about two thirds of the stunted children are from the countries of South-East Asia. The regional average of stunting among children below the age of five years was estimated at 38%. High prevalence of stunting of over 40% was reported from Bangladesh, Bhutan, India, Myanmar, Nepal and Timor-Leste.

Wasting is an indicator of acute or short-term malnutrition and generally indicates recent deficit in dietary intakes and/or coexisting disease pathology. High prevalence of wasting is a public health concern and a challenge for the health system. According to the WHO global database, the average rate of wasting (or weight for height) in children below the age of five years was estimated at 11.6% with prevalence rates of over 10% reported from Bangladesh, India, Indonesia, Maldives, Nepal, Sri Lanka and Timor-Leste.

Obesity

The prevalence of overweight and obesity is increasing alarmingly worldwide. The health consequences of obesity range from an increased risk of premature death to several non-fatal but debilitating complaints that impact on the quality of life. Obesity is a major risk factor for noncommunicable diseases (NCDs), and can have various psychosocial consequences.

The prevalence of obesity in children below five years of age was estimated at 3.5% according to the WHO global database. Excepting Thailand (10.4%) the other Member countries in the Region report lower figures of prevalence (Bhutan 3.9%, Indonesia 5.1%, and Maldives 3.9%).

Interpretation of the levels of obesity among young children and adolescents remained somewhat unclear over the years due to the absence of appropriate growth references. In 2007, WHO completed the development of the first set of growth references for children and adolescents which would soon be introduced at the national level for a uniform assessment of the emerging problem of overweight and obesity among the Region's young population.

Micronutrient deficiencies

Anaemia

An alarming 600 million people in the Region are suffering from anaemia, predominantly affecting adolescent girls, women of reproductive age and young children. Anaemia has an estimated prevalence rate of 74% among pregnant women in the Region with a wide range of 13.4% in Thailand to 87% in India. While much of the anaemia is attributed to iron deficiency, adequate data are not available to support this claim. It is conceivable that several micronutrient deficiencies, either alone or in combination, are responsible for the wide prevalence of anaemia.

Apart from inadequate dietary intake of iron and related micronutrients and their poor bioavailability from predominantly cereal-based diets, concurrent parasitic infections are also considered important factors responsible for the wide prevalence of anaemia. In view of the multifactorial nature of anaemia, WHO had issued a revised strategy for the control and prevention of anaemia in 2004 that called for food supplementation, food diversification, treatment and micronutrient supplementation for vulnerable population groups. Several Member countries have initiated integrated a more comprehensive approach to control and prevent anaemia along the lines suggested by WHO.

Iodine Deficiency Disorders (IDD)

Iodine Deficiency Disorders (IDD) are a major challenge to the health and development of the people in the Region. A variety of national workplans for the elimination of IDD as a public health problem have been developed by the Member countries. The population with insufficient iodine intake declined from 556 million in 2004 to 443 million in 2006; two Member countries – Bhutan and Sri Lanka – reported the elimination of IDD as a public health problem. Seven Member countries – Bangladesh, Bhutan, India, Maldives, Myanmar, Sri Lanka and Timor-Leste — have developed workplans to include IDD elimination as a component of overall nutrition programmes. Nine of the 11 Member countries of the Region had introduced universal salt iodization programmes and all had appropriate laboratory facilities for relevant salt quality control and assurance.

Vitamin A deficiency

Vitamin A deficiency (VAD) is a serious public health problem in most countries of the Region through its negative health consequences for children and women. Available evidence indicates that while the severe forms of Vitamin A deficiency e.g., clinical xerophthalmia, have declined in the Region, the sub-clinical forms

of vitamin A deficiency, particularly in children below five years, remains a public health problem (Bangladesh 21.7%, Nepal 32.3%).[31]

Member countries in the Region have launched intervention programmes including supplementation with vitamin A, encouraging fortification of food items with vitamin A, dietary diversification and health education.

Challenges

The recent rapid increase in food prices and inflation has the potential to exacerbate the already precarious household food security in several Member countries. Strengthening of the public distribution system of food (PDS), income generation programmes and other social support systems should be given priority.

High prevalence of undernutrition in the Region underscores the need for intensifying growth monitoring practices so that growth faltering can be detected at an early stage and remedial measures initiated. Growth monitoring is also important to detect low birth weight amongst infants born to undernourished and adolescent mothers.

The prevalent micronutrient deficiencies like iron, iodine and vitamin A along with emerging deficiencies like zinc, folic acid and calcium requires interfaces between appropriate research and innovative interventions.

A growing concern is the issue of nutrition transition where countries must develop multifaceted nutrition programmes which address the double burden of malnutrition-undernutrition and nutrition of indulgence characterised by overweight and obesity and leading towards diet-related chronic diseases like diabetes, obesity, cardiovascular diseases and certain diet-related cancers.

Life-long protection through vaccination

Vaccines are safe and efficacious, and immunization is a proven strategy to reduce morbidity and mortality from vaccine preventable diseases and promote social well-being. As a public health intervention, immunization remains one of the most cost-effective means of addressing the economic disparity reflected in health care sectors. Despite this, it is estimated that more than 13 million children in the South-East Asia Region remain unimmunized or incompletely immunized and continue to die from diseases that can be prevented with available vaccines.

Many countries in the Region have maintained high routine immunization coverage with the six traditional antigens and have expanded their immunization programmes by introducing new vaccines. However, challenges remain, including: increasing coverage and ensuring vaccine quality and safety, especially for underserved and hard-to-reach populations; enhancing disease surveillance, including laboratory capacity; and improving vaccine security. Furthermore, immunization programmes in many countries are highly donor-dependent, making them vulnerable to shifting donor priorities. Considering the high disease burden that results from vaccine-preventable diseases, continuing support to all countries should remain a priority.

Poliomyelitis

"*Finishing the job of polio eradication is our best buy. We must do it. We are leaving a perpetual gift to generations of children to come."*

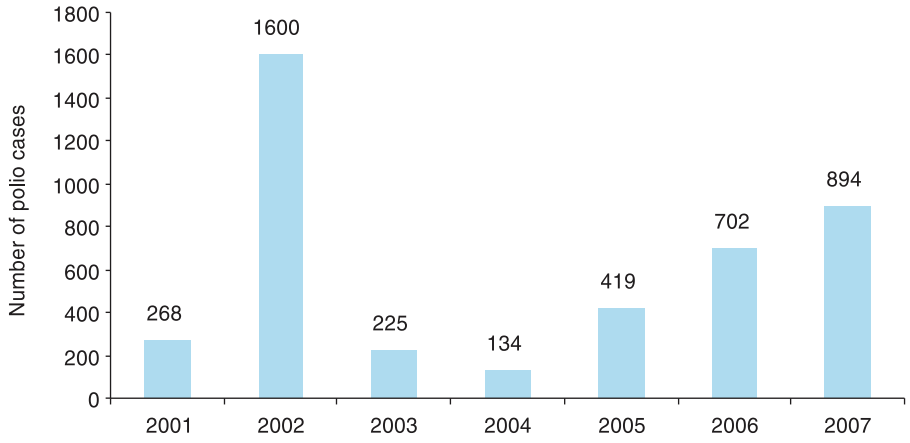
- Dr. Margaret Chan, Director-General, WHO

Before the World Health Assembly committed to eradicating wild polioviruses (types 1,2 and 3) in 1988 these viruses had been paralyzing an estimated 350 000 children per year globally. The Global Polio Eradication Initiative to date has reduced the annual burden of the disease by more than 99% to less than 2000 cases annually and has achieved eradication of type 2. Currently, wild poliovirus types 1 and 3 remain endemic in only four countries (Afghanistan, India, Pakistan and Nigeria). Recent importations of wild poliovirus into previously polio-free areas demonstrate the importance of finishing the job of eradication, maintaining a high level of vaccination coverage and high quality acute flaccid paralysis (AFP) surveillance for detection of any circulation of wild poliovirus as early as possible to limit the extent of outbreak that could follow.

In the South-East Asia Region, India remains the only endemic country since 2000 and accounted for most of the cases in the Region and also for importation of wild polioviruses in other countries both in the Region and outside.

Figure 14 shows the trends in reported poliomyelitis cases in the Region from 2001 to 2007. In 2003-2004 although the lowest numbers in case load was registered in the Region there was evidence of persistent circulation of polioviruses, especially of type 1 poliovirus in the northern states of Uttar Pradesh and Bihar in India, despite immunization campaigns with traditional trivalent oral polio vaccine (tOPV) that reached more than 90% of the population consistently. Studies suggested that the lower per dose efficacy of tOPV in these states were associated with high population density, poor sanitation, malnutrition, large birth

Figure 14: ***Trends in reported poliomyelitis cases in the South-East Asia Region, 2001–2007***



Source: WHO/SEARO, IVD Unit.

cohorts and high prevalence of diarrhoeal diseases and non-polio enteroviral infections. At the same time, more efficacious monovalent vaccines, that were shown to be about 3-5 times more effective than the trivalent vaccines were available for use that prompted India to implement a range of intensified and specific initiatives since 2005 designed to sequentially interrupt the transmission of wild poliovirus type 1 first considering that type 1 is more contagious, has less infection-to-paralysis ratio (200:1) and has more propensity for rapid and distal geographical spread and thus having much more probability for causing international spread.

The other efforts to intensify polio eradication included intensifying advocacy efforts, employing new strategies to reach underserved populations, tracking and vaccinating the newborns and vaccinating at transit points such as railway and bus stations, ferries, markets and religious fairs, netting three million vaccination sites. This strategy of preferential elimination of P1 seems to be working and has been responsible for the lowest number of P1 cases in 2007. At the same time due to having a few rounds of campaign with P3 containing vaccines there had been an outbreak of P3 poliomyelitis in Uttar Pradesh and in Bihar in 2007. Of the 874 polio cases detected in 2007, 794 were of type 3. However, it seems that monovalent oral polio vaccine type3 (mOPV3) is even more effective and with a few rounds of campaigns with this vaccine the outbreak is presently under control.

The recent incidences of importation-related outbreaks in Indonesia, Nepal, Bangladesh and Myanmar (2005-2007) indicate that while there will be always a risk of importation until the world is polio free the extent of the outbreaks can be limited with appropriate measures in line with World Health Assembly (WHA) resolution 59.1 of 2006. The Resolution recommended the countries detecting wild poliovirus importation to respond immediately with appropriate epidemiological investigation followed by supplementary immunization activities (SIA) response of adequate size (2-5 million children) within four weeks of detection, comprising of at least three rounds of house-to-house campaigns. At the same time, it is necessary to intensify surveillance efforts to detect additional cases and to strengthen and sustain routine immunization coverage with OPV3 uniformly at national and sub-national levels. With appropriate measures, Bangladesh, Indonesia and Myanmar were able to stop transmission of poliovirus. Nepal, however, continues to have newer importations related to its long porous border with the endemic states in India.

Surveillance for polio is based on the detection of children under 15 years who get acute flaccid paralysis (AFP). Stool specimens are tested for poliovirus at a certified laboratory, accredited under WHO standards. AFP surveillance results are regularly reported to WHO and quality standards are applied to ensure that almost all AFP cases are investigated to make certain no polio cases are missed. Countries in the Region rely upon quality indicators, based on regular data analysis, to strengthen their surveillance systems.

The polio laboratory network, composed of Global Specialized Laboratories, Regional Reference Laboratories, national laboratories and provincial laboratories supports the efforts for polio eradication and provides an excellent basis for international collaboration in the surveillance of poliovirus. Laboratory results are available in a timely fashion and reflect a high degree of accuracy. A new polio testing algorithm was implemented in the Polio Laboratory Network in 2006/2007 and the timeliness of test results has greatly improved.

Addressing the ongoing risk of wild poliovirus importation into polio-free countries is crucial and most countries conduct regular risk assessments and have updated or enhanced their preparedness plans. Events in Bangladesh, Indonesia, Myanmar and Nepal emphasize the importance of interrupting the transmission of wild poliovirus as swiftly as possible, since no country is safe from wild poliovirus as long as any country is endemic.

Laboratory monitoring for polio-free status, which includes accurate and updated national inventories of wild poliovirus infectious materials retained in laboratories to ensure that they are safely stored under required biosafety conditions, is another important priority.

Once wild poliovirus no longer circulates in human populations, its only source will be laboratories that retain polioviruses. Therefore, every country has to conduct a thorough review of all biomedical laboratories to establish a national inventory of wild polioviruses and implement the required biosafety measures so that these viruses can not be re-introduced to the communities.

A notable achievement in the Region is the success of the polio surveillance network in highly diverse countries, under a range of differing conditions. Laboratories participate in regular data exchange and mutual technical support for immunization campaigns, surveillance reviews and alert systems. Indeed, the high-quality surveillance systems developed for polio eradication, the demonstrated commitment to infrastructure and capacity-building, and the establishment of coordination mechanisms for external partner support can serve as a model for infectious disease control for other diseases, such as Severe Acute Respiratory Syndrome (SARS) and Avian influenza.

The Global Polio Eradication Initiative, spearheaded by national governments, Rotary International, the United States Centers for Disease Control and Prevention, United Nations Children's Fund and WHO, is the world's largest single public health initiative. Its demonstrable success is testimony to the commitment of the many participants in the fight against the disease. Perhaps no better example than polio eradication is needed to underscore the value of collaboration, for no other solution would have permitted such achievements. Collaboration must continue as the basis of the ongoing commitment to eradicate this age-old disease.

Measles

Despite a 26% reduction of estimated mortality due to measles from 2000 to 2006 in the Region, measles continues to be a leading cause of vaccine-preventable disease morbidity and mortality in children. Measles was responsible for an estimated 178 000 deaths (73.5% of total measles deaths in the world) during 2006 in the Region.[32] A proportion of the children who survive measles may endure lifelong disabilities, including brain damage and blindness. A disproportionate amount of measles-related disability and death affects the poorest, most disadvantaged children. The burden of the disease is greatest in countries with challenges in health system development and difficult-to-reach populations.

The South-East Asia Regional Strategic Plan 2007-2010 proposes a measles mortality reduction goal of 90% in estimated mortality by 2009 compared to 2000 estimates. It has the additional objectives of achieving and maintaining 90% coverage with routine measles vaccination nationally and at least 80% coverage in all districts in Member States by 2010. Strategies for sustainable measles

mortality reduction include high routine immunization coverage (≥ 90%) with a first dose of measles vaccine, similarly high coverage with a second dose given either through routine services or supplementary immunization activities (SIAs), sensitive and timely case-based surveillance with laboratory confirmation, tracking and investigation of measles outbreaks and case management of children with measles that includes providing vitamin A. Bhutan, DPR Korea, Maldives and Sri Lanka developed and implemented national plans targeting measles elimination, while Bhutan, Bangladesh, India, Indonesia, Myanmar, Nepal and Timor-Leste developed and implemented plans for sustainable mortality reduction.

According to WHO/UNICEF estimates in 2007, four countries (Bhutan, DPR Korea, Maldives, and Sri Lanka) achieved the regional objective of more than 90% coverage with routine measles vaccination nationally and in at least 80% of the districts. Thailand achieved national coverage of more than 90% but district-level data are not available. Three countries (Bangladesh, Myanmar and Nepal) have a national coverage of more than 80%.

All countries in the Region except India and Thailand have conducted measles catch-up campaigns, in which 116 million people received measles vaccination. Bhutan, Maldives, Sri Lanka and Thailand are providing a second opportunity through routine immunization. DPR Korea has decided to provide a second opportunity through routine immunization.

The number of measles cases in the WHO/UNICEF Joint Reporting Form (JRF) reduced from 106 419 in 2000 to 94 576 in 2006 to 69 301 in 2007. There is a marked reduction in the number of cases in Bangladesh since 2006 and in Nepal since 2005. Indonesia and Myanmar also reported a reduced number of cases in 2007. DPR Korea reported 3550 cases in 2007 after a period of 18 years. There are 19 laboratories in the regional measles rubella laboratory network and 18 of them have been accredited.

There were no measles outbreaks in Maldives, Sri Lanka and Timor-Leste in 2007. This is expected in Maldives and Sri Lanka with high routine immunization coverage, completion of measles catch-up campaigns and availability of routine second dose. DPR Korea had a large outbreak. Bhutan investigated one outbreak in 2007. Outbreak detection and investigation in Bangladesh and Nepal continued to be of high quality and indicate the impact of the measles catch-up campaign. The number of serologically confirmed measles outbreaks was markedly reduced in these two countries after the catch-up campaign and most of the outbreaks detected after the campaign were rubella outbreaks. Myanmar fully investigated 84% of the reported measles outbreaks while Indonesia investigated 46% of the outbreaks in 2007.

Many susceptible children in the largest country of the Region (India) have yet to receive a second opportunity for measles immunization. Success against measles in the Region will require ongoing cooperation among a broad array of national and international partners as well as unprecedented levels of support from local stakeholders.

Introduction of new vaccines

(i) Hepatitis B

Prior to the launch of the Global Alliance for Vaccines and Immunization (GAVI), only Bhutan, Indonesia and Thailand had introduced hepatitis B vaccine in their routine immunization programme. As of December 2007, all countries in the Region had introduced hepatitis B vaccine, although the progress of expansion is rather slow in India, with only 10 states beginning introduction in late 2007. In 2007, with the exception of India and Timor-Leste, all countries in the Region reported greater than 80% Hep B coverage.

(ii) Haemophilus influenzae type b (Hib)

Haemophilus influenzae type b (Hib) is an important causative agent for childhood pneumonia and bacterial meningitis. Given the difficulty of culturing and identifying Hib, demonstrating disease burden has been a challenge for almost all countries. In GAVI Phase I (2000-2005), countries of the Asia-Pacific Region could not access GAVI support for Hib vaccine without demonstrating disease burden. However, in 2006 WHO revised its position paper on Hib whereby all countries were recommended to introduce Hib vaccines. Following that, GAVI decided to support Hib vaccine introduction in all GAVI-eligible countries. In the South-East Asia Region, Sri Lanka was the first to make a successful application to GAVI and introducing the vaccine on 1 January 2008. Subsequently Nepal and Bangladesh too received approval of support from GAVI; other countries will apply in the coming rounds of application review by GAVI.

(iii) Japanese encephalitis

Japanese encephalitis (JE), an arboviral disease can be fatal in 30% of cases. Outbreaks have occurred in areas previously non-endemic for the disease. In 2005, a suspected Japanese encephalitis outbreak in northern India and southern Nepal resulted in at least 8900 cases and 1700 deaths.

Vaccination and environmental control are necessary to combat the disease. However, vaccination of the at-risk population has proven to be the most effective intervention. Current best practices for JE control and prevention began with campaigns focused on high-risk groups and geographic areas, followed by the progressive introduction of the vaccine into routine immunizations. Thailand used

vaccination effectively to control JE. There are issues of high cost and limited supply of inactivated mouse-brain derived vaccine, lack of WHO prequalified manufacturers of the vaccine, and difficulty in choosing the type of vaccine. Other endemic countries such as endemic states in India, and Sri Lanka have recently integrated JE vaccination with their vaccination initiatives with the live attenuated SA14-14-2 vaccine becoming available recently in large quantities and at affordable prices. India, Nepal and Sri Lanka developed plans to introduce this vaccine into their national immunization programmes. India began its first phase of introduction in May 2006 by immunizing about 7 million children aged 1 to 15 years in six districts of Uttar Pradesh, and in June an additional 2 million children in the same age group were immunized in Bardhhaman district in West Bengal. Several new vaccines against Japanese encephalitis that may be more effective are expected to be available in the next three to five years. Availability of these new, improved vaccines will greatly facilitate the prevention and control of Japanese encephalitis in endemic countries through routine immunization efforts.

(iv) Tetanus

Reducing deaths from neonatal tetanus, estimated at nearly 180 000 globally each year,[33] is one of the simplest and most cost-effective means by which to support the Millennium Development Goal of reducing neonatal mortality. Tetanus transmission can be prevented during childbirth by immunizing women of child-bearing age, thereby permitting antibodies to be transferred to the baby; by promoting clean delivery and cord-care practices; and by strengthening disease surveillance and case investigation. Vaccination with tetanus toxoid will also protect expectant mothers from maternal tetanus during pregnancy and delivery which is responsible for an estimated 5% of maternal mortality, particularly in the developing world. The World Health Organization continues to work closely with the United Nations Children's Fund and the United Nations Population Fund to reach worldwide elimination of both neonatal tetanus and maternal tetanus. High levels of immunization must be continued even when national goals have been reached.

All countries in the Region have made progress towards neonatal tetanus elimination. Maternal and neonatal tetanus is regarded as eliminated in Bangladesh, Bhutan, DPR Korea, Maldives, Nepal, Sri Lanka, Thailand and in 15 states and union territories in India. Indonesia completed nationwide supplementary immunization activities for women of child bearing age. Myanmar will be completing supplementary immunization activities in high-risk districts in 2008. Timor-Leste has plans for SIA in 2008-2009.

With these achievements, the regional goal of Maternal and Neonatal Tetanus (MNT) elimination by 2010 is feasible.

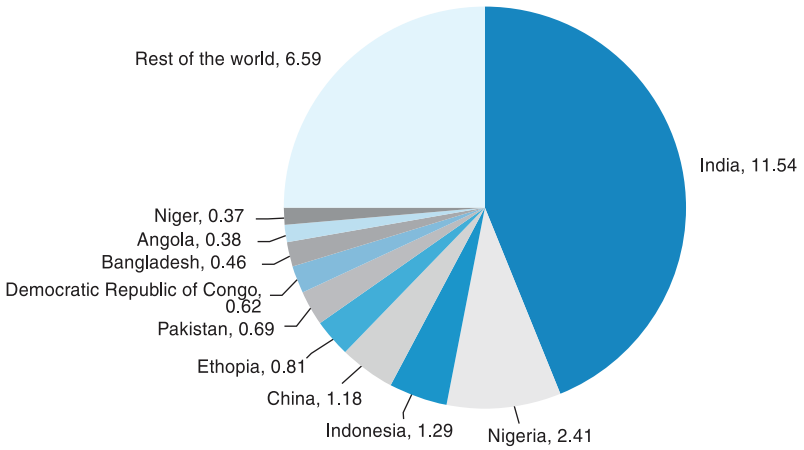
(v) Other new vaccines

Progress in research on new vaccines for several infectious diseases of world-wide importance opened up an unprecedented number of new immunization options. How countries and national immunization programmes deal with these new prevention opportunities will be a critical issue in this and the next decade. Two new vaccines in an advanced stage of development are the multivalent pneumococcal and rotavirus vaccines. These two vaccines are expected to substantially reduce childhood mortality, as pneumonia and diarrhoea are the two main childhood killers, responsible for almost 40% of all diarrhoea and pneumonia cases among children. While vaccines for widespread use are not likely to be available for the next three to five years, countries need to prepare themselves by generating sufficient disease burden data to guide the policy on vaccination later. GAVI funding has been instrumental through special Accelerated Development and Introduction Plans in helping countries in the Region generate the necessary data through multicountry surveillance networks.

Challenges in immunization in the Region

In the Fifty-eighth World Health Assembly, the WHO/UNICEF Global Immunization Vision and Strategy (GIVS) was presented and adopted. Two important goals of GIVS are that by 2010 all countries will reach at least 90% national vaccination coverage as measure by DTP3 coverage, and at least 80% vaccination coverage in all districts or equivalent administrative units. The current situation of routine immunization in several large population countries of the Region is not optimal and, unless significant efforts are made, the Region risks not achieving the GIVS goals (Figure 15). Therefore, serious efforts must be made to reach the more than 13 million children that are missed out even for routine immunization, leave alone have access to new and underutilized vaccines that are now available. Globally, 26.3 million infants not immunized against DTP3.

Figure 15: ***Top ten countries with large number* of unvaccinated infants (DTP3), 2006***



Globally, 26.3 million infants are not immunized against DTP3.

* In millions.
Source: WHO/UNICEF coverage estimates 1980-2006, August 2007.

Making the first five years healthy, happy and safe

The world has witnessed a remarkable achievement – under-five child mortality has decreased from about 200 per 1000 live births in the early 1960s to 74 per 1000 live births in 2005. Effective public health interventions delivered to large numbers of children are responsible for a major part of this success. Nonetheless, the prevailing situation is still not acceptable. In 2000, 10.6 million children under five years of age died globally; over half of them due to just five preventable communicable diseases compounded by malnutrition. The countries of the South-East Asia Region accounted for 3.1 million child deaths. In many countries, the progress in reducing deaths has slowed down and in some areas past gains have been reversed. Failure to effectively address neonatal mortality is one important reason for these trends. Other reasons include the limited progress that has been made in addressing determinants of ill health such as malnutrition, unhealthy environments, and low levels of access to and utilization of quality health care services. Knowledge about the management and prevention of disease and injuries has increased, but coverage of essential interventions is modest and is not sufficiently expanding. At the same time, many of the children who survive do not reach their full potential due to poor health and inadequate care for their intellectual and social development.

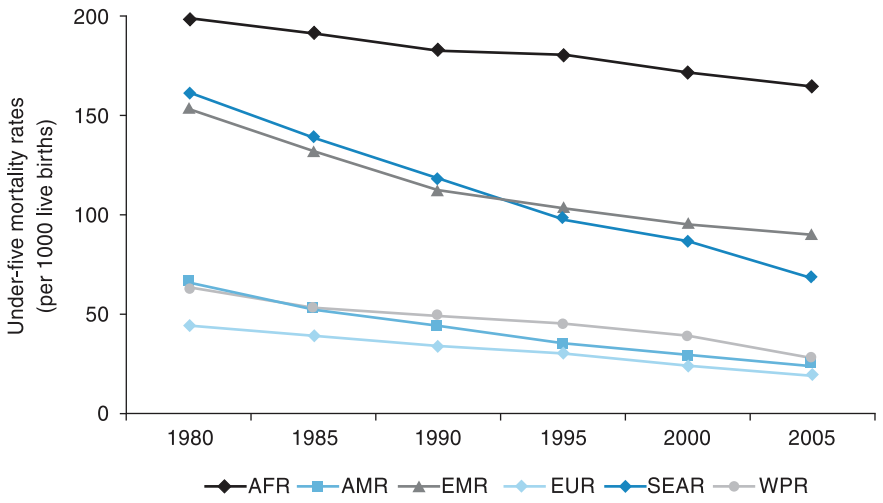
Under-five mortality currently averages 6 per 1000 live births in the high-income countries but is as high as 153 per 1000 in low-income countries. Within countries, child health also tends to be worse among the poor. In some countries children in the poorest third of the population are six times more likely to die before five years of age than those among the richest 10%. These inequalities are ethically not acceptable.

The Member countries of the WHO South-East Asia Region are home to about a quarter of the world's population. The Region accounts for almost one third of the global child deaths. Many of the Member countries in the Region have a significantly higher under-five mortality rate than the global under-five mortality rate. Forty-two countries from all over the world contributed to 90% of the child deaths in 2000. From the South-East Asia Region, India (with 2 402 000 deaths), Bangladesh (with 343 000 deaths), Indonesia (with 218 000 deaths), Myanmar (with 132 000 deaths) and Nepal (with 76 000 deaths) figure on this list.

Progress in reducing child mortality

Between 1990 and 2005, the global under-five mortality declined from 94 to 74 per 1000 live births – a decline of 21%. During the same period, countries of the South-East Asia Region have achieved a decline of 27% in child mortality. The under-five mortality declined from 118 per 1000 live births in 1990 to 86 in 2005. The global and Region-wise decline in under-five mortality between 1980 and 2005 is depicted in Figure 16.

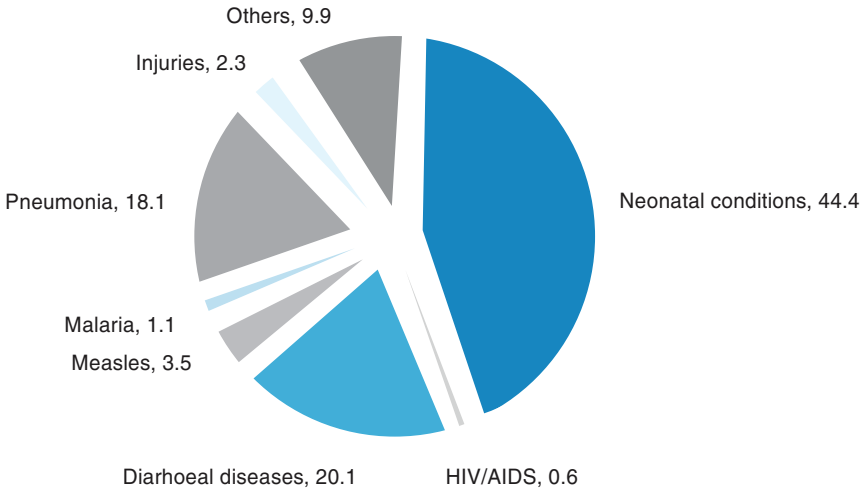
Figure 16: ***Under-five mortality trends by WHO regions, 1980-2005***



Souces: WHO Geneva, *World Health Report 2005*
WHO Geneva, *World Health Statistics 2007*

The major causes of under-five deaths are well known. In the South-East Asia Region diarrhoeal disease, pneumonia and neonatal conditions account for almost three fourths of child deaths (Figure 17). A significant achievement is reduction in vaccine-preventable diseases. However, measles still accounts for 3.5% of all child deaths.

Figure 17: ***Percentage distribution of causes of death among children less than five years***



Source: *World health statistics, 2007*.

Effective child health interventions

In recent years evidence about the effectiveness of child survival interventions has accumulated. Child health and survival is a function of a complex set of factors that include characteristics of physical environment, economic and socio-cultural factors. While these factors need to be addressed by various social sectors, there is concrete evidence about the effectiveness of preventive and therapeutic interventions that need to be delivered through the health system. Table 8 depicts a set of preventive and treatment interventions that have the potential of averting avoidable child mortality. If these interventions are made available universally, a 66% decline in under-five mortality can be achieved.

The aforementioned interventions will be effective only if they reach the children who need them. This seems to be a pivot in our march towards achieving MDG 4. Unfortunately, despite the information and knowledge that is available coverage with these interventions remains sub-optimal. Table 9 depicts the coverage in countries that accounted for 90% of all child deaths in 2000.

Table 8: ***Under-five deaths that could be prevented in countries that account for 90% of global child deaths in 2000 with universal coverage of effective interventions***

Preventive interventions	Estimated under-5 deaths prevented	
	Number of deaths ($x10^3$)	Proportion of all deaths (%)
Breastfeeding	1 301	13
Insecticide-treated materials	691	7
Complementary feeding	587	6
Zinc supplementation	459	5
Clean delivery	411	4
Hib vaccine	403	4
Water, sanitation, hygiene	326	3
Antenatal steroids	264	3
Newborn temperature management	227	2
Vitamin A supplementation	225	2
Tetanus toxoid	161	2
Nevirapine and replacement feeding	150	2
Antibiotics for premature rupture of membranes	133	1
Measles vaccine	103	1
Antimalarial intermittent preventive treatment in pregnancy	22	<1
Treatment interventions		
Oral rehydration therapy	1 477	15
Antibiotics for sepsis	583	6
Antibiotics for pneumonia	577	6
Anti-malarials	467	5
Zinc supplementation	394	4
Newborn resuscitation	359	4
Antibiotics for dysentery	310	3
Vitamin A supplementation	8	<1

Source: Adapted from Gareth Jones *et al.* "How many child deaths can we prevent this year?" *The Lancet,* Vol. 362, Issue 9377. July 5, 2003.

Focus areas for improving child health in the Region

Based on the current evidence, certain areas call for focused attention. The risks in these areas not only affect physical well-being, but also limit the intellectual development of children and adolescents, and undermine the economic development of their communities.

Table 9: ***Coverage estimates for child survival interventions for the 42 countries with 90% of worldwide child deaths in 2000***

Preventive interventions	Mean estimated coverage of target population (range among countries) (%)	
Breastfeeding (6-11 months)	90	(42-100)
Measles vaccine	68	(39-99)
Vitamin A supplementation	55	(11-99)
Clean delivery (skilled attendant at birth)	54	(6-89)
Tetanus toxoid	49	(13-90)
Water, sanitation, hygiene	47	(8-98)
Exclusive breastfeeding (<6 months)	39	(1-84)
Newborn temperature management	20	
Antibiotics for premature rupture of membranes	10	
Antenatal steroids	5	
Nevirapine and replacement feeding	5	
Insecticide-treated materials	2	(0-16)
Hib vaccine	1	
Antimalarial intermittent preventive treatment in pregnancy	1	
Zinc supplementation	<1	
Treatment interventions		
Vitamin A supplementation	55	(11-99)
Antibiotics for pneumonia	40	
Antibiotics for dysentery	30	
Antimalarials	29	(3-66)
Oral rehydration therapy	20	(4-50)
Antibiotics for sepsis	10	
Newborn resuscitation	3	
Zinc supplementation	<1	

Source: Adapted from Gareth Jones *et al.* "How many child deaths can we prevent this year?" *The Lancet,* Vol. 362, Issue 9377. July 5, 2003.

Mothers and newborns: Further reductions in childhood deaths and long-term disabilities cannot be achieved without making the health of mothers and newborns a higher priority. Forty percent of child deaths take place in the neonatal period. The decline in neonatal deaths over recent decades has been much slower than for older children. Among the 7 million infants who die each year all over the world, approximately 4 million deaths occur within the first month of life. Of the 37 million babies born every year in the South-East Asia Region 1.4 million lose their lives in the first month. An additional 1 million are stillborn.

A large proportion of women each year deliver without skilled attendance at birth, and many more mothers and newborns go without any postnatal care during the most vulnerable days and weeks after birth. Children born to unhealthy mothers are also more likely to be under weight and to have difficulty combating illness. They face an environment that is less able to provide safe and nurturing conditions that are necessary for their healthy growth and development.

Nutrition: The importance of nutrition as a foundation for healthy development is underestimated. Poor nutrition leads to ill health and ill health causes further deterioration of nutritional status. These effects are observed most dramatically in infants and young children, who carry the brunt of the onset of malnutrition, and the highest risks of death and disability associated with it. Sixty per cent of all child deaths in 2000 were associated with malnutrition. But the children who die represent only a small part of the total disease burden due to nutritional deficiencies. Maternal malnutrition and inadequate breastfeeding and complementary feeding represent huge risks to the health of those children who survive. Vitamin A, iodine, iron, and zinc deficiencies are still widespread and are a common cause of high morbidity and mortality, particularly among young children. In the Region, about half the under-five children are underweight; 15% are wasted; and in low-income countries, one in every three children at age five is stunted. The effects of poor nutrition and stunting continue over the child's life, contributing to poor school performance, reduced productivity, and other measures of impaired intellectual and social development.

Communicable diseases: Preventable communicable diseases (pneumonia, diarrhoea, malaria, measles and HIV infection) account for over half the childhood deaths. The fact that over 99% of these deaths in 2000 occurred in low-income countries demonstrates that they can and should be prevented. Communicable diseases also lead to considerable morbidity and in some cases to long-term disability. Helminthic infections represent a significant public health burden, particularly among children aged five to 14 years. These intestinal parasites harm health and nutritional status, contributing to severe outcomes from measles, malaria, pneumonia and other diseases. Repeated bouts of illness prevent the young child from learning through exploration and interaction with the world. For older children, illness limits their opportunities for further development and affects school attendance and performance. The devastating consequences of the HIV pandemic on children, adolescents and their families are being felt worldwide. In addition to the children with HIV who must be cared for, many more children are indirectly affected through the loss of one or both parents or the overwhelming emotional and financial burden of the disease on their families. However, even where HIV is prevalent, attention should not be diverted from the pressing need to attain and maintain high levels of coverage with basic child survival interventions.

Environment: Preliminary global estimates suggest that up to one third of the global disease burden can be attributed to adverse conditions in the physical environment. Over 40% of this burden falls on children under five years of age. Inadequate drinking water and sanitation, indoor air pollution, and injuries and other environmental risk factors are the root cause for almost half (4.7 million) of the 10.6 million deaths annually in this age group. More than half of the 2.1 million annual deaths in children under five years caused by acute lower respiratory infections may be associated with indoor air pollution. Interventions to improve water supply, sanitation and hygiene have the potential of reducing child deaths significantly. These environmental factors also contribute to life-long illness and disability triggered by the risks encountered in childhood.

Quality of hospital care for children: In most settings, about 10% of sick children seeking treatment at the primary health care level need referral care. It is also well known that families often take very sick children directly to referral facilities. This leads to underutilization of infrastructure at the primary health care level, built at great cost to the national exchequer. Severely ill children brought to hospitals often die as the severity of their illness is not recognized in time or the capacity to manage these emergencies is limited. Anecdotal evidence suggests that in many settings, capacity for managing severely ill children in small peripheral hospitals and health centres is limited. The provision of effective, evidence-based care to severely sick neonates, infants and children in small peripheral hospitals is an intervention that has the potential of saving many lives. It would also improve utilization of these facilities.

Building capacity for immediate triage, assessment and management of severely sick children will help the countries to achieve the child health-related Millennium Development Goals. WHO, in collaboration with partners, has developed tools to assess the quality of child care at the referral level. The standard of care provided in referral facilities is assessed against a previously developed referral care standard. The tool allows an objective analysis of not only the quality of clinical care provided to children but also of other important factors that determine the outcome, such as the status of drugs, supplies, equipment; laboratory support; staffing issues; mother-and-child-friendliness of services; and discharge and follow-up procedures, among others. Recently, hospital assessments on emergency care for children were carried out in Indonesia and in Timor-Leste. These assessments reveal some common areas that need attention. These include the lack of standard treatment guidelines, lack of capacity for triage and emergency management of severely sick children and the need for better communication skills in health providers.

Child development: In the recent past evidence has been published according to which over 200 million children (mainly in Asia and Africa) are not reaching their full developmental potential primarily because of poverty, poor nutrition and inadequate cognitive and social-emotional stimulation. Research has demonstrated that integrating health and nutritional interventions with validated home or centre-based psychosocial interventions are a cost-effective approach that can improve early childhood development with lasting benefits on the IQ of children and their educational performance. The Commission on Social Determinants of Health has also recognized early childhood development as an important determinant of health outcomes. Conventional child health programmes like IMCI have taken an illness-centered approach. This is sub-optimal as only a small proportion of sick children are taken to the health system and in these situations health providers and care givers are more concerned about the sickness than issues related to child development. There is a need to address the issue of providing guidance to parents and care-givers about appropriate care practices to ensure optimal growth and development. Estimates suggest that deficiency in child development in early childhood results in 20% loss in adult productivity. Cost-benefit analysis of early intervention indicates that for every dollar spent on early childhood development, returns can be up to 20 times the amount invested. The revival of interest in primary health care is an opportunity to examine how best to position initiatives to ensure growth and development in public health programmes.

Challenges:

Policy analysis: Most countries in the Region have made significant progress in reducing under-five mortality. Several countries are “on-track” towards achieving MDG 4, while others need to examine how best to accelerate progress. The central issue seems to be how to ensure access to effective preventive and treatment interventions equitably to all sections of the child population within the existing resource and health-system scenario of each country. One important element of policy analysis is the focus given to improving neonatal survival within the existing context of the maternal and child health programme. The fundamental issue is adopting a mix of community and health facility approaches designed to maximize coverage with proven and effective neonatal and child health interventions.

Evidence and information for programming: Sound evidence is the basis for effective planning, implementation, monitoring and evaluation of any public health initiative. WHO has developed several tools to assist in the assessment and evaluation of child health programmes.

Improving access to effective child health interventions – the role of IMCI: Most countries in the Region have adapted the generic IMCI strategy for delivery of child health interventions through the public health system. Countries need to assess what is the coverage of IMCI and what needs to be done to accelerate the pace of IMCI expansion to ensure universal coverage within a set time-frame. Community IMCI has been a weak area in most countries. This needs special attention to ensure availability of IMCI interventions at the grassroots level. Another aspect of IMCI that needs attention is the scaling-up of pre-service IMCI to ensure that future generations of health care providers are equipped with managing common childhood illnesses before they enter public health service. This is a strategy which, in a long run may work out to be more cost-effective and sustainable.

Improving quality of care of children in hospitals: All countries have established health care facilities in their national health systems for in-patient care. Anecdotal evidence indicates that in several countries these facilities established at substantial cost remain underutilized. This is particularly so when it comes to management of neonates and young children. One of the causes for poor utilization by the public is the poor quality of services provided to young infants and children in these facilities. Programme managers in the Region may like to consider what steps need to be taken to improve quality of child care in small health facilities.

Child development: One area that has remained comparatively neglected is the issue of “child development”. There are several reasons for this including pre-occupation of public health systems to reduce child morbidity and mortality. The other could be lack of information and evidence about “do-able” interventions through the public health system that could help children achieve their full potential. Child health programme managers from the Region may like to deliberate whether the time is opportune to work collectively towards developing interventions linked to existing neonatal and child health programmes that will promote child development.

Operations research: Considerable evidence about bio-medical determinants of child morbidity and mortality and on how to combat these is available. More evidence is needed about how to make these reach the maximum number of children. There is a need to study the efficacy of various service delivery models to determine the most cost-effective model in country-specific settings.

Resource mobilization and partnerships: In the scenario where several initiatives compete for limited resources, the need for forging partnerships among the government and partners active in the area of child health is essential. Under

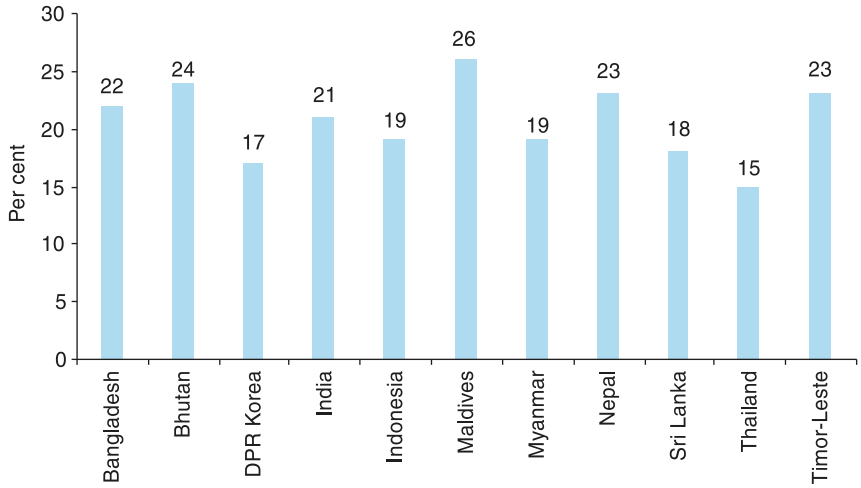
the leadership of ministries of health, there is a need to establish partnerships; among other things for advocacy, resource mobilization and monitoring and evaluation of child health initiatives.

Increasing sensitivity to adolescents' needs

Population of adolescents

Adolescents and youth (10-19 years old) together represent a significant segment of the world's total population. In the countries of South-East Asia Region, countries, the proportion of adolescents varies between 15 to 26% of the total population (Figure 18). There as some specific features which represent factors influencing health of this age group.

Figure 18: ***Proportion of adolescents (ages 10-19) in countries of the South-East Asia Region, 2005***



***Source**: UN, World population prospects: The 2006 revision.*

Educational status: While a higher proportion of adolescents are educated in Indonesia, Maldives, Myanmar, Sri Lanka and Thailand a large proportion of adolescents are not literate in Bangladesh, India and Nepal.[34]

Poverty and employment: Extreme poverty in many Member countries of the Region often prevents adolescents from attending or continuing schooling. A high proportion of out-of-school adolescents makes access to health and development difficult. Poverty and unemployment perpetuates the cycle of poverty and ill health. Poverty also increases the risk of adolescents adopting risk behaviour or deviant

behaviours including sex work, trafficking or substance/drug use. Adolescents from poor families are more likely to participate in the labour force.[35]

Mortality and morbidity levels: As in other regions, mortality rates among adolescents in the Region are generally lower than those observed in children or older ages. However, many adolescents in the Region die prematurely every year mainly from accidents, violence, pregnancy-related problems or illnesses that are either preventable or treatable. Up to 70% of mortality in adulthood has its roots in adolescence.[36] Accidents, injuries and suicide are also common causes of adolescent mortality and morbidity.[10] Population-based surveillance in a rural community in southwest Bangladesh revealed that suicide was a major cause of death, especially among young women. Mortality from suicide occurred at the rate of 39.6 per 100 000 population per year from 1983-2002.[10]

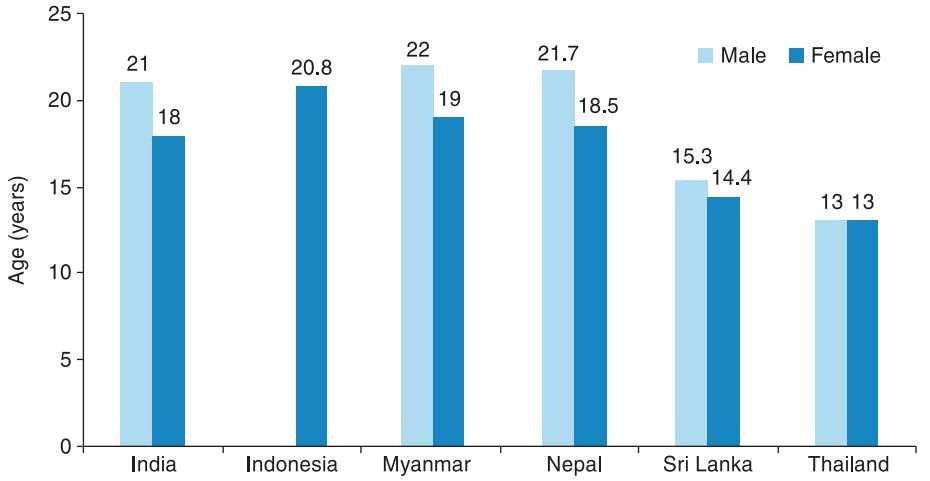
Nutrition: The main nutritional problems affecting adolescents in the Region include: undernutrition, stunting, iron deficiency, and other specific deficiencies like zinc and folate. Iodine deficiencies are also common among adolescents having implications on physical and cognitive development.[37]

With improvement in economic conditions dietary habits and life styles are changing. As a result, overnutrition and predisposition to chronic diseases in adults are emerging challenges in some countries and population groups in the Region.[35] The problem of over-nutrition is increasing in the urban and well-to-do populations in countries where under-nutrition is a common problem amongst the poor and rural/urban slum residents.

Age at marriage: Though the age of marriage is rising in most countries of the Region, early marriage for girls remains the norm in some countries. More than 68% girls in Bangladesh, 51.4% in Nepal, 47.4% in India, and about 24% in Indonesia are married by 18 years. The median age of marriage for girls is lower in countries like Bangladesh and India while it is higher for countries like Sri Lanka.

Early sexual activity: For many adolescents in the Region, sexual activity begins early. Marriage marks the onset of early sexual activity among a large majority of young females in some Member countries of the Region. In other countries where the age at marriage is increasing, there is growing evidence of premarital sexual activity among adolescents. Early onset of menarche, rising age of marriage and greater exposure to global media are also contributing factors (Figure 19). Sexual activity often takes place in the context of highly unequal gender relations, and limited information on sexual and reproductive health, leading to exposure to the risk of unintended pregnancy, abortion and STIs/HIV.

Figure 19: ***Age at sexual debut***



Source: *[1] India: BSS general population 2003; Indonesia: DHS 1991; Nepal: DHS 2001; Myanmar HIV/AIDS and young people, fact sheets. WHO; Sri Lanka: National Survey on emerging issues among adolescents in Sri Lanka: UNICEF 2004; Thailand: Bureau of Epidemiology*

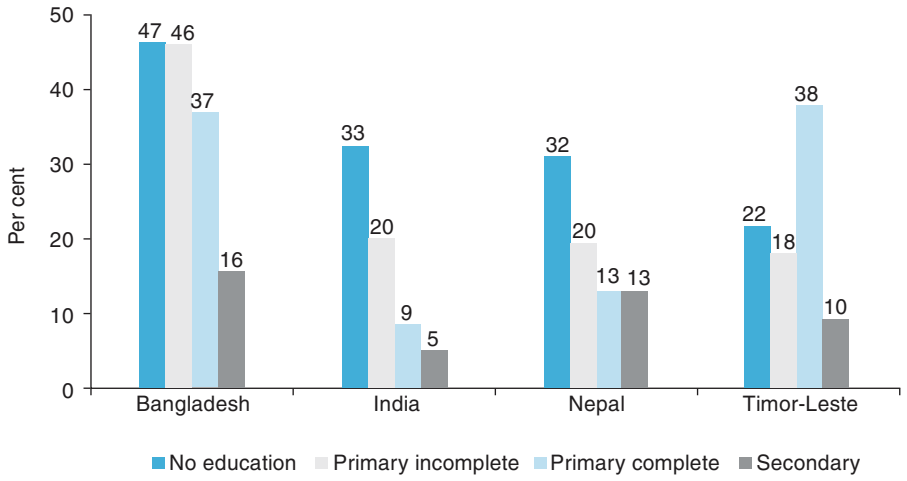
[2] Communicable Disease Control Dept., Ministry of Public Health, average age of first sex among sexually active 8th grade students, 2004, Report on the HIV/AIDS Situation in Thailand, 2004.

Childbearing: Of the 37 million babies born in the 11 countries of the Region each year, over 4 million (11.8%) are born to adolescent mothers. While the South-East Asia Region has witnessed a decline in adolescent fertility over the past few decades, four countries, namely, Bangladesh, Bhutan, India and Nepal, have high fertility levels per 1000 women aged 15-19 years. The adolescent childbearing rate in the Region ranges from 135 live births per 1000 women aged 15-19 years in Bangladesh to 2 in DPR Korea. The total fertility rate in the Region contributed by women in the age group 15-19 year varies from 5 to 20%.

Education and urbanization have a strong influence on adolescent pregnancy and childbearing. More than 47% of adolescent girls in Bangladesh, 33% in India, 32% in Nepal and 22% in Timor-Leste with no education were already mothers or were currently pregnant. Comparatively, a lower percentage of adolescents started childbearing who had primary or higher education (Figure 20).

Health consequences of early pregnancy and childbearing: Young women and their children face serious risks from early pregnancy and childbearing. More adolescent girls die from pregnancy-related causes than from any other cause.[38-40] The adverse health consequences of undernutrition and early childbearing include damage to the reproductive tract, high maternal mortality ratio, pregnancy complications, increased perinatal and neonatal mortality and high incidence of

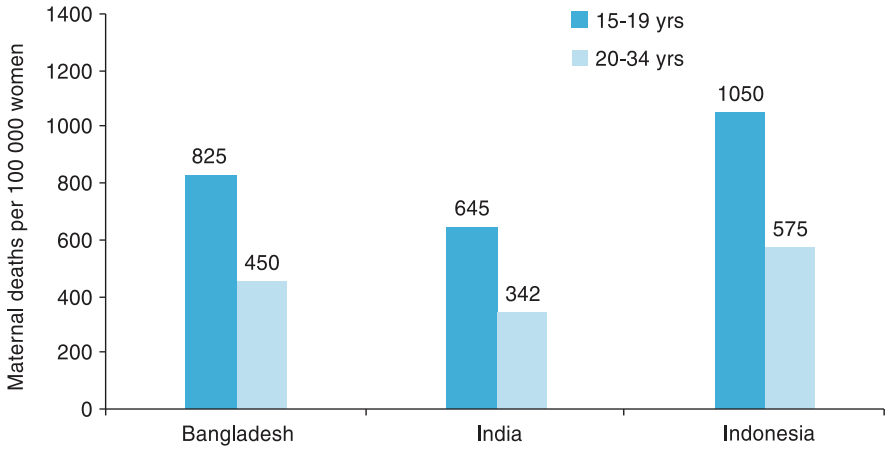
Figure 20: ***Adolescent childbearing by mothers' level of education***



Source: *Bangladesh DHS 2004. Bangladesh DHS 2007 preliminary Report. India NHFS-III 2005-06. India: Reproductive and Child Health, District Level Household Survey 2002-04. Ministry of health and Family Welfare, Government of India, August 2006. Nepal DHS 2001. Timor-Leste DHS 2003.*

low birth weight. Research suggests that adolescent girls between the ages of 15 and 19 are twice as likely to die during pregnancy or childbirth as compared to women in their twenties. For those under 15 years, the risks are five times higher.[41] Data from various health surveys and studies in some countries of the Region show that maternal mortality among 15-19 year old women is twice as high for women in their twenties (Figure 21).

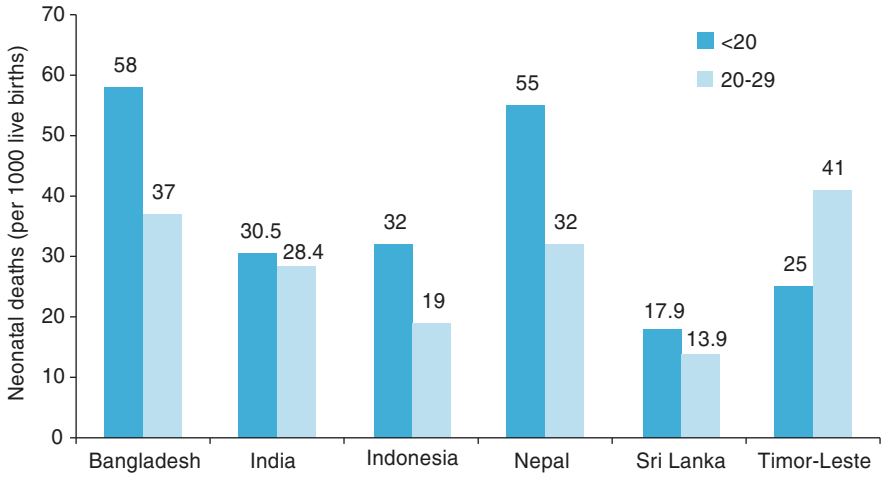
Figure 21: ***Maternal mortality per 100 000 women, by age***



Source: Safe Motherhood 1998.

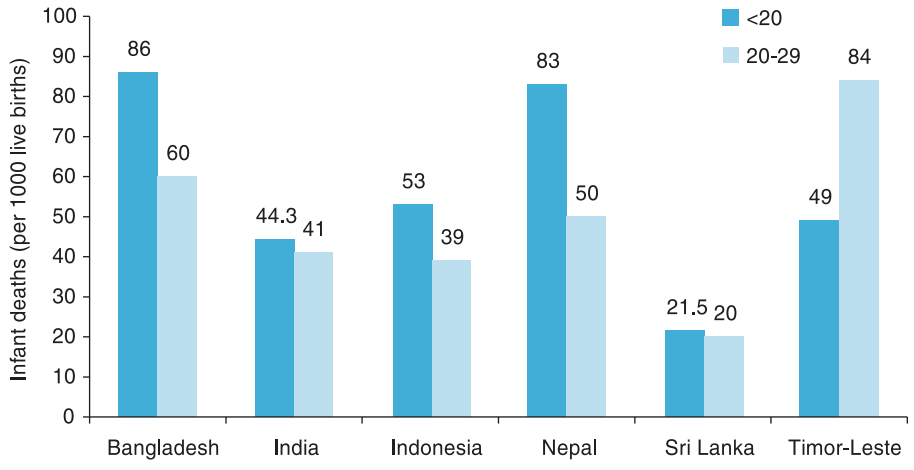
Figures 22, 23 and 24 reveal that neonatal mortality, infant mortality and under-five mortality is much higher for mothers who are less than 20 years old.

Figure 22: ***Neonatal mortality rates by mother's age at birth***



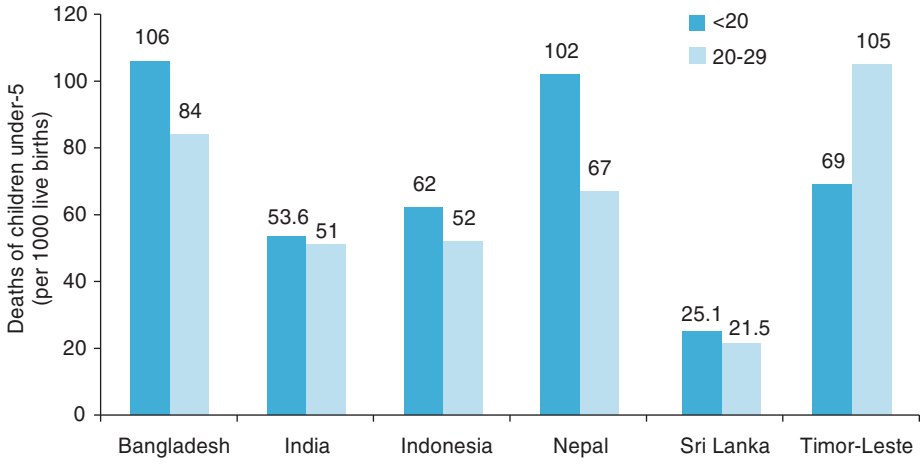
Source: Bangladesh DHS 2004, India NFHS-III 2005-06, Sri Lanka DHS 2000, Nepal DHS 2006, Indonesia DHS 2002-03, Timor-Leste DHS 2003.

Figure 23: ***Infant mortality rates by mother's age at birth***



Source: Bangladesh DHS 2004, India NFHS-III 2005-06, Sri Lanka DHS 2000, Nepal DHS 2006, Indonesia DHS 2002-03,Timor-Leste DHS 2003.

Figure 24: ***Under-five mortality rates by mother's age at birth***



Source: TLS 2003, INO 2002-2003, NEP 2006, SRL 2000, IND NFHS-3, BAN 2004, Demographic and Health Surveys of countries.

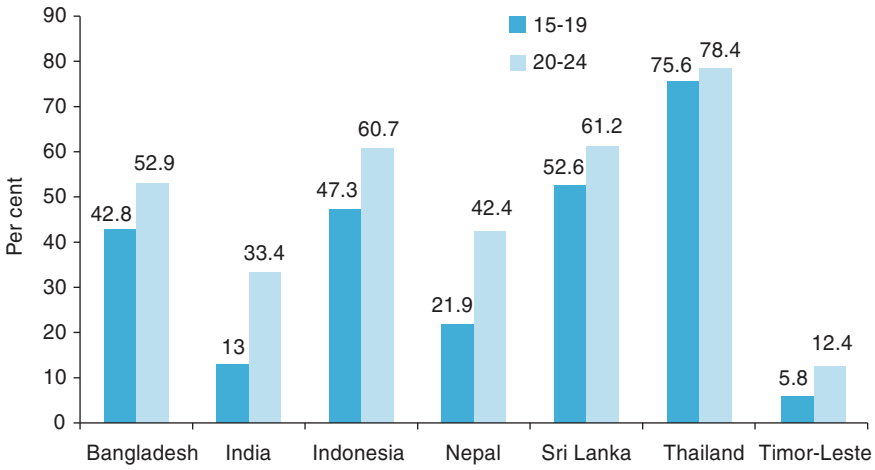
Abortions: The limited evidence available indicates a widespread prevalence of unsafe abortions, serious adverse consequences to women's health and a significant contribution to the deaths of women who are either on the verge of adulthood or are in the prime of their lives. Studies from Bangladesh, India, Nepal and Thailand reveal that abortions are common among adolescents.[35]

Contraception: Social and cultural differences within the Region result in an enormous diversity in the knowledge about contraceptives and their use among adolescents. The *knowledge* about contraception exceeds 90% among married female adolescents in almost all the countries except Myanmar[35] and Timor-Leste.

Though there is an increasing use of modern methods of contraception among young women in the Region, the proportion of adolescents *using* contraception is still very low in some countries. There is a wide gap between knowledge levels and the actual use of contraceptives (Figure 25).

STIs/HIV/AIDS: The burden of HIV/AIDS in South-East Asia is only next to that in sub-Saharan Africa.[42] Adolescents constitute a significant percentage of people at risk of HIV. The prevalence of HIV among youth ranges from 0.01% to 1.32%. In India, Sri Lanka and Thailand, in recent years, more females than males have been infected with HIV. In many countries of the Region the prevalence of STIs is also increasing among adolescents, which significantly increases the probability of sexual HIV transmission.

Figure 25: ***Contraceptive use among married 15-19 year old and 20-24 year old women***



Source: [1] *Bangladesh DHS 2007; India NFHS-III 2005-06; Indonesia DHS 2003; Nepal DHS 2001; Sri Lanka DHS 2000; Timo- Leste DHS 2003; Thailand Chayovan, Napaporn et al, 2003.*
[2] *Economic Crisis, Demographic Dynamics and Family in Thailand: A research report. Bangkok College of Population Studies, Chulalongkorn University.*

Poverty, low levels of education and lack of access to basic information and services make adolescents more vulnerable to HIV/AIDS.

Drug and substance abuse: The Global Youth Tobacco Survey supported by the World Health Organization and conducted in 2003 revealed that a large proportion of adolescents have easy accessibility to cigarettes. Almost 70% of adolescents in Indonesia, Maldives, Myanmar and Nepal, were able to purchase tobacco products from shops with ease and were not refused in spite of their young age. Factors like living in homes where others smoke or being exposed to smoking at public places also make adolescents more vulnerable to smoking.

In recent years drug abuse and injecting drug use among adolescents and young people, especially among young men has increased in the Region. In Maldives the maximum number of cases of drug abuse was found in the age group of 16-24 years. In Nepal, half of the 50 000 injecting drug users were between 16-25 years. Available data from Maldives, Nepal and Thailand show that the age of initiation into drugs is declining.[35]

Sexual abuse, exploitation and trafficking: Adolescents in the Region are also victims of sexual abuse and exploitation. Sexual abuse and exploitation have long-term implications for adolescent health and development. Such experiences are traumatic and can adversely affect subsequent behaviour and relationships. There are also many mental health related consequences such as depression, anxiety, suicidal thoughts as well as risk of unintended pregnancies, abortion and STIs/HIV.[43]

Barriers to health-seeking behaviour: In many countries of the Region information and services needed by adolescents are not available or are not accessible. Even where they are accessible, these services are often not utilized by the adolescents due to lack of privacy, confidentiality, inappropriate facility environment or judgmental attitude of the service providers.

The challenges:

- There is a huge paucity of age and sex disaggregated data with regard to adolescent health and development. Inadequate information on key indicators relating to adolescent health and development especially their reproductive and sexual health inhibits addressing their problems at policy and programme levels.
- There is a need to improve data collection, analysis, dissemination and information provision to prepare evidence-based policies and programmes, building advocacy and partnership with other sectors.
- Adolescents lack information and skills. They need to be empowered with correct, age appropriate and current information and skills to protect themselves from risks as well as to help them seek appropriate services.
- Information and sensitization of parents, teachers, service providers and other key stakeholders to adolescent needs is equally important as they play key roles in adolescent health and development.
- Although services are available, health facilities need to be made adolescent-friendly and their existing services expanded to cater to the diverse needs of the adolescents.
- Capacity building of health workers is required as health-care providers are not trained to deal in an effective and sensitive manner to the health needs and problems of adolescents.
- Adolescents need a safe and supportive environment that offers maximum opportunities for development. A supportive policy environment will help enhance access and coverage of health services. Laws and policies in some countries continue to remain indifferent to the sexual and

reproductive health needs of adolescents. In some countries access to condoms, Volunteer Counselling and Testing Centres and abortion services are restricted due to age and marital status. It is important to have clear policy guidelines within the existing legal framework to support access to services by adolescents.

- The needs of adolescents in disadvantaged circumstances, such as those with disabilities, street children/adolescents and displaced population groups need to be identified and addressed.
- Along with policy support building partnerships between different sectors is essential.
- Mobilization of the family and community for adolescent health concerns and development programmes, together with the active participation of adolescents is needed.
- There is a need to carry out monitoring, evaluation and operations research of programmes, using appropriate indicators. This information should be used to improve accessibility, quality and coverage of programmes.

Promoting active and healthy ageing

Older persons in countries of the Region face a wide range of social, environmental, economic and political determinants of health which directly or indirectly have an impact on their health outcomes. They face challenges related to diet and nutrition, recreation, pension systems, social security, violence and injury, mental health, social service as well as family and community socialization among other factors. The population of those above 80 years of age is growing most rapidly worldwide and a majority of these are women. Trends also suggest that there will be more older people in rural areas compared to urban areas given that more young people are likely to migrate to urban areas. Countries in the Region are no exception, and therefore would require specific actions including policies and legislation to be put in place in order to address the issue.

Countries in the Region have started giving attention to promoting the health of older people. Their actions are concentrated on partnership and promotion of care in the community and home, promotion of traditional family ties, making optimal use of existing health care delivery systems and establishment of old-age homes. Some countries have formulated national policies on ageing and health. A few have started collection and analysis of related information for advocacy, policy and programme development and for decision-making, dissemination to the general public, pensioners, health care professionals and policy-makers, to promote appropriate services, advice and practice on healthy

ageing. Efforts are also being made to develop an advocacy strategy with close collaboration among government agencies, NGOs and the media, aimed at influencing public opinion and encouraging support for community-based programmes for healthy ageing.

A few countries have also organized research studies related to epidemiology, patterns of the ageing population and determinants of healthy ageing and improved the capacity of health-care providers in the area of care of older people. The economic, social and health status of the fast-growing older populations poses a great challenge to all sectors. The major difficulties in developing programmes for care of older people include the lack of reliable data for programme planning, a virtual absence of national policies and strategies for the care of older people and an inadequate infrastructure to cope with their rapidly increasing health needs. There is a need to promote the concept of "active ageing" in a spirit of broad partnership with all sectors, including governments, professional organizations, the mass media, the education sector, and international and national NGOs.

The joint family system and family values are gradually being eroded in the Region. The number of older people living alone will increase with urbanization and migration of young people, coupled with decreased cohesiveness of family bonds. With regard to the health status, around 6% of the aged are immobile due to various disabling conditions. Approximately 50% of older people suffer from chronic diseases. Visual and hearing impairments are highly prevalent. At the same time, health services for older people are not adequate, nor is knowledge among health workers on the specific needs of older people.

Challenges:

The main challenges for older people in countries of the Region are as follows: (i) social security; (ii) health security; (iii) economic security; and (iv) new threats from emerging diseases and climate change. Characteristics of appropriate community-based interventions for promoting active and healthy ageing include seeking to promote optimal health, functional capacity and quality of life, providing timely preventive, curative, rehabilitative and chronic care services coordinated through a strong primary health care system, incorporating social support services and health services coordinated with institutional care, and providing equitable access to essential services regardless of income. This is to be provided by a sufficient cadre of well trained service providers.

4. Towards a healthy environment

Taking up the challenges in climate change and human health

Climate change will affect, in profoundly adverse ways, some of the most fundamental pillars of health: food, air and water. The warming of the planet will be gradual but the frequency and severity of extreme weather events, such as intense storms, heat waves, droughts and floods could be abrupt and the consequences will be dramatically felt. The most severe threats are to developing countries, with direct negative implications for the achievement of the health-related MDGs, and for health equity.

The health sector, at international, national and sub-national levels, has a responsibility, political leverage and staff with many of the necessary skills to protect the public from climate-related threats to health. Health professionals bring an understanding on how to reduce and prevent climate-related disease, injury and death.

During the last 100 years, human activities, particularly related to burning of fossil fuels, deforestation and agriculture have led to a 30% increase in the carbon dioxide (CO_2) levels in the atmosphere causing trapping of more heat. The Fourth Assessment Report (AR4) of the Intergovernmental Panel on Climate Change (IPCC), states:[44]

- "Most of the observed increase in globally-averaged temperatures since the mid-20th century is very likely due to the observed increase in anthropogenic greenhouse gas concentrations;
- Eleven of the last 12 years (1995-2006) rank among the 12 warmest years in the instrumental record of global surface temperature; and
- The global average sea level rose at an average rate of 1.8 mm per year from 1961 to 2003. The total rise in the sea level during the 20th century is estimated to be 0.17 m."

The AR4 IPCC 2007 report also draws on projections of future changes in climate:

- "The projected globally-averaged surface warming for the end of the twentyfirst century (2090–2099) will vary between 1.1 and 6.4 degrees Celsius. The projected rate of warming is greater than anything humans have experienced in the last 10 000 years;
- The global mean sea level is projected to rise by 9.88 cm by the year 2100;
- It is very likely that hot extremes, heat waves and heavy precipitation events will continue to become more frequent; and
- It is likely that future tropical cyclones (typhoons and hurricanes) will become more intense, with larger peak wind speeds and heavier precipitation".

At the 5663rd meeting of the United Nations Security Council held at New York, on 17 April 2007, Mr Ban Ki-Moon, United Nations Secretary-General, said that, according to the most recent assessments of the IPCC, the planet's warming was unequivocal, its impact was clearly noticeable and it was beyond doubt that human activities had been contributing considerably to it.[45]

WHO estimated that the warming and precipitation trends due to anthropogenic climate change of the past 30 years claimed over 150 000 lives annually. In 2000, of the 154 000 deaths occurring globally that were attributable to climate change, about 77 000 occurred in countries of the South-East Asia Region.

Populations within the Region remain highly vulnerable to a wide variety of health effects from climate change, but are also the fast-growing contributors to green house gas (GHG).

Regional perspective and recent actions

The health risks posed by climate change are global, and difficult to reverse. Recent changes in climate in the Region have had diverse impacts on health.

The WHO Regional Office for South-East Asia, in collaboration with WHO headquarters, started addressing the issue of climate change and health by co-convening a global meeting in Maldives in 2003. This event was oriented towards the urgent needs of small island states.

Together with the same partners, namely, the World Meteorological Organization, the United Nations Environment Programme and the United Nations Development Programme, the WHO Regional Offices for South-East Asia and the Eastern Mediterranean organized an interregional workshop on "Human Health Impacts from Climate Variability and Climate Change in the Hindu Kush - Himalaya Region", in India in October 2005. This event was oriented towards the needs of Himalayan countries in the regions.

The members of the WHO/UNEP regional Thematic Working Group (TWG) on climate change, ozone depletion and ecosystem change took part in a WHO biregional "Workshop on Climate Change and Health in South East and East Asian Countries", which was held in Kuala Lumpur, Malaysia in July 2007. The participants, the TWG members and others reviewed the methodologies for country vulnerability assessment and mitigation, and developed a regional response to reduce the burden of disease from climate change in Asia. Participants felt the need to strengthen capacity for assessment, research and communication on climate-sensitive health risks. They recommended that awareness on health impacts of climate variability and change needed to be raised among political, financial and community leaders, health practitioners, nongovernmental organizations, other sectors and the general public.

At the 25th Meeting of Ministers of Health (Thimphu, Bhutan, August 2007) it was concluded that climate change posed a major threat to health security in the South-East Asia Region. The Ministers called upon WHO to, *inter alia*, "support the formulation of a regional strategy to combat the adverse health impacts of climate change". The Health Ministers also requested WHO to select "climate change and health" as the topic for World Health Day.

Subsequently, the Director-General of WHO decided that "Protecting Health from Climate Change" would be the topic for World Health Day 2008. All the Member countries of WHO's South-East Asia Region observed and celebrated World Health Day in a befitting manner.

In November and December 2007, the WHO Regional Office for South-East Asia supported four national workshops on human health and climate change in Bangladesh, India, Indonesia and Nepal.

Taking all these aspects into consideration, the WHO Regional Offices for South-East Asia and the Western Pacific, in December 2007, organized a regional workshop of representatives of all the Member States of the Region in Bali, Indonesia, which prepared a regional action plan to protect human health from the effects of climate change. The goal of the regional action plan is to build

capacity and strengthen health systems. Member States in the South-East Asia Region are aiming to implement the regional action plan with three strategic objectives:

(1) To increase awareness of the health consequences of climate change.

(2) To strengthen health systems, capacity to provide protection from climate-related risks and to substantially reduce health systems' greenhouse gas (GHG) emissions.

(3) To ensure that health concerns are addressed in all decisions to reduce risks from climate change taken by the other key sectors.

Most countries in the South-East Asia Region have established national expert committees, often under the direct supervision of prime ministers, to formulate national plans for mitigation and adaptation to climate change. The active participation of the health sector, however, needs to be improved.

WHO supports projects and works closely with Member countries to address a wide range of health threats from climate change:

- In Bhutan, the support aims to prepare a proposal for the Global Environmental Facility (GEF) to strengthen existing health programmes that are addressing climate-sensitive health outcomes as mentioned in Bhutan's National Adaptation Programme of Action.[46]
- In Indonesia, the National Climate Change Inter-sectoral Committee is incorporating health concerns and actions related to health implications from climate change into the new Five Year National Development Plan.[47] At provisional and district levels, these concerns are being streamlined into the Healthy Cities Programme.
- In Sri Lanka, the Ministry of Environment has formulated a high-level committee, including members from the health sector, to study the situation and make recommendations for a series of activities to benefit human health in the long term.
- Thailand is taking action to reduce greenhouse gas emissions in absolute terms by incorporation of state-of-the-art technologies and careful adoption of energy-efficiency measures. The Ministry of Natural Resources and Environment has developed a Strategic Plan on Climate Change for 2008–2012 with six elements:
  - Build capacity to adapt and reduce vulnerabilities to climate change;
  - Promote greenhouse gas mitigation activities based on sustainable development;

- Support research and development to better understand climate change, its impacts, and adaptation and mitigation options;
- Raise awareness and promote public participation;
- Build capacity of relevant personnel and institutions, and establish a framework of coordination and integration; and
- Support international cooperation to achieve the common goal of climate change mitigation and sustainable development.

Perspectives

Health impacts will be disproportionately greater in vulnerable populations. In the South-East Asia Region, people at greatest risk include the very young, older people, and the medically frail. Low-income countries and areas where malnutrition is widespread, education is poor, and infrastructures are weak will have most difficulty adapting to climate change and related health hazards. Vulnerability is also determined by geography, and is higher in areas with a high endemicity of climate-sensitive diseases, water stress, low food production and isolated populations. The populations considered to be at greatest risk are those living on islands, mountainous regions, water-stressed areas, mega cities and the coastal areas.

Mitigating the effects of climate change can have direct and immediate health benefits. A number of proposed mitigation strategies may improve health. For example, reducing the reliance on coal-fired generation of power will reduce air pollution, and associated respiratory and cardiopulmonary disease and death. Providing opportunities for the use of mass transport (bus, metro) can also reduce levels of ambient air pollution, traffic-related injury and death, and active transport (bicycling and walking) would bring down obesity rates. Production and transport of food are major emitters of greenhouse gases.

Adaptation is needed because some degree of climate change is inevitable, even if greenhouse gas emissions were abruptly capped. Failure to respond will be costly in terms of disease, health-care expenditure and lost productivity. Estimated direct and indirect health-care costs and lost income due to several environmental illnesses (e.g. those caused by air pollution) often match or exceed the expenditure needed to tackle the environmental hazard itself.

Ensuring safety and adequacy in water supply and sanitation

Unsafe water and inadequate sanitation and hygiene contribute significantly to the high burden of disease due to diarrhoea and other infectious diseases in the

Region, especially among children. Countries of the Region have made significant progress in the provision of access to improved drinking water sources. (Table 10). Compared to 1990, the water supply coverage increased remarkably and in 2006, about 84% of the Region's population had access to improved water supply. Still, more than 200 million people lack access to improved water supply.

The Region appears to be on track to achieve the MDG goal for improved water supply. However, it is lagging behind on the sanitation goal with only 56% of the population having access to improved sanitation (Table 10). Up to 800 million people lack access to improved sanitation. On the positive side, open defecation is declining in the Region, declining from 40% in 1990 to 20% in 2006.[48] Major strides have been made in several countries in the Region suffering from low coverage in sanitation following the Regional-level Ministerial Sanitation Conferences in 2003, 2005 and 2007. Sanitation coverage is significantly higher in urban areas and therefore there is a greater need to focus on rural areas in order to achieve the sanitation MDG.

Table 10: ***Status of improved water supply and sanitation coverage in countries of the South-East Asia Region, 2006***

Country	Access to improved drinking water sources (%)			Access to improved sanitation (%)		
	Urban	Rural	Total	Urban	Rural	Total
Bangladesh	85	78	80	48	32	36
Bhutan	98	79	81	71	50	52
DPR Korea	100	100	100	58	60	59
India	96	86	89	52	18	28
Indonesia	89	71	80	67	37	52
Maldives	98	76	83	100	42	59
Myanmar	80	80	80	85	81	82
Nepal	94	88	89	45	24	27
Sri Lanka	98	79	82	89	86	86
Thailand	99	97	98	95	96	96
Timor-Leste	77	56	62	64	32	41
South-East Asia Region	**92**	**81**	**84**	**70**	**51**	**56**

Source: WHO/UNICEF Joint Monitoring Programme for Water Supply and Sanitation (JMP) Report, July 2008.

"Improved" water supply is defined as water delivered through house connections, public tapstands, boreholes, protected dug wells, protected springs and rainwater collection systems. While water supplied through these technologies may be assumed to be safe, in reality there is no guarantee unless additional water safety measures are taken.

While the previous WHO guidelines emphasized monitoring and sanitary inspections by water and health authorities, the Third Drinking Water Quality Guidelines published in 2004 introduced a fundamental change in approach with the introduction of water safety plans. The water safety plans (WSP) offer the most cost effective and protective means of consistently assuring a supply of safe drinking water. WSP operate through a catchment-to-consumer risk assessment and management approach based on sound science and supported by appropriate confirmatory water quality testing. The approach can be applied across a wide range of situations, from household solutions to community water supply schemes to large water supply utilities. The framework offers a means of providing safe drinking water emphasizing an integrated approach that brings together all stakeholders, thereby improving public health. Most of the Member States have initiated action in this direction and are determined to improve the quality of drinking water so as to reduce the disease burden due to waterborne illnesses.

There are several significant water quality problems that affect the SEA Region. Of these, contamination by pathogenic microorganisms of drinking-water sources and water stored within the home remains the most important. Arsenic contamination of groundwater is a further significant issue of concern. The extent of the arsenic contamination in the Region is becoming better understood and it is clear that many countries are identifying arsenic presence in shallow groundwater. Fluoride is also a recognized problem in the Region, especially in India, and the problems caused from consumption of water containing toxic levels of fluoride demand greater attention.

Arsenic in water has been recognized as a serious threat to health in the Region since 1997. Initially, West Bengal in India and Bangladesh were found to be seriously exposed due to their location in the delta of the Ganga-Brahmaputra; but it gradually became apparent that Nepal, Myanmar and Thailand also had several districts that had arsenic-contaminated groundwater. More recently, arsenic has been found in the Assam, Bihar and Uttar Pradesh regions of India.

Focusing on the health aspects of arsenicosis, harmonized norms and guidelines for use in the Member States were developed. Challenges in arsenic mitigation include developing national policies and guidelines that outline duties and responsibilities to achieve institutional collaborative efforts at all levels. In addition, in the arsenic mitigation programmes, water quality monitoring and surveillance, community responsibilities, health-care services for diagnosis, treatment and referral of arsenicosis patients, coordination of stakeholders and funding for arsenic mitigation should be focused on affected countries and areas.

For the MDG to be met, additional public and private investment in water supply and sanitation is needed. Improved water supply and sanitation can have important health and economic benefits. Better access to and services in water supply and sanitation are important instruments of poverty alleviation; they directly benefit the poor and vulnerable, and can create positive synergies with other MDGs such as universal education and reducing child mortality. Low-cost interim measures need to be promoted in parallel with efforts to stimulate infrastructure development and improve sector efficiency in order to mitigate the health consequences of deficiencies in water supply and sanitation services. Most ministries of health have hygiene promotion programmes but all are in need of strengthening, as evidenced by widespread lack of hygiene and high prevalence of diarrhoea in the Region. A separate but related challenge exists to strengthen countries' capacity to prevent and mitigate water-related health emergencies associated with natural disasters.

Controlling occupational hazards

Occupational hazards cause or contribute to the premature death of millions of people worldwide and result in ill health or disability of hundreds of millions each year. *The world health report 2002* places occupational risks as the tenth leading cause of morbidity and mortality. Almost 22.5 million DALYs and 700 000 deaths are attributable to these risk factors. According to the report, work-related injuries cause about 310 000 deaths each year, and up to 150 000 deaths attributable from the Region remain largely uncharacterized. Member States in the Region have witnessed major occupational health problems highlighted by the Bhopal disaster in India in 1984 and the Kader Toy Factory fire in Thailand in May 1993. However, workers of the Region are exposed to a wider range of occupational hazards and risks including chemical, physical and biological hazards as well as inadequate ergonomics practice and high psychosocial stress. Most of the countries of the Region are still in the process of rapid economic development, which potentially amplifies the pre-existing traditional risks and introduces new occupational risks. Thus, occupational health is of major concern in the South-East Asia Region with a work force of about 500 million.

The 2007 World Health Assembly resolution on *Workers health: global plan of action* provides a powerful political instrument and technical guidance for Member countries.[49] The resolution is particularly beneficial to countries in the Region, where work-related risk factors are responsible for the annual loss of more than 8 million disability-adjusted life years (DALYs)–or 27% of the global loss of healthy life years (around 30 million DALYs).[50]

In following up the *Global plan of action on workers' health 2008–2017* (annex to the World Health Assembly resolution mentioned above) and the 2005 regional strategy on occupational health,[51] Member States identified 12 specific actions to undertake in 2008–2009 with regional partners and collaborating institutions, including:[52]

- formulation of national policy and plans of action with regard to improving the occupational health and safety of workers, particularly in the informal sector;
- use of a multisectoral approach, and country-specific policy and plans of action for elimination of asbestos-related diseases; and
- improving coverage by basic occupation health services (BOHS) through linkage with primary health care.

Specific actions were also identified for WHO, the International Labour Organization (ILO), and WHO collaborating centres.

Controlling exposure in small and medium-sized enterprises

In recent years, WHO collaboration with other international agencies and experts evolved a novel approach called *Control banding*, or *Occupational risk management toolbox* (ORMT),[53] to help small and medium-sized industries control workplace exposures without the onsite help of experts.[54] Success factors and potential barriers in implementation of the toolkit were identified after reviewing experiences in implementation in countries, and future steps were identified by all partners for adoption of ORMT in the Region. Reducing the burden of diseases due to occupational risk factors will ultimately increase the productivity of informal and medium-sized enterprises.

Confronting the scarcity of occupational health personnel

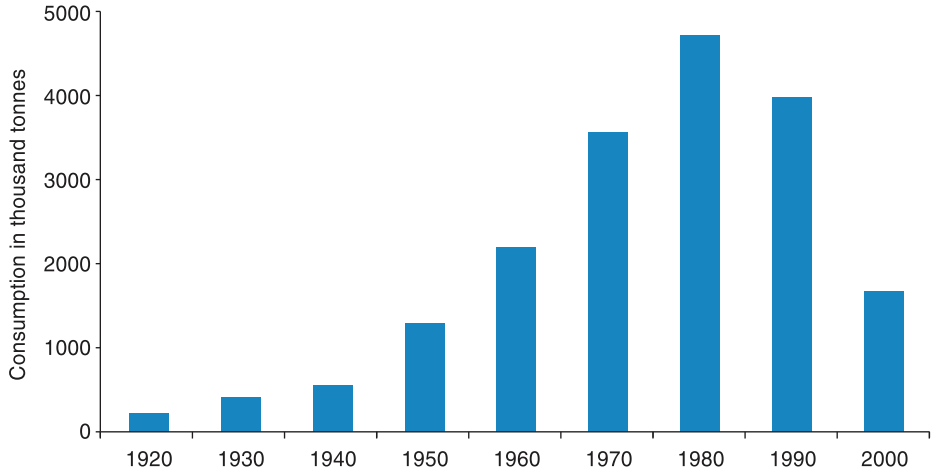
While the scarcity of qualified occupational health personnel is a major challenge, the role of occupational health nurses has been under-recognized in the Region. At the International Occupational Health Nursing Conference in 2007,[55] the challenges in this respect were addressed. National programmes to protect health-care workers and prevent needle-stick injuries are being developed.

Bangladesh, Bhutan and India have been developing national profiles and action plans for the protection and promotion of workers' health. After finalization of the national profiles and action plans, these countries will be able to systematically implement activities to tackle occupational health issues.

Eliminating asbestos-related diseases

In 2006, WHO made a policy statement on *Elimination of asbestos-related diseases*.[56] Globally, about 23% of WHO Member countries have banned or intend to ban the use of chrysotile asbestos; 41% have not banned asbestos but show no record of trading in asbestos; and 36% still use, import and export asbestos and asbestos-containing products. Asbestos consumption data (Figures 26 and 27) show that the asbestos industry is now moving away from developed countries to the developing economies of South-East Asia, where awareness and law enforcement are generally limited. If this trend is not checked, Member States may face an increase in asbestos-related cancers and diseases similar to that experienced by industrialized nations today.

Figure 26: ***World asbestos consumption, 1920–2000***



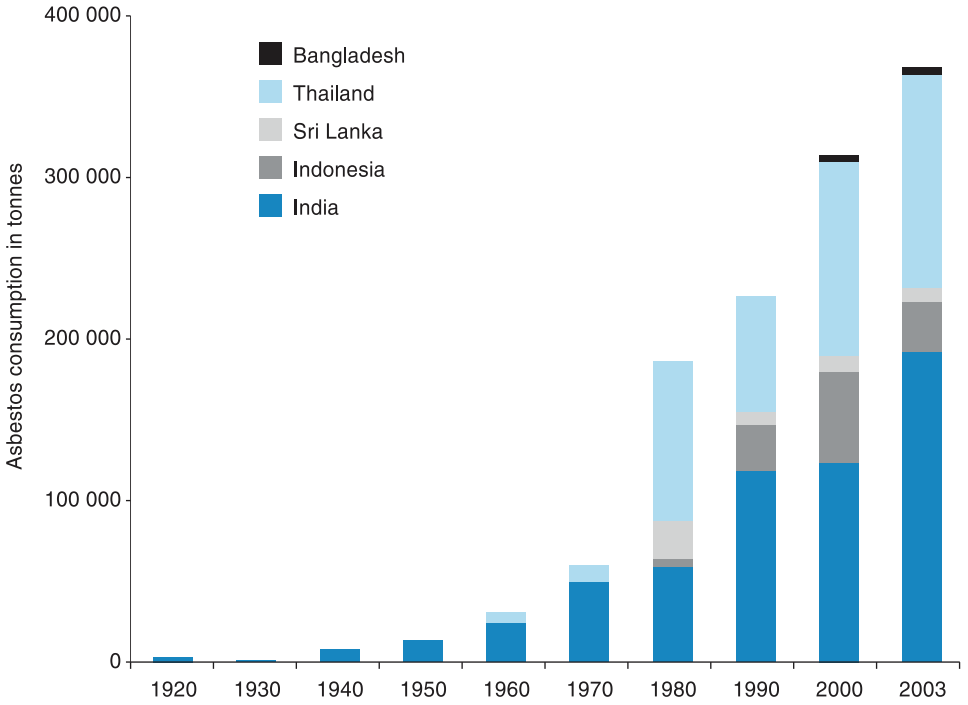
Source: Virta, R L, 2006. *Worldwide asbestos supply and consumption trends from 1900 through 2003.* U.S. Geological Survey Circular 1298, available at: http://pubs.usgs.gov/circ/2006/1298/

The future

Key issues in occupational health in the Region which will be addressed in the near future include:

- globalization in the context of moving the manufacturing industry (particularly hazardous industries) from developed to developing countries;
- policy development and law enforcement in asbestos; and
- occupational health in the informal sector (where more than 70% of workers are not covered by occupational health provisions).

Figure 27: ***Asbestos consumption in countries of the South-East Asia Region, 1920–2003***



Source: Virta, R L 2006. *Worldwide asbestos supply and consumption trends from 1900 through 2003*. U.S. Geological Survey Circular 1298, available at: http://pubs.usgs.gov/circ/2006/1298/

Improving the efficiency and effectiveness of the countries' food control systems

The importance of safe food, whether domestically produced and consumed or imported or exported, in the interest of both public health and economic efficiency and competitiveness, is well known by countries of the Region. However, the danger of food contamination and food-related disease outbreaks is particularly acute in the Region because of the proximity in which animals and people live and the way in which food is produced and distributed. The countries face a challenge of improving the efficiency and effectiveness of their food control systems in the context of the specific conditions of the Region in relation to rapid urbanization, food trade opportunities and growing intensification of livestock production, all of which increase the potential for food safety risks. The economic and social consequences of food contamination can also be significant. In addition, a poor food safety record and a large-scale outbreak of foodborne illness can adversely affect tourism.

Foodborne illnesses can arise from the ingestion of food contaminated with bacteria, protozoa, helminths, viruses, bacterial toxins, fungal toxins and chemicals. Surveillance is not sufficiently comprehensive to be able to estimate the true burden of foodborne illness in the Region. In India, several surveys of pesticide residues in food commodities have been conducted in recent years, under the responsibility of the Ministry of Health. One report in 2000 found most of the 708 samples tested to be contaminated by organochlorine pesticides.

Several resolutions, including World Health Assembly Resolutions 53.15 and 54.1, and Resolution SEA/RC53/6 (Rev.1) (2000) of the Regional Committee for South-East Asia, call on Member States to give greater attention to food safety and the reduction of the burden of foodborne illnesses. Despite these calls for action, efforts to improve food safety remain inadequately resourced in most countries of the Region.

Current status of national food control programmes

Despite the extent of foodborne illnesses, many Member countries do not yet have a clearly articulated and coherent national policy on food safety. There is a need for a strong political commitment in support of the development of effective food control programmes. This commitment has to be part of a national strategy based on the sharing of responsibilities among food safety authorities, the entire food industry (including farmers, growers, food processors, food retailers, food service operators and caterers) and consumers with effective national and sub-national coordination. There is low level of coordination and cooperation among the different government departments involved in developing and enforcing legislation. Inconsistencies in requirements are another problem. National capacity to analyse food also varies across the Region, with quality assurance in analytical procedures often overlooked. Several countries, however, do provide data on these to WHO's Global Environmental Monitoring (GEMS/Food) programme.

Only a very few countries have an active foodborne illness surveillance system capable of tracking and reporting the incidence of, and factors contributing to, foodborne illnesses. If a food safety programme is to be effective, it must actively promote the participation of both industry and consumers. The usefulness of a systematic approach such as Hazard Analysis and Critical Control Points (HACCP) needs further promotion as it can enable businesses and health authorities to prioritize improvements based upon risk.[57]

In India, the Food and Drugs Capacity Building Project is focused on capacity building for strengthening the staff in the 83 national and state food laboratories. It is helping build a computerized laboratory network and in specifically improving food monitoring at ports. The project also promotes food safety in the street food

sector and supports education of consumers. In the area of food legislation, the Indian government passed the Food Safety and Standards Bill in 2006 which consolidates eight laws governing the food sector and establishes the Food Safety and Standards Authority (FSSA) to regulate the sector, bringing food manufacturing, sale, and safety under a single umbrella.

Bangladesh has developed integrated nutrition, food security and food safety plans of action; Bhutan and Maldives have drafted food safety policies. In Indonesia, the MoH, initiated a process aimed at the implementation of the Healthy Food Markets Programme (HFMP), within the broader framework of the ongoing national Healthy Cities Programme which to date involves over 130 municipalities.

Regional action to enhance food safety

The 10-Point Regional Strategy for Food Safety, 2000, highlights the following priority actions to achieve the strategy:

- National food legislation in many Member countries urgently needs updating and revision, effectively taking into account Codex recommendations and the FAO/WHO model food law.
- An overarching food safety body at the national level, consisting of representatives of all stakeholders should be established to assure proper co-ordination of all food safety activities from production to consumption.
- There is need to increase the involvement of all stakeholders, the media and religious groups to expand the net to include those from disadvantaged and underprivileged groups in the community
- The collection of economic cost of foodborne disease outbreaks/other food safety issues such as export rejects would assist policy-makers to realize the enormity of the problem.
- Reemphasis on educational/ training/communication from general hygiene/microbiology to chemical contaminants and the newer technologies such as GMO food products.
- Regional and national capacities for establishing databases for food contaminant monitoring and foodborne disease surveillance should be strengthened. National focal points for both activities should be identified.
- All Member States should review the qualifications and training of inspectors within the context of national needs and modern approaches, including HACCP.

- All Member States should develop a broadly based participative risk communication strategy to promote better knowledge, attitudes and practices related to food safety issues.

Preventing exposure to toxic and hazardous chemicals

According to *The world health report 2002*, environmental hazards are estimated to cause or to contribute to the premature death of millions of people and result in the ill health or disability of millions more each year in countries of the Region. Environmental changes – both global and local – are having an increasing effect on health, particularly that of poor and vulnerable populations. One quarter of the global burden of disease is due to environmental health determinants. Children are more likely than adults to be exposed to contaminated water and soil, polluted air in the home, and toxic chemicals and are more vulnerable to the health effects of environmental contaminants. These factors contribute to over 5 million deaths globally each year among children.

The inadequate management of thousands of industrial, agricultural and household chemicals often result in unnecessary exposure to toxic chemicals, and sometimes in chemical incidents. Children who work from an early age in cottage industries – such as the bangle industry or production of firecrackers – are often exposed to toxic and hazardous chemicals that are widely and unsafely used. Chronic exposure is linked to damage to the nervous and immune systems and to effects on reproductive function and development. Very little is being done, to protect specially children's environmental health in most countries of the Region.

Less than 10% of the 1000 tonnes of health care waste that are produced daily in the Region are disposed off safely. Unsafe management of medical waste poses a series of life-threatening risks for all health personnel and patients, and also to the general public. Consequently, many used syringes and transfusion pipes reach rag pickers who siphon them off to scrap dealers who get them recycled back into the market, often without disinfection.

Air pollution, both indoor and ambient, is a major health threat to children. Nearly 75% of the population in the Region cooks with biofuels. An estimated 500 000 women and children die in India each year due to indoor air pollution-related causes. Outdoor air pollution, mainly from traffic and industrial processes, is a serious problem particularly in the ever-expanding mega cities of the Region.

Globally, the number of pesticide victims is estimated to be 3 million injured with 20 000 deaths. Data for the Region is incomplete. The Region also lacks capacity to respond and to prevent and manage poisonings: there are only 12 poison information centres in this Region, where more than 25% of the world's population lives.

Further, very little is done in terms of surveillance of health effects of chemical etiology such as chronic exposure to persistent organic pollutants (POPs) and other persistent toxic substances. This situation is becoming more critical with the increasing possibility of having to deal with mass casualties from not only accidental, but also deliberate chemical, biological and radionuclear incidents in the Region. (Box 3.)

Managing human poisonings

In recent years, the massive global expansion in the availability and use of chemicals in industrial, agricultural and domestic fields and overuse and abuse of drugs has led to the increased incidence of accidental and deliberate poisonings. Globally, WHO estimates that annually more than 6 million poisonings occur – nearly 500 000 persons suffer from pesticides poisoning and of these nearly 20 000 cases are fatal. The estimates for the Region are that over 1 million persons are poisoned annually.

Individuals can become directly exposed to man-made or natural toxic substances such as heavy metals either at their workplace, mining sites, chemical plants, or at the farm level. Indirect forms of human poisoning occur through contaminated food. WHO estimates that 12 million children worldwide are exposed to excessive levels of lead, recent data indicate that over 10 million people in the Region are at risk of mercury poisoning and 40 to 60 million face the risk of arsenic contamination from groundwater. Accidental poisonings range from snake bites to chemical incidents, such as the Bhopal gas leak. Intentional poisonings are becoming more frequent, especially among desperately indebted farmers who have easy access to pesticides.

The recognition over a decade ago that toxic exposures are an important threat to human health, led to the establishment of several Poisons Information Centre in the Region.

Currently, 15 poison centres are providing specialized poisoning patient management in the entire Region. Analytical toxicological support facilities are provided at some, but not all, of these institutions.

Box 3: **Seven steps for preparedness in case of biological and chemical emergencies**

STEP 1: Identify specialized information sources and specialists on hazardous materials, treatment protocols and preparation of public health response plans. Available at: *http://www.who.int/pcs/chem_incid_site/information_sources.htm; http://www.unepie.org/pc/apell/links/prevention.html*

STEP 2: Acquire equipment and supplies: chemical protective equipment (e.g. masks, goggles, aprons), pharmaceuticals, decontamination material, medical equipment (e.g. respirators) and other material. Consideration should be given to stockpiling and distribution plans.

STEP 3: Prepare for supportive and antidotal treatment. Few specific antidotes to chemical weapons are available. A good source of information and advice are poison centres, they either hold or know of stocks of antidotes. Available at: www.intox.org.

STEP 4: Identify and ensure analytical support as an early identification of the chemical warfare agent is essential to determine the risk to the population and the actions required to minimize casualties.

STEP 5: Train rescue and health personnel on the initial recognition and management of chemical casualties, barrier nursing, triage, decontamination, sample handling, handling of mass-casualty, rehabilitation and follow-up. Available at: *http://www.who.int/disasters/tg.cfm?doctypeID=24*.

STEP 6: Define triage criteria: a medical decision process is required to place casualties in priority order as to ensure the most effective use of limited medical resources and minimize morbidity and mortality.

STEP 7: Prepare for decontamination: In general, large quantities of water are required. Workers caring for victims at hospitals should remove clothing before the casualty is treated. Many chemical weapons evaporate readily and can be hazardous in enclosed rooms or shelters.

At the regional level, the strengthening of poison control measures are being promoted, but a lot more needs to be done in terms of commitment from countries in the Region to address this issue.

The challenges promote recognized harmonized approaches, preferably international, with a view to subsequent regional and global collaboration. Yet, specific collaboration through networking arrangements among those currently providing poison control facilities in the Region remains inadequate.

Preventing environmental health risks to children

Children are particularly vulnerable to environmental hazards. Exposure to environmental risks at early stages of development can lead to irreversible long-term, often lifelong, mental and physical damage. Priority environmental risks that must be tackled, particularly in developing countries, include unsafe water, lack of hygiene, poor sanitation, indoor air pollution, vector-borne diseases, chemical exposure and unintentional injuries. These risk factors cause the bulk of environmentally related diseases, disability and death among children and undermine their development.

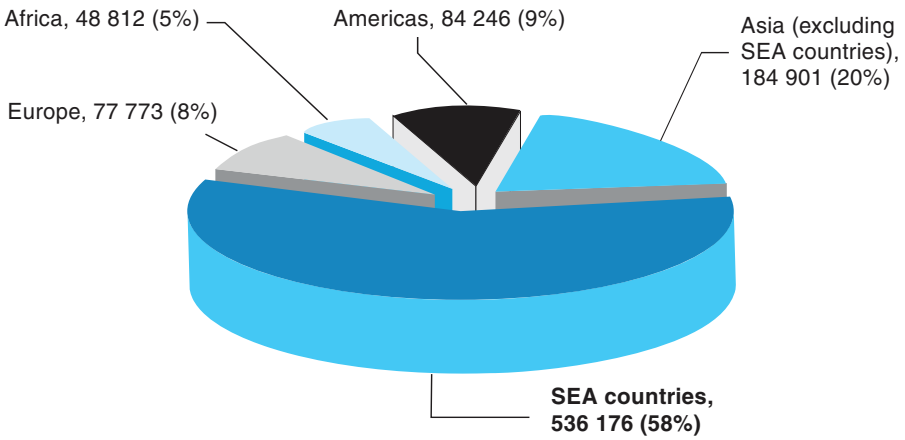
The global initiative on Healthy Environments for Children launched at the World Summit on Sustainable Development in Johannesburg, South Africa in 2002, brought together governments, nongovernmental and international organizations to form the Healthy Environments for Children Alliance to galvanize worldwide action on some of the major environmentally related risks to children's health. The alliance intends to be inclusive, participatory and action-oriented, bringing change to settings where children live, learn and play by providing knowledge, increasing coordination and political will, and mobilizing resources.

In the South-East Asia Region, a number of initiatives have been undertaken, including the development of education materials at national levels (e.g. a guide for teachers on health effects of environmental factors, or a game board for schoolchildren) and the networking of stakeholders to generate political will and coordinate intersectoral action on children's environmental health. Research projects were also initiated to study both exposure sources and health outcomes of priority environmental risks to children's health. In Nepal, indoor air pollution in winter was studied. Schoolchildren were trained to assess water quality in the highly polluted waters of the Ganges in Kanpur, India. Their findings were presented to local politicians. Indian schoolchildren collaboratively developed a CD-based educational game on environmental health.

Addressing the vulnerability of populations in the Region to emergencies

The South-East Asia Region is vulnerable to natural and man-made emergencies which impact human health, and accounted for 58% of worldwide deaths due to natural disasters between 1996 and 2005 (Figure 28).

Figure 28: ***Total numbers of people killed in natural disasters (1996 to 2005)***



Source: *World disasters report*, 2006.

Several major emergencies have occurred in the recent past:

- The Gujarat (India) earthquake on 26 January 2001.
- The unprecedented earthquakes and tsunami of 26 December 2004 severely affected six countries in the Region: India, Indonesia, Maldives, Myanmar, Sri Lanka and Thailand. They caused an estimated 280 000 deaths, with thousands missing. Nearly half a million people were injured and at least five million rendered homeless and/or deprived of adequate access to safe drinking water, sanitation, food or health services. Health infrastructures were severely damaged. Member States, WHO and other partners swiftly responded to the crisis. WHO played a proactive role in helping countries meet the serious public health management and logistical challenges posed in the aftermath of this tragedy.
- The Yogyakarta earthquake, in May 2006.
- The super-cyclone Sidr, which hit Bangladesh in November 2007.

In all these events not only was there a heavy loss of lives but the health infrastructure was also damaged, requiring substantial support to bring the health system back to normal. The following is a brief account of the damage caused by some disasters:[58]

- *2001, Gujarat (India) earthquake:* The earthquake destroyed 3812 health facilities. There was a total collapse of the health infrastructure in Kutch district, which was the worst affected. The cost of reconstruction for the health sector alone was estimated at US$ 60 million.

- *2004, earthquakes and tsunami:*
  - Aceh province (Indonesia): 30 of 240 health clinics were destroyed. Another 77 were damaged seriously; 40 suffered minor damage. As many as 700 health workers (of an estimated 9800 in the province) died or were reported missing.
  - Maldives: One regular hospital, two atoll hospitals, and 20 health centers were destroyed. As many as 5000 people had to be evacuated from 13 islands.
  - Sri Lanka: 92 health facilities were destroyed, including 35 hospitals.
  - India: Seven district hospitals, 13 primary health centres and 80 sub-centres were damaged in the southern Indian states of Tamil Nadu, Andhra Pradesh, Kerala, the Union Territory of Pondicherry and the Andaman and Nicobar Islands.

The fact that no major communicable diseases epidemics occurred in the above events is proof of the commendable work done by public health professionals in Member countries, in close collaboration with WHO and other partners. In all these events, water and sanitation, mental health and psychosocial support were also major public health interventions that Member States, WHO and other partners collaborated on.

Member States have worked together to focus on the important public health function of preparing for and responding to emergencies The work of WHO in emergencies is illustrated by the response to the tsunami. In this event, the WHO SEARO led the coordinated efforts of the operations and mobilized Organization-wide technical and logistics support to affected countries. This included the establishment of an emergency surveillance and early warning system, verification of and response to outbreaks, mobilization and rapid deployment of more than 200 experts and WHO staff from within and outside the Region, provision of nearly 90 technical guidelines and best practices, and ensuring stockpiling of life-saving drugs, vaccines and diagnostics. Public health interventions for environmental health (e.g. management of health care waste, food safety, psychosocial support and coordination with partners in the field), were also major needs in which Member States and WHO worked together.

Some inadequacies seen by countries include during these catastrophies were:

- Millions of people in South-East Asia still live in hazard-prone areas without adequate infrastructure to reduce vulnerability;
- There was inadequacy of systems for early warning, alert, response and evacuation;

- Mechanisms for managing the logistics aspect of the response were under-resourced;
- Key health facilities were destroyed; some buildings could have been saved if constructed to more robust standards based on local hazard analysis; and
- The speed of the health response was uneven and existing services were overburdened with a sudden influx of injured.

The tsunami was a turning point in highlighting the importance and need for emergency preparedness and response in the health sector. Reform in the disaster management sector in countries has begun as highlighted below:

- The National Disaster Management Authority was established in India in February 2005 to scale up disaster management in all sectors.
- Sri Lanka developed new legislation – the Disaster Management Act, which was passed in May 2005.
- Other countries have also started to review some of their legislation and policies in order to be better prepared and respond to emergencies better.

The landmark States that were put in place to strengthen the area of emergency preparedness and response:

Benchmarks for emergency preparedness and response

A duly prepared health sector and strong physical infrastructure has the potential to mitigate the impact of disasters and provide rapid and effective response. The health sector is expected to help and educate the public on the means to assess health risks; how to prepare for and cope with disaster, and on the myths – and truths – about the health consequences of disasters. A prepared health sector can help in reducing avoidable deaths, injuries and illnesses; anticipating population displacements; establishing disease surveillance systems; managing and preventing psychological and psychosocial problems; planning for food shortages and nutritional deficiencies; monitoring for diseases due to environmental health hazards; preventing damage to health facilities and other infrastructure; and anticipating and minimizing disruption to routine health services. WHO facilitated the development of 12 benchmarks to help Member States map out and systematically put in place these capacities for preparedness. The benchmarks were developed by international experts reviewing lessons from the tsunami and other emergencies

Benchmarks are often used by businesses to evaluate their performance in relation to the best practices in that sector. The 12 benchmarks developed by WHO for emergency preparedness are intended to ensure that all countries in the Region achieve a reasonable level of preparedness. They cover: human resource development; training and education; planning for such events; legislation and policy; funding; vulnerability assessment; information systems; surveillance; absorbing and buffering capacities and responses; patient care; and coordination. With these come a set of indicators and standards that can be checked and monitored both at national and sub-national levels. Together with ministries of health, WHO country offices are looking at the progress of these benchmarks.

South-East Asia Regional Health Emergency Fund (SEARHEF)

At the 24th Health Ministers' Meeting in Dhaka in August 2006, Member States recommended the creation of an emergency fund. The fund was further developed with participation from Member States and was finally established at the Sixtieth session of the Regional Committee through Resolution SEA/RC/60/R7.

5. Tackling risk factors and preventing noncommunicable diseases

The growing burden of noncommunicable diseases (NCDs) constitutes one of the major challenges for development in the twenty-first century. These diseases caused an estimated 35 million deaths globally in 2005, and constituted 60% of all deaths, with approximately 16 million deaths involving people under 70 years of age.[59] Total deaths from NCDs are projected to increase by a further 17% over the next 10 years. These diseases, which include heart diseases, stroke, cancer, chronic respiratory diseases and diabetes, emerged as a major cause of death and disability in the Region. They accounted for 47% of the Region's disease burden; 54% of the deaths in the Region during 2005 were NCD-related. The national life expectancy data and WHO estimates of NCD-related mortality and disease burden in the Member States of the Region are shown in Table 11.

Table 11: ***Life expectancy and some NCD-related mortality statistics in countries of the South-East Asia Region***

Member State	Life expectancy at birth (years)		Age-standardized mortality rate by cause (per 100 000 population)			Distribution of Years of Life Lost (YLL) by broader causes (%)		
			NCD	CVD	Cancer	CD	NCD	Injuries
	Male	Female	Both sexes			Both sexes		
	2005	2005	2002	2002	2002	2002	2002	2002
Bangladesh	62	63	762	428	111	60	28	12
Bhutan	62	65	771	441	112	65	25	10
DPR Korea	65	68	691	371	102	44	46	11
India	62	64	750	428	109	58	29	13
Indonesia	66	69	727	361	132	41	44	15
Maldives	67	69	864	484	123	55	36	9
Myanmar	56	62	796	432	115	60	29	11
Nepal	61	61	796	436	118	64	25	11
Sri Lanka	68	75	711	314	118	19	61	20
Thailand	67	73	559	199	129	43	40	17
Timor-Leste	63	68	814	441	118	63	26	11

CD – communicable diseases; CVD – cardiovascular diseases; NCD – noncommunicable diseases.
Source: *World Health Statistics 2007.*

Rapidly progressing epidemiological transition has been manifested as an increase in the health, social and economic burden inflicted by NCDs in the Region. Middle-aged adults (35-60 years) in the Region showed disproportionately high death rates due to NCDs in comparison with those living in more developed countries. This premature morbidity and mortality in the most productive phase of life is posing a serious challenge to societies and to their economies. People in countries of the Region tend to contract disease at younger ages, suffer longer and die sooner than people in high-income countries. According to WHO projections, almost half of the estimated 89 million NCD-related deaths that are likely to occur in the South-East Asia Region over the next 10 years will be premature. If appropriate public health action is not initiated, disability and premature deaths from heart disease, cancer, diabetes, chronic respiratory diseases and accidents will grow by more then 21% over the next 10 years in the SEA Region.

Tackling risk factors for major noncommunicable diseases

The main risk factors for major NCDs such as cardiovascular disease, cancer, chronic lung diseases and diabetes are common in all countries of the Region. They include: (a) tobacco and alcohol use, (b) unhealthy diet (high in total energy, fat, salt and sugar, low in fruit and vegetables) and (c) physical inactivity (Table 12). These behavioural risk factors are closely related to hypertension, overweight and high blood levels of glucose and cholesterol. The high level of risk factors among the population points to future increases in NCD prevalence and deaths.

The *World health report 2002*: *Reducing risks, promoting healthy life* estimated for the year 2000 that in the South-East Asia Region at least:[50]

- 1.5 million people died as a result of raised blood pressure;
- 1.1 million people died as a result of tobacco use;
- 1.1 million people died as a result of raised total cholesterol levels;
- 0.8 million people died as a result of low fruit and vegetable consumption;
- 0.5 million people died as a result of physical inactivity, and
- 0.25 million people died as a result of being overweight or obese.

Between 2002 and 2006, nine Member States of the Region conducted NCD risk factor surveys that used the WHO-promoted STEPS approach. While some countries conducted national level surveys (Indonesia,Thailand), others have carried out sub-national surveys. In some countries (India, Nepal) the surveys

Table 12: ***Summary results of NCD risk factor surveys using STEPS approach conducted in the South-East Asia Region; 25-64 years; both sexes***

Country/site	Year of survey	Current smokers (%)	Current consumers of alcohol (%)	% eating <5 servings of fruits and vegetables/ day	% physically inactive	% overweight or obese BMI > 25	% with blood pressure >140/90 mm Hg	% with fasting blood sugar > 7 mmol/l	% with blood cholesterol >5.2 mmol/l
Bangladesh – U Dhaka	2003	21.9	NS	NR	NR	36.5	NR	NS	NS
Bangladesh – R Dhamrai upzilla	2003	25.3	NS	NR	NR	8.6	NR	NS	NS
DPR Korea Pyongyang City	2005	31.1	NS	NS	NS	NR	16.3	NS	NS
India – U (six sites)	2004-5	15.7	20.7	81.4	23.8	39.4	24.3	NR	NR
India – R (six sites)	2004-5	17.8	26.4	84.6	10.0	13.3	20.3	NR	NR
Indonesia – national	2004	32.0	3.2	94.5	7.8	22.3	35.9	5.2	13.1
Maldives – Male	2004	22.7	NS	84.6	NR	44.2	NR	NR	54.4
Myanmar – U (Yangon)	2004	22.9	18.4	99.1	7.3	36.5	25.0	7.7	25.8
Myanmar – R (Yangon)	2004	24.4	18.0	98.2	3.5	23.3	11.9	3.8	18.7
Nepal – Lalitpur Ilam & Tanahu	2005	20.6	40.5	99.1	NR	16.5	42.0	NS	NS
Sri Lanka Dehiwala	2003	19.6	40.5	96.8	14.9	28.8	7.8	NS	NS
Thailand national	2004-5	18.6	40.1	85.0	NR	37.5	22.4	8.6	48.1
Total (range)	2003-5	16 – 32	3 - 41	81 - 99	4 - 24	9 - 44	8 - 42	4 - 9	13 – 54

BMI – body mass index; F & V – fruits and vegetables; NS – not studied; NR – not reported; R – rural; U – urban.
Source: Risk Factors for Noncommunicable Diseases in the SEA Region

were conducted at multiple sites to capture risk factor data, which reflect the diverse situations. The data generated through the surveys are compiled in Table 12 and illustrate:

(1) High prevalence and levels of major NCD risk factors in all countries not only in urban but also in rural areas.

(2) High burden of NCD risk factors both in men and women.

(3) Very low consumption of fruit and vegetables, especially fruits.

(4) Highly prevalent consumption of tobacco (smoked and smokeless) and alcohol, especially among males.

(5) Emergence of overweight, especially in urban areas, as a public health problem.

(6) Sufficiently high (though variable) prevalence of raised blood pressure in most settings to warrant a public health response.

(7) The extensive variability in the prevalence of individual NCD risk factors between countries, within countries, between urban and rural areas as well as between sexes.

Population-wide interventions to reduce tobacco consumption and to promote physical activity and healthy eating habits coupled with interventions targeting high-risk groups and individuals could greatly improve public health outcomes. When applied in an integrated way at population, community and individual levels, available public health interventions have the potential to prevent at least 80% of cardiovascular diseases, stroke and type 2 diabetes, and over 40% of cancers.

Tobacco use

Member States in the WHO South-East Asia Region, with 5% of the world's land area produce well over 13% of the world's tobacco. Four countries of the Region – India, Indonesia, Bangladesh, DPR Korea and Thailand – are among the top 20 tobacco-producing countries in the world. Of the 11 Member States in the Region, 10 produce tobacco.

In regard to tobacco consumption, the Region face has some unique problems as people use both the smoking and smokeless forms of tobacco.

Smoking is common among males in most countries of the Region. Among males current smoking varies from 30.6% in Sri Lanka to 58.6% in DPR Korea. Among females smoking prevalence is less than 5% in most of the countries. However, it is high in Maldives (11.6%), Myanmar (13.6%) and Nepal (26.4%).

Among smokers, indigenous smoking products like bidi, cheroots and kreteks are being smoked by over 3/4th of smokers in India, Indonesia and Myanmar. Rolled out cigarettes are very common in Thailand.

A variety of smokeless tobacco products are also consumed in South-East Asia. *Pan masala*, *gutkha* (industrially manufactured chewing tobacco product), *khaini* (chewing of dry tobacco leaves and lime), and chewing tobacco with areca nuts are common in Bangladesh, Bhutan, India, Maldives, Myanmar Nepal, and Sri Lanka. Smokeless tobacco use is more prevalent among men than among women in countries like India, Myanmar, Nepal and Sri Lanka. However, in Bangladesh smokeless tobacco use is more prevalent among women than among men.

The prevalence of tobacco use among youth in the Region is very diverse. Current cigarette smoking among students aged 13-15 years ranges from about 1.6% (males) and 0.9% (females) in Sri Lanka to 50.6% (males) and 17.3% (females) in Timor-Leste (Table 13). The Region also has a large variety of non-cigarette tobacco products. Current use of tobacco products other than cigarettes among students aged 13-15 years ranges from about 0.4% (males) in Thailand and 2.4% (females) in Indonesia to 29.0% (males) and 20.2% (females) in Timor-Leste.

Table 13: ***Tobacco use prevalence (%) in countries of the South-East Asia Region***

Country	Adult Tobacco Prevalence			Youth Tobacco Prevalence (13-15 years)				
	Year	Current Any Tobacco Smoking (Male)	Current Any Tobacco Smoking (Female)	Year	Cigarette Smoking (Male)	Cigarette Smoking (Female)	Current Tobacco Other than Cigarettes (Male)	Current Tobacco Other than Cigarettes (Female)
Bangladesh	2004	47.0	3.8	2007	2.9	1.1	8.0	4.2
Bhutan	...	...	...	2006	18.3	6.3	19.7	9.1
DPR Korea	2002	58.6	...	...	...	...	...	...
India	2005	33.1	3.8	2006	5.9	1.8	14.3	8.5
Indonesia	2004	65.9	4.5	2006	23.9	1.9	5.3	2.4
Maldives	2001	44.5	11.6	2007	6.6	0.9	4.3	2.7
Myanmar	2003	46.5	13.6	2007	8.5	1.3	20.3	7.9
Nepal	2006	34.8	26.4	2007	5.7	1.9	11.1	4.1
Sri Lanka	2003	30.2	2.6	2007	1.6	0.9	11.6	5.6
Thailand	2004	39.8	3.4	2005	17.4	4.8	0.4	4.9
Timor-Leste	...	...	...	2006	50.6	17.3	29.0	20.2

··· Data not available

Sources: *WHO Report on the Global Tobacco Epidemic, 2008; Global Youth Tobacco Survey Country Reports 2006-2007.*

Smoking-attributable morbidity data are scarce in the Region. Sporadic research in different parts of the Region suggests that smoking is responsible for cardiovascular disease, cancer and respiratory ailments. In most countries of the Region, lung cancer mortality tops the list among all cancer deaths, particularly among males. Oral cavity cancer also stands out prominently even among women in this Region.

Ten of the 11 Member States of the Region have ratified the Framework Convention on Tobacco Control (FCTC) and have initiated measures for its active implementation. Bangladesh, India, Myanmar, Sri Lanka and Thailand have comprehensive tobacco control legislation.

Thailand has implemented graphic health warnings on tobacco products. India has very recently formulated rules for graphic health warnings on different tobacco products; however, implementation is awaited. Bangladesh and Maldives have rotatory textual health warnings.

Most countries have banned direct advertisements of tobacco products in various media and this is well implemented. Some countries are in the process of formulating and modifying regulations in this regard. Many countries in the Region have banned indirect advertisement of tobacco products. However, implementation is not satisfactory.

In most countries, smoking is not allowed in public places. However, there is a need for effective implementation. Seven in 10 health professional students are exposed to second-hand smoke in many countries of the Region. In many countries, minors are not allowed to buy tobacco products. However, in many countries GYTS data reveals that over 70% of cigarette smoking students have free access to cigarettes. And, one in 10 students has been offered free samples of cigarettes and has objects with brand logo of cigarettes.

World No Tobacco Day is celebrated in all countries of the Region. Many tobacco control activists, ministries of health have received the WHO World No Tobacco Day award.

The WHO Regional Office for South-East Asia has developed the “Manual on Tobacco Control in Schools” which has been utilized by many countries in the Region. Hazards of tobacco use have also been incorporated in the school health education programmes in many countries. Most countries have well-organized health education programmes conducted by both the government and NGOs.

Youth being the most vulnerable and easily reachable target of the tobacco industry, WHO and the Centers for Disease Control and Prevention (CDC),

Atlanta, USA, developed the Global Youth Tobacco Survey (GYTS) to track tobacco use among youth across countries. The intention is to enhance the capacity of countries to design, implement and evaluate tobacco control and prevention programmes. Similarly, under the "Protecting the Youth from Tobacco", programme various activities are currently underway in Bangladesh, India, Myanmar and Thailand.

A number of activities under the "Channelling the Outrage" project have been undertaken in the Region.[60] Community-based tobacco cessation interventions have been initiated in five countries of the Region.

In view of greater impact and necessity of multisectoral approach to tobacco control, a study of existing and potential multisectoral mechanisms for comprehensive national tobacco control in eight countries of the Region has been undertaken. In order to magnify the economic impact of tobacco, a joint WHO-World Bank study on economic analysis of tobacco control was conducted in seven countries of the Region. The findings of these studies have been widely disseminated in the countries. A health cost study on impact of tobacco-related illness has been conducted in Bangladesh and is ongoing in a few more countries in the Region.

Given the influence of cinema on tobacco consumption among youth, a study on the portrayal of tobacco in Indian cinema was undertaken in India and efforts are being made to implement the recommendations of the study. Regional Situation Analyses are being carried out to assess the situation on the overall impact of tobacco on women, and on the widespread production and use of oral tobacco and its huge nefarious health impact in countries of the Region.

Most countries of the Region have a strong commitment to control the tobacco epidemic, which was reflected throughout the WHO FCTC negotiations and ratification process. However, the increasing trends of tobacco production and consumption are more visible in mega countries, such as Bangladesh, India and Indonesia, which represent a vast new marketplace for the tobacco industry and where the industry's marketing practices have intensified to capture youth and adults. Nonetheless, the Regional Strategy for Multisectoral Mechanisms for Comprehensive Tobacco Control will support countries to implement effective and efficient tobacco control plans and activities to control this epidemic.

The "Bloomberg Initiative To Reduce Tobacco Use" covering four countries (Bangladesh, India, Indonesia and Thailand) in the Region has added a new dimension in to tobacco control in the Region.

Alcohol abuse

Harmful use of alcohol is one of the main factors contributing to premature deaths and avoidable disease burden worldwide and has a major impact on public health. Harmful drinking is a major avoidable risk factor for neuropsychiatric disorders and other noncommunicable diseases such as cardiovascular diseases, cirrhosis of the liver and various cancers. The Nepal Demographic and Health Survey 2006 reported that 67% of the males between 15 and 60 years of age consumed alcohol. In Sri Lanka, 53.1% of males and 6.4% women above 15 years were current alcohol users. In India, surveys showed that around 20-30% of adult males and less than 5% of adult females use alcohol. In Thailand, 56% of males and 10% of females consumed alcohol in 2004. Many unique features relating to alcohol use and related harm in this Region pose special challenges. While alcohol is used by men traditionally, its use by women is now on the increasing. The proportion of dependent users is large. Though drinking occasions are fewer, the amount consumed is large. Issues of concern include pay-day drinking, violence including domestic violence, alcohol's contribution to poverty, illicit and home-brewed alcohol, higher alcohol use in poorer communities, and reduction in average age of initiation. The prevalence of alcohol dependence is relatively high in countries in this Region. Alcohol dependence in Thailand was 19.4% and 4.1% among the male and female adults, respectively, in 2001. In a survey of both males and females in a town in Nepal, the prevalence of alcohol dependence was 25.8%. It peaked at 45-54 years.

Worldwide, an estimated 2.3 million people die from alcohol-related causes. This is 3.7% of all deaths – 6.1% of deaths among men and 1.1% among women. Also, 64 975 000 disability-adjusted life years (DALYs) were lost due to alcohol-related causes. This was 4.4% of all DALYs – 7.1% of all DALYs among men and 1.4% among women. The percentage of suicides committed under the influence of alcohol ranged from 10% to 69% in some countries.[61] WHO has estimated that there are about 2 billion people worldwide who consume alcoholic beverages, and 76.3 million with disorders arising out of harmful use of alcohol.[62] A causal relationship between alcohol use and over 60 types of diseases and injury have been documented. Unintentional injuries account for around one third of the 1.8 million deaths due to alcohol. Studies in the South-East Asia Region have indicated that health, social and economic harm from alcohol is widespread.

Alcohol use has been associated with diseases ranging from stroke, myocardial infarction, cirrhosis, depression and psychosis to cancers of the liver, oesophagus, mouth and oropharynx. It is also associated with motor vehicle accidents, drowning, falls, poisoning, homicide, suicide and self-inflicted injuries. Socially deviant behaviours such as staying away or running away from home, indulging in gambling and other addictive behaviours have been shown to be

higher among alcohol users. Alcohol has been shown to be a major contributor to road accidents in the Region. In countries such as Thailand, road accidents are a leading cause of death with alcohol being a leading contributor to such accidents. In a large prospective study of 969 collisions, alcohol proved to be the most outstanding causative factor. In a study in Bangalore, India, nearly 28% of traffic injuries were found directly attributable to alcohol. Alcohol use is considered a risk factor for high risk sexual behaviours leading to HIV/AIDS and other sexually transmitted diseases. A study in India estimated losses from adverse effects of alcohol to be Rs. 244 billion, apart from the immeasurable losses due to multiple and rollover effects of alcohol use.[62]

Prioritizing cost-effective interventions to prevent cardiovascular diseases

Cardiovascular diseases (CVDs) include among others ischaemic heart disease, stroke, hypertension, rheumatic heart disease, and inflammatory heart diseases. Globally, contribution of CVDs towards total mortality increased from less than 10% to 30% during the twentieth century. In 2005, CVDs contributed to 28% of total deaths in the Region, making them the leading cause of overall mortality in South-East Asia.

The current mean CVD-attributable mortality rate in the Region—395 deaths per 100 000 population is much higher than the global average of 315. As shown in Table 11, estimated country-specific age-standardized CVD mortality rates in the Region range from 199 to 484 per 100 000 population per year in Thailand and Maldives, respectively. This wide variation points to important differences in the level of risk factors and the effectiveness of health interventions between individual countries. As some countries and areas are still in the early phase of epidemiological transition, further increases in CVD-related mortality are projected in the Region.

The worrisome aspect of the epidemiological transition observed in the Region is the rapidly increasing occurrence of CVDs in the young and middle-aged segments of the population. Between 2000 and 2030, about 35% of all CVD deaths in India will occur among those aged 35 to 64, compared with only 12% in United States and 2% in China.[63] The increase in CVD mortality and morbidity observed in countries of the SEA Region is largely the result of an increase in the prevalence of risk factors and a relative lack of access to preventive interventions, treatment of acute manifestations and interventions that prolong the survival of people with established CVDs.

Hypertension, considered as a risk factor for CVDs and a cardiovascular disease per se, contributes largely to the observed epidemics of CVDs in the Region. Estimates of the mean systolic blood pressure (SBP) for people aged 30-44 years in the Region in 2005 are shown in Table 14. Information on other risk factors is available in a specific subchapter below.

Table 14: ***Mean systolic blood pressure, age group 30-44 years: South-East Asia 2005***

Country	Systolic blood pressure (mm Hg)			
	Male		Females	
	Mean	SD	Mean	SD
Bangladesh	116.6	11.5	115.5	12.8
Bhutan	122.3	12.7	118.2	13.4
DPR Korea	122.5	16.0	117.2	16.4
India	123.8	13.0	120.9	14.0
Indonesia	121.3	15.4	120.0	16.8
Maldives	130.1	14.4	133.5	16.8
Myanmar	119.0	15.2	113.0	15.5
Nepal	122.3	12.7	118.2	13.4
Sri Lanka	122.0	15.6	120.1	16.8
Thailand	116.1	14.3	112.4	15.1
Timor-Leste	122.3	12.7	118.2	13.4

SD = standard deviation (95% CI)
Source: WHO-SEARO/WHO Geneva, Global InfoBase team, Department of Chronic disease and health promotion. 2005.

CVDs place a large economic and social burden on countries of the Region. The health system and out-of-pocket spending for its management are limited because of the overall economic situation and competing health priorities. In this context prioritizing the most cost-effective population and high-risk interventions to prevent and control CVDs is mandatory. Such interventions include: (i) tobacco control (taxation, advertising bans, control of smoking in public places, and health education); (ii) population-wide salt intake reduction: (iii) individual-based hypertension treatment; (iv) strategies to reduce cholesterol levels (health education, pharmacological treatment of people with high cholesterol); and (v) measures focused on the early detection and management of diabetes.

Increasing access to preventing, detecting and treating cancer

Cancer**,** one of leading causes of death worldwide, is a generic term for a group of more than 100 diseases affecting different parts of the body. The disease

occurs through a pathological breakdown of the processes which control the proliferation, differentiation and death of cells.

With age standardized mortality rate of 111 per 100 000 and a 9% share in total deaths, cancer has become an important public health priority in the Region. It is estimated that in 2000, there were 1.3 million cases and 0.9 million deaths from cancer in the Region with cervix uteri, breast, oral cavity and lung cancer the most common. Cancer incidence and mortality is shown in Figure 29.

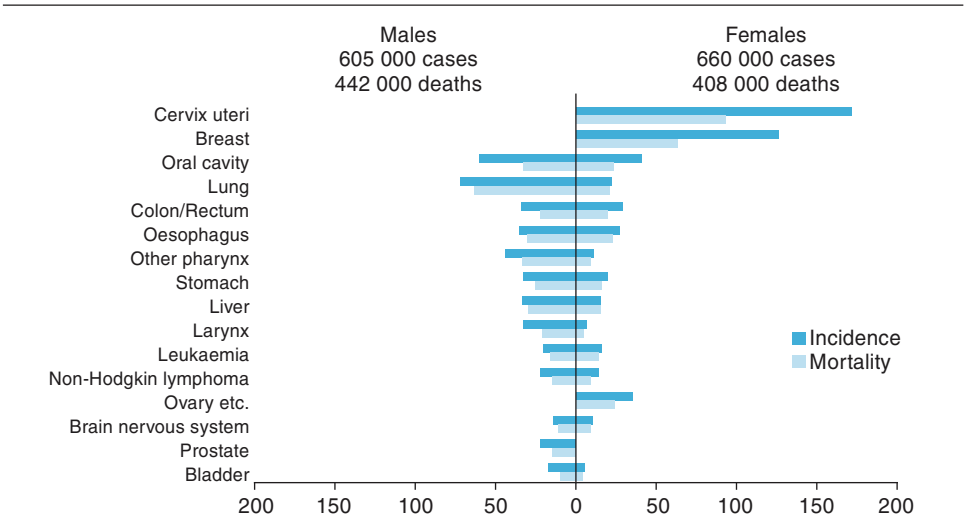
Cancer registries, either hospital or community-based such as those set up in India, Indonesia, Sri Lanka and Thailand, serve an important role in providing information about the area-specific prevalence of different types and locations of cancer. The wide variance in cancer-related epidemiologic indicators observed in the Region reflects demographic, socioeconomic and other characteristics of individual countries. Unlike in more developed regions of the world, where most of cancers are related to lifestyle and environmental risk factors, in the South-East Asia Region chronic infections caused by human papilloma virus (HPV), hepatitis B and C viruses: *Helicobacter pylori* and liver fluke are also of high importance.

Cancer of the uterine cervix is the most common cancer in the Region. Though its rates are decreasing in some countries as a result of improved socioeconomic conditions, further improvement requires the introduction of an active screening programme. Broad implementation of cytology-based screening and treatment for cervical cancer is hindered by financial constraints and inadequate health infrastructure and outreach. Alternate strategies such as visual inspection with acetic acid are being introduced in some countries, including India and Thailand.

Breast cancer is the other common cancer among women. In the South-East Asia Region it is second to cancer of the uterine cervix. Breast cancer is intimately related to a high-calorie diet, lack of exercise and reproductive factors. Early detection through proper screening and improvements in therapy have reduced mortality. Unfortunately, early detection and therapy are inaccessible to large segments of the population in the Region.

Tobacco use remains the major preventable behavioural risk factor for lung, oral and some other types of cancer. In addition to smoking, tobacco is often chewed, leading to cancer of the oral cavity—the third most common form of cancer in the Region. The countries with the greatest burden of oral cancer in men are India and Sri Lanka.

Figure 29: ***Cancer incidence and mortality in the South-East Asia Region***



Source: International Agency for Research and Cancer, 2006.

Effective cancer control requires a comprehensive national cancer control policy and programme with adequate resource allocation, development of diagnostic and therapeutic capacity and good resource utilization in palliative care. High levels of female illiteracy, gender discrimination and other socioeconomic inequalities, as well as lack of awareness of the risk factors and poor enforcement of tobacco, alcohol, and food legislation, all hinder the efforts of cancer control programmes. Widespread inaccessibility of preventive, early detection and treatment services for large segments of the population in the Region due to the geographical and financial constraints contribute to poor health outcomes. As out-of-pocket payment for the treatment of cancer could economically devastate families and individuals, the creation of appropriate financing mechanisms to cover the cost of treatment needs to be addressed.

Intervening to prevent and treat diabetes mellitus and its complications

Diabetes is a group of heterogeneous disorders characterized by hyperglycaemia (high blood sugar level) due to insulin deficiency, impaired effectiveness of insulin action, or both. Diabetes can lead to serious complications such as heart attack, stroke, blindness, renal failure, and amputation. Type 1 diabetes, Type 2 diabetes and gestational diabetes are the major forms of the disease.

The most common type of diabetes is type 2 diabetes. It accounts for 85– 95% of all cases and constitutes the major and growing global public health problem. Physical inactivity and unhealthy dietary habits that are associated with urbanization, globalization and ageing and result in overweight and insulin resistance are the most important risk factors for the development of Type 2 diabetes. The disease usually occurs in adulthood, although a small but increasing number of children and adolescents who are overweight are developing the illness also.

According to WHO estimates, over 180 million people worldwide have diabetes; this number is likely to more than double by 2030. Almost half of diabetes deaths occur in people under 70 years.

As per the International Diabetes Federation (IDF) estimates for 2007, in the South-East Asia Region, 54 million people were diabetic and an additional 63 million adults had Impaired Glucose Tolerance (IGT). Table 15 presents current estimates and future projections of the number of adults with diabetes and IGT by country. With nearly 41 million persons afflicted by the disease, India has the highest number of people with diabetes in the world. According to IDF projections, India will have 70 million diabetics by 2025. At the regional level the number of people with diabetes is anticipated to increase by 71% between 2007 and 2025.

Table 15: ***Number of people (in thousands) with diabetes mellitus (DM) and impaired glucose tolerance (IGT) in the 20-79 age group in countries of the South-East Asia Region, 2007–2025***

Country	DM 2007	DM 2025	IGT 2007	IGT 2025
Bangladesh	3 848	7 419	6 819	10 647
Bhutan	54	67	34	59
DPR Korea	807	1 082	1 284	1 624
India	40 851	69 882	35 906	56 228
Indonesia	2 888	5 129	14 144	20 597
Maldives	10	29	20	38
Myanmar	873	1 566	725	1 086
Nepal	497	1 009	542	1 100
Sri Lanka	1 187	1 786	1 708	2 272
Thailand	3 162	4 660	1 896	2 399
Timor-Leste	7	13	46	84
Total	54 184	92 642	63 124	96 134

Source: International Diabetes Federation 2006. Diabetes Atlas (3rd Edition).

World population adjusted (comparable) prevalence rates of diabetes in adults in the Member countries of the Region range from 1.7% to 8.4% (Table 16). The highest prevalence rates of 7%-8% are reported in India, Maldives, Sri Lanka and Thailand.[64] According to studies conducted in several countries of the Region, 30% to 81% of people with the disease are not aware of their diabetic status. Epidemiological data on Type 1 diabetes are scarce in the SEA Region. Available evidence indicates that incidence rates of this type of diabetes range from 0.3 to 4.2 cases per 100 000 population per year in Thailand and India, respectively.

Table 16: ***World population–adjusted prevalence (%) of diabetes mellitus (DM) and impaired glucose tolerance (IGT) in the 20-79 age group in countries of the South-East Asia Region, 2007–2025***

Country	DM 2007	DM 2025	IGT 2007	IGT 2025
Bangladesh	5.3	6.6	8.9	9.2
Bhutan	5.4	4.5	3.2	3.6
DPR Korea	5.2	5.8	8.2	9.1
India	6.7	8.2	5.6	6.3
Indonesia	2.3	2.9	10.6	11.6
Maldives	7.1	11.2	12.4	13.7
Myanmar	3.2	4.1	2.5	2.7
Nepal	4.2	5.8	4.1	5.5
Sri Lanka	8.4	10.2	12.1	13.4
Thailand	6.9	8.0	4.2	4.4
Timor-Leste	1.7	2.1	10.6	11.6

Source: International Diabetes Federation 2006. *Diabetes Atlas* (3rd Edition).

In the South-East Asia Region mortality attributable to diabetes is estimated at 1.0 million, which is equivalent to 6.1% of all-cause mortality in 2000.[65] Most people with diabetes die of late macro- and micro-vascular complications of the disease such as ischaemic heart disease, stroke and renal failure. These deaths, though directly attributed to diabetes, are not counted as diabetes-related deaths in the death certification-based mortality statistics leading to a substantial underestimation of the health impact of diabetes. When adjusted for the excessive cardiovascular-related mortality, the true regional figure for diabetes-attributed mortality may be as high as 12% of total mortality, placing the disease among the top five leading causes of death.

About 20% of global health expenditure on diabetes is spent in low and middle-income countries where 80% of people with diabetes live. Countries vary widely in the resources spent on diabetes. India alone spends an estimated US$ 2 billion per year. In the developing countries of the Region, medical purchases for diabetes go mainly towards preventing acute life-threatening hyperglycaemia with limited spending towards prevention of late vascular complications. In some countries not enough is spent to provide even least

expensive lifesaving diabetes drugs. Glycaemic and blood pressure control, foot care in people with high risk of ulcers, lifestyle interventions and annual eye examination are among the most cost-effective interventions for preventing and treating diabetes and its complications in developing countries.

Increasing capacity of Member States to prevent and control noncommunicable diseases

Policy interventions aimed to change the physical and socioeconomic environment, when implemented with comprehensive health promotion and integrated disease prevention and control programmes could significantly reduce the incidence of NCDs and decrease overall morbidity and mortality. There is a growing commitment and capacity among countries of the Region towards scaling-up the integrated prevention and control of NCDs. An assessment of national capacity for NCD prevention and control was undertaken in the Region in 2001 and then again in 2006-2007.[66]

Table 17 documents the progress achieved in this regard in the Region between 2001 and 2006. By and large, the repeat survey revealed an increase in capacity and demonstrated that all countries have made some progress in developing different components of NCD prevention and control. The presence of NCD units within the ministries of health increased and more countries had developed NCD policies, strategies and programmes. Progress was also evident

Table 17: ***Progress in the prevention and control of NCDs in the South-East Asia Region, 2001–2006***

Area	Indicator	No. of countries	
		2001	2006
Infrastructure	Presence of a NCD unit or department in MoH	4	7
Financial allocation	Allocation for NCDPC in regular budget of MoH	6	7
Policy/programmes	National health policy addresses NCDs	4	5
	National health strategy addresses NCDs	3	6
	National integrated NCD programme/plan	3	5
	Area-specific policy/programme/plan	9	9
Target-setting	Quantifiable targets set for the country in the area of NCDPC	4	5
Legislation/regulation	Tobacco	7	10
	Food and nutrition (related to NCDs)	9 @	5
Surveillance	Inclusion of NCDs in national HIS	10	10
	Routine or regular surveillance for NCDs/risk factors	6	6
National guidelines	Availability of national guidelines for disease/risk management (for all major conditions)	1	2

@ includes legislation not directly relevant to NCDs

Source: WHO/SEARO, NCD unit

in the area of tobacco control. However, there has been limited progress in some areas such as development of treatment guidelines and programme target setting. As Timor-Leste, which came into being in 2002, was not covered by the 2001 survey, the information presented in the table pertains to the 10 countries of the Region that had participated in both surveys i.e. Bangladesh, Bhutan, DPR Korea, India, Indonesia, Maldives, Myanmar, Nepal, Sri Lanka and Thailand.

Regional Framework for Prevention and Control of Noncommunicable Diseases

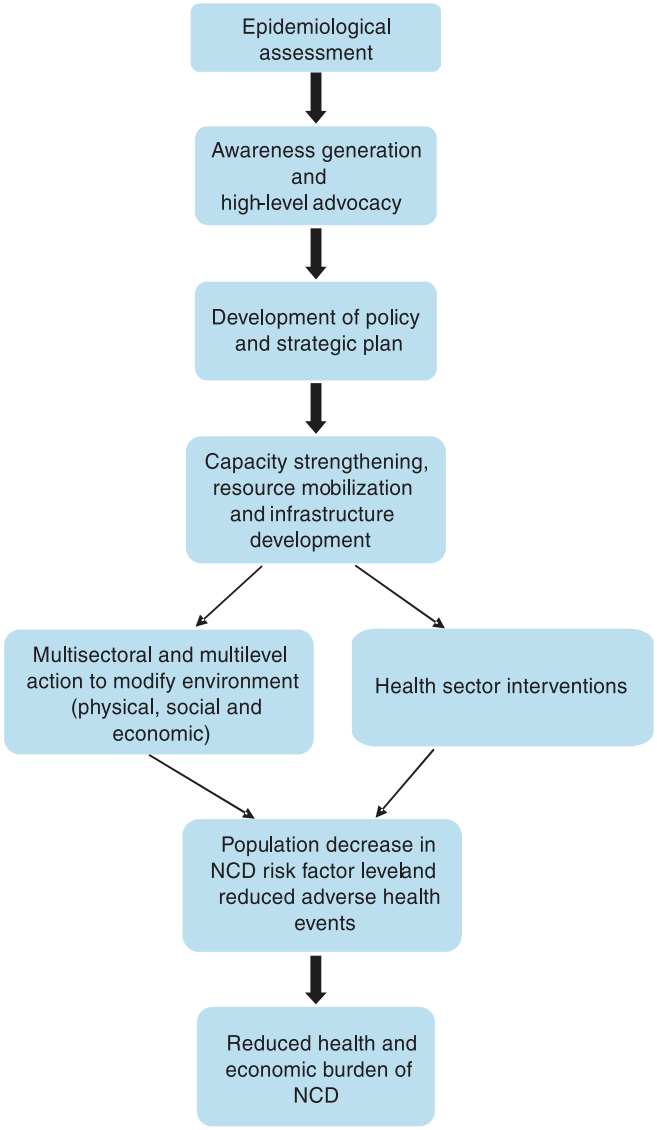
Several countries of the Region such as India, Indonesia and Thailand have made notable progress in framing and implementing national NCD prevention and control policies, plans and programmes. To further facilitate the process of developing, updating and strengthening of national policies, plans and programmes for integrated prevention and control of NCDs, the Regional Framework (Figure 30) was developed in 2006.[67]

The Framework is based on national, regional and global consensus on policy and technical actions for prevention and control of NCDs and their primary risk factors. It proposes the policy development framework and provides technical inputs for consideration in the process of developing national policies, plans and programmes. In 2007, the Regional Committee adopted a resolution endorsing the Regional Framework and urging Member States to formulate and strengthen national policies, strategies and programmes for integrated prevention and control of NCDs.[67]

Meeting the mental health needs of the communities

The *world health report 2001* drew attention to the significant morbidity caused by mental and neurological conditions. Globally, it is estimated that 450 million persons are affected by mental, neurological and substance-abuse disorders; a large proportion of them live in developing countries, including the South-East Asia Region. The proportion of the total disease burden measured by DALYs from neuropsychiatric conditions was estimated to increase from 9% in 1990 to 14% in 2020. Together these conditions account for more than 10% of the global burden of disease as measured by DALYs.[68] Alcohol as a risk factor is responsible for 3.6% DALYs and illicit drugs for 0.6%. A substantial proportion of people with neuropsychiatric conditions, particularly in developing countries, do not get appropriate treatment. This treatment gap can be as high as 80-90%. While both neurological and psychiatric conditions are common in communities living in rural and remote areas, neurological and psychiatric services are concentrated in urban tertiary-care hospitals.

Figure 30: ***South-East Asia Regional Framework for Prevention and Control of NCDs***



Source: WHO/SEARO, NCD unit

Mental disorders affect cognition, emotion, and behavioural control and substantially interfere both with the ability of children to learn and of adults to function in their families, at work, and in broader society in general. Mental disorders tend to begin early in life and often run a chronic, remitting and relapsing course. Because of the combination of high prevalence, early onset, persistence, and impairment, mental disorders make a major contribution to total disease burden.

To meet the mental health needs of the community, the WHO Regional Office for South-East Asia has advocated a two-pronged strategy of (1) promoting mental well-being taking a positive approach to mental health promotion and prevention of mental illnesses; and (2) developing community mental health services which reach out to the community. Community mental health programmes must aim to reach every individual who needs mental health care. More than treatment, it needs to include promotion of well-being and mental health as well, removal of stigma, psychosocial support and rehabilitation for those in need, prevention of harm from alcohol and substance use, and treatment of those who are sick, using the primary health care system as near to the user community as possible. The programmes should be capable of delivering at least the basic minimum level of services for neuropsychiatric conditions to everyone, everywhere. Those delivering health care in the community should be trained to identify and manage these conditions. Affordable and appropriate medications should be made available in the community.

Sri Lanka's National Mental Health Policy, approved in October 2005, includes a time-bound plan for extending mental health services all over the country within 10 years. In Thailand, the community mental health programme being implemented since 1982, has established linkages among concerned organizations, and expanded linkage with local authorities. Innovative approaches for promoting community mental health include the Monks programme (where trained monks recognizing and referring mentally ill patients for professional care have reduced the treatment gap to zero), the village health volunteer programme, mobile mental health teams and banning serving of alcohol during funerals.

Increasing national capacities for injury prevention

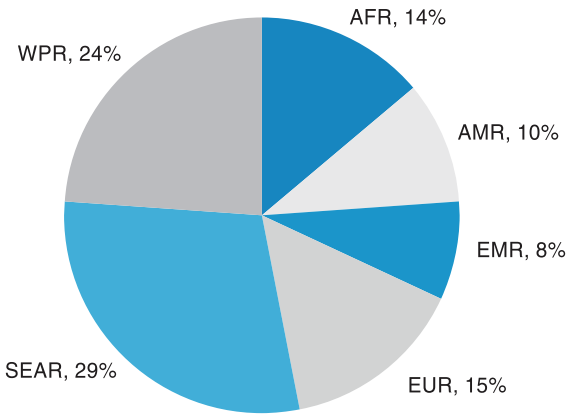
During the year 2002, injuries resulted in 181 991 119 disability adjusted life years (DALYs) lost; and an estimated 5 168 315 people worldwide died from injuries—a mortality rate of 83.0 per 100 000 population. Injuries accounted for 9% of the world's deaths and 12% of the world's burden of disease in 2002.[9] The burden of disease related to injuries, particularly road traffic injuries, interpersonal violence, war and self-inflicted injuries is expected to rise dramatically by 2020. Road traffic injuries are the leading cause of injury-related deaths worldwide (Table 18). If current trends continue, road traffic and intentional injuries (self-inflicted injuries or suicide, interpersonal violence, and war-related injuries) will rank among the 15 leading causes of death and burden of disease by 2020. The South-East Asia Region accounted for 29% and 31% respectively of the global injury related mortality and morbidity in 2002 (Figure 31).[9] The injury-related mortality rates by age and sex for the Region are given in Table 19.

Table 18: ***World rankings of injury-related mortality and burden of disease in 1990 and 2020***

	Ranking in terms of the number of deaths		Ranking in terms of DALYs lost	
	1990	**2020**	**1990**	**2020**
Road traffic injuries	9	6	9	3
Self-inflicted injuries	12	10	17	14
Interpersonal violence	16	14	19	12
War	20	15	16	8

Source: WHO, *The Injury Chartbook,* 2007.

Figure 31: ***Regional distribution of global injury-related mortality, 2002***



Source: WHO Geneva, GBD 2002 (Revised).

According to WHO 2002 estimates, about 1.3 million people suffer from unintentional poisonings every year in the Region, out of which 5% of reported cases are fatal. Unintentional injuries and those due to violence pose a significant public health problem in the Region.

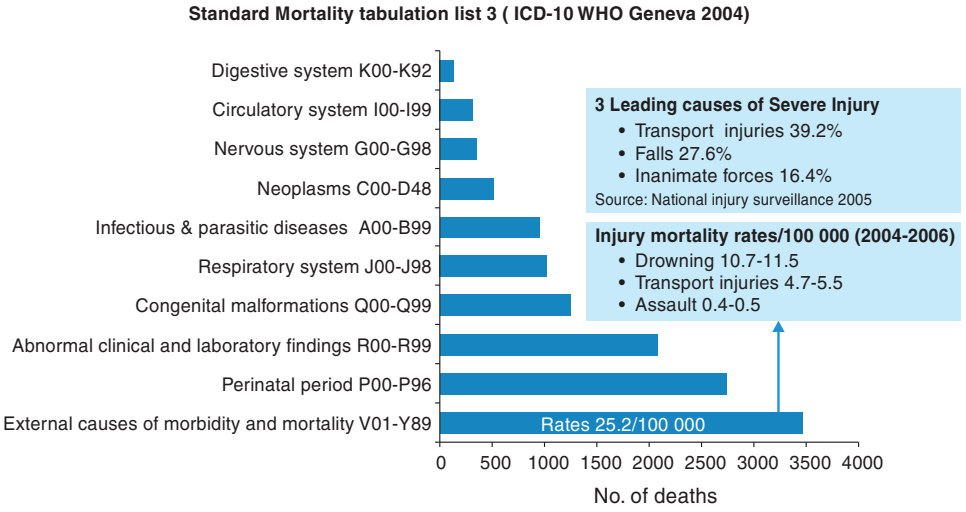
Injuries are the group of disease that is reported to be the leading cause of death in children in many developing countries. This group of disease was, for the first time, appeared as the leading cause of death in children under 15 years in a relatively developed country in SEA like Thailand (Figure 32). This information is an alarming sign for the SEA countries to begin to invest more in epidemiology, policy and planning and organization development for coping with the injury problem. The countries should carefully plan to develop the information system in the country to be able to monitor the leading causes of deaths in children less than 15 years of age as well as adolescent. The national training on injury epidemiology, prevention and care should be conducted, as most SEA countries already have the trainers trained at the intercountry level, in order to build critical mass of health and intersectoral personnel to cope with the growing problem.

Table 19: ***Injury-related mortality rates (per 100 000 population) in the world and the SEA Region by age group and sex, 2004***

Age groups years)	World			South-East Asia		
	Male	Female	Both Sexes	Male	Female	Both Sexes
under 1	106.3	110.6	108.4	111.1	113.6	112.3
1-4	57.0	54.0	55.6	73.0	91.8	82.0
5-9	45.3	38.0	41.8	63.7	61.0	62.4
10-14	36.0	26.3	31.3	44.1	44.6	44.4
15-19	78.9	46.5	63.1	84.7	87.5	86.0
20-29	133.3	50.8	94.4	135.6	95.8	116.3
30-44	139.7	52.4	96.7	162.3	87.9	126.1
45-59	155.3	70.3	112.8	183.2	127.1	155.6
60-69	171.4	93.0	130.6	221.4	184.2	202.1
70-79	229.9	144.9	182.6	378.9	317.9	346.2
80+	449.8	307.5	359.2	769.2	581.9	666.1

Source: Global Burden of Disease: 2004 update

Figure 32: ***Top 10 causes of death in Thai children (<15 years), Thailand, 2006***



Source: Death certificate, Bureau of Health Policy and Strategy, Ministry of Public Health, Thailand

In response to these injury related problems, Eight countries (Bangladesh, Indonesia, Maldives, Myanmar, Nepal, Sri Lanka, and Thailand) have formulated national policy for selected injuries prevention and among this, three countries have already a national implementing mechanism and a unit in MOH to coordinate and implementing the program. However, there are still many challenges faced by developing countries of the Region in solving injury problems, including: insufficient awareness of the magnitude and major causes of injury; and limited national capacity to coordinate for and to collate the injury data from

hospitals and other important sources such as vital registration and, transport authorities, for analysis to appropriately monitor. In depth investigation and researches are still needed for evidence-based interventions appropriate to the country context.

Road traffic injuries: Road traffic is a major cause of injuries and deaths throughout the Region. The prevalent use of motorcycles is very obvious from the increasing proportion of them among registered vehicles (Table 20). Such a large percentage of motorcycles as registered vehicles has not been seen in any other developed countries. The epidemiological pattern of major victims of RTI in SEA region has changed in the previous two decades from having pedestrians as most common victims to be motorcyclists (rider and pillion rider) as most common victims. This is evidently reported in injury surveillance and research reports of India, Indonesia, Myanmar, Sri Lanka and Thailand. Many countries in the Region have adopted legislation that mandates the use of helmets and seatbelts, speed limits, controls on drinking and driving, and legislated the requirement of automatic turn-on at all times of headlamps by motorcyclists. However, enforcement of the law is not always successful. In recent years, Thailand required by law that a warning label regarding the use of a motorcycle helmet when riding on a motorcycle be shown on all new motorcycles. A few countries have developed national action plans for road safety and are implementing them. Each country takes a multisectoral approach to road safety, involving the transport, police, education, health and other departments. A lead agency has been set up to issue policy, guidance and monitoring of the multisectoral activities. Certain initiatives in safety promotion and vulnerable protection have also been initiated such as producing standardized motorcycle helmets for children age 2-10 years with policy support and piloted multi-sectoral projects at the provincial level to promote motorcycle safety and the use of motorcycle helmets in for children age 2-14.

Table 20: ***Percentage of motorcycles among all registered vehicles in selected countries of the South-East Asia Region***

Country	% motorcycles	Year
Indonesia	75	2003
India	71	2004
Myanmar	68	2003
Thailand	65	2007
Bangladesh	65	2005
Nepal	63	2004
Sri Lanka	50	2006

Source: [1] ASEAN road safety statistics. ADB-ASEAN programme
[2] Road traffic injury prevention in India (Government of India, WHO collaborative programme (2004-2005)
[3] Biregional (SEAR-WPR) workshop on injury surveilance
[4] Transport authorities websites

The health sector is intensely involved in improving injury surveillance and emergency medical care systems and advocating for public awareness among motorists and other road users. The pre-hospital service, an emergency response system that provides on-the-spot initial care safe transport of patients to properly equipped trauma units which can save lives and minimize disability, is of great interest to countries in the Region. Such networks are being established countrywide in Thailand and in some of the larger metropolitan areas in other countries of the Region. The United Nations Road Safety Week, coordinated by WHO, has strongly supported multisectoral coordination to prevent road traffic injuries.

Suicides: It is a major cause of injury deaths in the Region. Of the 2.5 million reported suicide attempts in the Region in 2002, 70% were by ingestion of pesticides. The most frequent methods used in completed suicide (ended with fatality) are hanging and use of firearms. Different social and economic factors affect the mental state of people and rates of suicide. The availability of poisons (e.g. pesticides and harmful substances) and firearms in the society is linked to the occurrence of suicide. In urban areas of some more developed countries in the Region, attempted suicides by using analgesic and cold remedy medicine in women and adolescents were reported from injury surveillance data. Suicide has been too often related to the state of mental health or depression. Research and investigations in the Region show that depression is not as strong a causal factor in suicide as impulsivity, and these links should be systematically explored to provide guidance for an appropriate response, including focusing attention on reducing access to the means of suicide. Some high-risk approach intervention was tried. For example, India and Thailand have established telephone help-lines with NGO collaboration in many large urban areas for the depressed. Some other intervention programmes which screen those at high risk can also create stigmatization which lowers compliance. Researchers should also seek for population approach intervention, which aims at changing the way of thinking and living of the whole target population in order to decrease the risk of self harm.

Drowning: The South-East Asia Region accounted for 25% and 26% of the drowning-related DALYs and mortality, respectively, worldwide in 2002.[9] Drowning is the most common cause of unintentional deaths in Bangladesh and Maldives and the leading cause of injury-related deaths in children less than 15 years, in Thailand. Most drowning deaths took place in ponds, rivers and oceans, man-made water reservoirs, and during floods and typhoons. Drowning deaths during water recreation can be prevented by adult supervision of children, instructions in swimming and the training of lifeguards. Fencing of large and deep water sources is also effective to decrease unattended exposure. This can be substantially contributed by local government and communities. For surface water transport, legislation and enforcement of provision of lifejackets and floatation

devices can prevent mass casualties. Research on cheaper and more easily available floating devices for passengers during water transport is needed in developing countries. In the case of floods and storms, preventive measures include early warning and evacuation to safer places and prompt rescue activities.

Burns: This is a major injury problem in South-East Asian countries. The Region accounted for just over one-half of the total number of fire-related deaths worldwide and for more than 50% of the total number of DALYs lost to fire-related burns globally. In 2002, females in South-East Asia had the highest fire-related burn mortality rates worldwide (16.9 per 100 000 population) while males in South-East Asia had the fourth highest (6.4 per 100 000 population).[9] This may largely be contributed by the unclear classification and misclassification of cases between intentional and unintentional causes. The majority of burns occur at home. Use of fireworks during festivals and celebrations is common and result in a significant number of burn injuries. The lack of adequate treatment of burns is also a factor that increases the severity of the injury. More efforts are needed to improve the classification of burn cases in this Region and the promotion of appropriate use of International Statistical Classification of Diseases and Related Health Problems 10th revision (ICD 10) especially on external causes of morbidity and mortality, is urgently needed for better information which will lead to appropriate planning for prevention. Effective prevention interventions include appropriate rules and regulations on product safety standards, close monitoring and education along with the provision of first aid and treatment of burns.

Preventing and controlling thalassaemia

Thalassaemia is a hereditary blood haemoglobin disorder that results in varying degrees of anaemia. It is classified both by clinical manifestation and genetic background. The most common types of thalassaemia syndrome are alpha (α) and beta (β) thalassaemia. Both forms of thalassaemia are prevalent in the Region. The most severe form of α-thalassaemia, Hb Bart's Hydrops Fetalis results in death during the foetal or newborn period. Many individuals with α-thalassaemia have milder forms of the disease with varying degrees of anaemia; β-thalassaemia ranges from a very severe form of anaemia with growth retardation, like β-thalassaemia major, also called Cooley's anaemia, to a very mild form with no health effects.

Thalassaemia is a major cause of mortality and morbidity in the Region. The growing demand for resources for the care of thalassaemia patients makes the disease an important public health issue. Available information on the prevalence of thalassaemia in selected countries of the Region is shown in Table 21.

Table 21: ***Prevalence of thalassaemia and abnormal haemoglobins in South-East Asia***

Country	%Carriers			
	α	β	Hb E	Hb CS
Bangladesh	...	3	4	...
India	5–97	3–4	(+)	(+)
Indonesia	6–16	3–10	1–25	...
Maldives	28	18	0.7	0.4
Myanmar	10	0.5–1.5	2–28	...
Sri Lanka	(+)	2.2	0.5	...
Thailand	10–30	3–9	10–53	...

··· Data not available

(+) abnormal gene present, exact frequency not known

Source: Modified from Fucharoen S, Winichagoon P. *Asian Biomedicine*, 1 (1): 1-6, 2007.

Prevention, the key strategy for thalassaemia control, includes carrier screening, genetic counselling and prenatal diagnosis for at-risk couples. Introduction of prenatal diagnosis with selective abortion is considered an important factor in the success of thalassaemia prevention programmes. However, medical termination of pregnancy is an ethical and legal issue in many countries.

Thalassaemia carriers have no symptoms and thus require no treatment. Presently, many children born with major forms of thalassaemia are dying undiagnosed or untreated before age ten due to anemia and infection. Children with thalassaemia major require frequent blood transfusions to prevent complications and improve their quality of life. This carries the risk of acquiring hepatitis, HIV, malaria and syphilis. Moreover, frequent blood transfusions lead to an accumulation of iron in the body which can damage the heart, liver and other vital organs. For many years, desferrioxamine, administered daily by pump, was the only therapy for patients with iron overload. For a minority of patients who have a suitable donor and can afford the costly treatment, thalassaemia can also be treated by bone marrow or stem cell transplantation.

Thalassaemia poses a significant burden for the health services and economic resources of many countries. With advances in knowledge and technology, it is now possible to effectively prevent and control the disease. Highly successful programmes have been implemented in some countries such as Cyprus, Greece and Italy. Increasingly, prevention programmes are being introduced in the Region including India, Indonesia, Maldives and Thailand. The overall goal of a thalassaemia programme is to ensure the provision of basic facilities, skills and knowledge for prevention and management. Such programmes should be integrated into existing health-care systems and take into account the social and cultural needs of the community.

6. Preventing, controlling, eliminating and eradicating communicable diseases

Promoting health security in the Region

Strengthening of preparedness and response for public health emergencies

The fact that no major communicable disease epidemic occurred following the tsunami disaster that struck on 26 December 2004 is proof of the commendable work done by public health professionals in Member States, in close collaboration with WHO and other partners. The WHO Regional Office mobilized and coordinated organization-wide technical support to affected countries. This included the establishment of a tsunami technical group (TTG) strengthening emergency surveillance and early warning system, verification of and response to outbreaks, mobilization and rapid deployment of more than 200 experts and WHO staff from within and outside the Region, provision of nearly 90 technical guidelines and best practices, and ensuring stockpiling of life-saving drugs and vaccines and diagnostics.

At the Twenty-fourth Health Ministers' Meeting in Dhaka in August 2006, Member States recommended the creation of an emergency fund proposed to be called *The South-East Asia Regional Health Emergency Fund (SEARHEF).* To strengthen regional health security, WHO has established a *Strategic Health Operations Centre* at its Regional Office in New Delhi in 2005. A sub-regional unit of Communicable Diseases Surveillance and Response WHO/SEARO has been established in Bangkok for prompt support and response to Avian Influenza and other diseases of international concern; another unit is located in the National Institute of Communicable Diseases in New Delhi.

WHO/SEARO facilitated the revision process of the International Health Regulations (IHR) in the Region by mobilizing opinions and views in Member States, which ultimately led to the development of a consensus at the Intergovernmental Working Group on new regulations for managing public health emergencies of international concern, which was adopted by the World Health Assembly in May 2005. The revised IHR (2005) replace those adopted in 1969 and came into force globally from 15 June 2007. Their purpose is to ensure maximum protection of people against the international spread of diseases while causing minimum interference to world travel and trade. National capacities for implementing IHR (2005) have been strengthened, and table-top exercises were undertaken to test the effectiveness of strategies. The *Asia Pacific Strategy on Emerging Diseases* developed by the South-East Asia and Western Pacific regions of WHO is expected to support strengthening of health security in the Member States.

Communicable disease surveillance and response

Emerging and epidemic-prone diseases are remarkably resilient and pose serious public health threats in the South-East Asia Region and require constant vigilance. In recent years, the Region experienced significant outbreaks of deadly new diseases including Nipah virus, Severe Acute Respiratory Syndrome (SARS) and highly pathogenic human avian influenza A (H5N1). Meanwhile, outbreaks of known epidemic-prone diseases such as meningococcal disease, cholera and typhoid fever continue to occur. Some of these outbreaks caused public health emergencies of regional and international concern. The experiences of SARS and avian influenza have revealed the need for strengthening public health infrastructure and surveillance, early warning and response systems in the countries and for reinforcing national and regional capacities to detect emerging diseases and other public health emergencies as early as possible so as to respond rapidly and effectively. Strong routine surveillance systems for epidemic-prone diseases and new emerging diseases enhance the capacity to detect any unusual outbreaks. Developing and strengthening communicable disease surveillance and control at national levels requires a substantial and long-term commitment of human and financial resources. Many countries have now strengthened their national surveillance and response systems with high-level political commitment, increasing allocation of national resources and international support. WHO has been working collaboratively with Member States towards strengthening the health system, infrastructure and human capacity to better respond to face challenges. The Asia Pacific Strategy for Emerging Diseases has been developed and implemented to strengthen the national and regional capacities required for emerging disease surveillance, alert and response. A number of other initiatives have been put in place, not only to better prepare the Member States but also to strengthen regional collaboration.

Surveillance and early detection: All countries in the Region now have disease surveillance systems. India launched an Integrated Disease Surveillance Project in November 2004. However, in some countries, the surveillance systems are not fully established and do not function well as early warning systems. Delays in reporting and lack of capacity for rapid data analysis hamper timely generation of early warning signals of potential public health threats. Traditional disease-based surveillance systems generally do not detect and report public health events caused by unknown diseases, therefore reducing the capacity to detect emerging, outbreak-prone diseases in a timely manner. In most countries and areas of the South-East Asia Region, there are no formal established event-based surveillance systems in place to detect unusual or unexpected public health events. In line with the core capacity requirements under the International Health Regulations (2005), event-based surveillance systems need to be strengthened or developed in each country. An effective communicable disease surveillance programme requires adequate public health workforce with training, and availability of adequate laboratory capacity for timely and accurate diagnosis. Laboratory quality assurance programmes and standardized biosafety procedures and training are vital to ensure the accuracy of data obtained and the safety of workers.

Infection control: There is need for efficient infection control programmes in health-care settings and training for health workers in prevention of transmission of pathogens and for containment of antimicrobial resistance. The important components of the infection control programme are basic measures such as standard precautions, education and training of health-care workers; protection of health care workers; identification of hazards and minimizing of risks, effective work procedures; surveillance and monitoring and participation in outbreak investigation. Patterns of antimicrobial resistance have been monitored since 1991 through a regional surveillance programme. Focal laboratories in countries participate in the programme and maintain data on 22 common bacteria species that cause significant public health problems. The system should be expanded and revised to monitor existing levels and emerging antibiotic resistance in the Region more effectively, and to link this with evidence-based containment strategies. WHO is working to facilitate a common strategy for surveillance and containment.

Communication and information: Full and honest communication with the public, media and other stakeholders about disease threats and outbreaks is a key element of response and impact mitigation. Communication activities should be based on scientific principles with an emphasis on accuracy, transparency, timeliness, consistency and effectiveness. Effective communication builds trust and confidence, raises awareness and guides the public, healthcare workers and other groups in responding appropriately to outbreak situations and complying with public health measures requiring behaviour change. WHO Outbreak Communication guidelines (December 2005) highlighted the best practices for outbreak communications.

Lessons from SARS are being applied for risk communication in avian influenza and other potential public health threats. During the SARS outbreak, electronic media made it possible to rapidly disseminate news, scientific advances, information and safety messages. This was an important shift in the relationship between the electronic media and public health activities. Comprehensive information tailored to need can now be shared easily with a wide range of audiences. It is estimated that about 65% of the world's first news about infectious disease events comes from informal sources, including press reports and the Internet.

Regional and international collaboration: The SARS outbreak was a reminder that communicable diseases can spread rapidly across borders, making international collaboration and prompt, transparent information-sharing critical to control disease spread. Transparency is not only required in reporting of public health events of possible international or national concern, but also when evaluating current resources and future needs. The International Health Regulations (2005) represent a major step forward in regional and international collaboration and collective actions to prevent the spread of diseases.

WHO has now established its global disease surveillance, alert and response systems to detect, verify, assess and respond to outbreaks and public health events of international concern. Since 2003, the WHO Regional Office has been strengthening regional response capacity through closer collaboration with the Global Outbreak Alert and Response Network (GOARN) and increasing regional participation in the network. WHO also works with regional partners in the animal health sector to respond to the threat of emerging zoonotic diseases. Regional and international collaboration and coordination to support national and regional disease surveillance, alert and response systems need to be further strengthened.

Asia Pacific Strategy for Emerging Diseases: In responding to the issues and addressing the need for long-term capacity building, two regions of WHO–the South-East Asia Region and the Western Pacific Region–joined forces to develop a biregional strategy, the Asia Pacific Strategy for Emerging Diseases (APSED), to confront the challenges of emerging infectious diseases. The Strategy serves as a road map and provides a strategic guidance and direction for the countries and areas of the region to strengthen their readiness and capacity to effectively prevent, detect and respond to emerging diseases. It incorporates the core capacity requirements for surveillance and response under the IHR (2005).

APSED implementation mechanisms have been developed for sustainable technical collaboration within the Region including the establishment of the Asia Pacific Technical Advisory Group (TAG) on Emerging Infectious Diseases. TAG held its first meeting in July 2006 to review and endorse a five-year WHO workplan for implementing APSED with regional goals for minimum capacity building in the Region. It has identified five priority programme areas of work, including surveillance and response, laboratory capacity, zoonoses, infection control and risk communications. The Regional Committee Meeting in 2006 urged all countries to develop their national workplans to ensure the effective implementation of the strategy. Since September 2006, a number of countries have conducted capacity assessment and developed their national plans of action for strengthening long-term capacity required for emerging diseases.

Resource mobilization and coordination

WHO and other international technical agencies play key roles in mobilizing international cooperation and support in many areas of communicable disease control. These include enhanced capacity and technical cooperation in emerging zoonoses, risk analysis and management, laboratory biosafety, infection control, logistics, risk communication and other specialty areas. With the recent outpouring of funding and technical assistance from donor organizations in response to avian influenza and the threat of potential pandemic influenza, WHO and the other UN agencies are actively involved in coordination to avoid duplication and to ensure absorption capacity.

Integrating prevention and control of acute diarrhoea and respiratory infections

Disease burden

In developing countries, acute diarrhoea and pneumonia are the leading causes of death among children and account for more than 2 million deaths each year. In spite of the availability of simple and highly cost-effective interventions, the disease burden is not declining as fast as expected. Apart from causing considerable morbidity across all ages, in the 0-5 years-old age group, acute respiratory infections (ARI) and diarrhoeal diseases are responsible for almost 50% of the estimated 3.1 million deaths annually in the South-East Asia Region (Figure 17).

In India alone, more than 400 000 deaths occur every year from pneumonia in children under five. In five countries of the Region (Bangladesh, India, Indonesia, Myanmar and Nepal) these diseases cause about 600 000 deaths annually.

Diarrhoeal diseases cause considerable morbidity all over the world. Current estimates in under-five children suggest there are 1.4 billion episodes of diarrhoea per year, three episodes per child per year, and annually 123 million clinic visits and 9 million hospitalizations worldwide, with a loss of 62 million disability-adjusted life years (DALYs).[9] Moreover, diarrhoea and respiratory infections occur in outbreaks affecting all age groups and causing considerable suffering.

Responses

During the mid-1990s, there was a shift in policy and the case management component of Integrated Management of Childhood Illnesses (IMCI) programme was conceived also to tackle malaria, measles and malnutrition in children. This has been a comprehensive strategy; however, an increase in the IMCI coverage may still not be satisfactory.

In recent years, there have been new developments in case management and preventive strategies. Home management with high-dose oral amoxicillin has been found to be just as effective as hospitalization for severe uncomplicated pneumonia. Using low-osmolarity solutions of oral rehydration salts and zinc in the case management of acute diarrhoea improves the outcome. Hand-washing alone can reduce the incidence of ARIs and diarrhoeal diseases by 30-50%. Improving the quality of water, especially at the point of use, is effective in preventing diarrhoea.

Way forward

The way forward comprises development and implementation of an effective control programme by taking into account lessons learnt from the past and the newly identified opportunities. The WHO Regional Office has recently taken steps to declare these problems a public health priority. An initiative has been taken to establish a programme on integrated control of acute diarrhoeal and respiratory infections; to develop consensus on effective intervention strategies; and create a suitable package of interventions from case management to health promotion, sanitation, breastfeeding, nutrition, vaccination and epidemiology. The programme advocates for an integrated approach to surveillance, prevention and control of diarrhoeal diseases and ARI, implemented by a broad variety of disciplines including institutions, community and home levels. The response would be mounted by all relevant stakeholders. There is an opportunity to mobilize a higher level of political commitment, advocate for more effective interventions, carry out

monitoring and evaluation, and share and learn from each other. Simple interventions and strategies that are available should be scaled up and access to needy and vulnerable populations ensured. A regional approach is needed to mitigate mortality and morbidity due to these forgotten and neglected diseases in the Member countries of the South-East Asia Region.

Implementing the new Stop TB Strategy

The WHO South-East Asia Region carries over a third of the global burden of tuberculosis, representing a case burden of nearly 5 million TB cases. In addition, it is estimated that over half a million people continue to die of tuberculosis each year in the Region. The global HIV epidemic has resulted in Myanmar, Thailand, and six states in India reporting a high HIV prevalence, with Bangladesh, Indonesia and Nepal reporting concentrated epidemics. The prevalence of HIV/AIDS among tuberculosis cases was largely unknown in many countries in the Region in 2001. The prevalence of HIV/AIDS among TB patients is presently estimated to be 1.3% in 2006, and between 50-80% of AIDS cases in the Region are reported to have active TB. Mortality rates between 30% and 79% are being reported among TB/HIV co-affected people while on treatment for TB.

Varying levels of resistance to the most commonly used TB drugs were found in almost all settings surveyed in the region between 1999 and 2006. During the fourth global drug resistance survey, multidrug resistant TB in the Region was found to be still low at an overall 2.8% among new cases, and 18.8% among previously treated cases. While this reflects a very small increase in the drug resistance from 2.2% in 2000, the number of incident MDR-TB cases was estimated at nearly 149 698 in 2006, with 74% of these cases in India. Cases of extremely drug resistant tuberculosis (XDR-TB) have also been isolated in samples from Bangladesh, India and Thailand.

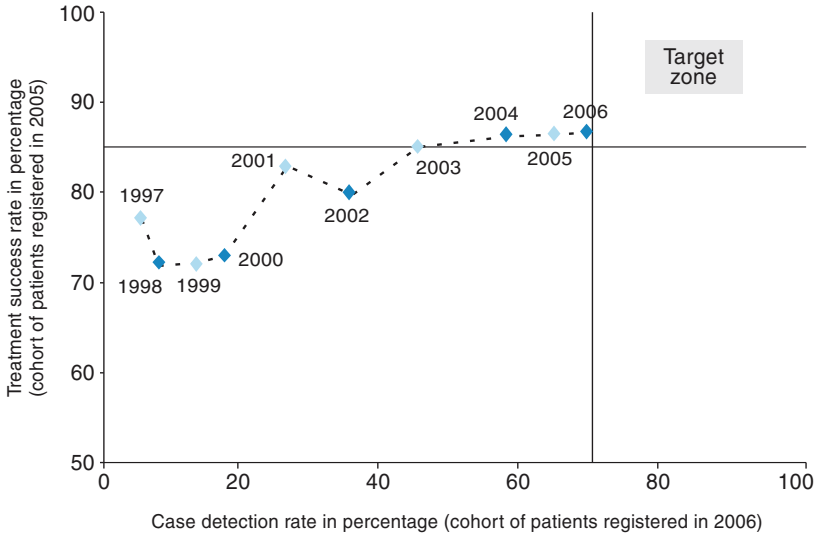
Progress in TB Control

All Member countries of the South-East Asia Region adopted the DOTS strategy in the early 1990s. With the launch of the new Stop TB strategy in 2006, countries have adapted their multi-year plans to include additional interventions in line with this strategy.

In recent years, remarkable progress has been made towards achieving the three targets established by the World Health Assembly in 2000. By the end of 2006, close to 99% of the Region's population was living in areas where DOTS services were available. Over 86% of TB patients were reported as having been successfully treated in 2006, while the case-detection rate increased from 37% in 2001 to more than 67.5% in 2006, closing in on the target of 70%

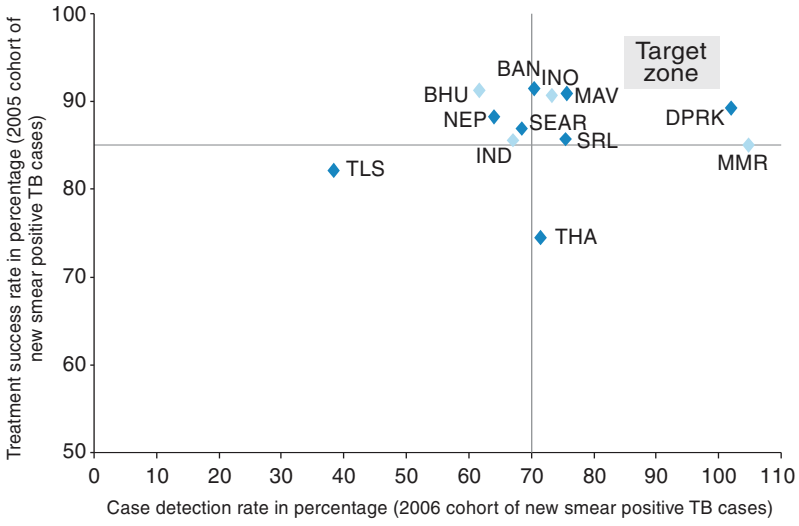
(Figure 33). Six of the Member States in the South-East Asia Region had achieved both global targets for case detection and treatment success in 2006 (Figure 34). Over two million patients are presently registered for treatment every year.

Figure 33: ***Tuberculosis: case detection and treatment success rates in the SEA Region, 1997-2006***



Source: Annual reports on TB in the SEA Region, WHO/SEARO, 2007.
Based on the total number of TB cases notified by Member countries by year (increasing gradually from 1997 (1 308 981) to 2006 (1 920 644).

Figure 34: ***Tuberculosis: case detection and treatment success rates in the SEA Region Member States***



Source: Annual reports on TB control, national TB programmes, SEAR Member countries, December 2007.

BHU: Bhutan; BAN: Bangladesh; DPRK: Dem. People's Rep. of Korea; IND: India; INO: Indonesia; MAV: Maldives; MMR: Myanmar; NEP: Nepal; SRL: Sri Lanka; THA: Thailand; TLS: Timor-Leste; SEAR: South-East Asia Region

A major strategy towards improving case detection has been the inclusion of public health-care providers operating outside the Ministry of Health, such as the railways, military and prison health services, as well as private providers, through an approach called Public-Private Mix DOTS. Public-Private Mix DOTS activities are rapidly expanding throughout the Region, particularly in Bangladesh, India, Indonesia, Myanmar and Nepal. Over 260 medical colleges, thousands of private practitioners and nongovernmental organizations are now working with national TB control programmes. In areas where Public-Private Mix DOTS initiatives are under way, improvements reported. Employees in public and private sectors are beginning to benefit from DOTS at their workplaces. In India, a business alliance against TB was launched in March 2004, in collaboration with WHO and the World Economic Forum (WEF). DOTS has also been included in teaching, practice and research agendas of medical schools in Bangladesh, India, Indonesia, Myanmar, Nepal, Thailand and Sri Lanka. There are also several very encouraging examples of community-based approaches in SEA countries, which need to be better documented for replication of the most successful approaches.

The implementation of external quality assessments, and focus on quality control has led to improvements in the quality of TB laboratory services across the Region. Seven countries have at least one national level laboratory with facilities for mycobacterial culture and drug susceptibility testing. Bangladesh and Nepal are now in the process of having their national reference laboratories accredited. There is now a need to establish strong links between national reference laboratories and supra-national reference laboratories to further support the strengthening of TB laboratory services in countries of the Region.

Recognizing the threat of TB-HIV coinfection, national HIV/AIDS and TB programmes in some of the most affected countries in the Region have developed national frameworks for TB-HIV. TB/HIV activities are widespread in Thailand and are being expanded in India and Myanmar. Indonesia, with a concentrated HIV epidemic, has established interventions in Papua and Java Bali, the HIV high-prevalence areas in the country. Other countries in the Region, including Bangladesh, Bhutan, Nepal and Timor-Leste, are developing national strategies to address TB-HIV.

In several countries in the Region, surveys were conducted to assess the extent of anti-TB drug resistance among TB patients. Bangladesh, India, Myanmar and Nepal have established MDR-TB treatment sites. Nepal has expanded to all five regions in the country. Indonesia and Timor-Leste have completed all preparations and will begin enrolling patients in 2008. Bhutan and Sri Lanka also plan to commence MDR-TB treatment in 2008.

Funding for tuberculosis control greatly improved between 2001 and 2006 when many of the countries most affected by tuberculosis increased their TB budgets substantially. In addition, bilateral and multilateral agreements with donor countries and various partners helped to increase spending on TB control in the Region. A further boost of funding for TB control in countries and areas with a high burden of TB was provided by the Global Fund to fight AIDS, Tuberculosis and Malaria (GFATM). By the end of 2006, a total of 11 proposals with a value of US$ 218 million were approved by the Global Fund in support of TB control programmes in the Region.

Resource mobilization and partnerships

Support provided during the Global Fund and the 3-Diseases Fund in Myanmar have brought in essential additional resources for TB control over the past five years. Bangladesh, DPR Korea, India, Indonesia and Nepal also received funding through bilateral agreements with the Canadian Development International Agency (CIDA), United States Agency for International Development (USAID), Department for International Development (DFID), The World Bank, and Gorgas. Additional funding was also received from USAID for technical assistance to countries at the regional level. All 11 countries in the Region continue to receive technical assistance through WHO regional and country offices, and international technical partners, namely, CDC, the International Centre for Veterinary and Medical Sciences (IVMS), the Royal Foundation for Tuberculosis in the Netherlands (KNCV), Institute of Tropical Medicine (ITM, Belgium), the Union and a few independent consultants recruited through WHO. In-country partners such as BRAC, Damien Foundation and The International Centre for Diarrhoeal Disease Research, Bangladesh (ICDDR,B) in Bangladesh, and the three WHO Collaborating Centres in the region also provided assistance to enhance national TB control efforts.

WHO Regional and country offices help coordinate the efforts of governments and their national and international partners. These efforts helped to respond to the regional challenges, mobilize financial resources and keep TB control high on the agenda of countries in the Region. Ten out of eleven countries in the Region have grant or direct procurement agreements with global drug facility (GDF) and have access to quality assured affordable anti-TB drugs on a regular basis.

At the Sixtieth Session of the Regional Committee of the WHO South-East Asia Region in Bhutan in 2007, a resolution was adopted urging Member States to ensure that necessary steps are taken to fully implement national plans for TB control incorporating all elements of the new Stop TB Strategy in order to achieve the Millennium Development Goals.

Challenges to TB control

While TB control programmes are steadily moving forward in all these areas, a number of issues remain to be addressed. The increasing prevalence of HIV-TB coinfection in some countries and areas in the Region requires urgent and decisive action. National AIDS and TB programmes need to initiate and scaleup TB-HIV collaborative activities, including surveillance of HIV among TB patients, intensified case detection and prevention, treatment and care. In order to ensure that HIV-positive TB patients who require antiretroviral therapy have full access to it, and that all PLWHA are screened and those with active TB treated effectively, national HIV/AIDS and TB programmes will need to collaborate effectively. Almost all national TB control programmes have identified laboratory capacity as a major constraint to scaling up diagnosis and treatment of MDR-TB cases. Improving the quality of national laboratory networks to diagnose all forms of TB, including among those affected by HIV, is therefore a priority. There is also a need for increased technical assistance to establish and scale up projects to treat TB patients with multidrug-resistance and strengthen drug resistance surveillance in the Region.

Efforts to control TB should go hand-in-hand with efforts to strengthen health systems as a whole. Primary healthcare systems in many countries and areas are overstretched and suffer from inadequate infrastructure and a shortage of adequately skilled staff. The transition from centralized to decentralized health-care systems in many areas poses a challenge to maintaining successful TB programmes because of the limited management capacity and insufficient human resources at provincial, district and peripheral levels. Ensuring sufficient human resources in health care has been one of the persistent challenges of the Region. India and Indonesia have given priority to human resource development, making a significant contribution to overcoming the difficulties arising from decentralization of the health-care system. Opportunities have been created by WHO and partners to increase the human resource capacity for TB control by establishing training courses and workshops on TB control.

Ensuring sustainability will also need well-functioning, wider and more inclusive partnerships with other related programmes and government departments, civil society, and with the strong and vibrant private health sector, working towards a comprehensive health service delivery with these sectors.

TB control programmes also need to address the needs of population groups at higher risk of contracting active TB. These risk groups include prison populations, refugees and other displaced people, migratory workers, illegal immigrants, persons living with HIV/AIDS and other marginalized groups. Special situations requiring extra attention include unexpected population movements occurring at times of political unrest, war or natural disaster.

In-country research capacity to develop innovative approaches for specific interventions tailored to the operational level of service delivery needs to be developed.

TB control needs long-term commitment. While funding for TB control programmes is fairly secure, with most short-term resource gaps filled, excepting in Myanmar and DPR Korea, concerns remain regarding funding over the long term.

Future plans

The substantial progress in TB control achieved thus far needs to be sustained and further developed to enable individual countries in the Region to achieve the targets set for TB control in the Millennium Development Goals. Following the achievement of the TB control targets set by WHO for 2005, countries in the Region will need to address the remaining challenges to make further progress towards the global target of reducing the prevalence of and mortality due to TB. The rapid progress in TB control in the Region has led WHO and its partners to advance the target to reduce the burden and mortality due to TB by half from 2015 to 2010. Given the data from the Region which show a decline both in TB prevalence and mortality, there are indications that the regional targets could be achieved.

Conclusions

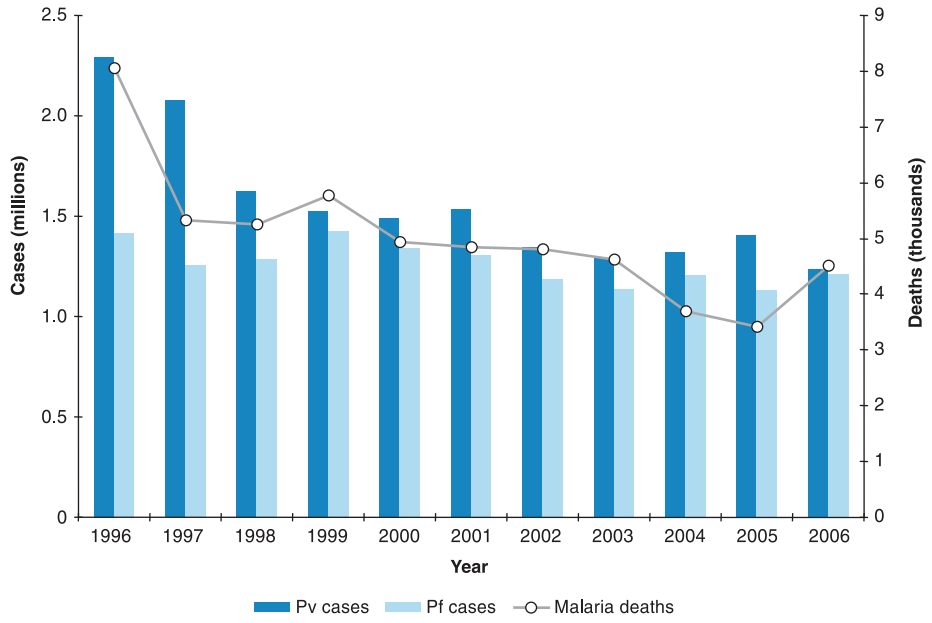
Good progress in case detection and cure rates, as well as innovative strategies to address challenges in TB control have paved the way for a reversal in the epidemic. Strong partnerships have developed involving a wide range of stakeholders in TB control. Stronger political commitment and improved financing have contributed to more effective and efficient TB control services. Yet, every year approximately 3 million new TB cases are detected in the Region, and an estimated 500 000 people die of TB each year.

New challenges such as the increase in the prevalence of the TB-HIV co-infection and multidrug-resistant TB must be effectively addressed. Moreover, health systems issues, such as human resource development and health financing, increasingly affect TB control and will need to be considered in planning and implementing TB control activities. With sustained efforts of all stakeholders, it will be possible to reduce the prevalence and mortality due to TB by one half by 2015 and so take another step towards a future without TB.

Strengthening intersectoral activities and promoting community participation in malaria control

Malaria is endemic in virtually all countries of the Region except Maldives. Though an estimated 30.99 million cases occurred in 2006, only about 2.45 million laboratory confirmed cases were reported. However, reported deaths due to malaria dropped significantly (approximately 37% reduction in 2006 as compared to 1995). Further, there was a slow decline in reported cases (3.6 million in 1995 to 2.45 million in 2006) (Figure 35). The proportion of *Plasmodium falciparum* cases, however, increased steadily (from 19.6% in 1970 to 49% in 2006).

Figure 35: ***Trends in reported malaria cases and deaths in the South-East Asia Region, 1996-2006***



Source: WHO/SEARO, Malaria unit (based on country report)

While *P. vivax* is more predominant in the Indian subcontinent, in almost all other cases, *P. falciparum* is the major cause of malaria with a very small number of cases due to *P. malariae*. Even though Bangladesh and India have seen a decline in malaria in recent years, there has been a surge in the proportion of *P. falciparum* cases, possibly due to the westward spread of drug-resistant *P. falciparum* malaria from the Mekong region. In countries where effective treatment and control measures for falciparum malaria were in place, the proportion of reported vivax cases was increasing. A re-emergence of *P. vivax* malaria in DPR Korea in the mid-1990s was effectively controlled.

Malaria affects mainly poor, underserved and marginalized populations in remote rural areas which are characterized by inadequate control measures and limited access to health care. Higher malaria prevalence has been reported among ethnic minorities and tribal groups living in remote forested and border areas, as well as among mobile and migrant populations. Underreporting of malaria cases and deaths remains a major challenge. Drug-resistant parasites, poor treatment-seeking behaviour and the presence of counterfeit antimalarial drugs further hinder control efforts.

Drug resistance and national treatment policies. Resistance of *P. falciparum* to the 4-aminoquinolines and sulfadoxine-pyrimethamine is widespread in almost all countries of the Region, with varying levels of severity. Resistance to mefloquine was reported in Myanmar and Thailand. Quinine has reduced susceptibility in Thailand. With progression from mono- to multidrug resistance, all malaria-endemic countries that have *falciparum* malaria adopted the highly effective artemisinin-based combination therapy (ACT). India in 2007 revised the national treatment guidelines and switched to ACT and Sri Lanka is planning to do same. The remaining countries are now up-scaling the ACT.

Thailand, which has been using artemisinin-derivatives as combination therapy since 1995, reported a significant reduction in *falciparum* cases. However, increasing treatment failures with the mefloquine and artesunate combination were reported over the last three years along the Thai-Cambodian border.

The problem of multidrug-resistant *P. falciparum* is expanding geographically. Focal outbreaks of malaria were reported in almost all countries. Chloroquine-resistant *P. vivax* was reported in India, Indonesia, and Myanmar. The current treatment recommendations of three-day chloroquine and 14-day primaquine against *vivax* malaria are inadequate in these areas. Also a higher dose of primaquine is required.

WHO established a systematic inventory of *in vivo* and *in vitro* drug efficacy studies, gathering data from malaria endemic countries for a continuous evaluation of the efficacy of antimalarial drugs. A database was created to facilitate the analysis and tracking of drug efficacy studies. The inventory and database helped identify trends of *P. falciparum* and *P. vivax* drug resistance in countries of the Region, including a review of how national treatment policy changes evolved and recommendations for future action.

Malaria vectors

Malaria flourishes in several ecological zones: forests and forest fringes namely; irrigated agricultural areas and coastal areas. The environment plays a substantial

role in vector species prevalence. On the Indian subcontinent, there are about 40 identified malaria vectors, but *An. stephensi* (urban vector) and *An. culicifacies* complex (rural vector) are the predominant species. *An. minimus* and *An. dirus* complex are effective vectors in the forest and forest fringes of the Greater Mekong Subregion. *An. sundaicus* is prevalent in the estuaries and brackish water of the Mekong delta and Indonesia. *An. sinensis* is common on the Korean peninsula. The *An. sundaicus* complex, *An. flavirostris,* and *An. balabacensis* are effective vectors in the Malay-Indonesian Subregion, breeding mainly in forested mountainous areas, but also found in lowland rice paddies, irrigation canals and streams.

Ecological changes brought about by the agro-industrial exploitation of forest resources and forested lands such as mining, large-scale farming, development projects with the construction of hydroelectric dams, roads and bridges, housing, and urbanization, along with the appearance of insecticide-resistant mosquitoes, have all contributed to the increasing complexity of vector control. The effects of global warming and the attendant change in vector distribution is an emerging matter for concern.

Malaria control programmes

Malaria is a focal disease with wide variations requiring stratified, area-specific strategies for effective, sustainable control. Commitment and leadership at all levels of the government combined with significant investments made in strengthening diagnosis and treatment, vector control and health systems have contributed to this success.

Early case detection and prompt treatment: While a few countries have diagnostic services at hospitals and community clinics, diagnostic networks at the periphery are frequently inadequate and need strengthening in most countries. Most countries now use malaria rapid diagnostic tests (RDT), deploying RDT for field use in very remote areas. This facilitates confirmed diagnosis prior to treatment in areas difficult to access. All countries in the Region have changed their treatment guidelines and are using highly efficacious ACT medicines, but the availability of these supplies for health workers and dispensing facilities in remote areas has to be assured to promote prompt access to effective treatment.

Vector control: An effective, integrated vector management strategy is based on the selective application of various control measures determined by the ecology of the area and epidemiological distribution of the disease. While insecticide-treated mosquito nets or long-lasting insecticidal nets are distributed to households in non-mobile communities of endemic areas, insecticide-treated nets and hammocks have also been recommended for mobile groups in the

Mekong Region, i.e., forest workers, soldiers and miners. Indoor residual spraying complements insecticide-treated nets in some areas where vectors usually feed indoors and is also used to control focal epidemics.

The reported coverage of insecticide-treated nets and indoor residual spraying was approximately 10%-20% of the population at risk of malaria. Although over the past two-three years countries have made remarkable progress in scaling up the net coverage with the help of Global Fund contributions, the overall coverage is still too low to have a significant impact on disease transmission.

Regional, country and community level partnerships: Recognizing the need for national control programmes to foster partnerships with all stakeholders at the regional, country and community level, most countries have made efforts to increase intersectoral activity and promote community participation in malaria control. Promotion of community-based care and the creation of links between communities and health systems, crucial for effective control strategies, are being achieved through community mobilization and communication for behavioural change. The entry of the Global Fund accelerated the active involvement of the private sector, especially villagers, private physicians and pharmacies, nongovernmental organizations, the business and corporate sector, faith-based groups and multilateral and bilateral agencies in malaria control.

Challenges to malaria control: Malaria is a disease of poverty. Indigenous or tribal minorities and mobile populations and migrants are most vulnerable. Health system-related challenges include limited management capacity, inadequate infrastructure and logistic support, shortage of skilled human resources, weak surveillance, monitoring and reporting systems, and insufficient financial resources. All malaria-endemic countries face the continuing threat of multidrug resistant *falciparum* malaria and the emerging resistance of *vivax* malaria. There is an increasing and urgent need for the availability of affordable GMP (good manufacturing practice)-certified antimalarial drugs, as well as alternative drugs.

Successful malaria control requires long-term commitment and sustainability by national governments, communities and partners.

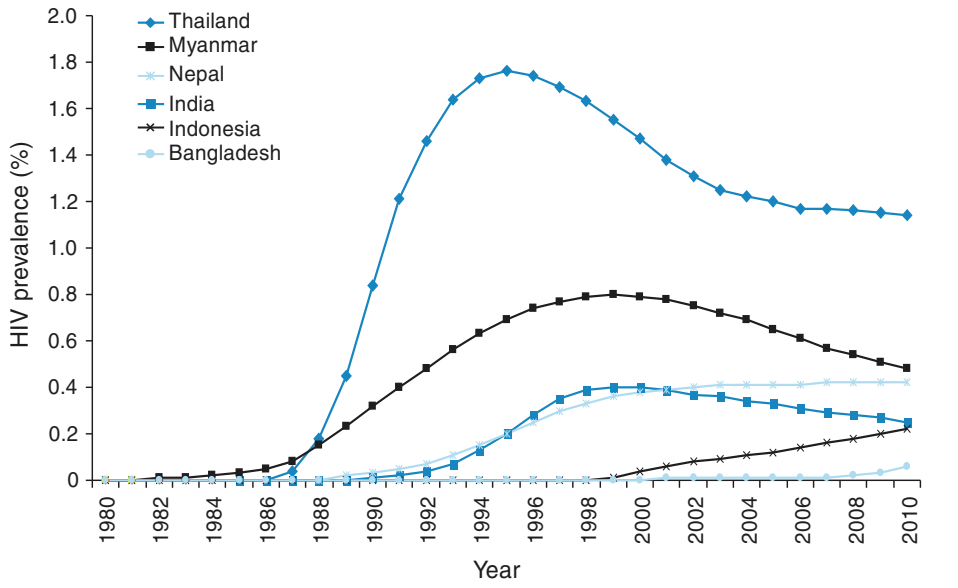
Controlling epidemics and scaling up services for HIV/AIDS

In South-East Asia, the HIV epidemic has continued to grow since 1984 when the first case was diagnosed in Thailand. Today, with an estimated 3.6 million people living with HIV, South-East Asia is the second most affected Region in

the world. Five countries—India, Thailand, Myanmar, Indonesia and Nepal—account for over 99% of the regional burden. HIV incidence is highest among sex workers and their clients, men who have sex with men, and injecting drug users.

While overall adult HIV prevalence in the Region (0.35% in 2007) has changed little in the last five years, there are important country-wise variations. In Indonesia and Bangladesh, for example, the epidemic is rapidly increasing, whereas in India, Myanmar, Nepal and Thailand, HIV epidemics have declined or stabilized (Figure 36)—in interpreting this figure, care should be exercised because of the difference in the denominator. The remaining countries have low-level epidemics. Even in these countries, however, vulnerability and risk, together with high rates of other sexually transmitted infections (STIs), create favourable conditions for spread of the virus.

Figure 36: ***HIV: projected trends in adult prevalence in six countries of the South-East Asia Region with highest burden***



Source: The above adult HIV prevalence curves generated by SPECTRUM, Asia Epidemic Model, are based on national surveillance data reported by ministries of health in Member countries *(http://sti.bmj.com/cgi/content/full/80/supp_1/i14)*

With an estimated 260 000 new HIV infections and 300 000 HIV-associated deaths in 2007, HIV continues to be a major public health problem in the Region.

The regional response to HIV and STIs

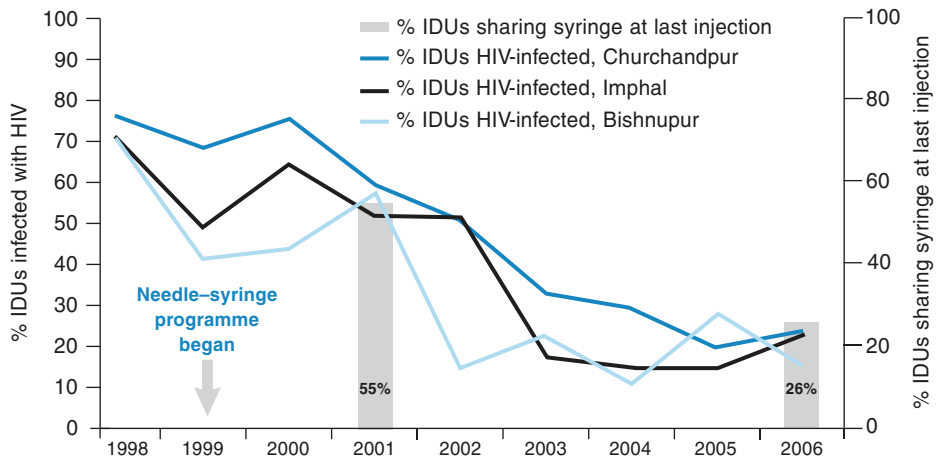
Despite these challenges, a number of countries have achieved notable successes both in controlling epidemics and in scaling up services for those in need.

Targeted interventions guided by reliable surveillance can reverse epidemics: HIV and other STIs can be controlled by scaling up STI services, promoting 100% condom use in sex work and involving target populations in programme implementation. The successful 100% condom programme in Thailand led to sharp HIV declines as a result of increased condom use in sex work settings, implemented through a nationwide network of STI clinics. As of 2004, an estimated 5.7 million HIV infections had been averted. In West Bengal, India, peer involvement decreased HIV vulnerability, increased sex worker empowerment, and stalled HIV take-off; condom use in Sonagachi (Kolkota, India) increased from 3% in 1992 to 87% in 2007 while syphilis among sex workers declined from 25% to 4%. India and Myanmar, like Thailand, have begun to report a decrease in STIs and HIV since beginning to scale up targeted interventions reaching populations at greatest risk.

There are many other local successes. In Bangladesh, NGOs with political support from the government spearheaded interventions with sex workers, injecting drug users (IDU) and men who have sex with men (MSM). Social marketing programmes in Myanmar and Nepal have helped make condoms more accessible and affordable to low-income and high-risk groups in many countries. The Avahan India AIDS Initiative has targeted both sex workers and their high risk clients in India's six high-prevalence states. Avahan works in highly-affected districts and along national highways supporting community mobilization and STI clinics for sex workers and their clients, MSM and injecting drug users reaching over 200 000 at-risk persons.

IDUs can benefit from harm reduction if applied effectively at sufficient scale: Among injecting drug users (IDUs), harm reduction efforts aim to reduce exposure to contaminated injecting equipment, the major factor in HIV transmission in this group. Harm reduction interventions for injecting drug users are gaining momentum in the Region. In Bangladesh, NGOs began harm reduction programmes including needle/syringe exchange, condom distribution, abscess management and advocacy. By the end of 2004, the needle/syringe exchange programme covered 3900 IDUs in 19 districts of Bangladesh. Myanmar is conducting successful substitution maintenance treatment with methadone in 20 of the 325 townships. In Indonesia, drug substitution clinics have been established in Jakarta and Bali. Some education and HIV prevention programmes targeting IDUs have been initiated in selected prisons in Indonesia and Thailand. Scale-up of harm reduction interventions in Manipur, India led to reduction in syringe sharing among IDUs and a decrease in HIV prevalence (Figure 37).

Figure 37: ***Scale-up of harm reduction interventions in Manipur, India and its impact on syringe sharing among injecting drug users (IDUs) and on HIV prevalence, 1998-2006***



Source: WHO/SEARO *(http://www.searo.who.int/linkfiles/hiv-aids_wad_poster_2007.pdf).*

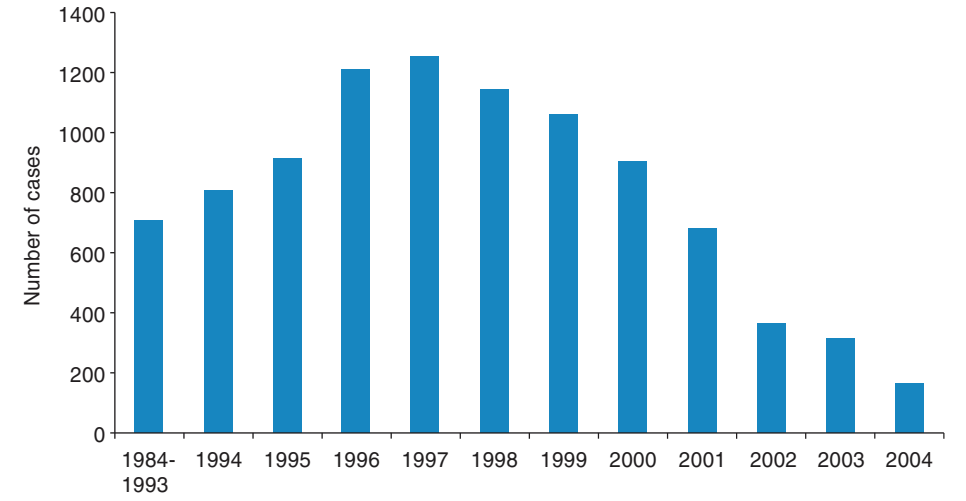
Despite the significant progress achieved in scaling up targeted interventions, there is need for more efforts to keep pace with the expanding epidemic. Access to prevention programmes has been limited to only 20% of sex workers and 3% of IDU in the South-East Asian countries in 2005.[69] Modelling analysis has indicated that to reverse epidemic trends in these most vulnerable populations, 60% of them will need to incorporate prevention strategies and adopt safer behaviours.

Prevention of mother-to-child-transmission (PMTCT) is a crucial area

By the end of 2006, PMTCT services were being offered at 2433 health facilities in India. Every district in the six high-HIV burden states and >90% districts in the low-HIV burden states have at least one PMTCT centre. In Myanmar, the PMTCT programme began in 2000 and currently covers 89 of 325 townships. Thailand has achieved a high coverage of PMTCT services accompanied by a decrease in the number of paediatric AIDS cases (Figure 38). For example in 2005, of the 639 363 women who delivered in the public sector, 98% received HIV counselling and testing; of 5143 women found positive, 94% received antiretroviral preventive therapy.

While PMTCT programmes are being operated in some countries in the Region, low uptake of HIV testing and counselling in pregnant women was found to be a barrier in India and Myanmar.

Figure 38: ***Trend of AIDS cases among children (aged 0-4 years), Thailand, 1984-2004***



Source: Ministry of Health, Thailand, 2005.

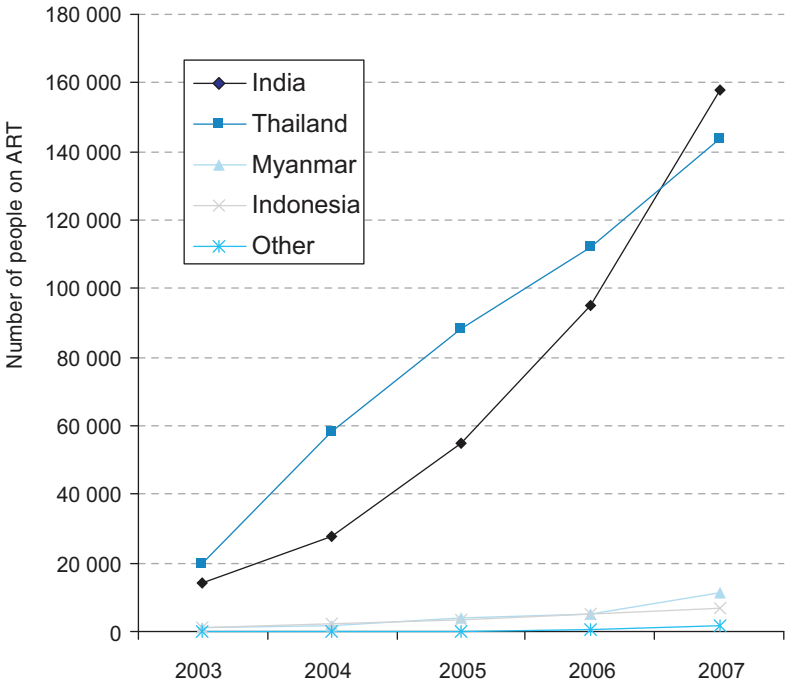
Scaling up ART and improving survival is possible

Remarkable progress has been made in the Region on scaling up HIV antiretroviral treatment since November 2003 when the WHO "3 by 5" initiative was launched (Figure 39). Over three years, the number of people started on treatment increased from 18 000 to 178 000. However, there are wide variations in coverage rates among countries and overall, less than 20% of those who need treatment have access to it. ART has been successfully scaled up in Thailand. In India, scale-up of the ART programme has been exemplary. Survival on first-line drugs was high and comparable to other countries and opportunistic infections reduced over time.

Prevention and control of Sexually Transmitted Infections (STI)

STI patterns vary greatly in countries of the Region. Some countries have high rates of curable STIs while others have controlled these infections and see more incurable STIs such as HSV-2. Surveys across a selection of sites in Indonesia in 2005 revealed uniformly high prevalence of STIs among direct and indirect sex workers even approaching or exceeding 50% in some localities. As STIs are known to facilitate both the acquisition and spread of HIV, there is added urgency to strengthen STI control.

Figure 39: ***ART scale-up in South-East Asia Region, 2003–2007***



Sources: 1. Toward Universal Access Progress Report, 2007.
2. UNGASS Country Progress Reports, 2008.

Good STI control can help countries totally prevent emergence of HIV epidemics. Sri Lanka has been successful in averting an HIV epidemic to date despite a longstanding civil war and absence of male circumcision; data from sentinel STI clinics document sustained reductions in curable STIs with rare detection of HIV even among high-risk populations. Syphilis prevalence among pregnant women is very low in Sri Lanka and Thailand, and is declining in Myanmar following targeted control efforts.

HIV counselling and testing improves access to needed HIV services

Both voluntary counselling and testing (VCT) and provider-initiated testing and counselling (PICT) especially for pregnant women, STI clients and TB patients, have been increasing across the Region. In Thailand, with the development of VCT clinics in public hospitals, services are now available in nearly 1000 hospitals and clinics.[70] In India, availability of counselling and testing services in 935 centres by March 2006,[71] led to increased access to care and better linkages to treatment.

Blood safety is improving: Around 60% of total blood collected in the Region is from voluntary, non-remunerated blood donors. Further strengthening of national blood services in pursuance of the WHO Global Strategy for Safe Blood is needed.

Current challenges

While access to services has increased since 2001, it is still low for IDUs, MSM, sex workers, and prisoners. Coverage also remains low for VCT, PMTCT and care and treatment services. The Region has the highest number of IDUs (5.9 million) and MSM (6.3 million) but prevention programme coverage is only 3% and 2%, respectively. Prevention programmes reach only 20% of the estimated 1.6 million sex workers and 31% of the 1.4 million male prisoners in the Region. The annual number of risky sex acts are highest in the Region but condom coverage extends to only 10%. This Region has the maximum annual births (46.9 million), but PMTCT is offered only to 5%. Moreover, despite the rapid scale-up of ART in the past few years, it is available to only 10% of the 1.4 million who need it. Less than half (47%) of the population in the Region receives the "essential package" of care and treatment described by WHO and UNAIDS.

Improving coverage presents a number of challenges. Systems need to be built to support scale-up from a limited number of sites towards coverage targets. The contributions of a range of donors and implementing partners require direction and coordination. An important element of success is effective programme management.

The National AIDS Programme (NAP) should be in the driver's seat. The NAP should set standards for interventions and services, coordinate activities among implementing partners and monitor key outcomes. In addition, functional capacity building mechanisms are required to support scale-up of both targeted interventions and clinic-based services. This may take the form of a technical support unit in or allied to the NAP with sufficient technical expertise to standardize approaches (guidelines, tools, etc), organize training and conduct regular monitoring and supervision.

Coordination is also needed at district level to map epidemic "hotspots", targeted interventions and clinical services. Such information should guide district-level planning and coordination involving local health care facilities and other implementing partners.

At local level, support is needed for decentralization of HIV-related services to the health facility and community level, and their integration with other priority

health interventions. Implementation support should include plans to relieve human resource constraints–including task sharing, co-management and integration of services at different levels of health facilities.

The way forward – regional priorities

Significant progress has been made in recent years in treating AIDS and opportunistic infections. As a result, HIV is increasingly seen as a manageable chronic disease where morbidity and mortality can be reduced and life expectancy and quality of life improved. The challenge is to widely extend HIV-related services – from HIV counselling and testing to PMTCT and ART – to those in need, working through health services and strengthening them in the process.

Yet, such efforts alone would do little to control or reverse epidemics. And without controlling epidemics, treatment efforts will never keep pace with new infections. In some countries, up to eight new HIV infections occurred in 2007 for every one person started on life-saving ART; despite progress in scaling up treatment services.

HIV epidemiology shows clearly that transmission does not occur uniformly across populations. Rather, epidemics are driven by high incidence and rapid spread in networks of injecting drug users, sex workers and men who have sex with men, while incidence is much lower in the general population. It is by secondary transmission – from clients of sex workers to their regular partners, for example – that epidemics extend into the general population. The challenge here is to effectively target disease control efforts “upstream” to prevent infection and interrupt the chain of transmission.

National AIDS Programme Managers set priorities for 2008 at their annual meeting in November 2007 in Bali. Commitments were made to achieve progress in the following areas.

(1) Unblock critical prevention. Interrupting transmission is the first priority particularly in countries with poor control of HIV and STI epidemics. Initial focus is on addressing barriers to scaling up i) targeted condom and STI interventions to slow sexual transmission, and ii) proven harm reduction interventions to prevent injection-related transmission.

(2) Rational ART provision reduces morbidity and mortality, slows development of HIV drug resistance and reduces cost. It involves effective first-line treatment, adherence support, and close monitoring with early warning indicators.

(3) Increase implementation capacity, with focus on human resources. Scaling up interventions and services requires investment in primary health care and human resources for health. Improved health systems, sustained finances and increased capacities of human resources are critical for a successful response.

(4) Strengthen strategic information [surveillance and monitoring & evaluation (M&E)] as crucial components of the national response. All countries agreed to implement working group recommendations with technical assistance for WHO, UNAIDS and other partners.

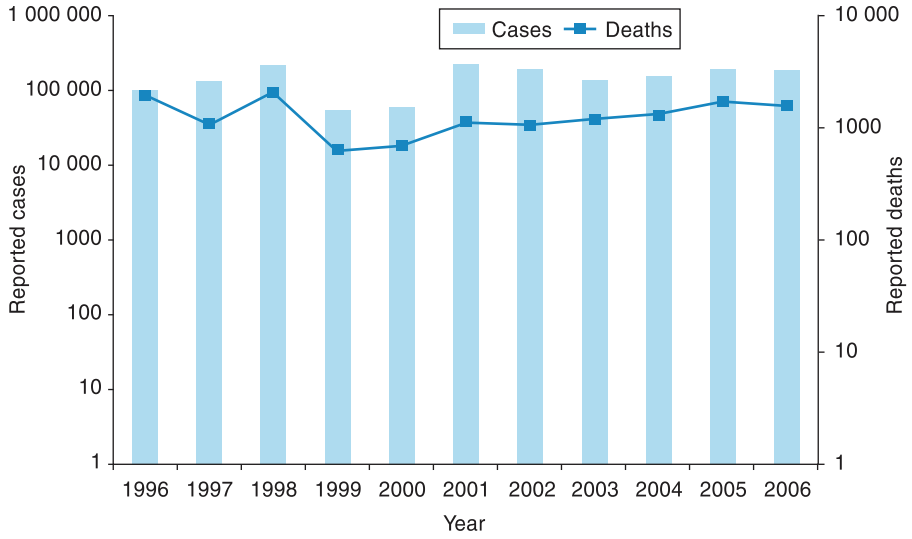
A balanced response is clearly needed to curb the growth of HIV epidemics while expanding access to needed HIV services. Where this has been done, countries are better able to meet needs for PMTCT, ART and related HIV services. Real progress towards universal access can be made only when incidence slows and countries are no longer chasing moving targets.

Aiming to reverse the rising trend of dengue

In recent decades, epidemic dengue fever (DF) and dengue haemorrhagic fever (DHF) have emerged as global public health problems. In 2005, the South-East Asia Region accounted for 60% of the global burden of DF/DHF. High-burden countries in the Region were Indonesia, Thailand and Myanmar with India, Bangladesh, Maldives and Sri Lanka also reporting frequent outbreaks. Dengue is a man-made problem related to human behaviour, affected by globalization, rapid, unplanned and unregulated urban development, poor water storage and unsatisfactory sanitary conditions, and an increasing the breeding habitats of the mosquito. As shown in Figure 40 there was a three-fold increase in reported cases from approximately 64 000 in 2000 to 190 000 in 2006 while reported deaths more than doubled from 650 to 1600.

Bhutan and Nepal reported their first cases in 2004 and 2006 respectively and saw a gradual increase in the numbers. Rapid, unplanned urban development and movement of people to and from urban areas are the main factors contributing to dengue outbreaks. For achieving effective control of dengue, the countries have to accelerate key interventions, which include policy and regulatory support and partnerships within the health sector and with other ministries such as the environment, education, law and tourism. They should strengthen their health systems for prediction, early detection, preparedness and early response to dengue outbreaks.

Figure 40: ***Trend of reported dengue cases and deaths in the South-East Asia Region, 1996-2006***



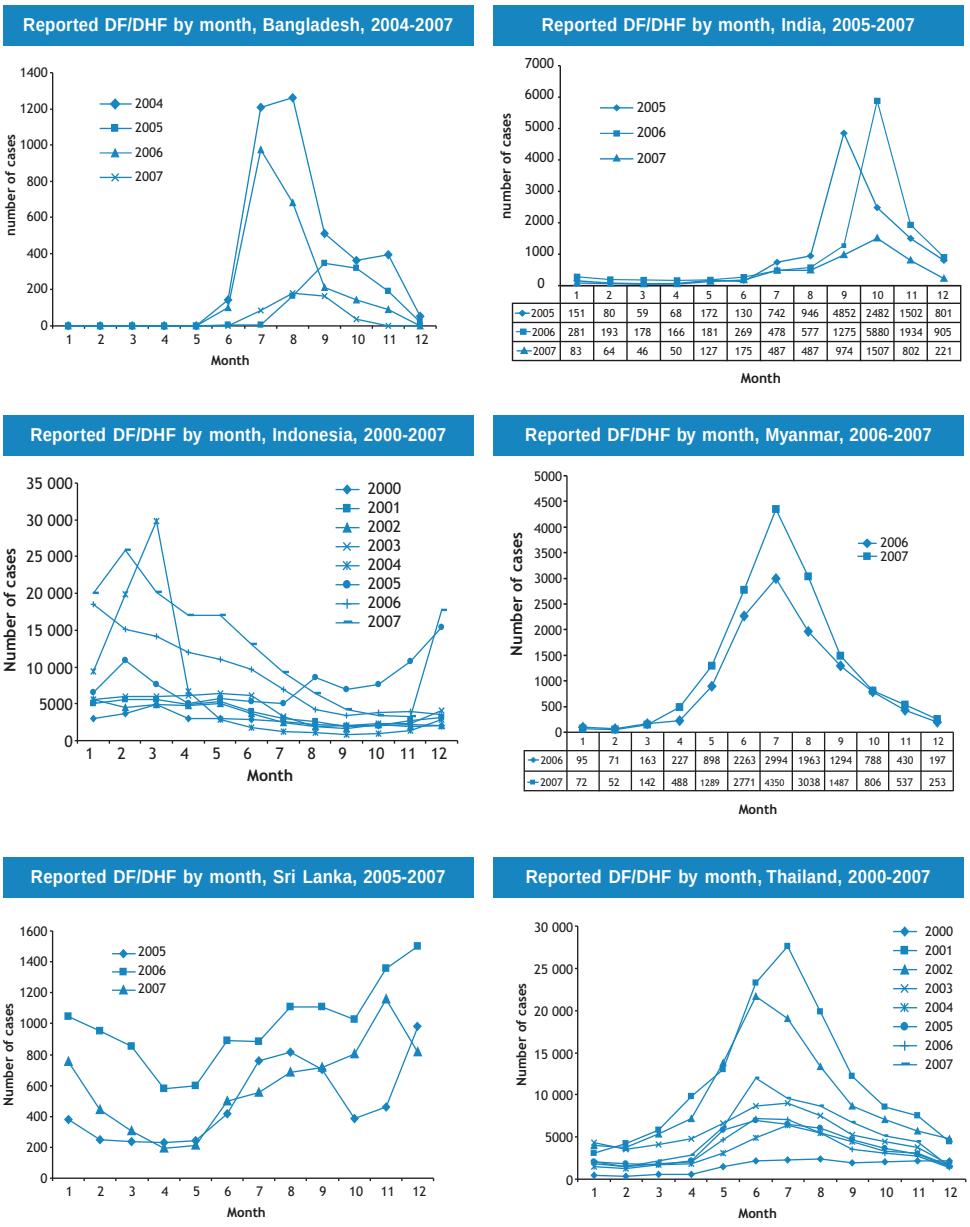
Source: WHO/SEARO (http://www.searo.who.int/LinkFiles/Dengue_Dengue_updated_tables_06.pdf), March 2008.

Seasonality of dengue

Seasonal trends of dengue in the country or locations can be used for predicting outbreaks and for timely response to these public health events (Figure 41).

Since dengue and dengue haemorrhagic fever are ecological diseases, prevention is the key to effective control. Surveillance of vectors and the disease are both very critical because outbreaks of dengue are generally preceded by increased vector populations in local areas. Vector control, imperative for prevention of dengue, requires the full participation and mobilization of the community at the individual and household level. Individuals, families, community support groups, self-help groups, NGOs, local authorities and departments of health need to work together to address the current situation because dengue is everyone's concern. Physicians and clinicians should follow national guidelines for effective and rational case management of dengue and dengue haemorrhagic fever.

Figure 41: ***Dengue: seasonal trends in selected countries***



	1	2	3	4	5	6	7	8	9	10	11	12
2005	151	80	59	68	172	130	742	946	4852	2482	1502	801
2006	281	193	178	166	181	269	478	577	1275	5880	1934	905
2007	83	64	46	50	127	175	487	487	974	1507	802	221

	1	2	3	4	5	6	7	8	9	10	11	12
2006	95	71	163	227	898	2263	2994	1963	1294	788	430	197
2007	72	52	142	488	1289	2771	4350	3038	1487	806	537	253

Source: WHO-SEARO, Dept. of Communicable Diseases, 2008.

Preventing and containing chikungunya

In recent years, countries in the South-East Asia Region have been severely affected by the outbreaks of chikungunya fever. India was hit in 2006 after a gap

of 32 years. Indonesia, Maldives, and Sri Lanka have also been affected by this emerging infection. Various factors that are responsible for the resurgence of chikungunya include mutation of the virus, absence of herd immunity, lack of efficient vector control activities, globalization and emergence of *Aedes albopictus*, in addition to *Aedes aegyptii* as an efficient vector for chikungunya virus.

India In 2006, almost 1.5 million cases of chikungunya were reported. During 2007, more than 55 000 suspected cases of chikungunya have been reported from 14 states and Union Territories (UTs) in India. The state of Kerala alone accounts for 43% of the cases. No death has been attributed to chikungunya in India in 2007.

The National Vector-Borne Diseases Control Programme undertakes surveillance of suspected chikungunya cases through a network of 40 hospital-based sentinel surveillance centres supported by 13 apex laboratories.

Indonesia: Chikungunya occurred sporadically until 1985 after which there were no reports until a series of outbreaks between 2001 and 2007. Between January 2001 and April 2007, more than 15 000 cases were reported from 7 provinces, with a peak in 2003. There have been over 1200 suspected cases reported from 23 sub-districts in 2007. Most of the cases were reported from the province of Java.

Maldives: The chikungunya started in December 2006 and lasted for three months. Almost 11 000 (4.5% of the total population) suspected cases were reported. Suspected cases were also reported in 2007.

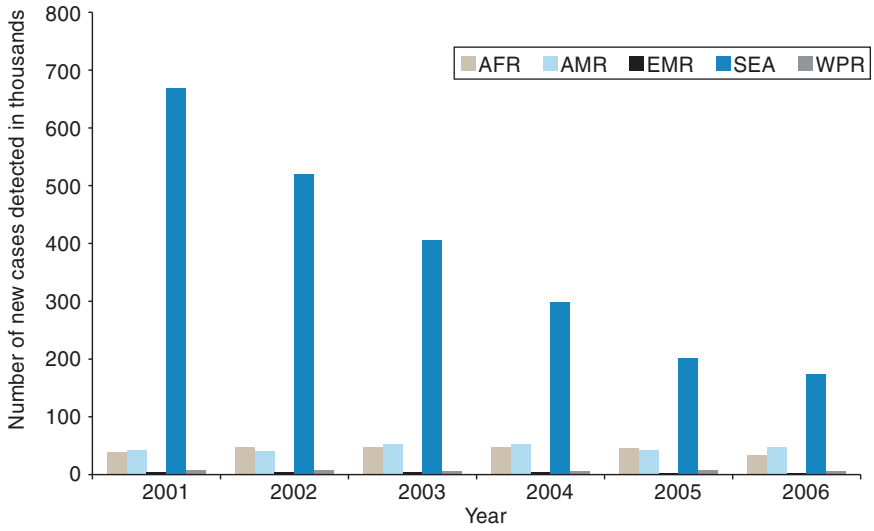
Chikungunya has established endemicity in several parts of the South-East Asia Region. The socioeconomic factors and public health inadequacies that facilitated the spread of this infection continue to exist. There is an urgent need to strengthen national surveillance and response capacity through a multisectoral approach and active participation of the communities to prevent and contain this emerging infectious disease.

Sustaining control activities in leprosy

The South-East Asia Region achieved the goal of elimination of leprosy as a public health problem (prevalence of less than one case per 10 000 population) at the end of December 2005 with the regional prevalence rate of

0.87 per 10 000 population. The regional prevalence rate has further reduced to 0.70 per 10 000 population with a total of 116 663 cases on treatment in the beginning of 2007. The regional new case detection has declined from almost 700 000 cases in 2001 to less than 200 000 cases in 2006 (Figure 42).

Figure 42: ***Leprosy: trends in the detection of new cases by WHO Region, 2001-2006***



Source: WHO/SEARO Global Leprosy Programme, 2008.

Nine Member countries have achieved elimination at the national level, leaving only Nepal and Timor-Leste to achieve the goal. In Nepal, a total of 3417 cases were on treatment at the end of December 2006 with a prevalence rate of 1.31/10 000 population. In Timor-Leste, a total of 222 cases were on treatment with a prevalence rate of 1.89/10 000 at the end of December 2006. These two countries are making concerted efforts to achieve the elimination goal by 2008.

India, which accounted for the highest burden of leprosy, globally and regionally, also achieved the leprosy elimination goal in 2005. As of March 2007, the reported national prevalence rate was 0.72/10 000 population and a total of 95 150 cases were on treatment.

In Indonesia, the annual new case detection remained static around 15 000–18 000 cases over the last four years and increased to almost 20 000 cases in 2005. However, the number of new cases detected decreased to more than 17 000 in 2006.

Two countries – Bangladesh and Myanmar have achieved elimination at the second administrative level i.e. all six divisions in Bangladesh and all 17 states/ divisions in Myanmar.

Globally, there were 15 countries that reported 1000 and more new cases during 2006 and six of these are in the South-East Asia Region (Bangladesh: 6000, India: 140 000, Indonesia: 18 000, Myanmar: 4000, Nepal: 4000 and in Sri Lanka: 2000 cases – numbers are rounded).

Globally, more than 15 million cases were cured with MDT, about 12.8 million were from the South-East Asia Region. Thus, the Region has made a significant contribution to a reduction in the global leprosy burden.

The countries which have achieved and sustained elimination at the national level are making concerted efforts to further reduce the leprosy burden. These countries are Bangladesh, Bhutan, DPR Korea, India, Indonesia, Maldives, Myanmar, Sri Lanka and Thailand. However, there are a number of high endemic areas within these countries. All these countries need continued support relevant to the specific country needs and adequate resources to consolidate the gains made and to further reduce the burden of leprosy.

All countries of the Region have integrated leprosy services into the general health services and are taking measures to further strengthen integration. Countries which have achieved elimination at the national level are concentrating on efforts to further reduce the burden of leprosy. Nepal and Timor-Leste are intensifying the activities to achieve elimination at the earliest. The public perception and support to leprosy elimination has continued to improve and stigma and discrimination continued to decline.

Novartis has pledged free supply of Multidrug therapy (MDT) at least until 2010. The leprosy elimination programme globally and regionally was fortunate to have the sustained financial support from The Nippon Foundation and Sasakawa Memorial Health Foundation through WHO and substantial allocations from national governments. Thus leprosy elimination in general has not faced resource constraints so far. It is hoped that WHO will continue to receive support from all these partners in order to sustain leprosy services and further reduce the burden of the disease.

The remaining challenges:

(1) Achieving elimination at the national level in the remaining two countries (Nepal and Timor-Leste);

(2) Sustaining political commitment and ensuring adequate resources in order to sustain elimination at the national level and progress towards further reducing the burden of leprosy;

(3) Strengthening integration of leprosy services into the general health system through capacity building and skill development, in order to ensure and sustain quality leprosy services, including diagnosis and treatment;

(4) Ensuring a wider coverage of leprosy services, especially in currently under-served population groups such as remote rural areas, urban slums, migrant labour;

(5) Increasing and sustaining community awareness through sustained advocacy and IEC activities to promote voluntary case detection and decrease the stigma;

(6) Minimizing/preventing operational factors;

(7) Prevention and care of disabilities, prevention of displacement of people affected by leprosy and ensuring community-based rehabilitation of cured/ disabled people affected by leprosy;

(8) Streamlining the MDT supply and stock management at all levels, considering the low endemic situation; and

(9) Ensuring continued technical support that is relevant to the specific country needs.

Building up to elimination of visceral leishmaniasis

Visceral leishmaniasis or kala-azar is caused by the trypanosomatid parasite *Leishmania donovani*. It is transmitted by the sand fly, *Phlebotomus argentipes,* in the Indian sub-continent. The disease presents as fever of long duration (more than two weeks) with splenomegaly, anaemia, progressive weight loss and sometimes darkening of the skin. In the endemic areas children and young adults are its principal victims. Without timely treatment the disease is fatal. Kala-azar/ HIV coinfections have emerged as a health problem in recent years.

Kala-azar is found in several countries, with about 500 000 cases reported annually. Five countries, namely Bangladesh, Brazil, India, Nepal, and Sudan account for 90% of the global incidence. Within countries, kala-azar occurs among

the socially marginalized and poorest communities. An estimated 200 million people in Bangladesh, India and Nepal are at risk of kala-azar, largely in rural communities. The disease is endemic in 52 districts in four states of India, and 12 districts (including 10 border districts) of Nepal.

Current kala-azar situation in the Region

The kala-azar situation is worsening due to the occurrence of asymptomatic cases, post-kala-azar dermal leishmaniasis (PKDL), undernutrition, and kala-azar/HIV coinfections. It has been estimated* that in 2007, there were 280 000 cases in 52 districts of India, 137 000 cases in 45 districts of Bangladesh, and 13 000 cases in 12 districts of Nepal. The case fatality rate has decreased perhaps due to improved case management in endemic countries (Figure 43). The estimations are 22 times more than the cases reported. The factors responsible for the upsurge in visceral leishmaniasis include poor socioeconomic status, malnutrition, and insufficient spraying with insecticides in affected areas resulting in vector proliferation.

Kala-azar can be eliminated from the Region

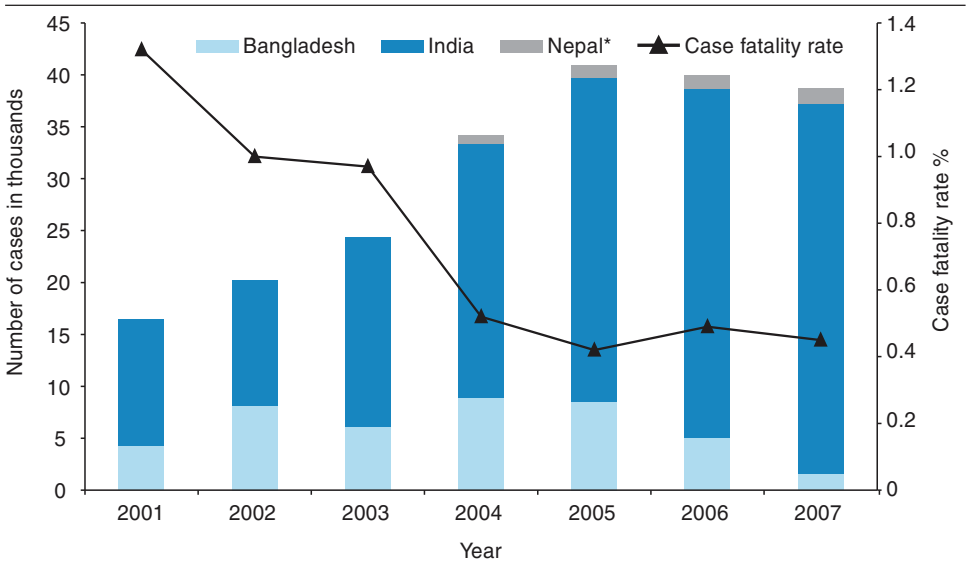
It is possible to eliminate kala-azar from the South-East Asia Region for the following reasons:

- Man is the only known reservoir host and the sandfly, *Phlebotomus argentipes,* the only vector. Consequently, the transmission of the disease can be interrupted.
- The disease is limited to geographical areas, which allows elimination efforts to be focused.
- There is a strong political commitment for the elimination of kala-azar. The health ministers from the three endemic countries in the Region have signed a Memorandum of Understanding (MoU) to cooperate in the elimination efforts.
- A reasonably safe and effective oral drug (miltefosine) as the first-line drug is approved and available. Drugs for the treatment of severely ill patients and non-responders are also available.
- A reliable, easy-to-use rapid dipstick test, “rk39”, can be used for diagnosis.
- Near-elimination of kala-azar had been achieved through indoor residual spray (IRS) as a collateral benefit of malaria control programme.

Summary of progress in elimination efforts

In 2004, the Regional Technical Advisory Group (RTAG) formulated the regional strategic framework for elimination of kala-azar. The three countries (Bangladesh, India and Nepal) agreed to eliminate kala-azar by 2015 or earlier. A necessary step in the elimination of kala-azar is to quantify the resource needs and costs for the scaling up of the efforts into an elimination programme.

Figure 43: ***Kala-azar: trends in reported cases and case fatality rate in endemic countries in the South-East Asia Region, 2001-2007***



Source: Country reports, 2007.

Three countries prepared operational plans. Implementation has been initiated in selected districts and preparatory activities undertaken. Partners in health are committed to support the elimination of kala-azar.

Five strategic components have been identified in the regional strategic framework for elimination of kala-azar, as follows:

(a) Early diagnosis and complete treatment of kala-azar and PKDL;

(b) Integrated vector management (IVM) comprising of indoor residual spraying (IRS), insecticide-treated nets (ITNs) and improvements in housing including cleanliness of the house;

(c) Effective disease surveillance including active and passive case detection in the government and private sectors;

(d) Social mobilization and partnerships with emphasis on achieving early diagnosis, complete treatment, participation in IRS, adoption of personal protection measures and micro-environmental management through community participation and promotion of partnerships within and outside the health sector; and

(e) Operations research to monitor drug and insecticide resistance, quality of drugs, treatment compliance, pharmacovigilance etc.

To eliminate kala-azar, intensive and sustained efforts will be needed from the government at all levels. Financial and technical support is needed from partners and participation of the community. In addition, services have to be of good quality to achieve elimination.

Priority areas to be addressed for elimination of kala-azar

(1) *Policy and strategy support*

Policy and strategy articulation, discussion, development of consensus on the policy and its implementation will be the major thrusts for support. Policy change would be decided based on evidence and country programme review. The following actions would be needed to achieve the goal of elimination:

- Advocacy for resource mobilization amongst the key decision-makers to allocate resources required for elimination of kala-azar;
- Positioning of the kala-azar programme prominently within the health system and disease control programme;
- Increasing the visibility of kala-azar elimination efforts through communication strategy;
- Providing quarterly updates on policy and strategy issues that require to be changed based on evidence; and
- Reviewing the best practices to effect corrections in the programme.

(2) *Strengthening programme management*

The success of the kala-azar elimination programme depends on programme management. Specific elements of support would include the following:

- Capacity development of supervisory staff in the endemic states and districts through programme management training with the expected output of development of district operational plans;
- Strengthening procurement and logistics supply management;
- Emphasis on quality assurance and quality improvement of the programme through the application of standards and standard operating procedures (SOPs);
- Establishing oversight mechanisms to promote application of standards and SOPs in the private sector;
- Assistance in the development of IVM strategy and use of complementary strategy of IRS insecticide treated nets and cleanliness of houses to ensure reduction of transmission risk;
- Application of active case search using a cost-effective approach identified through implementation research;
- Monitoring of drug resistance;
- Quality assurance of diagnosis; and
- Pharmacovigilance of first- and second-line drugs.

(3) *Cross-border collaboration*

This is an important issue for elimination of kala-azar. About 50% of the cases are reported from districts located across international borders. There is free movement across the border in many affected districts because of porous borders. Poverty, migration, resettlement are likely to contribute to continued transmission of kala-azar. The Memorandum of Understanding signed by the health ministers of Bangladesh, India and Nepal is to further promote cooperation, collaboration and partnerships. WHO has the mandate for promotion of inter-country cooperation. Even though cross-border collaboration in the control of communicable diseases has been recommended in several meetings of the health ministers, progress has been slow because of resource constraints and inability of any country to take the lead. The following elements related to cross-border collaboration should be considered:

- The use of similar policy and strategy support for kala-azar elimination. This would help in using common standard operating procedures. This means use of standard case definition, use of rapid diagnostic kit (RDK) for diagnosis, use of the same first-line drugs and ensuring complete treatment in districts across the border;

- Regular exchange of information including alerting the staff across the border if there has been an increase in reported cases that should trigger active case search;
- Ensuring the continuity of treatment even if the individual moves across to the district in the neighbouring country;
- Organization of joint training of the concerned staff and capacity development;
- Provision of referral services to districts across the international border so as not to duplicate the resources deployed for provision of specialized services; and
- Organization of joint review meetings.

(4) *Promoting operations research*

The success of kala-azar elimination would depend on operations research and implementation to identify best practices that can help in scaling up cost-effective interventions. It would require development of capacity, synchronization of research with programme management to facilitate the rapid application of evidence-based interventions in the programme through greater complementarity of research with the programme. The following issues should serve as a starting point for operations research:

- Diagnosis and treatment of PKDL, kala-azar/HIV coinfections and kala-azar/TB coinfections;
- Combination treatment with the objective of reducing or delaying drug resistance and a shorter duration of treatment;
- Improved compliance with treatment through the application of DOTS approach;
- Cost effectiveness studies of key interventions;
- Assessment of IRS and LLIN as a complementary strategy for transmission risk reduction;
- GIS mapping for IRS targeting;
- Assessing cost-effective approaches in active case search;
- Identifying constraints and challenges amongst socially disadvantaged population groups in access to diagnosis and treatment of kala-azar;
- Assessment of disease burden; and
- Development of tools to monitor the progress towards elimination of kala-azar.

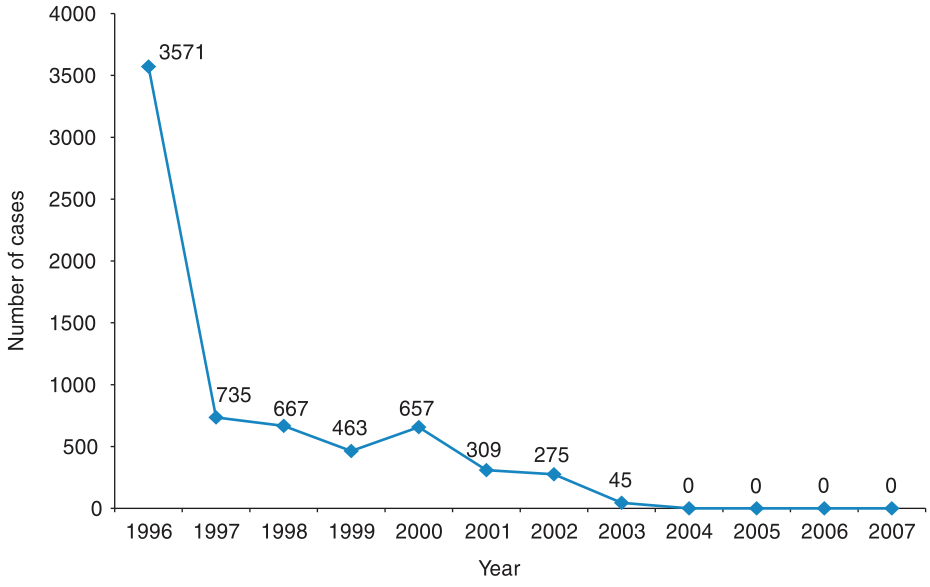
(5) *Programme reviews*

National and regional programme reviews and assessment of coverage including quality will be the key to success in kala-azar elimination. This would be important in making changes required as mid-course corrections and adjusting the resources deployed. An in-depth review of the programme was carried out in India in 2006. This was followed by a Joint Monitoring Mission. This helped in making important policy decisions and preparing a national project implementation programme (PIP) for the elimination of kala-azar. Support is required to prepare tools and protocols and for organizing the national and international programme reviews. Programme reviews are proposed to be organized in 2009, 2011, 2013 and 2015.

Eliminating and eradicating yaws

Yaws occurs in countries of the Region – India, Indonesia and Timor-Leste. It has been eliminated from India (as announced by the Minister of Health in September 2006) and the target date of 2010 was set for eradication of the disease from the country.[72] India's achievement in yaws elimination (Figure 44) was lauded at the 11th International Task Force on Disease Eradication meeting in Atlanta, USA in October 2007. Yaws eradication is an achievable goal since there is a safe and cost-effective intervention: a single injection of long-acting benzathine penicillin.

Figure 44: ***Yaws cases in India, 1996-2007***



Source: WHO/SEARO CDS.

Yaws is a public health problem in Indonesia and Timor-Leste, with about 5000 new cases reported annually. A target date for elimination of yaws has been set for 2012 in these two countries. A proposal for eradication of yaws in Indonesia and Timor-Leste has been developed and a plan of action proposing accelerated efforts in endemic provinces to improve early case detection and treatment and their contacts, programme management, increased advocacy/ awareness, incorporation of yaws control in the medical and paramedical curricula, and establishment of partnerships, among other activities, has been drafted. These activities are yet to commence in full swing. Adequate resources and technical support, as well as dedicated implementation and oversight are critical for accomplishing the desired goal. It would require better commitment to and an increased capacity for yaws eradication in endemic countries.

Severe Acute Respiratory Syndrome (SARS)

Severe acute respiratory syndrome (SARS), is a viral respiratory illness caused by a coronavirus called SARS-associated coronavirus (SARS CoV). It was the first severe and readily transmissible disease of the twenty-first century. It is believed to have originated in southern China in November, 2002. From there it crossed into Hong Kong (China) in February 2003. In just a few days it had spread to Viet Nam, Singapore, Canada and Germany, and then beyond. By July 2003, a cumulative total of more than 8098 probable SARS cases with more than 774 deaths had been reported from 26 countries—including India, Thailand and Indonesia in the South-East Asia Region. By early July 2003, WHO declared that human-to-human transmission of the virus had been broken. The principal worry was the threat of a pandemic, possibly with serious consequences for global health.

By September 2005, it was clear that the Asia Pacific region had become the epicentre for emerging infectious diseases, prompting the WHO Regional Offices in South-East Asia and the Western Pacific, in collaboration with Member States, to develop a strategy to provide a regional tactical approach and build new partnerships against emerging diseases (APSED). Over 30 new infectious agents have been detected in the last three decades, 75% of which have originated in animals. New pathogens, particularly viruses, remain unpredictable and continue to emerge and spread around the globe.

Collaborating in avian influenza prevention, control and research

Avian influenza (AI) is a global problem, with more than 60 countries affected since 2003. Poultry affected by AI (H5N1) continue to infect humans, with a high mortality rate. As of 31 December 2007, 351 confirmed human H5N1 cases had been reported globally from 14 countries, which include 143 cases in the South-East Asia Region. Indonesia reported a high number of human cases, with a case fatality rate (CFR) of 81%. Cases have been reported from 12 provinces in Java, Sumatra, Sulawesi and Bali. The majority of cases reported direct or indirect exposure to sick or dead poultry. Eleven clusters of human cases have been reported from Indonesia: all have occurred amongst blood-related family members, with no transmission beyond the family unit.

A total of 25 human cases have been reported in Thailand since 2004. Last human case was confirmed in 2006. Outbreaks in poultry were also reported from Yangon, Mon, Bago and Shan states of Myanmar in 2007. A seven-year-old girl from Shan State (East) became the first confirmed human AI case from Myanmar in December 2007. Bangladesh reported its first outbreak of poultry AI in Dhaka region in March 2007.

Avian influenza and pandemic preparedness are priority areas, and a Strategic Action Plan has identified five key areas of focus: (1) reduce human exposure to H5N1 virus; (2) strengthen early warning systems; (3) intensify rapid containment operations; (4) build capacity to cope with a pandemic; and (5) coordinate global scientific research and vaccine development.

Control of AI in backyard poultry is crucial to reduce environmental contamination and risk of human infection. Provision of adequate compensation following culling has proved effective in encouraging early reporting of poultry deaths in many countries.

Countries should adopt integrated control measures for poultry AI using a combination of measures best suited to the local situation. Multisectoral coordination is crucial. Research priorities for human health include measures to minimize human exposure to infected poultry and reduction of the CFR.

The question is why human cases have not been reported from Bangladesh despite widespread poultry outbreaks. The risk of infection is likely related to the amount of circulating virus (which is difficult to quantify) and risk behaviours (which are poorly understood). Many poultry AI outbreaks were reported in Indonesia during 2003-2004, but no human cases were reported until 2005. Human H5N1

infection is a rare event and not all exposed individuals develop the disease. It is possible that a similar pattern may be observed in other countries. India has conducted risk mapping based on density of backyard poultry, water bodies, farming practices and presence of waterfowl, which predicts that east India is most vulnerable (largely due to the high density of ducks and poultry). Pakistan appears to have had success in using vaccine for poultry AI control, but implementation of vaccination has been problematic for other countries. Turkey was able to rapidly control its outbreak in humans and animals. Compensation is crucial for early reporting of poultry AI outbreaks (and therefore implementation of culling strategies) but every country has experienced practical difficulties in implementing compensation policies. Sharing experience and exchanging information are vital to facilitate development of national strategies and policies for AI control, and WHO has an important role in bringing countries together to share best practices.

Arrangements for human AI surveillance differ considerably between affected countries, and comparison of their effectiveness is difficult. A systematic meta-evaluation would help to identify gaps and facilitate development of uniform standards. One problem for surveillance is the occurrence of human H5N1 cases in Indonesia (and other countries) with no history of direct exposure to infected poultry, which complicates the development of surveillance case definitions. It is likely this reflects high levels of environmental contamination with H5N1 virus: this is an area which needs to be better understood and addressed.

The outbreaks of SARS and avian influenza made clear the need to revise the International Health Regulations, a legal framework for detecting, notifying and responding to public health emergencies of international concern, including those caused by emerging diseases.

Preventing and controlling rabies

Rabies currently kills one person every ten minutes in Asia. More than 55 000 people die of rabies in Asia annually; the South-East Asia Region alone accounts for 60% of the global mortality. Rabies in humans is preventable through proper vaccination. Studies show that most patients were victims of rabies due to negligence, ignorance or the inadequate availability of primary health care services.

In the South-East Asia Region, 96% of human rabies mortality is attributed to dog bites, with children and poor people often at greatest risk. Therefore, control of rabies through vaccination in the canine population is fundamental to elimination of the disease.

During the past decade, Sri Lanka and Thailand have significantly reduced deaths from rabies by implementing mass dog-vaccination campaigns. These two countries abandoned use of nerve-tissue rabies vaccine long ago and India and Nepal phased out production and subsequent use of nerve-tissue rabies vaccine in 2005 and 2006, respectively. There is a need to consider and promote the use of the intra-dermal rabies vaccination technique, which would improve accessibility and affordability of modern tissue culture rabies vaccine.

Annex tables

Table 1 : ***Population (in thousands) by five-year age group, sex, other broad age groups and population indicators, 2005***

Age group	Sex	Bangladesh	Bhutan	DPR Korea	India	Indonesia	Maldives	Myanmar	Nepal	Sri Lanka	Thailand	Timor-Leste	SEAR
	Both	18 916	63	1 661	126 894	21 754	30	4 173	3 611	1 503	4 520	182	183 307
0-4	M	9 669	32	851	66 136	11 092	15	2 118	1 853	767	2 317	93	94 943
	F	9 247	31	809	60 758	10 662	15	2 054	1 759	736	2 203	89	88 363
	Both	17 555	70	1 979	124 494	21 176	32	4 342	3 571	1 510	4 484	164	179 377
5-9	M	8 992	35	1 011	65 118	10 779	16	2 200	1 836	769	2 310	84	93 150
	F	8 563	34	967	59 376	10 397	16	2 142	1 735	741	2 174	80	86 225
	Both	17 456	78	2 069	122 755	21 217	38	4 559	3 373	1 608	4 652	134	177 939
10-14	M	8 934	39	1 057	64 267	10 786	20	2 308	1 737	821	2 402	69	92 440
	F	8 522	38	1 012	58 488	10 430	19	2 251	1 636	788	2 251	66	85 501
	Both	16 270	75	1 855	114 126	21 370	39	4 763	2 919	1 760	5 007	113	168 297
15-19	M	8 358	38	948	59 554	10 839	20	2 409	1 504	896	2 554	58	87 178
	F	7 912	37	907	54 572	10 532	19	2 354	1 415	864	2 453	55	81 120
	Both	14 897	71	1 851	104 612	21 476	33	4 595	2 519	1 863	5 108	98	157 123
20-24	M	7 661	40	945	54 553	10 818	17	2 319	1 284	933	2 574	51	81 195
	F	7 236	31	906	50 060	10 657	16	2 276	1 235	930	2 534	47	75 928
	Both	12 675	58	1 493	94 067	20 294	26	4 354	2 132	1 471	5 083	67	141 720
25-29	M	6 519	32	761	48 990	10 165	13	2 180	1 060	713	2 520	35	72 988
	F	6 155	25	732	45 078	10 129	12	2 174	1 072	758	2 564	32	68 731
	Both	11 340	43	2 116	82 978	18 815	21	4 212	1 804	1 243	5 090	63	127 725
30-34	M	5 846	23	1 076	43 192	9 399	11	2 089	866	593	2 443	33	65 571
	F	5 494	20	1 039	39 786	9 417	10	2 124	938	650	2 647	30	62 155
	Both	10 026	39	2 201	73 400	16 957	17	3 574	1 538	1 447	5 018	53	114 270
35-39	M	5 165	22	1 118	38 199	8 504	9	1 758	715	705	2 362	25	58 582
	F	4 861	17	1 083	35 201	8 454	8	1 815	823	742	2 656	28	55 688
	Both	8 595	30	1 656	65 196	14 694	15	3 078	1 316	1 398	5 081	47	101 106
40-44	M	4 446	16	838	33 919	7 396	8	1 504	607	691	2 407	23	51 855
	F	4 149	14	817	31 277	7 298	7	1 574	709	706	2 674	24	49 249
	Both	6 996	28	1 552	57 040	12 414	12	2 686	1 105	1 291	4 789	42	87 955
45-49	M	3 628	15	781	29 639	6 255	6	1 304	516	639	2 287	21	45 091
	F	3 369	13	771	27 400	6 159	6	1 382	590	652	2 502	21	42 865
	Both	5 642	21	876	48 777	9 657	10	2 296	922	1 199	4 053	31	73 484
50-54	M	2 924	11	436	25 226	4 855	5	1 102	437	589	1 952	16	37 553
	F	2 718	10	440	23 550	4 803	5	1 194	485	610	2 100	15	35 930
	Both	4 137	17	1 170	35 403	7 369	6	1 514	721	965	2 996	25	54 323
55-59	M	2 077	9	576	17 913	3 527	3	723	331	469	1 455	11	27 094
	F	2 061	8	595	17 490	3 842	3	791	390	496	1 541	13	27 230
	Both	3 364	14	1 128	28 206	6 394	5	1 138	570	621	2 210	20	43 670
60-64	M	1 668	8	528	14 020	2 974	3	538	257	299	1 057	10	21 362
	F	1 696	7	600	14 186	3 421	2	600	313	323	1 153	10	22 311
	Both	2 344	12	914	22 689	5 243	4	930	423	446	1 848	14	34 867
65-69	M	1 151	6	389	10 921	2 401	2	426	186	210	842	7	16 541
	F	1 193	6	525	11 768	2 841	2	505	237	235	1 005	7	18 324

Age group	Sex	Bangladesh	Bhutan	DPR Korea	India	Indonesia	Maldives	Myanmar	Nepal	Sri Lanka	Thailand	Timor-Leste	SEAR
	Both	1 554	9	565	16 087	3 676	3	764	287	344	1 347	8	24 644
70-74	M	745	4	196	7 600	1 641	2	349	123	154	592	4	11 410
	F	808	5	369	8 487	2 035	2	415	164	191	755	4	13 235
	Both	917	5	316	9 858	2 180	2	532	169	237	898	5	15 119
75-79	M	422	3	85	4 663	953	1	238	71	106	378	2	6 922
	F	495	3	231	5 195	1 227	1	294	98	131	519	3	8 197
	Both	428	2	154	5 042	970	1	290	79	123	492	2	7 583
80-84	M	192	1	33	2 377	411	0	126	32	52	187	1	3 412
	F	236	1	121	2 665	559	1	164	47	71	305	1	4 171
	Both	140	1	47	2 065	326	0	127	26	62	227	1	3 023
85-89	M	62	0	8	978	129	0	53	10	28	72	0	1 340
	F	79	0	40	1 087	198	0	74	16	34	154	0	1 682
	Both	28	0	12	579	71	0	34	5	23	77	0	829
90-94	M	12	0	1	283	26	0	13	2	11	20	0	368
	F	16	0	11	296	45	0	21	3	11	57	0	460
	Both	3	0	2	118	8	0	6	1	6	21	0	165
95-99	M	1	0	0	61	3	0	2	0	3	4	0	74
	F	2	0	2	57	6	0	4	0	2	17	0	90
	Both	0	0	0	16	0	0	1	0	1	4	0	22
100+	M	0	0	0	9	0	0	0	0	1	1	0	11
	F	0	0	0	7	0	0	0	0	0	3	0	10
	Both	153 284	636	23 617	1 134 402	226 061	294	47 968	27 091	19 121	63 005	1 069	1 696 548
All ages	M	78 472	334	11 638	587 618	112 953	151	23 759	13 427	9 449	30 736	543	869 080
	F	74 812	300	11 977	546 784	113 112	144	24 208	13 665	9 671	32 267	525	827 465
0-14		53 927	211	5 709	374 143	64 147	100	13 074	10 555	4 621	13 656	480	540 623
15-44		73 803	316	11 172	534 379	113 606	151	24 576	12 228	9 182	30 387	441	810 241
45-64		20 139	80	4 726	169 426	35 834	33	7 634	3 318	4 076	14 048	118	259 432
15-64		93 942	396	15 898	703 805	149 440	184	32 210	15 546	13 258	44 435	559	1 069 673
65+		5 415	29	2 010	56 454	12 474	10	2 684	990	1 242	4 914	30	86 252
60+		8 779	43	3 138	84 660	18 868	15	3 822	1 560	1 863	7 124	50	129 922
Child dep.		57	53	36	53	43	54	41	68	35	31	86	51
Old age dep		6	7	13	8	8	5	8	6	9	11	5	8
Total dep.		63	61	49	61	51	60	49	74	44	42	91	59
Sex ratio		105	111	97	107	100	105	98	98	98	95	103	105
Females (15-49 yrs)		39 176	157	6 255	283 374	62 646	78	13 699	6 782	5 302	18 030	237	435 736

Source: UN, *World population prospects* :*The 2006 revision* (http://esa.un.org/unpp/index.asp?panel=2).

Table 2: *Total population (in thousands), 1990-2015*						
Country	**Year**					
	1990	**1995**	**2000**	**2005**	**2010**	**2015**
Bangladesh	113 049	126 297	139 434	153 281	166 638	180 114
Bhutan	547	507	559	637	684	737
DPR Korea	20 143	21 715	22 946	23 616	24 015	24 416
India	860 195	954 282	1 046 235	1 134 403	1 220 182	1 302 535
Indonesia	182 847	197 411	211 693	226 063	239 600	251 567
Maldives	216	248	273	295	323	353
Myanmar	40 147	43 134	45 884	47 967	50 051	51 998
Nepal	19 114	21 672	24 419	27 094	29 898	32 843
Sri Lanka	17 114	18 080	18 714	19 121	19 576	19 960
Thailand	54 291	57 523	60 666	63 003	65 125	66 763
Timor-Leste	740	850	819	1 067	1 271	1 504
South-East Asia Region	1 308 403	1 441 719	1 571 642	1 696 547	1 817 363	1 932 790
World	5 294 879	5 719 045	6 124 123	6 514 751	6 906 558	7 295 135

Source: UN, *World population prospects: The 2006 revision* (http://esa.un.org/unpp).

Table 3: *Population sex ratio (males per 100 females), 1990-2015*						
Country	**Year**					
	1990	**1995**	**2000**	**2005**	**2010**	**2015**
Bangladesh	106.1	105.6	105.3	104.9	104.5	104.1
Bhutan	105.3	103.5	102.9	111.1	111.8	112.2
DPR Korea	96.1	96.4	96.6	97.2	97.7	98.1
India	108.5	108.3	107.9	107.5	107.0	106.5
Indonesia	100.5	100.4	100.1	99.9	99.6	99.4
Maldives	105.3	105.5	105.5	105.3	104.8	104.2
Myanmar	99.2	99.2	98.9	98.1	97.6	97.3
Nepal	101.6	99.0	98.7	98.2	98.3	98.3
Sri Lanka	102.1	101.0	99.5	97.7	96.6	95.6
Thailand	98.4	97.8	96.6	95.3	94.5	93.9
Timor-Leste	106.0	105.4	104.4	103.0	103.1	103.1
World	**101.7**	**101.7**	**101.7**	**101.6**	**101.5**	**101.4**

Source: UN, *World population prospects: The 2006 revision* (http://esa.un.org/unpp).

Table 4: ***Population aged 0-14 years (%), 1990-2015***

Country	Year					
	1990	1995	2000	2005	2010	2015
Bangladesh	40.7	39.6	37.2	35.2	32.9	31.1
Bhutan	42.6	43.6	40.2	33.0	27.7	24.9
DPR Korea	26.2	26.9	25.9	24.2	21.3	19.2
India	37.8	36.6	35.0	33.0	30.7	28.7
Indonesia	35.8	33.0	30.3	28.4	26.7	24.9
Maldives	46.5	45.3	40.3	34.0	29.9	29.0
Myanmar	35.6	33.1	30.2	27.3	25.0	23.1
Nepal	41.9	41.8	40.9	39.0	36.3	34.1
Sri Lanka	32.0	29.5	26.8	24.2	22.4	21.4
Thailand	28.5	25.8	23.6	21.7	20.6	19.7
Timor-Leste	39.9	41.7	49.4	45.0	44.8	44.0
World	**32.6**	**31.7**	**30.2**	**28.3**	**26.9**	**26.0**

Source: UN, *World population prospects: The 2006 revision* (http://esa.un.org/unpp).

Table 5: ***Population aged 65 years and above (%), 1990-2015***

Country	Year					
	1990	1995	2000	2005	2010	2015
Bangladesh	3.0	3.1	3.3	3.5	3.9	4.3
Bhutan	3.3	3.8	4.4	4.6	5.0	5.4
DPR Korea	4.7	5.7	6.9	8.5	9.8	10.4
India	3.9	4.2	4.6	5.0	5.3	5.8
Indonesia	3.8	4.2	4.9	5.5	6.1	6.6
Maldives	3.3	3.5	3.7	3.8	3.9	3.9
Myanmar	4.9	5.2	5.5	5.6	5.7	6.3
Nepal	3.4	3.4	3.5	3.7	3.9	4.2
Sri Lanka	5.4	6.0	6.5	6.5	7.4	9.3
Thailand	4.9	5.7	6.7	7.8	8.7	10.2
Timor-Leste	2.0	2.3	2.5	2.7	2.9	3.0
World	**6.1**	**6.5**	**6.9**	**7.3**	**7.7**	**8.3**

Source: UN, *World population prospects: The 2006 revision* (http://esa.un.org/unpp).

Table 6: ***Population density (per sq km), 1990-2015***

Country	Year					
	1990	1995	2000	2005	2010	2015
Bangladesh	785	877	968	1 064	1 157	1 251
Bhutan	12	11	12	14	15	16
DPR Korea	167	180	190	196	199	203
India	262	290	318	345	371	396
Indonesia	96	104	111	119	126	132
Maldives	724	832	916	991	1 082	1 184
Myanmar	59	64	68	71	74	77
Nepal	130	147	166	184	203	223
Sri Lanka	261	276	285	291	298	304
Thailand	106	112	118	123	127	130
Timor-Leste	50	57	55	72	85	101
World	**39**	**42**	**45**	**48**	**51**	**54**

Source: UN, *World population prospects: The 2006 revision* (http://esa.un.org/unpp).

Table 7: ***Average annual population growth rate (%), 1990-2020***

Country	Year					
	1990-1995	1995-2000	2000-2005	2005-2010	2010-2015	2015-2020
Bangladesh	2.22	1.98	1.89	1.67	1.56	1.42
Bhutan	-1.53	1.94	2.63	1.43	1.48	1.14
DPR Korea	1.50	1.10	0.58	0.34	0.33	0.34
India	2.08	1.84	1.62	1.46	1.31	1.14
Indonesia	1.53	1.40	1.31	1.16	0.98	0.80
Maldives	2.78	1.93	1.57	1.76	1.80	1.65
Myanmar	1.44	1.24	0.89	0.85	0.76	0.67
Nepal	2.51	2.39	2.08	1.97	1.88	1.76
Sri Lanka	1.10	0.69	0.43	0.47	0.39	0.27
Thailand	1.16	1.06	0.76	0.66	0.50	0.36
Timor-Leste	2.77	-0.76	5.31	3.50	3.36	3.02
World	**1.54**	**1.37**	**1.24**	**1.17**	**1.10**	**1.00**

Source: UN, *World population prospects: The 2006 revision* (http://esa.un.org/unpp).

Table 8: ***Crude birth rate (per 1000 population), 1990-2020***

Country	Year					
	1990-1995	1995-2000	2000-2005	2005-2010	2010-2015	2015-2020
Bangladesh	33.6	29.4	27.8	24.8	23.1	21.4
Bhutan	35.7	29.3	22.4	18.5	18.9	18.2
DPR Korea	21.1	19.0	15.1	13.2	13.6	14.1
India	30.7	27.7	25.1	23.0	21.0	19.1
Indonesia	24.3	22.0	20.7	18.7	16.8	15.0
Maldives	36.6	26.6	22.2	23.4	23.3	21.5
Myanmar	25.3	22.1	19.5	18.2	16.6	15.5
Nepal	38.1	34.5	30.2	28.1	26.4	24.7
Sri Lanka	20.4	18.2	16.3	15.0	14.6	14.0
Thailand	18.4	17.0	15.4	14.6	13.6	12.7
Timor-Leste	43.0	45.7	41.7	42.1	39.9	37.5
World	**24.7**	**22.6**	**21.1**	**20.3**	**19.5**	**18.4**

Source: UN, *World population prospects: The 2006 revision* (http://esa.un.org/unpp).

Table 9: ***Crude death rate (per 1000 population), 1990-2020***

Country	Year					
	1990-1995	1995-2000	2000-2005	2005-2010	2010-2015	2015-2020
Bangladesh	11.1	9.2	8.2	7.5	7.0	6.7
Bhutan	12.6	10.0	7.8	7.2	7.0	6.8
DPR Korea	6.0	7.9	9.3	9.9	10.3	10.7
India	9.8	9.1	8.7	8.2	7.8	7.5
Indonesia	8.2	7.2	6.6	6.3	6.3	6.4
Maldives	8.9	7.3	6.5	5.7	5.3	5.0
Myanmar	10.3	9.8	10.2	9.7	9.0	8.7
Nepal	12.0	9.8	8.7	7.7	7.0	6.5
Sri Lanka	6.5	7.0	7.3	7.2	7.7	8.3
Thailand	7.4	8.1	8.6	8.5	8.9	9.3
Timor-Leste	15.4	12.6	10.2	8.9	7.8	6.8
World	**9.3**	**8.9**	**8.8**	**8.6**	**8.5**	**8.4**

Source: UN, *World population prospects: The 2006 revision* (http://esa.un.org/unpp).

Table 10: ***Total fertility rate (Children per woman), 1990-2020***

Country	Year					
	1990-1995	1995-2000	2000-2005	2005-2010	2010-2015	2015-2020
Bangladesh	4.12	3.50	3.22	2.83	2.63	2.47
Bhutan	5.39	4.19	2.91	2.19	2.10	2.02
DPR Korea	2.35	2.09	1.92	1.85	1.85	1.85
India	3.86	3.46	3.11	2.81	2.54	2.32
Indonesia	2.90	2.55	2.38	2.18	2.01	1.88
Maldives	5.55	3.85	2.81	2.63	2.47	2.34
Myanmar	3.10	2.65	2.25	2.07	1.92	1.85
Nepal	5.00	4.37	3.68	3.28	2.98	2.75
Sri Lanka	2.48	2.22	2.02	1.88	1.85	1.85
Thailand	2.00	1.90	1.83	1.85	1.85	1.85
Timor-Leste	5.69	7.01	6.96	6.53	6.00	5.49
World	**3.05**	**2.80**	**2.65**	**2.55**	**2.46**	**2.37**

Source: UN, *World population prospects: The 2006 revision* (http://esa.un.org/unpp).

Table 11: ***Infant mortality rate (per 1000 live births), 1990-2020***

Country	Year					
	1990-1995	1995-2000	2000-2005	2005-2010	2010-2015	2015-2020
Bangladesh	89	73	61	53	44	36
Bhutan	88	70	53	45	38	33
DPR Korea	42	48	50	48	46	43
India	77	70	63	55	49	43
Indonesia	58	45	34	27	21	18
Maldives	65	55	46	34	27	22
Myanmar	81	76	75	66	58	51
Nepal	91	73	65	54	45	37
Sri Lanka	17	15	12	11	10	10
Thailand	21	16	12	11	10	9
Timor-Leste	125	98	79	67	56	47
World	**62**	**58**	**54**	**49**	**45**	**41**

Source: UN, *World population prospects: The 2006 revision* (http://esa.un.org/unpp).

Table 12: ***Life expectancy at birth (years), 1990-2020***

Country	Sex	Year					
		1990-1995	1995-2000	2000-2005	2005-2010	2010-2015	2015-2020
Bangladesh	Males	55.5	59.0	61.3	63.2	65.1	66.8
	Females	56.7	59.9	62.8	65.0	67.4	69.5
	Both	56.0	59.4	62.0	64.1	66.2	68.1
Bhutan	Males	53.0	57.3	61.8	64.0	65.8	67.4
	Females	56.3	60.8	65.2	67.5	69.6	71.4
	Both	54.5	58.9	63.5	65.6	67.6	69.3
DPR Korea	Males	66.1	64.0	64.2	65.1	66.0	66.8
	Females	73.7	71.0	68.8	69.3	70.3	71.3
	Both	70.0	67.7	66.7	67.3	68.2	69.1
India	Males	59.9	61.0	61.7	63.2	65.0	66.6
	Females	60.8	62.7	64.2	66.4	68.5	70.4
	Both	60.2	61.8	62.9	64.7	66.6	68.4
Indonesia	Males	61.1	64.2	66.7	68.7	70.2	71.4
	Females	64.5	67.9	70.5	72.7	74.3	75.7
	Both	62.7	66.0	68.6	70.7	72.2	73.6
Maldives	Males	62.3	64.3	65.6	67.6	69.2	70.6
	Females	59.8	62.6	65.6	69.5	71.6	73.5
	Both	61.0	63.4	65.6	68.5	70.4	72.0
Myanmar	Males	57.3	57.8	56.7	59.1	61.9	63.9
	Females	61.6	63.0	63.4	65.3	67.5	69.5
	Both	59.3	60.3	59.9	62.1	64.6	66.6
Nepal	Males	55.8	59.1	61.0	63.2	65.1	66.8
	Females	55.6	59.6	61.6	64.2	66.6	68.8
	Both	55.7	59.4	61.3	63.8	65.9	67.9
Sri Lanka	Males	67.5	66.9	67.0	68.8	69.5	70.2
	Females	74.0	74.3	75.0	76.2	77.0	77.6
	Both	70.4	70.5	70.8	72.4	73.1	73.8
Thailand	Males	64.0	62.8	63.7	66.5	67.8	69.1
	Females	71.2	72.8	74.0	75.0	75.7	76.6
	Both	67.3	67.5	68.6	70.6	71.7	72.8
Timor-Leste	Males	48.5	53.6	57.5	60.0	62.2	64.2
	Females	50.1	55.2	59.1	61.7	64.2	66.6
	Both	49.2	54.4	58.3	60.8	63.2	65.4
World	Males	62.1	63.0	63.9	65.0	66.3	67.5
	Females	66.3	67.4	68.3	69.5	70.8	72.1
	Both	64.2	65.2	66.0	67.2	68.5	69.8

Source: UN, *World population prospects: The 2006 revision* (http://esa.un.org/unpp).

Table 13: ***Urban population (%), 1990-2015***						
Country	**Year**					
	1990	**1995**	**2000**	**2005**	**2010**	**2015**
Bangladesh	19.8	21.7	23.6	25.7	28.1	30.8
Bhutan	16.4	20.5	25.4	31.0	36.8	42.5
DPR Korea	58.4	59.1	60.2	61.6	63.4	65.5
India	25.5	26.6	27.7	28.7	30.1	31.9
Indonesia	30.6	35.6	42.0	48.1	53.7	58.5
Maldives	25.8	25.6	27.7	33.9	40.5	46.6
Myanmar	24.9	26.1	28.0	30.6	33.9	37.4
Nepal	8.9	10.9	13.4	15.8	18.2	20.9
Sri Lanka	17.2	16.4	15.7	15.1	15.1	15.7
Thailand	29.4	30.3	31.1	32.3	34.0	36.2
Timor-Leste	20.8	22.5	24.3	26.1	28.1	30.5
World	**43.0**	**44.7**	**46.6**	**48.6**	**50.6**	**52.7**

Source: UN, *World urbanization prospects: The 2007 revision* (http://esa.un.org/unup).

Table 14: ***Average annual growth rate of the urban population (%), 1990-2020***						
Country	**Year**					
	1990-1995	**1995-2000**	**2000-2005**	**2005-2010**	**2010-2015**	**2015-2020**
Bangladesh	4.03	3.66	3.58	3.45	3.41	3.33
Bhutan	2.98	6.20	6.60	4.88	4.32	3.45
DPR Korea	1.76	1.45	1.04	0.90	0.98	1.05
India	2.88	2.63	2.35	2.39	2.50	2.57
Indonesia	4.54	4.73	4.04	3.34	2.70	2.14
Maldives	2.63	3.49	5.62	5.29	4.63	3.88
Myanmar	2.42	2.64	2.68	2.88	2.70	2.51
Nepal	6.66	6.57	5.27	4.87	4.67	4.42
Sri Lanka	0.20	-0.22	-0.31	0.46	1.13	1.74
Thailand	1.73	1.63	1.49	1.66	1.75	1.83
Timor-Leste	4.33	0.72	6.75	5.00	4.99	4.75
World	2.34	2.19	2.07	1.98	1.91	1.81

Source: UN, *World urbanization prospects: The 2007 revision* (http://esa.un.org/unup).

Table 15: ***Population (in millions) in urban agglomerations with 5 million or more inhabitants in 1990 in the Region, 1990-2015***

Country	Agglomeration	Year					
		1990	1995	2000	2005	2010	2015
Bangladesh	Dhaka	6.621	8.332	10.285	12.576	14.796	17.015
India	Mumbai	12.308	14.111	16.086	18.202	20.072	21.946
	Kolkata	10.890	11.924	13.058	14.282	15.577	17.039
	Delhi	8.206	10.092	12.441	15.053	17.015	18.669
	Chennai	5.338	5.836	6.353	6.918	7.559	8.309
Indonesia	Jakarta	8.175	8.322	8.390	8.843	9.703	10.792
Thailand	Bangkok	5.888	6.106	6.332	6.582	6.918	7.332

Source: UN, *World urbanization prospects: The 2007 revision* (http://esa.un.org/unup).

Table 16: ***Number of the urban agglomerations (with 1 million or more inhabitants) in the Region, 1990-2015***

Country	Year					
	1990	1995	2000	2005	2010	2015
Bangladesh	2	3	3	3	3	4
Bhutan	…	…	…	…	…	…
DPR Korea	1	1	2	2	2	2
India	23	24	32	40	48	54
Indonesia	6	6	7	7	8	11
Maldives	0	0	0	0	0	0
Myanmar	1	1	1	1	3	3
Nepal	0	0	0	0	1	1
Sri Lanka	…	…	…	…	…	…
Thailand	1	1	1	1	1	1
Timor-Leste	…	…	…	…	…	…
Total	34	36	46	54	66	76

… Data not available
Source: UN, *World urbanization prospects: The 2007 revision* (http://esa.un.org/unup).

Table 17: ***Adult literacy rate (%), 1990-2015***

Country		Year					
		1990	1995	2000	2005	2010	2015
Bangladesh	Male	44.3	46.8	49.4	51.7	53.6	55.7
	Female	23.7	26.9	30.2	33.1	35.6	38.3
	Total	34.2	37.1	40.0	42.6	44.8	47.2
Bhutan	Male	…	…	…	…	…	…
	Female	…	…	…	…	…	…
	Total	…	…	…	…	…	…
DPR Korea	Male	…	…	…	…	…	…
	Female	…	…	…	…	…	…
	Total	…	…	…	…	…	…
India	Male	61.9	65.2	68.4	71.4	74.1	76.5
	Female	35.9	40.6	45.4	50.1	54.7	58.9
	Total	49.3	53.3	57.2	61.1	64.7	67.9
Indonesia	Male	86.7	89.6	91.8	93.6	95.0	96.1
	Female	72.5	77.7	81.9	85.5	88.5	91.1
	Total	79.5	83.5	86.8	89.5	91.7	93.6
Maldives	Male	95.0	96.1	97.0	97.6	98.1	98.6
	Female	94.6	95.7	96.8	97.6	98.2	98.6
	Total	94.8	95.9	96.9	97.6	98.2	98.6
Myanmar	Male	87.4	88.2	88.9	89.6	90.1	90.6
	Female	74.2	77.6	80.5	82.8	84.8	86.6
	Total	80.7	82.8	84.7	86.1	87.4	88.6
Nepal	Male	47.4	53.7	59.4	64.6	69.3	73.2
	Female	14.0	18.6	24.0	29.9	36.0	42.1
	Total	30.4	36.0	41.7	47.4	52.8	57.9
Sri Lanka	Male	92.9	93.7	94.4	95.0	95.6	96.0
	Female	84.7	86.9	89.0	90.6	92.1	93.3
	Total	88.7	90.2	91.6	92.8	93.8	94.6
Thailand	Male	95.3	96.3	97.1	97.7	98.1	98.5
	Female	89.5	91.9	93.9	95.1	95.8	96.7
	Total	92.4	94.1	95.5	96.4	96.9	97.6
Timor-Leste	Male	…	…	…	…	…	…
	Female	…	…	…	…	…	…
	Total	…	…	…	…	…	…

Note: calculated from adult illiteracy rates provided in the source document
… Data not available
Source: UNESCO Institute for Statistics, July 2002 Assessment (http://stats.uis.unesco.org).

Table 18: ***Gross enrolment ratio (%), 2000 and 2005***

Country		Primary school		Secondary school	
		2000	2005	2000	2005
Bangladesh	Female	102	47	…	…
	Male	101	45	…	…
	Total	102	46	…	…
Bhutan	Female	73	95	38	43
	Male	84	98	46	49
	Total	78	97	42	46
DPR Korea	Female	…	…	…	…
	Male	…	…	…	…
	Total	…	…	…	…
India	Female	86	113	38	49
	Male	101	116	54	59
	Total	94	115	46	54
Indonesia	Female	107	113	53	62
	Male	111	117	56	63
	Total	109	115	55	62
Maldives	Female	134	117	57	...
	Male	133	120	53	...
	Total	134	119	55	...
Myanmar	Female	104	114	41	46
	Male	104	111	38	47
	Total	104	113	39	47
Nepal	Female	103	108	29	42
	Male	130	118	41	49
	Total	117	113	35	46
Sri Lanka	Female	...	108	…	…
	Male	...	108	…	…
	Total	...	108	…	…
Thailand	Female	106	109	...	80
	Male	107	110	...	75
	Total	106	109	...	77
Timor-Leste	Female	...	95	...	53
	Male	...	103	...	53
	Total	...	99	...	53

… Data not available
Source: UNESCO, http://stats.uis.unesco.org/unesco/TableViewer/tableView.aspx.

Table 19: *Gross National Income (GNI) per capita (US$), 1990-2005*

Country	Year							
	1990	1995	2000	2001	2002	2003	2004	2005
Bangladesh	300	340	390	380	380	400	440	470
Bhutan	500	500	720	790	850	960	1 130	1 250
DPR Korea	…	…	…	…	…	…	…	…
India	390	380	450	460	470	530	630	730
Indonesia	620	1 010	590	740	830	940	1 130	1 280
Maldives	…	…	2 010	1 990	2 030	2 160	2 390	2 320
Myanmar	…	…	…	…	…	…	…	…
Nepal	200	200	220	230	220	220	250	270
Sri Lanka	470	700	810	840	850	930	1 000	1 160
Thailand	1 540	2 780	1 990	1 950	1 970	2 150	2 490	2 720
Timor-Leste	…	…	…	…	430	420	550	600

… Data not available
Note: GNI per capita in current US$ by World Bank Atlas method.
Source: World Bank, *World Development Indicators 2007* on CD-ROM.

Table 20: *Gross Domestic Product (GDP) per capita growth (annual %), 1990-2005*

Country	Year							
	1990	1995	2000	2001	2002	2003	2004	2005
Bangladesh	3.6	2.7	3.9	3.2	2.4	3.3	4.3	4.0
Bhutan	0.2	6.3	4.8	6.6	8.2	6.8	7.2	2.6
DPR Korea	…	…	…	…	…	…	…	…
India	3.7	5.7	2.3	3.5	2.1	6.8	6.8	7.7
Indonesia	7.1	6.9	3.5	2.5	3.0	3.3	3.6	4.2
Maldives	…	…	1.6	0.8	3.8	5.9	6.8	-7.5
Myanmar	1.0	5.2	8.5	9.9	10.7	12.5	1.9	3.9
Nepal	2.0	0.7	3.7	3.3	-2.7	1.3	1.6	0.7
Sri Lanka	5.2	4.1	4.3	1.8	2.5	4.7	4.2	4.4
Thailand	9.6	7.9	3.7	1.2	4.4	6.1	5.3	3.6
Timor-Leste	…	…	13.1	16.0	-11.6	-11.1	-3.5	-2.8

… Data not available
Source: World Bank, *World Development Indicators 2007* on CD-ROM.

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Definitions

Adult literacy rate (%): The percentage of persons aged 15 years and above who can read and write. The application of this definition is subject to qualifiers in each country and at each census. (UN, *1999 Demographic Yearbook*)

Antenatal care coverage (Percentage of pregnant women covered): The annual number of pregnant women attended by trained personnel per 100 live births in the same year. (WHO, *Evaluating the implementation of the strategy for health for all by the year 2000, Common Framework, Second Evaluation*)

Area: The total surface area, comprising land area and inland waters (assumed to consist of major rivers and lakes) and excluding only polar regions and uninhabited islands. (UN, *2000 Demographic Yearbook*)

Average annual population growth rate: The average exponential rate of growth of the population over a given period. It is calculated as ln(Pt/P0)/t, where t is the length of the period. It is expressed as a percentage. *(World Population Prospects: The 2006 Revision, Population Database http://esa.un.org/unpp/index.asp?panel=7)*

Average dietary energy consumption per person: Refers to the amount of food, expressed in kilocalories (kcal) per day, available for each individual in the total population during the reference period. Caloric content is derived by applying the appropriate food composition factors to the quantities of the commodities. Per person supplies are derived from the total amount of food available for human consumption by dividing total calories by total population actually partaking of the food supplies during the reference period. (FAO, *Statistics Division 2006)*

Beds per 10 000 population (Bed density): The ratio of the total number of (hospital) beds available in the country to the total population, expressed per 10 000 population. (http://www.who.int/healthinfo/statistics/indhospitalbeds/en/index.html)

Birth rate (per 1000 population): The annual number of live births occurring per thousand mid-year population. (UN, *1993 Demographic Yearbook*)

Children (Infants) immunized with DTP-3 (%): The percentage of infants immunized against diphtheria, tetanus, and whooping cough (three doses according to the immunization scheme adopted in the country) before reaching their first birthday. (WHO, *Implementation of strategies for health for all by the year 2000, Third Monitoring of Progress, Common Framework*)

Contraceptive prevalence (percentage of contraceptive users): The number of women of child bearing age (15-49 or 15-44 years) using any method of contraception per 100 women of child bearing age. (WHO, *Evaluating the implementation of the strategy for health for all by the year 2000, Common Framework, Second Evaluation*)

Crude death rate (per 1000 population): The annual number of deaths occurring per thousand mid-year population. (UN, *2000 Demographic Yearbook*)

Deliveries by qualified attendant (skilled health personnel): The number of deliveries attended by trained health personnel per 100 deliveries. (WHO)

Dependency ratio: The ratio of persons in the "dependent" ages (under 15 years plus 65 years or older) to those in the "economically productive" ages (15-64 years). This ratio is usually referred to as the total dependency ratio, while the first component of the numerator (children under age 15) is called child or young dependency ratio, and the second component (those aged 65 and over), old-age or old dependency ratio. (UN, *World Population Policies Vol .III 1990*). This book uses 60 years instead of 65 years in accordance with the pattern in this Region.

Doctors per 10 000 population: The ratio of total number of doctors working in the country to the total population, expressed per 10 000 population. (WHO, *World Health Statistics 2005* for physician's density)

Elderly: A person aged 60 years or more. (WHO, *Health Statistics Annual 1987*)

Expectation of life at birth (life expectancy at birth): The number of years newborn children would live if subject to the mortality risks prevailing for a cross-section of the population at the time of their birth. (UNICEF, *The State of the World's Children 1997*)

Expenditure on health (as % of GDP): The ratio of total expenditure on health from all sources to the gross domestic product of the country, expressed in percentage.

Expenditure on health per capita (international dollars): The average amount in international dollars spent per person on health in the country.

General government expenditure on health: Estimated as the sum of outlays by government entities to purchase health-care services and goods; notably by ministries of health and social security agencies. (WHO, *World Health Report 2006*)

Gross domestic product (GDP): The monetary value of all final goods and services produced in a country/an economy during a year. *(WHO, 1998a)*

Gross enrollment ratio (%): Designates a nation's total enrollment "in a specific level of education, regardless of age, expressed as a percentage of the population in the official age group corresponding to this level of education" (*UNESCO. 2005. Glossary. http://portal.unesco.org/education/en/ev.php-URL_ID=36028&URL_DO=DO_TOPIC&URL_SECTION=201.htm).*

Gross national income (GNI) per capita (US $): Formerly gross national product or GNP, the broadest measure of national income; measures total value added from domestic and foreign sources claimed by residents. GNI comprises gross domestic product (GDP) plus net receipts of primary income from foreign sources. Data are converted from national currency to current US$ using the World Bank Atlas Method. This involves using a three-year average of exchange rates. (World Bank, *World Development Report 2002*)

Health workers per 10 000 population: The ratio of total number of health workers (as per definition of the country) in the country to the total population, expressed per 10 000 population.

Human development index (HDI): Composite of three indicators that reflect important dimensions of human development: longevity as measured by life expectancy at birth; educational attainment as measured by a combination of adult literacy (two thirds weight) and combined primary, secondary and tertiary enrolment ratios (one third weight); and standard of living as measured by real GDP per capita (in purchasing power parity dollars). (UNDP, *Human Development Report 2003*)

Incidence: The number of instances of illness commencing, or of persons falling ill, during a given period in a specified population. More generally, the number of new events, e.g., new cases of a disease in a defined population, within a specified period of time. The term incidence is sometimes used to denote "incidence rate". Incidence rate is the rate at which new events occur in a population. The numerator is the number of new events that occur in a defined period; the denominator is the population at risk of experiencing the event during this period, sometimes expressed as person-time. The incidence rate most often used in public health practice is calculated by the formula

$$\frac{\text{Number of new events in specific period}}{\text{Number of persons exposed to risk during this period}} X10^{n}$$

(John M. Last, International Epidemiological Association, *A Dictionary of Epidemiology*, Third Edition)

Infant mortality rate (IMR): The number of deaths of infants under one year of age per 1000 live births. (WHO, *International Statistical Classification of Diseases and Related Health Problems - Tenth Revision)*

Low birth weight: Birth weight less than 2500 grams (up to and including 2499 grams). (WHO, *International Statistical Classification of Diseases and Related Health Problems - Ninth Revision*)

Malaria death rate per 100 000 in all age groups: People of all age groups who died due to malaria in a given year per 100 000 population (WHO).

Malaria prevalence rate per 100 000 population: Proportion of notified or reported cases of malaria per 100 000 population in a given year (WHO).

Maternal mortality ratio: Annual number of maternal deaths per 100 000 live-births. A maternal death is the death of a woman while pregnant or within 42 days of termination of pregnancy, from any cause related to or aggravated by the pregnancy or its management, but not from accidental or incidental causes. (WHO, *ICD-10*)

Neonatal mortality rate: Number of deaths during the first 28 days of life per 1000 live births in a given year or period. *(http://www.who.int/healthinfo/statistics/indneonatalmortality/en/)*

Nurses per 1000 population: The ratio of total number of nurses working in the country to the total population, expressed per 1000 population. (WHO, *World Health Statistics 2005* for Nurse density)

One-year-olds immunized against measles (Infants immunized with measles vaccine) (%): The percentage of infants fully immunized against measles (one dose) before reaching their first birthday. (WHO, *Implementation of Strategies for Health for All by the Year 2000, Third Monitoring of Progress, Common Framework*)

Older person: A person aged 60 years or more

Out-of-pocket expenditure: The direct outlays of households, including gratuities and in-kind payments, made to health practitioners and to suppliers of pharmaceuticals, therapeutic appliances and other goods and services, whose primary intent is to contribute to the restoration or the enhancement of the health status of individuals or population groups. (WHO, *World Health Report 2006*)

Population density: It is the ratio between (total) population and surface (land) area. This ratio can be calculated for any territorial unit for any point in time, depending on the source of the population data. *(OECD Glossary of Statistical Terms, http://stats.oecd.org/glossary/detail.asp?ID=2084)*

Population growth rate per year (%): This is computed by taking into account the crude birth rate, the crude death rate, and the net international migration rate of a country for a given year. (Rates have been computed as average annual rates of population growth over periods of five years.) It is an algebraic sum of the natural growth rate (crude birth rate minus crude death rate) and the net international migration rate, expressed as a percentage. (UN, *World Population Prospects, The 2000 Revision*)

Population with access to improved (adequate) sanitation (%): The percentage of the population with adequate excreta-disposal facilities that can effectively prevent human, animal and insect contact with excreta. (WHO, *World Health Report 1996*)

Population with access to improved (safe) water (%): The percentage of the population with safe drinking-water available in the home or with reasonable access to treated surface waters and untreated but uncontaminated water such as that from protected boreholes, springs and sanitary wells. (WHO, *World Health Report 1996*)

Poverty: The inability to attain a minimum standard of living. The World Bank uses a poverty line of consumption less than US$1.00 a day (at constant 1985 prices) per person (World Bank 1993). UNICEF defines the absolute poverty level as the income level below which a minimum nutritionally adequate diet plus essential non-food requirements is not affordable. (UNICEF 1995).

Prevalence: The number of events, e.g., instances of a given disease or other condition, in a given population at a designated time; sometimes used to mean "prevalence rate". When used without qualification, the term usually refers to the situation at a specified point in time (point prevalence). Prevalence rate (ratio) is the total number of all individuals who have an attribute or disease at a particular time (or during a particular period) divided by the population at risk of having the attribute or disease at this point in time or midway through the period. (John M. Last, International Epidemiological Association, *A Dictionary of Epidemiology*, Third Edition)

Private expenditure on health: Total outlays on health by private entities, notably commercial insurance, non-profit institutions, households acting as complementary funders to the previously cited institutions or disbursing unilaterally on health commodities. The revenue base of these entities may comprise multiple sources, including external funds. (WHO, *World Health Report 2006*)

Public share to total health expenditure (%): The percentage of government expenditure on health to the total health expenditure.

Sex ratio: The number of females in the population for every 100 males.

Stunted (Under-height for age) children under age five years: Includes moderate and severe stunting, defined as more than two standard deviations below the median height for age of the reference population. *(*UNDP, *Human Development Report 2004*)

Total fertility rate (TFR): The number of children who would be born per woman if she were to live to the end of her child-bearing years and bear children at each age in accordance with prevailing age-specific fertility rates. (UNICEF, *The State of the World's Children 1996*)

Total health expenditure: It has been defined as the sum of general government expenditure on health (commonly called public expenditure on health), and private expenditure on health. (WHO, *World Health Report 2006*)

Total population: The mid-year estimate of the total population of a country or area as prepared by the Population Division of the United Nations based on their methodology for estimations and projections to provide a consistent series of demographic parameters for every country of the world. (UN, *World Population Prospects, The 1994 Revision*)

Tuberculosis death rate per 100 000: Proportion of people of all age groups who died due to tuberculosis in a given year. (WHO)

Tuberculosis prevalence rate per 100 000: Proportion of tuberculosis cases of all age groups per 100 000 population in a given year. (WHO)

Under-five mortality rate (U5MR): The annual number of deaths of children under five years of age per 1000 live births. (WHO, *World Health Report 1996*)

Underweight children (under-five years of age): Proportion of children under five years with low weight-for-age as measured by percentage of children in moderate and severe malnutrition – those falling below 80% of the median weight for reference value or below two standard deviations of national or international reference populations, such as growth charts of the US National Center for Health Statistics. (UNICEF)

Urban population: The number of persons residing in urban localities. The definition of urban locality varies from country to country, and the definitions used by Member States of the South East Asia Region are as follows:

Bangladesh : Places having a municipality (pourashava), a town committee (shahar committee) or a cantonment board.

India : Towns (places with municipal corporation, municipal area committee, town committee, notified area committee or cantonment board); also, all places having 5000 or more inhabitants, a density of not less than 1000 persons per square mile or 390 per square kilometre, pronounced urban characteristics and at least three fourths of the adult male population employed in pursuits other than agriculture.

Indonesia : Municipalities, regency capitals and other places with urban characteristics.

Maldives : Male, the capital.

Nepal : Localities of 9000 or more inhabitants.

Sri Lanka : Municipalities, urban councils and towns.

Thailand : Municipal areas.

For Bhutan, DPR Korea, and Myanmar, no definition of “urban” is available. (UN, *Demographic Yearbook, 1988 and 1993*).

The health situation in Member States of WHO's South-East Asia Region varies within and across countries. The Region accounts for around 25% of the world population yet it incurs 30% of the global disease burden. The Health Situation in the South-East Asia Region was first published in 1980 and the present volume is the eleventh in the series. This publication presents the health situation in the Member States, as reflected by epidemiological data, primarily covering the period 2001-2007. It is presented with a regional perspective and, where appropriate, comparisons have been made with other regions of WHO and with world averages. It describes the progress in health development and reflects the impact of health programmes, highlighting the need for concerted action to improve the health of the population of the region. Various professionals, policy-makers, authorities, researchers, health personnel and those committed to the advancement of public health in the Region will find this publication a valuable resource.

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