LASER SURGERY

A MEDICAL DICTIONARY, BIBLIOGRAPHY,
AND ANNOTATED RESEARCH GUIDE TO
INTERNET REFERENCES

JAMES N. PARKER, M.D.
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The collective knowledge generated from academic and applied research summarized in various references has been critical in the creation of this book which is best viewed as a comprehensive compilation and collection of information prepared by various official agencies which produce publications on laser surgery. Books in this series draw from various agencies and institutions associated with the United States Department of Health and Human Services, and in particular, the Office of the Secretary of Health and Human Services (OS), the Administration for Children and Families (ACF), the Administration on Aging (AOA), the Agency for Healthcare Research and Quality (AHRQ), the Agency for Toxic Substances and Disease Registry (ATSDR), the Centers for Disease Control and Prevention (CDC), the Food and Drug Administration (FDA), the Healthcare Financing Administration (HCFA), the Health Resources and Services Administration (HRSA), the Indian Health Service (IHS), the institutions of the National Institutes of Health (NIH), the Program Support Center (PSC), and the Substance Abuse and Mental Health Services Administration (SAMHSA). In addition to these sources, information gathered from the National Library of Medicine, the United States Patent Office, the European Union, and their related organizations has been invaluable in the creation of this book. Some of the work represented was financially supported by the Research and Development Committee at INSEAD. This support is gratefully acknowledged. Finally, special thanks are owed to Tiffany Freeman for her excellent editorial support.

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FORWARD

In March 2001, the National Institutes of Health issued the following warning: "The number of Web sites offering health-related resources grows every day. Many sites provide valuable information, while others may have information that is unreliable or misleading."[1] Furthermore, because of the rapid increase in Internet-based information, many hours can be wasted searching, selecting, and printing. Since only the smallest fraction of information dealing with laser surgery is indexed in search engines, such as **www.google.com** or others, a non-systematic approach to Internet research can be not only time consuming, but also incomplete. This book was created for medical professionals, students, and members of the general public who want to know as much as possible about laser surgery, using the most advanced research tools available and spending the least amount of time doing so.

In addition to offering a structured and comprehensive bibliography, the pages that follow will tell you where and how to find reliable information covering virtually all topics related to laser surgery, from the essentials to the most advanced areas of research. Public, academic, government, and peer-reviewed research studies are emphasized. Various abstracts are reproduced to give you some of the latest official information available to date on laser surgery. Abundant guidance is given on how to obtain free-of-charge primary research results via the Internet. **While this book focuses on the field of medicine, when some sources provide access to non-medical information relating to laser surgery, these are noted in the text.**

E-book and electronic versions of this book are fully interactive with each of the Internet sites mentioned (clicking on a hyperlink automatically opens your browser to the site indicated). If you are using the hard copy version of this book, you can access a cited Web site by typing the provided Web address directly into your Internet browser. You may find it useful to refer to synonyms or related terms when accessing these Internet databases. **NOTE:** At the time of publication, the Web addresses were functional. However, some links may fail due to URL address changes, which is a common occurrence on the Internet.

For readers unfamiliar with the Internet, detailed instructions are offered on how to access electronic resources. For readers unfamiliar with medical terminology, a comprehensive glossary is provided. For readers without access to Internet resources, a directory of medical libraries, that have or can locate references cited here, is given. We hope these resources will prove useful to the widest possible audience seeking information on laser surgery.

The Editors

[1] From the NIH, National Cancer Institute (NCI): **http://www.cancer.gov/cancerinfo/ten-things-to-know**.

CHAPTER 1. STUDIES ON LASER SURGERY

Overview

In this chapter, we will show you how to locate peer-reviewed references and studies on laser surgery.

The Combined Health Information Database

The Combined Health Information Database summarizes studies across numerous federal agencies. To limit your investigation to research studies and laser surgery, you will need to use the advanced search options. First, go to **http://chid.nih.gov/index.html**. From there, select the "Detailed Search" option (or go directly to that page with the following hyperlink: **http://chid.nih.gov/detail/detail.html**). The trick in extracting studies is found in the drop boxes at the bottom of the search page where "You may refine your search by." Select the dates and language you prefer, and the format option "Journal Article." At the top of the search form, select the number of records you would like to see (we recommend 100) and check the box to display "whole records." We recommend that you type "laser surgery" (or synonyms) into the "For these words:" box. Consider using the option "anywhere in record" to make your search as broad as possible. If you want to limit the search to only a particular field, such as the title of the journal, then select this option in the "Search in these fields" drop box. The following is what you can expect from this type of search:

- **Cosmetic Laser Surgery**

  Source: FDA Consumer. 34(3): 34-37. May-June 2000.

  Summary: This journal article provides the general public with information on cosmetic laser surgery. Laser resurfacing is used to remove wrinkles and lines caused by sun damage and facial expressions, acne scars, some folds and creases around the nose and mouth, and precancerous and benign superficial growths. Lasers are revolutionary surgical tools because they can cut through tissue without causing excessive bleeding, their energy can reach areas within the body more easily than a scalpel, and they can let surgeons target very specific types of tissues without affecting nearby tissue. Not everyone is an ideal candidate for laser resurfacing because certain people with very sensitive skin cannot tolerate the medications and lubricants used on the skin during healing. In addition, darker skinned ethnic groups are not candidates because laser

resurfacing alters skin color too dramatically and unpredictably. People who expect instant results are also not good candidates. Certain complications occur with laser resurfacing, including a prolonged redness of the skin, tenderness, easy flushing, and some pigmentary changes. Although most of these complications are temporary, there are some more serious and possibly permanent complications, including hypopigmentation and scarring. There is no national policy for credentialing health professionals planning to practice laser surgery, so consumers must be very careful when selecting a practitioner. They need to interview several doctors, ask the right questions, and evaluate the doctors' answers and credentials.

Federally Funded Research on Laser Surgery

The U.S. Government supports a variety of research studies relating to laser surgery. These studies are tracked by the Office of Extramural Research at the National Institutes of Health.[2] CRISP (Computerized Retrieval of Information on Scientific Projects) is a searchable database of federally funded biomedical research projects conducted at universities, hospitals, and other institutions.

Search the CRISP Web site at **http://crisp.cit.nih.gov/crisp/crisp_query.generate_screen**. You will have the option to perform targeted searches by various criteria, including geography, date, and topics related to laser surgery.

For most of the studies, the agencies reporting into CRISP provide summaries or abstracts. As opposed to clinical trial research using patients, many federally funded studies use animals or simulated models to explore laser surgery. The following is typical of the type of information found when searching the CRISP database for laser surgery:

- **Project Title: IR AND ULTRASOUND CATHETER SYSTEMS**

  Principal Investigator & Institution: Hooper, Brett A. Assistant Research Professor; Biomedical Engineering; Duke University Durham, NC 27706

  Timing: Fiscal Year 2001; Project Start 02-MAY-2001; Project End 30-APR-2004

  Summary: (Verbatim from Applicant's Abstract): Cardiovascular disease is the leading cause of death in the United States. Techniques to address this problem such as laser angioplasty showed promise early on, but enthusiasm waned in the face of inadvertent vascular perforation, restenosis, and thrombosis. The overall objective of the proposed research is to develop and test a new class of broadband endoscopic and catheter based systems for the diagnosis and therapy of cardiovascular disease. This new generation of catheter based devices is designed to overcome the problems associated with laser angioplasty and extend the frequency range of IR which can be administered. We also propose to develop, for the first time, multiple energy catheters that will permit simultaneous imaging with JR and ultrasound (U/S). Simultaneous, multi-energy images may permit a more accurate assessment of vascular plaque type. The proposed imaging systems will be forward-Jooking rather than side-looking unlike all conventional intravascular ultrasound scanners. To address the overall objective we propose the following specific aims: 1) measure IR absorbance spectra of various

[2] Healthcare projects are funded by the National Institutes of Health (NIH), Substance Abuse and Mental Health Services (SAMHSA), Health Resources and Services Administration (HRSA), Food and Drug Administration (FDA), Centers for Disease Control and Prevention (CDCP), Agency for Healthcare Research and Quality (AHRQ), and Office of Assistant Secretary of Health (OASH).

atherosclerotic plaque (in vitro and in vivo) in the 2 to 10 um range, 2) perform tissue-specific, evanescent optical wave ablation of atherosclerotic plaque (in vitro and in vivo) at wavelengths determined from aim 1, using the continuously tunable IR free-electron laser (FEL) at Duke University, 3) design, construct, and test a broadband multi-energy catheter that permits simultaneous forward-looking JR and U/S imaging, and 4) design, construct, and test a broadband multi-energy catheter that permits sequential JR imaging and ablation. Perhaps the most profound advantage of this approach is the combined use of evanescent waves and multiple energy endoscopic delivery for precise, controlled **laser surgery** and diagnosis in a minimally invasive setting. The program will evolve from benchtop experiments using the JR FEL to advanced fiber optics that incorporate specialized optical micro-electro-mechanical systems (MEMS) sources and sensors for diagnostic and therapeutic devices. Results from aims 1 and 2 will guide the construction phase of the advanced MEMS source and detection arrays. The integration of MEMS and smart pixel arrays has the potential of making available to cardiovascular medicine high performance, inexpensive and unique catheters. Such catheters could have a major impact on the treatment of cardiovascular disease and may find application in other disease entities.

Website: http://crisp.cit.nih.gov/crisp/Crisp_Query.Generate_Screen

- **Project Title: OXIDE GLASS FIBER OPTIMIZED FOR SHORT PULSE IR LASERS**

  Principal Investigator & Institution: Tran, Danh C.; Infrared Fiber Systems, Inc. 2301-A Broadbirch Dr Silver Spring, MD 20904

  Timing: Fiscal Year 2002; Project Start 01-MAY-2002; Project End 31-MAR-2003

  Summary: There is a clinical need for optimized optical fiber transmission of short pulse mid-infrared laser radiation for surgical laser applications. Large potential medical markets such as cosmetic skin resurfacing, dentistry, and ophthalmology utilize the Er: YAG and Er:YSGG lasers for therapeutic procedures. The goal of this Phase I study is to further develop the germanium oxide glass fibers made by IFS so that they may be used in these applications. There are three aims of this study: (1) Testing and development of fibers using a short-pulse ER:YAG laser for potential ophthalmic applications requiring further precision, (2) Testing at high-power, high pulse repetition rates for dental and cosmetic applications requiring rapid removal of large amounts of tissue, and (3) development of more compatible germanium oxide fibers. Further Phase II work will be done on the continued fiber development and the development of specialized fiber probe tip designs for flexible delivery of laser radiation during custom surgical laser procedures. PROPOSED COMMERCIAL APPLICATIONS: IR fiber able to deliver laser energy from short pulse mid-infrared lasers would have many applications in **laser surgery** and dentistry, including ophthalmology and dermatology, for example.

  Website: http://crisp.cit.nih.gov/crisp/Crisp_Query.Generate_Screen

- **Project Title: STABILIZED ADAPTIVE OPTICS IMAGING LASER MICROSURGERY**

  Principal Investigator & Institution: Hammer, Daniel X.; Physical Sciences, Inc. 20 New England Business Center Andover, MA 01810

  Timing: Fiscal Year 2003; Project Start 19-SEP-2003; Project End 31-AUG-2005

  Summary: Recent advances in ophthalmic imaging have revolutionized the ability of clinicians to visualize and understand a wide variety of diseases of the eye. Although these advanced diagnostic instruments indirectly indicate a course of treatment, they are generally not directly coupled to a particular therapy. We propose to design, develop,

and construct an innovative diagnostic instrument, the core elements of which will be integral to the delivery of a new treatment modality. The diagnostic instrument will use scanning laser ophthalmoscopy (SLO) at its core, with unique and necessary enhancements of adaptive optics and retinal tracking used to increase imaging performance and clinical utility. The instrument will be used to precisely deliver laser pulses for several different potential therapeutic applications. By use of ultrashort laser pulses of femtosecond or picosecond duration, microsurgical damage can be created at spatially-confined locations, without collateral damage to critical adjacent layers, and with lower energies than other **laser surgery.** The system will be constructed at Physical Sciences Inc. (PSI) and the imaging performance will be evaluated there on artificial targets and on a limited number of human subjects. The system will then be transported to the laser laboratory (AFRIJHEDO) at Brooks AFB for initial testing in an appropriate animal model. The PSI investigators will be assisted by experts in the field of adaptive optics for retinal imaging, clinical ophthalmology, and ultrashort pulse laser generation and delivery. The unique use of an advanced, high-resolution imaging system for both imaging and delivery of laser pulses for specific therapies constitutes the direct, complete, and efficient integration of detection and treatment modalities.

Website: http://crisp.cit.nih.gov/crisp/Crisp_Query.Generate_Screen

- **Project Title: STUDIES OF ANTAGONISTS TO INTEGRIN ALPHA V BETA 3**

  Principal Investigator & Institution: Mattern, Ralph H.; Telios Pharmaceuticals, Inc. 11045 Roselle St, Ste a San Diego, CA 92121

  Timing: Fiscal Year 2001; Project Start 30-SEP-1996; Project End 31-AUG-2003

  Summary: Peptidomimetic antagonists to the integrin receptor alpha(v)beta(3) will be developed as therapeutics to treat diabetic retinopathy. This disease afflicts 2.1 million people a year and is the leading cause of blindness in the under 55 age group. The only treatment at this time is **laser surgery**. Integrin alpha(v)beta(3) antagonists represent a new type of non-surgical therapy. The mechanism by which the antagonists will work is by attenuating uncontrolled neovascularization by inhibition of angiogenesis. Using the structural data obtained during Phase I of this study as a starting model, we will design and synthesize peptidomimetics. In our rational design approach we will employ NMR studies on 15N labeled alpha(v)beta(3) selective peptides bound to the receptor, traditional structure activity relationship studies and computer simulations. We will express the alpha(v)beta(3) receptor in a soluble form which facilitates both NMR studies and binding assays. A parallel synthesis approach will be pursued to obtain small targeted families of compounds which will be assayed for their binding to the integrin receptors, and promising leads will be tested in vivo. The goal is the development of drug candidates that will have the proper bioavailability and pharmacokinetics to be useful as therapeutics. PROPOSED COMMERCIAL APPLICATIONS: Non-peptidic integrin alpha(v)beta(3) antagonists will be used to treat diabetic retinopathy, a disease that afflicts 2.1 million people a year and is the leading cause of blindness in the under 55 age group.

  Website: http://crisp.cit.nih.gov/crisp/Crisp_Query.Generate_Screen

- **Project Title: TRANSIENT THERMAL MODELING AND SIMULATION ENVIRONMENT**

  Principal Investigator & Institution: Elkouh, Nabil A.; Creare, Inc. Box 71, Etna Rd Hanover, NH 03755

  Timing: Fiscal Year 2003; Project Start 01-JUL-2003; Project End 31-DEC-2003

Summary: (provided by applicant): Many biomedical applications involve the use of energy deposition into in homogeneous structures, such as **laser surgery,** cryosurgery, and RF ablation. In many cases, numerous advantages can be realized when the energy source is pulsed. No commercial software package exists to assist clinicians in determining the direction, duration, and magnitude of these energy interventions. In particular, existing predictive tools do not account for the effects associated with the laser interaction with thin tissues. While well-known approximations, such as the Diffusion Model, adequately account for interactions with thick tissue samples, they do not accurately model the effects associated with thin tissues where interactions with boundaries becomes important. Furthermore, when pulsed energy is deposited in tissue at ultra-high frequency, the subsequent conduction in the tissue no longer adheres to Fourier's conduction law, further complicating simulations. The specific aim of this project is to develop a general, commercial software modeling and simulation environment that will enable accurate assessment of heat transfer for biomedical applications involving energy deposition in tissues across the spectrums of thin to thick tissue layers and ultra-fast to continuous wave lasers, including those situations when non-Fourier heat conduction is important. Our thermal modeling and simulation environment will provide an easy-to-use tool for clinicians and biomedical researchers to plan accurately and understand a wide variety of pulsed and non-pulsed energy deposition-based clinical procedures. In Phase I, we will develop the general framework for a stand-alone software package that will be demonstrated with comparisons to experimental data, analytic solutions, and Monte Carlo simulations. In Phase II, we will develop a complete and robust package with an intuitive graphical user interface, refined models, and greatly expanded property data base developed in conjunction with our collaborators. We will also conduct appropriate experiments and work closely with clinicians to verify the underlying models and numerical schemes and gather additional required material properties.

Website: http://crisp.cit.nih.gov/crisp/Crisp_Query.Generate_Screen

- **Project Title: TWIN-TWIN TRANSFUSION SYNDROME TRIAL**

  Principal Investigator & Institution: Crombleholme, Timothy M. Attending Surgeon; Children's Hospital of Philadelphia 34Th St and Civic Ctr Blvd Philadelphia, PA 19104

  Timing: Fiscal Year 2001; Project Start 24-SEP-2001; Project End 31-MAY-2006

  Summary: (provided by applicant): The twin twin transfusion syndrome (TTTS) is the most common serious complication of monochorionic twin gestations, affecting between 4 and 35% of monochorionic twin pregnancies each year in the United States. The TTTS accounts for 17% of all perinatal mortality associated with twin gestations. Standard therapy in the United States has been limited to serial amnioreduction which appears to improve the overall outcome but has had little impact on the more severe end of the spectrum in TTTS. In addition, survivors of TTTS treated by serial amnioreduction have an 18 to 26% incidence of significant neurologic and cardiac morbidity. Selective fetoscopic laser photocoagulation of chorioangiopagus has emerged as an alternative treatment strategy in TTTS with comparable survival to serial amnioreduction in non-randomized, non- prospective clinical studies. The superiority of fetoscopic laser treatment of TTTS remains unproven. In our preliminary data we have observed enhanced survival with selective fetoscopic laser photocoagulation in pregnancies with TTTS that had already failed serial amnioreduction or rnicroseptostomy. We hypothesize that treatment of the underlying chorioangiopagus by selective fetoscopic laser photocoagulation will not only improve the survival of twins but will reduce the incidence of neurologic, cardiac, and developmental sequelae of TTTS. We propose to

test this hypothesis by a prospective randomized multicenter trial to compare serial amnioreduction with selective fetoscopic laser photocoagulation. In. the course of this study we will address the following specific aims: 1) To demonstrate that selective laser photocoagulation of chorioangiopagus in severe tETS results in significantly improved survival of twins compared to aggressive serial amnioreduction therapy. Survival of recipients and donors, both within the same pregnancy and overall survival to 30 days after birth will be examined; 2) To demonstrate that selective laser photocoagulation results in significantly improved cardiac, neurologic, and developmental outcomes in survivors of severe TTTS compared to survivors treated by aggressive serial amnioreduction. This will be a multicenter prospective randomized clinical trial with patients randomized either to serial amnioreduction at one of 16 participating centers or selective fetoscopic **laser surgery** at one or two participating centers. The fetal echocardiograms will be reviewed in a blinded fashion to evaluate cardiac morbidity and response to treatment.. Similarly, prenatal ultrasounds, as well as ultrasounds and MRI s obtained in the first week of life and after 4 weeks, will be reviewed in a blinded fashion to evaluate the neurologic morbidity and distinguish prenatal from perinatal events. Long-term neurodevelopmental outcome will be evaluated by the NIGH]) Neonatal Network at 18 to 22 months of age. The overall goal of the study is to improve the outcomes of twins with TTTS by determining which treatment for TTTS has a better survival as well as cardiac, neurologic, and developmental outcome.

Website: http://crisp.cit.nih.gov/crisp/Crisp_Query.Generate_Screen

- **Project Title: ULTRASONIC SYSTEM FOR OCULAR VISUALIZATION AND BIOMETRY**

  Principal Investigator & Institution: Wiseman, George D.; Ultralink, Llc 2083 Hawaii Ave Ne Saint Petersburg, FL 33703

  Timing: Fiscal Year 2002; Project Start 01-FEB-2002; Project End 31-JUL-2002

  Summary: (Provided by Applicant): The long-term objective of this program is a commercially viable system that will play a key role in restoring and preserving vision for millions of patients in this country and abroad. The system will couple high-frequency ultrasound (40 MHz) with novel signal processing to provide accurate, precise biometry of the cornea and anterior chamber. Measurements will be used by ophthalmologists to: 1) plan refractive **laser surgery** of the cornea (for vision correction and restoration); 2) select the appropriate type and size of recently developed intra-ocular lenses (IOL) to correct refractive errors or restore vision following cataract surgery; and, 3) document causes of undesired side-effects following laser and IOL procedures, so that corrective actions can be initiated promptly. The system will incorporate advanced, patented methodology developed by the Weill Medical College of Cornell University (WMC) and Riverside Research Institute (RRI). Ultralink, Inc. has already implemented an initial "proof-of-concept" system that successfully demonstrated the practicality of these objectives. This innovative system functioned extremely well, but it also identified several practical issues that will be addressed in this program so that these techniques can realize their full clinical and commercial potentials. The program will integrate system design (Phase I), and development and testing (Phase II) at Ultralink, WMC, and RRI. PROPOSED COMMERCIAL APPLICATION: The research will provide advanced ultrasonic systems to provide precise biometric data that is essential for optimal laser?refractive surgery and intraocular lens implants.

  Website: http://crisp.cit.nih.gov/crisp/Crisp_Query.Generate_Screen

The National Library of Medicine: PubMed

One of the quickest and most comprehensive ways to find academic studies in both English and other languages is to use PubMed, maintained by the National Library of Medicine.[3] The advantage of PubMed over previously mentioned sources is that it covers a greater number of domestic and foreign references. It is also free to use. If the publisher has a Web site that offers full text of its journals, PubMed will provide links to that site, as well as to sites offering other related data. User registration, a subscription fee, or some other type of fee may be required to access the full text of articles in some journals.

To generate your own bibliography of studies dealing with laser surgery, simply go to the PubMed Web site at **http://www.ncbi.nlm.nih.gov/pubmed**. Type "laser surgery" (or synonyms) into the search box, and click "Go." The following is the type of output you can expect from PubMed for laser surgery (hyperlinks lead to article summaries):

- **A case of pleomorphic adenoma of the epiglottis. Bilateral vocal-cord paralysis after YAG laser surgery.**
  Author(s): Ito A, Sone M, Kitamura Y, Fukuta S, Nakashima T, Yanagita N.
  Source: Auris, Nasus, Larynx. 1997 July; 24(3): 303-7.
  http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=9251860&dopt=Abstract

- **A clinical investigation of the management of oral lichen planus with CO 2 laser surgery.**
  Author(s): Loh HS.
  Source: Journal of Clinical Laser Medicine & Surgery. 1992 December; 10(6): 445-9.
  http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=10148213&dopt=Abstract

- **A comparative study of topical analgesia with a lidocaine/prilocaine cream (EMLA) and infiltration anesthesia for laser surgery of genital warts in men.**
  Author(s): Lassus A, Kartamaa M, Happonen HP.
  Source: Sexually Transmitted Diseases. 1990 July-September; 17(3): 130-2.
  http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=2247802&dopt=Abstract

- **A comparison between laser surgery and electrosurgery for bilateral hydrosalpinx: a 2-year follow-up.**
  Author(s): Tulandi T, Vilos GA.
  Source: Fertility and Sterility. 1985 December; 44(6): 846-8.
  http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=4076441&dopt=Abstract

[3] PubMed was developed by the National Center for Biotechnology Information (NCBI) at the National Library of Medicine (NLM) at the National Institutes of Health (NIH). The PubMed database was developed in conjunction with publishers of biomedical literature as a search tool for accessing literature citations and linking to full-text journal articles at Web sites of participating publishers. Publishers that participate in PubMed supply NLM with their citations electronically prior to or at the time of publication.

- **A method for clearing smoke during laser surgery of the vagina and cervix.**
  Author(s): Marsden DE, McDonald TW, Cavanagh D.
  Source: American Journal of Obstetrics and Gynecology. 1983 May 1; 146(1): 109-10.
  http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=6846413&dopt=Abstract

- **A method for determining depth of unmarked endotracheal tubes used in laser surgery.**
  Author(s): Mathews WS Jr.
  Source: Anesthesia and Analgesia. 1990 March; 70(3): 340.
  http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=2305994&dopt=Abstract

- **A new drape for otolaryngologic laser surgery.**
  Author(s): Selkin SG.
  Source: Otolaryngology and Head and Neck Surgery. 1986 November; 95(4): 523-4.
  http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=3106919&dopt=Abstract

- **A new endotracheal tube for carbon dioxide and KTP laser surgery of the aerodigestive tract.**
  Author(s): Ossoff RH, Aly A, Gonzales D, Koriwchak MJ, Houchin N.
  Source: Otolaryngology and Head and Neck Surgery. 1993 January; 108(1): 96-9.
  http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=8437882&dopt=Abstract

- **A new tongue plate for use in oropharyngeal KTP laser surgery.**
  Author(s): Ayshford CA, Kabbani M, Reddy TN.
  Source: Rev Laryngol Otol Rhinol (Bord). 2000; 121(1): 57-8.
  http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=10865487&dopt=Abstract

- **A randomized study of dorzolamide in the prevention of elevated intraocular pressure after anterior segment laser surgery. Dorzolamide Laser Study Group.**
  Author(s): Hartenbaum D, Wilson H, Maloney S, Vacarelli L, Orillac R, Sharpe E.
  Source: Journal of Glaucoma. 1999 August; 8(4): 273-5.
  http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=10464738&dopt=Abstract

- **A review of carbon dioxide laser surgery in the oral cavity and pharynx.**
  Author(s): Rhys Evans PH, Frame JW, Brandrick J.
  Source: The Journal of Laryngology and Otology. 1986 January; 100(1): 69-77.
  http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=3080541&dopt=Abstract

- **A review of laser surgery in the U.S.S.R.**
  Author(s): Skobelkin OK, Brekhov EI, Korepanov VI.
  Source: Lasers in Surgery and Medicine. 1985; 5(5): 451-2.
  http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=4068876&dopt=Abstract

- **A set of bronchoscopes for carbon dioxide laser surgery.**
  Author(s): Ossoff RH, Karlan MS.
  Source: Otolaryngology and Head and Neck Surgery. 1983 June; 91(3): 336-7.
  http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=6410342&dopt=Abstract

- **A simple, inexpensive, disposable suction device for laser surgery.**
  Author(s): Cohen NL.
  Source: Otolaryngology and Head and Neck Surgery. 1981 May-June; 89(3 Pt 1): 451-2.
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  Author(s): Malloy TR, Wein AJ.
  Source: The Surgical Clinics of North America. 1984 October; 64(5): 905-12.
  http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=6436989&dopt=Abstract

- **Use of a metal tracheostomy tube for laser surgery to a subglottic stenosis.**
  Author(s): Asai T, Mastumoto S, Shingu K.
  Source: European Journal of Anaesthesiology. 2001 February; 18(2): 126.
  http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=11270025&dopt=Abstract

- **Use of parent-child tents in pediatric laser surgery.**
  Author(s): Yoo SS, Liggett J, Cohen BA.
  Source: Dermatologic Surgery : Official Publication for American Society for Dermatologic Surgery [et Al.]. 2003 April; 29(4): 399-401.
  http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=12656820&dopt=Abstract

- **Use of scleral eye shields for periorbital laser surgery.**
  Author(s): Wheeland RG, Bailin PL, Ratz JL, Schreffler DE.
  Source: J Dermatol Surg Oncol. 1987 February; 13(2): 156-8.
  http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=3805478&dopt=Abstract

- **Vaginal laser surgery.**
  Author(s): Jobson VW, Campion MJ.
  Source: Obstetrics and Gynecology Clinics of North America. 1991 September; 18(3): 511-24. Review.
  http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=1659681&dopt=Abstract

- **Ventilation by metal suction catheter during tracheal laser surgery performed on a premature infant.**
  Author(s): Lock RL, Audenaert SM, Richardson CH, Haydon RC.
  Source: The Laryngoscope. 1994 February; 104(2): 226-8.
  http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=8302129&dopt=Abstract

- **Vocal function following carbon dioxide laser surgery for glottic carcinoma.**
  Author(s): Hirano M, Hirade Y, Kawasaki H.
  Source: The Annals of Otology, Rhinology, and Laryngology. 1985 May-June; 94(3): 232-5.
  http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=4014943&dopt=Abstract

- **Vocal quality after endoscopic laser surgery.**
  Author(s): Greene DA.
  Source: Archives of Otolaryngology--Head & Neck Surgery. 1987 November; 113(11): 1238.
  http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=3663356&dopt=Abstract

- **Voice quality after laser surgery or radiotherapy for T1a glottic carcinoma.**
  Author(s): Tamura E, Kitahara S, Ogura M, Kohno N.
  Source: The Laryngoscope. 2003 May; 113(5): 910-4.
  http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=12792332&dopt=Abstract

- **Vulvar and penile HPV lesions: laser surgery and topic anaesthesia.**
  Author(s): Frega A, Di Renzi F, Palazzetti PL, Pace S, Figliolini M, Stentella P.
  Source: Clin Exp Obstet Gynecol. 1993; 20(2): 76-81.
  http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=8392452&dopt=Abstract

- **What's new in cutaneous laser surgery.**
  Author(s): Dover JS, Kilmer SL, Anderson RR.
  Source: Keio J Med. 1993 December; 42(4): 165-8. Review. No Abstract Available.
  http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=8126971&dopt=Abstract

- **What's new in cutaneous laser surgery.**
  Author(s): Dover JS, Kilmer SL, Anderson RR.
  Source: J Dermatol Surg Oncol. 1993 April; 19(4): 295-8. No Abstract Available.
  http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=8478468&dopt=Abstract

- **Why 70 watts to evaluate metal tapes for CO2 laser surgery?**
  Author(s): Williamson R.
  Source: Anesthesia and Analgesia. 1991 March; 72(3): 414-6.
  http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=1994778&dopt=Abstract

- **Wound healing after laser surgery.**
  Author(s): Hendrick DA, Meyers A.
  Source: Otolaryngologic Clinics of North America. 1995 October; 28(5): 969-86. Review.
  http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=8559583&dopt=Abstract

- **Ziv laryngeal depressor for laser surgery.**
  Author(s): Ziv M.
  Source: Otolaryngology and Head and Neck Surgery. 1986 March; 94(3): 411-2.
  http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=3083383&dopt=Abstract

CHAPTER 2. NUTRITION AND LASER SURGERY

Overview

In this chapter, we will show you how to find studies dedicated specifically to nutrition and laser surgery.

Finding Nutrition Studies on Laser Surgery

The National Institutes of Health's Office of Dietary Supplements (ODS) offers a searchable bibliographic database called the IBIDS (International Bibliographic Information on Dietary Supplements; National Institutes of Health, Building 31, Room 1B29, 31 Center Drive, MSC 2086, Bethesda, Maryland 20892-2086, Tel: 301-435-2920, Fax: 301-480-1845, E-mail: ods@nih.gov). The IBIDS contains over 460,000 scientific citations and summaries about dietary supplements and nutrition as well as references to published international, scientific literature on dietary supplements such as vitamins, minerals, and botanicals.[4] The IBIDS includes references and citations to both human and animal research studies.

As a service of the ODS, access to the IBIDS database is available free of charge at the following Web address: **http://ods.od.nih.gov/databases/ibids.html**. After entering the search area, you have three choices: (1) IBIDS Consumer Database, (2) Full IBIDS Database, or (3) Peer Reviewed Citations Only.

Now that you have selected a database, click on the "Advanced" tab. An advanced search allows you to retrieve up to 100 fully explained references in a comprehensive format. Type "laser surgery" (or synonyms) into the search box, and click "Go." To narrow the search, you can also select the "Title" field.

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[4] Adapted from **http://ods.od.nih.gov**. IBIDS is produced by the Office of Dietary Supplements (ODS) at the National Institutes of Health to assist the public, healthcare providers, educators, and researchers in locating credible, scientific information on dietary supplements. IBIDS was developed and will be maintained through an interagency partnership with the Food and Nutrition Information Center of the National Agricultural Library, U.S. Department of Agriculture.

The following information is typical of that found when using the "Full IBIDS Database" to search for "laser surgery" (or a synonym):

- **Mucosal reconstruction using an artificial dermis after KTP laser surgery.**
  Author(s): Department of Oral and Maxillofacial Surgery, Graduate School of Medicine, Kobe University, Kobe, Japan. ishiijun@med.kobe-u.ac.jp
  Source: Ishii, J Fujita, K Komori, T J-Clin-Laser-Med-Surg. 2002 December; 20(6): 313-7 1044-5471

Federal Resources on Nutrition

In addition to the IBIDS, the United States Department of Health and Human Services (HHS) and the United States Department of Agriculture (USDA) provide many sources of information on general nutrition and health. Recommended resources include:

- healthfinder®, HHS's gateway to health information, including diet and nutrition: **http://www.healthfinder.gov/scripts/SearchContext.asp?topic=238&page=0**
- The United States Department of Agriculture's Web site dedicated to nutrition information: **www.nutrition.gov**
- The Food and Drug Administration's Web site for federal food safety information: **www.foodsafety.gov**
- The National Action Plan on Overweight and Obesity sponsored by the United States Surgeon General: **http://www.surgeongeneral.gov/topics/obesity/**
- The Center for Food Safety and Applied Nutrition has an Internet site sponsored by the Food and Drug Administration and the Department of Health and Human Services: **http://vm.cfsan.fda.gov/**
- Center for Nutrition Policy and Promotion sponsored by the United States Department of Agriculture: **http://www.usda.gov/cnpp/**
- Food and Nutrition Information Center, National Agricultural Library sponsored by the United States Department of Agriculture: **http://www.nal.usda.gov/fnic/**
- Food and Nutrition Service sponsored by the United States Department of Agriculture: **http://www.fns.usda.gov/fns/**

Additional Web Resources

A number of additional Web sites offer encyclopedic information covering food and nutrition. The following is a representative sample:

- AOL: **http://search.aol.com/cat.adp?id=174&layer=&from=subcats**
- Family Village: **http://www.familyvillage.wisc.edu/med_nutrition.html**
- Google: **http://directory.google.com/Top/Health/Nutrition/**
- Healthnotes: **http://www.healthnotes.com/**
- Open Directory Project: **http://dmoz.org/Health/Nutrition/**
- Yahoo.com: **http://dir.yahoo.com/Health/Nutrition/**

- WebMD®Health: **http://my.webmd.com/nutrition**
- WholeHealthMD.com: **http://www.wholehealthmd.com/reflib/0,1529,,00.html**

The following is a specific Web list relating to laser surgery; please note that any particular subject below may indicate either a therapeutic use, or a contraindication (potential danger), and does not reflect an official recommendation:

- **Vitamins**

  Vitamin C
  Source: Prima Communications, Inc.www.personalhealthzone.com

CHAPTER 3. ALTERNATIVE MEDICINE AND LASER SURGERY

Overview

In this chapter, we will begin by introducing you to official information sources on complementary and alternative medicine (CAM) relating to laser surgery. At the conclusion of this chapter, we will provide additional sources.

National Center for Complementary and Alternative Medicine

The National Center for Complementary and Alternative Medicine (NCCAM) of the National Institutes of Health (**http://nccam.nih.gov/**) has created a link to the National Library of Medicine's databases to facilitate research for articles that specifically relate to laser surgery and complementary medicine. To search the database, go to the following Web site: **http://www.nlm.nih.gov/nccam/camonpubmed.html**. Select "CAM on PubMed." Enter "laser surgery" (or synonyms) into the search box. Click "Go." The following references provide information on particular aspects of complementary and alternative medicine that are related to laser surgery:

- **Anesthesiological problems of endolaryngeal and endotracheal laser surgery.**
  Author(s): Jeckstrom W, Wawersik J, Hoffmann P, Werner JA, Lippert BM, Christiansen B, Paustian R, Sowada U.
  Source: Advances in Oto-Rhino-Laryngology. 1995; 49: 15-9.
  http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=7653352&dopt=Abstract

- **Rhabdomyosarcoma of the larynx treated by laser surgery combined with radiotherapy and chemotherapy.**
  Author(s): Kedar A, Kuten A, Joachims HZ, Ben-Arieh Y, Yudelev M.
  Source: Medical and Pediatric Oncology. 1983; 11(4): 279-80.
  http://www.ncbi.nlm.nih.gov:80/entrez/query.fcgi?cmd=Retrieve&db=PubMed&list_uids=6688456&dopt=Abstract

Additional Web Resources

A number of additional Web sites offer encyclopedic information covering CAM and related topics. The following is a representative sample:

- Alternative Medicine Foundation, Inc.: **http://www.herbmed.org/**
- AOL: **http://search.aol.com/cat.adp?id=169&layer=&from=subcats**
- Chinese Medicine: **http://www.newcenturynutrition.com/**
- drkoop.com®: **http://www.drkoop.com/InteractiveMedicine/IndexC.html**
- Family Village: **http://www.familyvillage.wisc.edu/med_altn.htm**
- Google: **http://directory.google.com/Top/Health/Alternative/**
- Healthnotes: **http://www.healthnotes.com/**
- MedWebPlus: **http://medwebplus.com/subject/Alternative_and_Complementary_Medicine**
- Open Directory Project: **http://dmoz.org/Health/Alternative/**
- HealthGate: **http://www.tnp.com/**
- WebMD®Health: **http://my.webmd.com/drugs_and_herbs**
- WholeHealthMD.com: **http://www.wholehealthmd.com/reflib/0,1529,,00.html**
- Yahoo.com: **http://dir.yahoo.com/Health/Alternative_Medicine/**

The following is a specific Web list relating to laser surgery; please note that any particular subject below may indicate either a therapeutic use, or a contraindication (potential danger), and does not reflect an official recommendation:

- **General Overview**

  Benign Prostatic Hyperplasia
  Source: Integrative Medicine Communications; www.drkoop.com

  BPH
  Source: Integrative Medicine Communications; www.drkoop.com

  Glaucoma
  Source: Integrative Medicine Communications; www.drkoop.com

  Macular Degeneration
  Source: Integrative Medicine Communications; www.drkoop.com

  Prostate Enlargement
  Source: Integrative Medicine Communications; www.drkoop.com

  Retinopathy
  Source: Healthnotes, Inc. www.healthnotes.com

Warts
Source: Healthnotes, Inc. www.healthnotes.com

- **Herbs and Supplements**

  Shiitake
  Alternative names: Lentinus edodes
  Source: Healthnotes, Inc. www.healthnotes.com

General References

A good place to find general background information on CAM is the National Library of Medicine. It has prepared within the MEDLINEplus system an information topic page dedicated to complementary and alternative medicine. To access this page, go to the MEDLINEplus site at **http://www.nlm.nih.gov/medlineplus/alternativemedicine.html**. This Web site provides a general overview of various topics and can lead to a number of general sources.

CHAPTER 4. PATENTS ON LASER SURGERY

Overview

Patents can be physical innovations (e.g. chemicals, pharmaceuticals, medical equipment) or processes (e.g. treatments or diagnostic procedures). The United States Patent and Trademark Office defines a patent as a grant of a property right to the inventor, issued by the Patent and Trademark Office.[5] Patents, therefore, are intellectual property. For the United States, the term of a new patent is 20 years from the date when the patent application was filed. If the inventor wishes to receive economic benefits, it is likely that the invention will become commercially available within 20 years of the initial filing. It is important to understand, therefore, that an inventor's patent does not indicate that a product or service is or will be commercially available. The patent implies only that the inventor has "the right to exclude others from making, using, offering for sale, or selling" the invention in the United States. While this relates to U.S. patents, similar rules govern foreign patents.

In this chapter, we show you how to locate information on patents and their inventors. If you find a patent that is particularly interesting to you, contact the inventor or the assignee for further information. **IMPORTANT NOTE:** When following the search strategy described below, you may discover non-medical patents that use the generic term "laser surgery" (or a synonym) in their titles. To accurately reflect the results that you might find while conducting research on laser surgery, we have not necessarily excluded non-medical patents in this bibliography.

Patents on Laser Surgery

By performing a patent search focusing on laser surgery, you can obtain information such as the title of the invention, the names of the inventor(s), the assignee(s) or the company that owns or controls the patent, a short abstract that summarizes the patent, and a few excerpts from the description of the patent. The abstract of a patent tends to be more technical in nature, while the description is often written for the public. Full patent descriptions contain much more information than is presented here (e.g. claims, references, figures, diagrams, etc.). We will tell you how to obtain this information later in the chapter. The following is an

[5]Adapted from the United States Patent and Trademark Office:
http://www.uspto.gov/web/offices/pac/doc/general/whatis.htm.

example of the type of information that you can expect to obtain from a patent search on laser surgery:

- **Antimicrobial filter for use in electrocautery or laser surgery**

  Inventor(s): Holland; Clint (East Amherst, NY)

  Assignee(s): Medtek Devices, Inc. (Amherst, NY)

  Patent Number: 5,874,052

  Date filed: May 5, 1997

  Abstract: The present invention includes a filter, 10, for purifying smoke plume generated from electrocautery or laser surgery. The filter includes a pre-filter, 11, for filtering gross particulate; a first filter, 12, having a structurally blended antimicrobial agent and adapted to capture and destroy minute and harmful organic particles such as viruses or bacteria at high efficiency; a second filter, 13, having a charcoal bed for removing gaseous toxins and odors from the smoke plume and a post-filter, 14, adapted to complete the general filtering process and to control the migration of any charcoal fines or other filter elements. The filter is adapted to be used in connection with various filter containers or hoods, including a rectangular hood, 16, or an industry-standard cylindrical filtering container, 20. The invention further includes the method for producing the blended antimicrobial first filter through the casting of a polymer membrane, 30, from a solution of a solvent, 25, polymer, 24, and antimicrobial, 26, cast on a substrate, 28, and made the subject of controlled evaporation of the solvent, 29. Thereafter, the resulting polymer membrane, thoroughly diffused and blended with the antimicrobial, is formed into various filter shapes, 31.

  Excerpt(s): The present invention relates generally to the field of filters and filtration devices and more particularly, to a filter used in electrocautery or laser surgery to remove and destroy harmful microbes suspended in the smoke plume produced thereby.... In recent years, there has been a tremendous increase in electrocautery and laser surgery for both complicated and simple procedures, including cancer therapy, gynecological surgery, vascular surgery and other areas of both invasive and topical therapies.... Moreover, the use of high energy lasers and various other electrocautery-type devices in the surgical field is expected to increase dramatically with the perfection of new techniques and equipment used in the field. While laser and electrocautery surgery have proved to be extremely beneficial surgical alternatives, the benefits must be weighed in light of the environmental problems caused by the smoke plume generated during the course of the procedures.

  Web site: http://www.delphion.com/details?pn=US05874052__

- **Apparatus for computerized laser surgery**

  Inventor(s): Danon; Nissim N. (Flat 29, 15 Rabina St., Ramat Aviv, IL)

  Assignee(s): none reported

  Patent Number: 5,049,147

  Date filed: March 13, 1990

  Abstract: There is provided an apparatus and methods for computerized laser surgery. The apparatus comprises apparatus for displaying in real time a visually sensible image of the area of surgery, apparatus for displaying in overlap over the visually sensible

image a simulation of the effects of operator indicated laser surgical procedures on the area of surgery and automated apparatus for carrying out the operator indicated laser surgical procedures following the display thereof. The method includes the steps of simulating the effects of operator indicated laser surgical procedures on an area of surgery, tuning parameters of a beam of a surgical laser, aiming the apparatus for transmitting laser energy at each point of the surgery, low energy firing of the low energy laser beam at an operator indicated surgery point thereby to ensure that the surgical laser is correctly aimed and high energy firing of the surgical laser at the operator indicated surgery point thereby to treat the point.

Excerpt(s): The present invention relates to laser surgery generally and has particular applicability to ophthalmic laser surgery.... U.S. Pat. No. 4,597,649 describes information display apparatus for ophthalmic slit lamps wherein an LED display is provided between the collimator and the eyepiece and is suitable for display of laser operational data in addition to positional data.... U.S. Pat. No. 4,503,854 describes ceiling mounted laser surgery apparatus having a motorized micromanipulator delivery system which is compatible with a microprocessor for automated surgery. A built in digital television system is provided for demonstration, recording or for use as a robotic eye in association with a computer used to control the laser surgery.

Web site: http://www.delphion.com/details?pn=US05049147__

- **Apparatus for laser surgery and particularly for the keratotomy of the cornea (III)**

  Inventor(s): Schroder; Eckhard (Eckental, DE), Thyzel; Reinhardt (Heroldsberg, DE)

  Assignee(s): Aesculap AG (Tuttlingen, DE)

  Patent Number: 5,000,751

  Date filed: September 13, 1989

  Abstract: An apparatus for laser surgery, particularly of the cornea is provided. Through this apparatus, a laser, especially a UV-laser, can be imaged on the tissue undergoing the operation. A diaphragm is arranged in the optical path of the laser and defines the illuminated region of the tissue. The diaphragm includes a slit which has a fixed angular alignment and an adjustable length and width. Further, an optical rotary device is provided which rotates the beam about an optical axis in between the slit and the tissue undergoing the operation.

  Excerpt(s): The invention relates to an apparatus for laser surgery and particularly to keratotomy of the cornea using a laser, particuarly a UV-laser.... It is known, e.g. form the article "Excimer-Laser Surgery of the Cornea" by Stephen L. Trokel, American Journal of Ophthalmology, 1983, vol. 96, pp. 710-715 that in particular, argon-fluoride-excimer lasers with a wavelength of 193 nm are suitable for performing operations on the cornea. The object of such operations is e.g. to eliminate abnormal cornea curvatures by applying a specific "incison pattern". The literature discloses lasers of other wavelengths, e.g. r.f. lasers, which are suitable for keratotomy.... It is also known from the scientific literature, that light of other wavelengths is also suitable for keratotomy of the cornea.

  Web site: http://www.delphion.com/details?pn=US05000751__

- **Apparatus for laser surgery on a cornea**

  Inventor(s): Sumiya; Toshifumi (Nukata-gun, JP)

  Assignee(s): Nidek Co., Ltd. (Aichi, JP)

  Patent Number: 5,549,599

  Date filed: April 3, 1995

  Abstract: An apparatus for laser surgery on a cornea for correcting the refractive error of a patient's eye by removing away a part of the cornea by a laser beam. The apparatus has a first set device for setting the removing area in removal of stroma of the cornea, a second set device for setting the shape of the postoperation cornea, a device for restricting laser irradiation to the removing area determined by the second set device, a device for detecting whether removal of the epithelium from the cornea is accomplished, a device for changing a mode to remove away the epithelium to a mode to remove the stroma of the cornea based on detected results by the detecting device, and a control device for determining the area to be removed away on the epithelium based on the removing area set by the first set device in a mode for removing the epithelium of the cornea and driving the beam restricting device, and then for controlling the beam restricting device based on the set data by the second set device in a mode for removing the stroma of the cornea, thereby to remove away the stroma from the cornea in a desired shape.

  Excerpt(s): The present invention relates to an apparatus for laser surgery on a cornea, in which a laser beam ablates away a surface of a cornea to correct the refractive error of an eye.... There is a known method for correcting the refractive error of an eyeball by removing away stroma underlying epithelium of the cornea in a lens-like shape by a laser beam to change its curvature. This can be called Photorefractive Keratectomy. In a conventional surgery method, the epithelium constituting the anterior surface of the cornea would be peeled off in advance of irradiation of a laser beam thereto. This peeling method of the epithelium from the cornea was a mechanical method using a hockey knife and the like to scrape the epithelium.... In such a mechanical removing method with a hockey knife and the like, the time needed for removing the epithelium of the cornea would differ from operator to operator according to each skill and others, this influencing the dry condition of the stroma of the cornea and causing a change of the moisture content of the stroma. Accordingly, there occurs a problem that, if an excimer laser beam which is high absorbable into water is used for ablating the stroma of a cornea, change of a dry condition of the stroma causes large variations in ablation depths on the stroma. As a result, the actual ablated shape of the stroma of the cornea differs from a predetermined shape of the stroma, resulting in errors in the corrected refractive power of the postoperation cornea.

  Web site: http://www.delphion.com/details?pn=US05549599__

- **Apparatus for laser surgery on a patient lying on an operating table**

  Inventor(s): Thyzel; Reinhardt (Heroldsberg, DE)

  Assignee(s): Meditec Reinhardt Thyzel GmbH (Heroldsberg, DE)

  Patent Number: 4,911,160

  Date filed: April 30, 1987

Abstract: An apparatus for laser surgery on a patient disposed on an operating table is provided. A laser device which produces a laser beam is disposed under the operating table. A beam guiding device is also provided which guides the laser beam from the laser device laterally toward an outside side of the table, and upwardly near an outside side of the table to a point above the table. A horizontal pivot arm is also provided which receives the laser beam from the beam guiding device above the table and guides the laser beam to an operation site. The horizontal pivot arm includes an adjustable length.

Excerpt(s): The present invention relates to an apparatus for laser surgery on a patent lying on an operating table, and in particular to an apparatus for the treatment of eyes with lasers.... Most known apparatuses for treating eyes with lasers are constructed in such a manner that the person to be treated is seated. Although the head of the person to be treated is held by a head support, and in particular a chin support during the treatment, it is unavoidable that the person to be treated shows signs of fatigue during long treatment, as required, by way of illustration, in radial keratotomy.... For that reason it is suggested that the person to be treated be laid on a bed or an operating table during treatment in order that the patient is treated in a prone position and, therefore, in a much more relaxed state.

Web site: http://www.delphion.com/details?pn=US04911160__

- **Automatic fluid control system for use in open and laparoscopic laser surgery and electrosurgery and method therefor**

  Inventor(s): Cosmescu; Ioan (1449 N. 22nd St., Phoenix, AZ 85022)

  Assignee(s): none reported

  Patent Number: 5,836,909

  Date filed: September 13, 1996

  Abstract: A manual and automatic fluid control system and method for use in open and laparoscopic laser surgery and electrosurgery is disclosed. The system includes a manual mode along with several automatic modes which can effectuate both suction and irrigation, either individually or simultaneously. In the various automatic modes, the suction and/or irrigation is automatically activated during activation of a medical apparatus for laser surgery or electrosurgery without requiring separate activation from the surgeon or operating room staff. Several safety features for monitoring the fluid control system are also incorporated within the system such as fluid sensors for detecting the absence of irrigation fluid, pressure sensors and vacuum systems for monitoring fluid pressure, fluid sensors for monitoring fluid volume, and warning signals for detecting empty containers. All of the safety features are designed to automatically deactivate suction and/or irrigation means contained within the fluid control system upon detection of unsafe levels. Finally, specially designed suction/irrigation hand pieces are disclosed for use in connection with the fluid control system.

  Excerpt(s): This patent application is related to my earlier patent entitled "AUTOMATIC SMOKE EVACUATOR SYSTEM FOR A SURGICAL LASER APPARATUS AND METHOD THEREFOR", issued as U.S. Pat. No. 5,199,944. This patent application is also related to my pending patent application entitled "A TELESCOPIC SURGICAL DEVICE AND METHOD THEREFOR", filed on Jul. 10, 1996, under Ser. No. 08/500,045. Both this issued patent and this pending patent application are herein incorporated by

reference.... The present invention relates generally to an automatic fluid control system and method and suction/irrigation hand pieces which are designed to be used in conjunction with the automatic fluid control system and method. More particularly, the present invention relates to an automatic fluid control system and method which can effectuate both suction and irrigation, either individually or simultaneously, and which has a re-useable pump that can deliver high pressure and high flow suction and irrigation which are required during open and laparoscopic laser surgery and electrosurgery procedures.... In the past, suction/irrigation units have functioned by applying air pressure on water containers, wherein the water is being used for fluid irrigation, in order to force the water to be pressurized. A trumpet valve was used to release the water under relative pressure for laparoscopic procedures. These devices operated under low pressure due to the risk of exploding the irrigation containers in the event that too much pressure was applied. Consequently, both the water pressure and water flow associated with those devices were low. Further, the trumpet valve associated with these devices is relatively hard to handle because of the strong springs that are necessary to enable the valves to function.

Web site: http://www.delphion.com/details?pn=US05836909__

- **Composite for use in making protective articles for use in laser surgery**

  Inventor(s): Kirschbaum; Warren (77 Harbor La., Kemah, TX 77565), Weinberg; Steven L. (916 Davis Rd., League City, TX 77573)

  Assignee(s): none reported

  Patent Number: 5,190,810

  Date filed: December 18, 1991

  Abstract: A composite of an adhesive layer, foil, a fire retardant fabric, and a hydrogel which is used to protect objects during laser surgery and which possesses favorable burning, flashing, and resistance to burn through properties. The hydrogel is preferably a hydrophilic material such as a polyurethane, collagen, polyacrylonitrile, polyvinyl alcohol, or polyvinyl acetal. The fire retardant fabric is preferably a fabric woven or knitted from polyamide or polyimide fibers having a thickness sufficient to provide the desired degree of protection. The composite is applied to the object to be protected, which can be a person or an endotracheal tube or surgical instrument, using the adhesive to adhere the composite thereto.

  Excerpt(s): The present invention relates to a composite for protection of objects, including the patient as well as surgical personnel, during laser surgery. In more detail, the present invention relates to a laser resistant composite for use in making objects such as surgical retractors, endotracheal tubes, catheters, and other items used in laser surgery for protecting both patient and surgical personnel from damaged tissue resulting from direct incidence of a laser on that object or reflected laser beams on tissue during surgery or from fire resulting from incidence of a laser on flammable materials.... Although most damage to the skin or other tissue from a laser is repairable, the extent of the damage varies depending upon the degree of absorption of the laser wavelength and the duration of exposure such that there is potential for serious damage. Adding to that potential is the fact that reflection of the laser beam is potentially as damaging as direct contact with the beam. Various safety measures are employed depending upon the surgical procedure to protect against such damage. For instance, a back drop is used behind the tissue being lased, when possible, and in the abdominal cavity, a wet wooden tongue blade, titanium rod or wet laparotomy sponge can be used to protect

underlying tissue. Abdominal and cranial cavities are filled with sterile saline to absorb the energy of the beam. Non-involved, exposed tissue is covered with wet laparotomy sponges, four by fours, or cottonoids. Patients are restrained from movement, and beaded or other non-reflective instruments are used.... Fires can occur by ignition of a drape, endotracheal tube, or article of clothing, plastic, or rubber in the treatment area. On information and belief, none of the standard surgical drapes will resist impact from a laser beam. Precautions against fire include, for instance, the covering of surgical drapes with wet towels and/or laparotomy sponges, the wetting of all the drapes, sponges and gauzes used in the area of laser application, and the precautions listed above for protecting against laser burns. A more complete listing of these precautions is set out in the report of the Technical Practices Coordinating Committee of the Association of Operating Room Nurses, published as Recommended Practices--Laser Safety in the Practice Setting, 50 AORN J. 1015-1020 (November 1989) and in Safety Issues in Clinical Laser Management, published by Clinical Laser Monthly (February 1990).

Web site: http://www.delphion.com/details?pn=US05190810__

- **Contact tip for laser surgery**

  Inventor(s): Cozean; Colette (El Toro, CA), Freiberg; Robert J. (Mission Viejo, CA)

  Assignee(s): Premier Laser Systems, Inc. (Irvine, CA)

  Patent Number: 6,110,167

  Date filed: May 31, 1995

  Abstract: A laser surgery apparatus including a contact tip comprising an input face having a surface for receiving laser energy from an optical waveguide directed along an axis of propagation. The surface is inclined relative to the axis of propagation such that an angle of incidence between the laser light and the surface is approximately equal to Brewster's angle. Another aspect of the invention includes coating a portion of the tip body with a coating that is reflective to the laser energy. One preferred embodiment comprises a tip body coated with a single coating consisting essentially of a material which is biologically compatible with tissue to prevent generation of a toxic tissue response. A further aspect of the invention includes a tip configuration having a generally conical exterior with a substantially flat surface disposed obliquely to a core axis of the tip body. An additional feature on the invention includes a shield to protect tissue adjacent to the shield from undesired thermal damage by preventing the transfer of thermal energy through the shield.

  Excerpt(s): The present invention relates generally to laser surgery probes, and particularly to probes having contact tips which are heated by laser energy.... Contact tips are commonly used in laser surgery for a variety of procedures, including surgical incisions and coagulation. Typically, such contact tips comprise a tip body of a transparent material such as sapphire which is capable of withstanding high temperatures. The sapphire may be coated with a coating that is absorptive to laser energy. Absorption of the laser energy heats the tip to high temperatures suitable for tissue vaporization. One problem with such tips, however, is that they do not distribute the laser energy evenly and thus heating is not uniform. Further, due to toxicity or other adverse effects of the coating, an overcoat of, for example, ceramic or glass, must be applied to prevent the coating from contacting the tissue. Examples of contact tips utilizing absorptive coatings are disclosed in U.S. Pat. Nos. 4,736,743 and 4,832,979.... Typically, contact tips receive laser energy from a waveguide, such as an optical fiber. Laser light propagates out of the waveguide end through an air gap and strikes an input

face of the contact tip. The input face is generally normal to the axis of propagation. Because the indices of refraction between the waveguide, the air gap and the contact tip material do not match, some radiation is reflected from the input face, resulting in build up of thermal energy.

Web site: http://www.delphion.com/details?pn=US06110167__

- **Device and method for reducing corneal induced aberrations during ophthalmic laser surgery**

  Inventor(s): Juhasz; Tibor (Irvine, CA), Suarez; Carlos G. (Irvine, CA), Kurtz; Ronald M. (Irvine, CA)

  Assignee(s): IntraLase Corp. (Irvine, CA)

  Patent Number: 6,623,476

  Date filed: April 13, 2001

  Abstract: A disposable lens for reconfiguring the cornea of an eye for ophthalmic laser surgery includes a lens which has a flat anterior surface that is formed opposite a contact surface. A skirt surrounds the contact surface and extends outwardly therefrom to define a chamber. The skirt is formed with a groove which creates a suction channel between the skirt and the contact surface in the chamber. In its operation, the lens is positioned over the cornea and a vacuum pump is selectively activated to create a partial vacuum in the suction channel. Due to this partial vacuum, the cornea is drawn into the chamber where it is urged against the contact surface of the lens. The result of this is that the cornea is flattened into a configuration where the introduction of spherical aberration and coma into a light beam passing into the cornea is reduced or eliminated.

  Excerpt(s): The present invention pertains generally to surgical devices. More particularly, the present invention pertains to surgical lenses which are used in ophthalmic laser surgery. The present invention is particularly, but not exclusively, useful as a lens for temporarily reconfiguring the cornea from an imperfect shape which causes light passing through the cornea to experience aberration into a shape that allows light to pass through the cornea with little or no aberration.... For ophthalmic laser procedures involving the photodisruption of eye tissue, it is extremely important for the laser beam to be properly focused to a spot at a prescribed location inside the tissue. To make accurate incisions with the laser, it is extremely important that the focal spot have good definition. Specifically, it is desirable that the laser beam reach the focal spot free from aberrations that can distort the definition of the focal spot.... For ophthalmic laser procedures involving the cornea, a beam of laser light is generally passed through the anterior surface of the cornea and focused within the cornea. Unfortunately, since the anterior surface of the cornea in its natural state is nearly spherical, once a beam of light passes through the anterior surface of the cornea, aberrations are introduced into the beam that cause the beam to distort. For light beams that are focused to a focal spot within the cornea, these corneal induced aberrations distort the definition of the focal spot. It follows that more accurate incisions can be performed by reducing or eliminating these corneal induced aberrations.

  Web site: http://www.delphion.com/details?pn=US06623476__

- **Device for eliminating parallax of stereo microscopes during refractive laser surgery**

  Inventor(s): Tang; Fuqian (Orlando, FL), Voorhees; David (Oviedo, FL)

  Assignee(s): LaserSight Technologies, Inc. (Winter Park, FL)

  Patent Number: 6,344,039

  Date filed: March 18, 1997

  Abstract: A device for eliminating decentration error due to parallax during ophthalmic laser surgery comprises a stereo microscope having a first ocular and a second ocular and an objective lens for viewing a patient's eye, a laser for projecting a laser beam at a patient's eye during ophthalmic laser surgery; and structure for aligning the objective lens relative to the first ocular to center the laser beam with a patient's eye. The device for eliminating decentration error due to parallax also comprises prism positioned between either the first ocular and the objective lens or the objective lens and the laser beam.

  Excerpt(s): The present invention relates generally to ophthalmic refractive laser surgery systems and more particularly to a device for eliminating the parallax of a stereo microscope which is utilized in an ophthalmic refractive laser surgery system.... Lasers have been utilized in ophthalmic surgery to ablate the cornea of the eye in order to correct for abnormal conditions of the eye. Precise centering of the eye is critical in ophthalmic refractive laser surgery for effective treatment. In such laser surgical procedures a stereo microscope or a biomicroscope is used by a surgeon to precisely center the eye prior to aiming and focusing a laser beam on the cornea to be ablated. Incorrect positioning or centering of the eye prior to ablating the cornea can result in a less ideal operation. It is known that the use of a stereo microscope introduces a phenomenon known as parallax error. Parallax error can easily cause decentration of treatment, especially for inexperienced surgeons. Since centering of the eye is extremely important, it is desirable to utilize a device to eliminate any parallax caused by use of the stereo microscope.... The present invention is designed to obviate and overcome many of the disadvantages and shortcomings experienced with use of a stereo microscope, and to provide a device for eliminating parallax of a stereo microscope during refractive laser surgery. The present invention is intended to eliminate any parallax error associated with the use of a stereo microscope and to provide a device which provides perfect centering of the eye prior to use of a laser to ablate the eye.

  Web site: http://www.delphion.com/details?pn=US06344039__

- **Fiber-optic probe for soft-tissue laser surgery**

  Inventor(s): Black; Michael (560 Trinidad La., Foster City, CA 94404), Kupershmidt; Vladimir (3124 Weymouth Ct., Pleasanton, CA 94086)

  Assignee(s): none reported

  Patent Number: 5,248,311

  Date filed: September 14, 1992

  Abstract: A fiber-optic probe for soft-tissue laser surgery such as angioplasty comprising a section of an optical fiber having a beam-inlet end (23) and a beam-outlet end (22) and composed of a beam-propagating core (18) and a cladding (19) a part of which is removed in the form of openings (20, 21) through which a portion of the laser beam leaves the fiber-optic probe and is directed laterally to the longitudinal axis 34 of the

fiber to the operation site. The intensity distribution of the outgoing beam can be controlled by selecting a required pattern of distribution of the openings.

Excerpt(s): The present invention relates to medicine, particularly to laser fiber-optic probes for soft tissue surgery, e.g., for angioplasty or endometriosis.... At the present time laser techniques find increasing medical applications, in particular in laser surgery on soft tissue, such as laser angioplasty, endometriosis, or tubular reconstructive surgery. For surgical operations, a laser beam should be delivered to the operation site and converted into other forms of energy, such as heat or acoustic energy, which is concentrated within a specific volume. However, operation sites usually are remotely located with respect to the laser-energy source and are often poorly accessible, especially when the operation must be performed inside a blood vessel to remove a plaque which is a localized area of arteriosclerosis. Plastic surgery of diseased blood vessels is called angioplasty. In laser angioplasty an optical fiber is inserted into a blood vessel, moved along the vessel, and used, e.g., for removing plaque from the inner walls of the vessel.... At the present time, however, optical fiber laser angioplasty can be carried out only in relatively short and straight vessels because existing techniques suitable for such operations allow the beam to exit only in a linear path.

Web site: http://www.delphion.com/details?pn=US05248311__

- **Filter for laser surgery smoke evacuation system**

  Inventor(s): Robertson; Philip D. (Colorado Springs, CO)

  Assignee(s): Xanar, Inc. (Colorado Springs, CO)

  Patent Number: 4,619,672

  Date filed: September 11, 1985

  Abstract: A filter for a laser surgery smoke evacuation system including a generally cylindrical hollow housing with endcaps on either end to hold a plurality of filter elements in place within the housing. The inlet end of the housing includes a hollow cone with a cylindrical inlet projecting from the apex of the cone and a base ring projecting from the base of the cone. The endcaps are held in place by adhesive tape strips with a high friction backing. The high friction backing helps hold the filter lightly in place during use. The filter is disposable and easily removable from the system and includes no mechanical apparatus to hold the filter in the system.

  Excerpt(s): This invention relates to an apparatus for evacuating the undesired by-products of laser surgery from the surgical site by establishing an airflow through a suction tube placed at the surgical site and more particularly to a filter used with the apparatus.... The present application relates to a filter for a laser surgery smoke evacuation system. Two other applications are being filed simultaneously and are assigned to the same assignee as the present application: the first, U.S. Application Ser. No. 774,692, relates to the smoke evacuation system as a whole; and, the second, U.S. Application Ser. No. 774,693, relates to electronic circuitry for the system.... Laser surgery is becoming a more common surgical modality with a large variety of uses. When a tissue is subjected to a high energy laser beam the tissue is vaporized. It is desirable to remove the vapor and other by-products from the surgical site in a controlled manner. Smoke is intended to mean the by-products of laser surgery which are primarily gases, but can include some small amounts of liquid and solid particulate matter. The most common means of removing the vapor and other by-products is to use a suction tube at the surgical site to establish a flow of air which is then delivered to a

filter placed in a housing with the motors and pumps that establish the vacuum flow. Present day vacuum apparatus usually works satisfactorily but are often heavy, difficult to move, noisy and expensive. The filters used with many present day systems can be difficult to replace when they become clogged.

Web site: http://www.delphion.com/details?pn=US04619672__

- **Instrument for ophthalmic laser surgery**

  Inventor(s): Swaniger; James R. (Costa Mesa, CA), Goth; Paul R. (Irvine, CA)

  Assignee(s): American Hospital Supply Corporation (Evanston, IL)

  Patent Number: 4,520,824

  Date filed: September 13, 1982

  Abstract: An instrument for ophthalmic laser surgery is disclosed, in which lasers are mounted for conjoint movement with a slit lamp on an X-Y table. The laser beams are directed into the patient's eye by a beam-directing assembly which pivots together with the slit lamp's microscope about a common axis, and which receives the laser beams along that common axis. The resulting structure greatly improves the ease of use of the laser arrangement and keeps the laser beams in alignment with the microscope at all times.

  Excerpt(s): This invention relates to a slit lamp with laser surgery capability for use by ophthalmic surgeons.... In recent years, laser surgery has become an important tool for ophthalmic surgeons. The technique involves observation of the patient's eye under considerable magnification by means of a conventional slit lamp while focusing a low power visible laser beam at a desired point in the patient's eye. When the visible beam has been appropriately focused, a high-powered therapeutic beam, outside the visible spectrum but coaxial with the visible beam, is momentarily activated to cut or coagulate the tissue at the spot where the visible beam had been focused.... In the prior art (exemplified by U.S. Pat. No. 3,703,176 to Vassiliadis et al), a laser beam was produced by a laser positioned on a stationary support and connected to the slit lamp by a pair of articulated arms which allowed the slit lamp assembly to be moved into proper focus with respect to the patient's eye. In this arrangement, the laser beam used an optical path movable conjointly with the path of the light slit produced by the illuminator or light source of the slit lamp. As a practical matter, the illuminator needs to be movable with respect to the microscope of the slit lamp, through which the physician observes the eye, to permit observation of the illuminated eye from different directions. As a result, the prior art device not only failed to allow the physician to move the laser beam totally independently of the illumination column, but it also produced an annoying parallax when the microscope was not exactly aligned with the light slit beam. Inasmuch as it is often necessary for the physicial to direct the light slit beam at an angle to his line of vision for better observation, the movement of the laser beam conjointly with the light slit beam created a significant problem.

  Web site: http://www.delphion.com/details?pn=US04520824__

- **Laser surgery**

  Inventor(s): Jako; Geza J. (169 E. Emerson St., Melrose, MA 02176)

  Assignee(s): none reported

  Patent Number: 4,503,854

  Date filed: June 16, 1983

  Abstract: A laser surgical system for use in the operating room is suspended on the ceiling and can be moved horizontally in an X-Y direction. The system has the laser tubes, power supplies and cooling unit in the suspended assembly. A carbon dioxide laser for cutting and a neodymium YAG laser for coagulation excite a common optical channel. A third laser argon, or other wavelength, can be added to the system. The common optical channel couples the laser beams to an articulate arm delivery system, or a microscope micromanipulator delivery system or fiberoptics delivery system. The microscopic micromanipulator delivery system is motorized so it can be easily moved in any direction. This motorized system is also compatible with a microprocessor for automated surgery. The system also has a built-in digital television system for demonstration, recording or as a robotic eye for association wtih a computer that may help control the laser surgery.

  Excerpt(s): The present invention relates in general to laser surgery and more particularly concerns novel apparatus and techniques for performing a wide variety of surgical procedures in an operating room with precision and reduced trauma for patients while facilitating observation and recordation through the use of laser sources of different wavelengths transmittable to a patient over a common optical path that is also observable by the surgeon.... As an example of prior art laser surgical apparatus reference is made to U.S. Pat. Nos. 3,487,835, 3,528,424, 3,642,007, 3,659,613, 3,769,963, 3,796,220, 3,865,113, 3,865,114, 3,910,276, 4,069,823, 4,170,997 and 4,174,154.... It is an important object of this invention to provide an improved laser surgical system.

  Web site: http://www.delphion.com/details?pn=US04503854__

- **Laser surgery aspiration apparatus and technique**

  Inventor(s): Fletcher; Henry H. (Cupertino, CA)

  Assignee(s): Laserscope (San Jose, CA)

  Patent Number: 5,267,996

  Date filed: March 7, 1991

  Abstract: An apparatus and method of aspirating vapors during laser surgery couples a vaporizing device with a source of vacuum. The apparatus includes an aspiration connector insertable into the vaporizing device and coupled to an optical waveguide disposed along a bore of the device. An aspiration pathway extends along with the optical waveguide in the bore of the vaporizing device forming a compact single passageway vaporizing device with aspiration capability. Vacuum control points are provided along the aspiration pathway to adjust the vacuum at an end where the vapors are formed.

  Excerpt(s): This invention relates to aspirating vaporized material and in particular, smoke, steam and fine particulates of vaporized material during surgery and treatment.... U.S. Pat. No. 4,678,459 to Onik et al. discloses a percutaneous diskeotomy system (for surgery on the disks in the human back) having an irrigation device and

vacuum device for aspirating tissue fragments severed by a guillotine cutting device. The system disclosed by Onik et al. provides irrigation fluid and vacuum for moving tissue fragments internally along the system for removal. The irrigation pathways are relatively large in diameter to accommodate the tissue fragments and irrigation fluids. Onik et al. does not disclose or suggest using a laser to vaporize tissue or aspirating vaporized tissue.... U.S. Pat. No. 4,694,828 to Eichenbaum discloses a laser system including a handpiece and nose cone assembly having mating passageways for aspiration and irrigation. The nose cone assembly comprises an outer housing, an inner housing and an aspiration tube located inside the inner housing, all with coaxially aligned lateral openings defining a photovaporization chamber. Eichenbaum discloses that tissue is aspirated into the chamber where it is vaporized and conducted along the aspiration tube. The aspiration and irrigation passageways are separate from and adjacent to the optical fiber passageway, thus resulting in a fairly large diameter device to be inserted into the body. Eichenbaum does not disclose or suggest aspirating vaporized tissue along essentially the same passageway that the optical fiber is disposed.

Web site: http://www.delphion.com/details?pn=US05267996__

- **Laser surgery device and method**

  Inventor(s): Freedman; Philip D. (6000 Wescott Hills Way, Alexandria, VA 22315-4747)

  Assignee(s): none reported

  Patent Number: 6,454,761

  Date filed: January 30, 1995

  Abstract: Laser surgery is controlled by interferometry.

  Excerpt(s): This invention is directed to a laser surgery device and method controlled by interferometry.... Laser surgery methods include ophthalmic procedures, dental procedures and irradiation of tissue for hemostasis, photodynamic destruction of forms of tumors, removal of epidermal growths and abnormalities and for the ablation of atherosclerotic plaques. Lasers have been used in surgical procedures to cut tissue and to immediately coagulate the cut. Lasers have been used to control bleeding during surgical removal of burn wound eschar and in surgery on highly vascularized organs such as the liver.... Typically in laser surgery, heat generated by the laser is harnessed to destroy tissue. While thermal effects are commonly used in medical surgical methods, other nonthermal effects are utilized as well. Photons from laser beams can drive chemical reactions, break atomic bonds that hold molecules together or create shock waves to achieve various surgical objectives. Biomedical applications include such tasks as unclogging obstructed arteries, breaking up kidney stones, clearing cataracts and altering genetic material.

  Web site: http://www.delphion.com/details?pn=US06454761__

- **Laser surgery drape**

  Inventor(s): Bellina; Joseph H. (3439 Kabel Dr., New Orleans, LA 70114)

  Assignee(s): none reported

  Patent Number: 4,604,998

  Date filed: April 11, 1984

  Abstract: A layered drape apparatus useful during laser surgery protects the patient from inadvertent laser radiation damage by diffusing radiation which leaves the operative field. The apparatus includes metallic and non-metallic layers with an airspace therebetween.

  Excerpt(s): The present invention relates to surgical drapes, and more particularly relates to a multi-layered drape for protecting patients during laser surgery.... Many new surgical techniques have been developed for the treatment of cancer among other things. Laser surgery requires the use of a laser beam which can be harmful to the patient if it is misdirected or misapplied for a long period of time. It would therefore be desirable to have a drape which would maintain a sterile area about the operation and at the same time provide protection to the patient from the laser beam for areas outside the operative area.... Various devices have been patented which use one or more layers of material for protecting individuals from radiation. A discussion of various such patented devices follows hereinafter.

  Web site: http://www.delphion.com/details?pn=US04604998__

- **Laser surgery method**

  Inventor(s): Edwards; Glenn S. (Nashville, TN), Logan; Regan A. (Nashville, TN), O'Day; Denis M. (Nashville, TN), Copeland; Michael (Nashville, TN)

  Assignee(s): Vanderbilt University (Nashville, TN)

  Patent Number: 5,403,306

  Date filed: June 22, 1993

  Abstract: A laser surgery method is disclosed for use in efficient ablation of tissue with little or no thermal damage to adjacent tissues. The wavelength of the surgical laser is tuned to an absorption peak of a proteinaceous material or functional groups contained therein, the amides for example. A suitable power level is chosen to either vaporize or liquify the targeted tissue.

  Excerpt(s): The present invention relates generally to the use of laser radiation as a therapeutic tool in medicine and surgery, and more particularly to the use of an infrared laser in the precision surgical ablation or cutting of tissue under conditions where minimization of damage to adjacent non-targeted tissues is required.... Laser technology is currently used in clinical medical practice in a variety of applications, including as a surgical tool for the therapeutic ablation of human tissues, both internal and external. In some applications, the precision obtainable by a narrowly and accurately focused beam of laser radiation is superior to other more traditional surgical techniques. However, the use of lasers in certain areas, such as in the eye or brain, carries also the risk of thermal damage being done to sensitive tissues adjacent to the areas where tissue incision or removal is desired.... Although prior art laser surgery techniques have recognized the problems of thermal damage to healthy tissues during laser surgery, none of the proposed solutions have been entirely satisfactory. A principal deficiency is that prior

art laser surgery techniques have not employed the optimum non-photochemical wavelengths of laser radiation which produce ablation without thermal damage. The infrared (IR) region has been preferred over ultraviolet (UV) in many surgical applications because the IR wavelengths are non-photochemical in their effect on tissue and because laser radiation at some UV wavelengths has been reported to cause cell mutation.

Web site: http://www.delphion.com/details?pn=US05403306__

- **Laser surgery plume evacuator with aspirator**

  Inventor(s): Backscheider; Frank A. (Batavia, OH), Rogers; Paul (Cincinnati, OH)

  Assignee(s): Recto Molded Products, Inc. (Cincinnati, OH), United States Medical Corporation (Cincinnati, OH)

  Patent Number: 4,963,134

  Date filed: March 3, 1989

  Abstract: A portable laser surgery evacuator includes an aspirator contained in the same housing which is positionable in an operating room near a surgical site. Surgical plume is evacuated from the site by vacuum, filtered through moisture, purifying and particle filters, chemically deodorized, and exhausted in cleaned form into the operating room environment. Fluid containing liquid is aspirated by pumping to a collector bag hung on a hose of the evacuator. Gaseous plume components of the fluid are vented from the collector to the evacuator to be cleaned with the plume. The venting is provided by a hose joining the evacuator inlet hose at a Venturi like connection. The evacuator includes a symmetrical reversible charcoal filter having a moisture absorbing cellulose filter at each end. A disposable aspirator pump of the rotating impeller type mounts on a motor shaft extending through the housing and is restrained against rotation by fixed hooks against which the pump fittings are urged by the torque of the motor.

  Excerpt(s): The present invention relates to evacuation apparatus for removing laser smoke from the operative site during laser surgery. More specifically, the present invention relates to evacuation and suction apparatus for evacuating the gaseous plume of smoke and vapor products of laser surgery as well as liquid material from the operating field.... Laser surgery is becoming an increasingly useful and preferred surgical procedure. For example, laser surgery has been used to remove human tumors and the like. In the laser surgical process, the surgeon applies a highly concentrated beam of coherent light to the surgical site to both cut and cauterize the tissue. The process burns, chars and partially vaporizes the tissue. Laser surgery is preferred to reduce the extent and duration of surgery and to induce better healing of the operative incision. Nonetheless, the burning process of laser surgery is known to generate an offensive and undesirable cloud of particulate laden smoke and vapor referred to as the plume. This plume contains degradation products of tissue charred or burned by exposure to the intensely concentrated energy of the laser beam. The plume generated during laser surgery, if allowed to remain at the operative site, tends to cloud the surgeon's view and to fill the environment of the operating room with plume contaminants. The contaminants may be unsafe and are offensive to the patient and to the physicians, nurses and others attending the surgery.... To accommodate this plume problem, evacuator systems have been developed by which the plume may be withdrawn from the operating field before it escapes into the environment of the operating room. Such an evacuator system typically includes a source of vacuum coupled to a vacuum hose, the nozzle of which is positioned adjacent the operative site

to suction the plume away. The evacuator often further includes a series of filters or the like to remove the particulate matter and vapors from the plume as it passes from the vacuum hose into the evacuator unit so that the cleansed air may be exhausted back into the environment of the operating room. An example of such an evacuator is the Lase System II available from U.S. Medical Corporation in Cincinnati, Ohio. The Lase System II was previously available from Lase Inc. in Cincinnati, Ohio. Lase Inc. merged with U.S. Medical Corporation.

Web site: http://www.delphion.com/details?pn=US04963134__

- **Lightpipe tip for contact laser surgery**

  Inventor(s): Levy; Michael B. (Woodinville, WA), Laakmann; Katherine D. (Seattle, WA)

  Assignee(s): Luxar Corporation (Bothell, WA)

  Patent Number: 5,071,222

  Date filed: April 24, 1990

  Abstract: A contact laser surgery tip for connection to a lightpipe conducting laser light. A hollow proximal end portion of the tip connects to the lightpipe. A hollow distal end portion is heated when it absorbs at least a portion of the laser light transmitted thereto by the proximal end portion. The proximal end portion of the tip is fabricated with an inner surface material having an index of refraction with a real part that is less than about 0.3. The surface material is coated with a reflectivity-enhancing thin film. The proximal end portion of the tip can include a sleeve on which is deposited the highly reflective inner surface material with the thin film coating. The tip is shaped and given material characteristics so that the distal end and proximal end portions can be selectively heated. The tip can include apertures for allowing the passage of a selected portion of laser light outwardly from the tip.

  Excerpt(s): The applicants have recognized that a section of hollow tube having a highly reflective inner surface can serve as a high efficiency hollow tip for use at the distal end of a YAG fiber or other light conduit. Such tips are less fragile than the artificial sapphire tips presently used with YAG fibers and are less expensive. Several metals are known to have low refractive indices at 1.06 micrometers. For example, silver has a refractive index of roughly 0.13-6.83j in thin film and 01.28-7.0j in bulk at 1.06 micrometers, while copper has an index of 0.2-7.0j in both bulk and thin film. The computed reflectivities of these materials are greater than 98% averaged for P and S polarization at an 81 degrees angle of incidence. The anticipated transmission for tips of these materials is generally greater than 90%, dependent upon the exact tip geometry and the input laser beam.... The transmission efficiency of the light through such a tip is dependent upon the index of refraction of the material that composes the highly reflective layer formed on the tube's inner wall. The index of refraction is a complex number whose real and imaginary components are dependent upon the wavelength and polarization of the incident light. The light polarization is determined by whether the electric field (E-field) vector is parallel to the light's plane of incidence (P-polarized) or perpendicular to the light's plane of incidence (S-polarized).... It has been determined that the highly reflective layer is preferably made from a material having a low index of refractivity. The material in the highly reflective layer should also be chosen for its safety and ease of manufacturing.

  Web site: http://www.delphion.com/details?pn=US05071222__

- **Medical drape for laser surgery**

  Inventor(s): Charowsky; Harry P. (45047 SE. 166th St., North Bend, WA 98045), Charowsky; Deborah A. (45047 SE. 166th St., North Bend, WA 98045)

  Assignee(s): none reported

  Patent Number: 4,998,538

  Date filed: August 25, 1989

  Abstract: A disposable medical drape adapted for use in laser surgery is configured to form an enclosure, acting as an emission barrier, between the medical laser and the patient tissue to be removed so as to contain, within the enclosure, materials present in the laser plume. The drape includes a floor having an opening therein which defines the target area of patient tissue. The floor includes moisture-absorbent material which is premoistened to protect the patient from errant laser shots. The underside of the floor includes an adhesive material for fixing the floor of the drape directly to the skin of the patient. The drape includes flexible transparent walls which extend from the floor of the drape to the medical laser, the walls including stiffening rings to define an obstruction-free corridor for the laser beam. The walls of the drape are gathered around the barrel of the medical laser so as to prevent emissions at that juncture. The walls of the drape include suction ports adapted to be used with evacuation equipment for removing laser plume materials from the enclosure and creating a negative pressure therein. The walls of the drape also provide access to the patient tissue. The material of the drape is nonflammable.

  Excerpt(s): This invention relates to a disposable medical drape, and particularly to such a drape for use in laser surgery to act as an emission barrier to protect the environment of the operating room from contamination by airborne materials which result from laser surgery.... While there are many new applications for laser surgery, and its advantages over conventional surgery in particular situations are substantial, there is growing concern about contamination by emissions contained in the laser plume. In laser surgery, the laser beam removes patient tissue by vaporization. The patient tissue is heated by the laser beam until the moisture in the tissue causes it to vaporize and/or explode or until the tissue burns. The procedure creates an plume of material which can include patient tissue, patient fluids, smoke and other gases. Such plumes can contain live cells and active viruses. Applicants are aware of instances where live viruses have been discovered in the vocal chords and on the forearms of the surgeon after laser surgery. With increased awareness of such highly communicable diseases as AIDS, such contamination is highly undesirable.... Conventional medical drapes, typically made of cotton cloth, are unsuited to laser surgery. They are porous, allowing the laser plume to pass through the drape; they are flammable, and may catch fire if the laser beam strikes the drape; and they are opaque, interfering with the view of the medical personnel.

  Web site: http://www.delphion.com/details?pn=US04998538__

- **Method and apparatus for assessing an ophthalmic patient before and after medical or surgical intervention such as laser surgery**

  Inventor(s): Rosen; Howard B. (1 Lyncroft Rd., Montreal PQ., CA), Quigley; Michael G. (388 Roslyn, Westmont, Quebec, CA)

  Assignee(s): none reported

  Patent Number: 5,835,189

  Date filed: May 9, 1997

  Abstract: In order to determine the prospective long term improvement to a diseased eye obtained by performing a treatment such as retinal laser surgery, the diameters of the four major arteriole blood vessels are measured, preferably digitally, and summed before the treatment at positions substantially equidistant from the center of the region where they converge and enter the optic nerve head. After the eye heals, the diameters of the blood vessels are digitally remeasured, and the degree of reduction of the second value with respect to the first value is determined. The reduction is compared to a predetermined reduction range (as obtained, for example, from a computer database of known results) which is representative of known degrees of long term improvement to obtain an indication of the expected long term results of the subject eye and the adequacy of the treatment. The same procedure may be employed to predict the results of medical or surgical retinal interventions other than retinal laser surgery, and a similar procedure may be employed to help establish the suitability of medical or surgical retinal interventions, including laser surgery, on a given eye by comparing the retinal blood vessel measurements taken before any such intervention to corresponding measurements of a reference eye (e.g., a normal eye) and applying a maximum acceptable difference between the two.

  Excerpt(s): This invention relates to the medical arts and, more particularly, to a method for quickly establishing a benchmark value indicative of 1) the risk and rate of progression of retinal related diseases in a given ophthalmic patient and 2) the degree of efficacy obtained by a given medical or surgical intervention, including laser surgery.... Laser surgery has become a relatively common technique used by highly skilled ophthalmic surgeons to perform a variety of procedures on diseased and traumatized eyes, particularly those with damage to the retina and its associated structure. A broad term of art encompassing the use of laser surgery in this manner is "photocoagulation". Depending upon the particular problem with a given eye, as determined by an extensive study which typically includes taking a series of photographs using a fundus camera, an ophthalmic surgeon will carry out a series of closely controlled burns in the eye structure region under treatment. The surgeon determines whether a series of burns in the region of localized damage is called for or, as is often the case, whether it is appropriate to effect a more extensive panretinal photocoagulation in which on the order of 1200 to 1600 laser burns are distributed substantially uniformly across the patient's entire retina (excepting for an area surrounding the optic nerve, the area responsible for central vision and areas where certain major blood vessels are situated) is made.... Close control of the treatment is obtained not only by the dexterity and judgment of the surgeon and the excellence of the equipment used, but also by the prior selection of the type of laser (e.g., argon), power level, duration of each burn (typically, a small fraction of a second up to 0.5 second per spot) and spot size (typically in the range 100 to 500 microns).

  Web site: http://www.delphion.com/details?pn=US05835189__

- **Method and apparatus for improved laser surgery**

  Inventor(s): Hayes; Donald J. (Plano, TX), Matthews; J. Lester (Dallas, TX), Judy; Millard M. (Dallas, TX)

  Assignee(s): Microfab Technologies, Inc. (Plano, TX)

  Patent Number: 5,092,864

  Date filed: April 30, 1990

  Abstract: A method and apparatus for providing greater precision placement and control of the delivery of laser energy during laser surgery is disclosed and includes a pulse-controlled dye delivery system which may be coordinated with the delivery of laser energy to predetermined tissue. The pulse-controlled dye delivery system comprises at least one ejection head capable of ejecting drops of liquid dye with the diameter of each drop being less than two hundred microns. The dye is responsive to the wavelength of energy delivered by the laser performing the surgery to convert the laser energy from the surgical laser to tissue thermal energy. Circuitry is provided for precisely activating the dye delivery system and the laser energy source such that optimal conditions for successful outcome of the surgery may be achieved. Because of the small amount of dye deposited on the tissue and the very short time the dye is on the tissue before the laser energy arrives, the dye does not spread from the desired spot and concentrates the laser energy at the desired spot.

  Excerpt(s): The present invention relates in general to laser surgery. More particularly, but not by way of limitation, it relates to a method and apparatus for the delivery of very small drops of dye to selected tissue locations to enhance the effect of laser energy delivered to the selected tissue locations stained by the very small drops of dye.... Although this invention is applicable to the dispensing of very small and precise amounts of fluids to be used in conjunction with the dispensing of other fluids or quantities of energy, it has been found particularly useful in the environment of the delivery of very small drops of dye to enhance the effect of laser energy. Therefore, without limiting the applicability of the invention to "delivery of very small drops of dye to enhance the effect of laser energy", the invention will be described in such environment.... There are well known benefits from the use of surgical lasers in the medical field in the area of welding or closure of openings in tissue, for example, the coagulation of tissue to close an opening (ophthalmological vessel coagulation). There are also benefits from the use of a laser beam to ablate tissue to make an opening such as an incision or hole in tissue. The advantages of laser welding arise primarily from the avoidance of suture material which may distort the healing process and promote excessive scarring, a shorter operative time, a hemodynamically more perfect flow surface, etc.

  Web site: http://www.delphion.com/details?pn=US05092864__

- **Method and apparatus for laser surgery**

  Inventor(s): Taboada; John (San Antonio, TX), Poirier; Robert H. (San Antonio, TX)

  Assignee(s): Refractive Laser Research & Development Program, Ltd. (San Antonio, TX)

  Patent Number: 5,112,328

  Date filed: August 7, 1990

Abstract: Apparatus and method for laser surgery in which laser energy, pulsed or continuous, is focussed to a focus spot of ten to thirty microns which is located within tissue, or the like to cause highly localized heating. The pulsed radiation is in the TEM(oo) mode, has a wavelength of approximately 1064 nanometer, the pulses being not in excess of 100 nanoseconds and the pulse rate being approximately 2000 per second. Where the laser beam is continuous or pulsed, it has a wavelength of approximately 1400 to 1800 nanometer, or in photoablative modes, having a wavelength of 190 to about 300 nanometers. The focus spot may be caused to move relative to the axis of a handpiece; and to liquid may flow across the exposure site to remove debris. A handpiece may have an endoscope including a glass contact tip at its distal end to receive light and to acquire an image of the exposure site probes for eye surgery include a quartz rod in a sheath, the quartz rod having a beveled distal end surface through which the laser radiation is emitted and may have infusion and aspiration passages with ends coplanar with the beveled end surface of the quartz rod.

Excerpt(s): This invention relates to method and apparatus for effecting surgery through the application of a laser beam.... The present method and apparatus are particularly applicable to the delivery of laser energy for performing various surgical procedures. These include eye surgery, and more particularly cornea, cataract or vitreal surgery, and various dental procedures.... (c) The laser must be tuned to the extreme infrared end of the spectrum where water, a major constituent of living tissue, is a strong absorber.

Web site: http://www.delphion.com/details?pn=US05112328__

- **Method and apparatus for monitoring laser surgery**

  Inventor(s): LaHaye; Leon C. (3155 I-49 S., Opelousas, LA 70570)

  Assignee(s): none reported

  Patent Number: 6,322,555

  Date filed: July 23, 1999

  Abstract: A method and system for laser surgery produces controlled laser pulses and simultaneously verifies that a sequence of pulses of prescribed energy are being delivered to the patient. A photo detector receives a predetermined portion of the energy of each treatment pulse. A separate monitoring computer compares an output signal from the photo detector corresponding to each treatment laser pulse with a reference value for that type of pulse obtained in a calibration sequence. Implementation in an ophthalmic laser surgery system is also disclosed.

  Excerpt(s): This invention relates to laser surgery apparatus and methods and more particularly to the monitoring of laser systems used in ophthalmic laser surgery.... Laser systems have been used in ophthalmic surgery for modifying the cornea of the patient. Systems such as shown in U.S. Pat. No. 4,729,372 to L'Esperance contemplate the controlled ablation of the cornea of the patient with a pulsed excimer laser. Operations performed with the system include corneal transplants and keratotomies.... The application of laser light to the cornea may be controlled by spot scanning of the cornea or by the use of masks. As shown in U.S. Pat. No. 5,108,388 to Trokel, the masks may, for example, employ slits or holes. Repeated scanning or pulsing through properly selected masks are employed to reshape or reprofile the curvature of the cornea to treat myopic or hyperopic conditions. The system can also be used, for example, to remove corneal sections for corneal replacements or transplants.

  Web site: http://www.delphion.com/details?pn=US06322555__

- **Method and apparatus for precision laser surgery**

  Inventor(s): Harriss; Paul (Livermore, CA), Schiffer; Steven (San Francisco, CA), Sklar; H. Alfred (San Francisco, CA), Frank; Alan M. (Livermore, CA), Ferrer; Olga M. (Miami, FL), Rienecker; Fred (Pleasanton, CA), Brown; Stewart A. (Livermore, CA), McMillan; Charles F. (Livermore, CA)

  Assignee(s): Phoenix Laser Systems, Inc. (San Francisco, CA)

  Patent Number: 5,098,426

  Date filed: February 6, 1989

  Abstract: A system for effecting precision laser surgery includes an intensified surgical video microscope directed at the tissue to be operated upon and having zoom capability. The surgical microscope presents a microscopic image on a video screen in front of the surgeon. Preferably, the video screen is divided into multiple separate sections, with the microscopic video image in one section and precise cross sectional and plan views indicating location presented in the other sections of the screen. These additional views may be generated using Moire interferometry by projecting a Ronchi ruling on the surface of the tissue, in viewing the projection with a camera to obtain all necessary information for contour tracking of the subject surface. Interior elements and interfaces of, for example, the eye are also sensed by a light beam and precisely located and mapped by a computer forming a part of the device. The imaging system of the invention enables the surgeon to have before him abundant visual information on the video screen with indication of precisely where, in three dimensions, a focused surgical laser beam is directed at any time. The system also includes tracking system for following the movements of the subject tissue, for example an eye during surgery. The tracking system is fast enough to track such movement, preferably at the maximum repetition rate of the laser plus a sufficient margin for safety, but at all times faster than the frame rate for the video displays at which the video screen is retraced.

  Excerpt(s): The invention relates to surgical methods and apparatus, and in particular the invention is directed to improved methods and apparatus for precision laser surgery. In one preferred embodiment, the system of the invention is used for effecting precise laser eye surgery. In other embodiments the invention is applicable to non-surgical diagnostic procedures or non-medical procedures involving precision laser operations, such as industrial processes.... Beginning in approximately 1960, largely due to the work of Dr. Littman at Carl Zeiss, the first surgical microscopes were introduced. Prior to that time, surgeons who required a more magnified image of the region in which they sought to operate used a special set of loupes that have magnifying lenses attached to the lower portion of the spectacles, especially in ophthalmology but also in otoringology and other specialties. In other disciplines such as urology and internal surgery, barrel type endoscopes were used.... Due in part to the pioneering work of Dr. Joaquin Barraquer, the surgical microscope came into wide use in ophthalmology; at first for corneal transplant surgery and later for cataract surgery among other procedures. The levels of magnification, zooming capabilities, and definition of the work region provided the surgeon the means to better direct his surgical invasions. The end result was increasingly more accurate surgical procedures with less trauma to the patients and a lowered level of complications arising from surgery.

  Web site: http://www.delphion.com/details?pn=US05098426__

- **Method and apparatus for predictive beam energy control in laser surgery**

  Inventor(s): Kuzdrall; James A. (103 Linwood St., Nashua, NH 03060)

  Assignee(s): none reported

  Patent Number: 6,190,377

  Date filed: May 5, 1999

  Abstract: A method and apparatus is disclosed for predicting an effective and safe laser light energy range for sub-epidermal laser surgery. The method is especially useful in controlling beam energy during the treatment of PWS. The method is accomplished by first impinging a measurement laser pulse on a predetermined treatment area, wherein the measurement laser pulse has an energy below a predetermined threshold of coagulation and below a predetermined threshold of skin damage. The thermal emission caused by the measurement laser pulse emanating from the treatment area is then detected and the delay time from the measurement laser pulse to the detection of the thermal emission is measured. The rise rate of the thermal emission is then measured. The layer thickness is then calculated based upon the delay time, wherein the layer thickness is substantially the epidermal thickness. An internal measurement temperature rise is calculated based upon the layer thickness and the rise rate. Finally, the energy of the measurement laser pulse is multiplied by a minimum scaling ratio to obtain a minimum laser treatment energy, wherein the minimum scaling ratio is the known coagulation temperature divided by the internal measurement temperature rise, and the energy of the measurement laser pulse is multiplied by a maximum scaling ratio to obtain a maximum laser treatment energy, wherein the maximum scaling ratio is the known skin damage threshold temperature divided by the measurement temperature rise.

  Excerpt(s): This invention relates generally to measurement methods and specifically to controllers for laser surgery.... Malformed blood vessels just beneath the skin surface cause skin disorders such as birthmarks, spider veins, rosacea, and hemangenomas. These disorders respond to treatment by an intense pulse of laser radiation.... For example, a birthmark known as "Port Wine Stain" (PWS), named for its appearance, is one specific disorder that is treated with a laser radiation pulse. These blemishes appear at infancy as pink areas, usually on the face and neck, but darken to purplish red during childhood.

  Web site: http://www.delphion.com/details?pn=US06190377__

- **Method for corneal laser surgery**

  Inventor(s): Juhasz; Tibor (Irvine, CA)

  Assignee(s): Escalon Medical Corporation (Skillman, NJ)

  Patent Number: 6,110,166

  Date filed: October 2, 1996

  Abstract: A method for corneal laser surgery includes directing the focal point of a focused laser beam at a start point in the stroma. The focal point is then moved along a predetermined path in the cornea to photodisrupt tissue and to create a flap or a plug of corneal tissue. Specifically, the flap or plug is crated with an undercut region that interlocks with an overlap region to restrain movement of the flap or plug in an anterior direction. Stromal tissue under the flap or plug can then be removed when the plug or

flap is forceably lifted from the cornea. The flap or plug is subsequently replaced in its interlocking relationship with the remainder of the corneal tissue. The diminished stromal tissue reshapes the cornea in a manner which improves the vision of the patient.

Excerpt(s): The present invention pertains generally to ophthalmic surgery which is useful for correcting vision deficiencies. More particularly, the present invention pertains to methods which surgically correct the vision of a patient by removing portions of the stroma to reshape the cornea. The present invention is particularly, but not exclusively useful as a method for using a laser beam to photodisrupt corneal tissue to achieve access to a predetermined volume of stromal tissue which needs to be removed to correct the vision of the patient.... Vision impairment can occur for many reasons, and be the result of many causes. One, all too common, cause for vision impairment results from a defective condition of the eye which occurs when the refractive characteristics of the cornea do not cause parallel rays of light to focus on the retina. When the eye is at rest, and the rays of light focus in front of the retina, the condition is known as myopia (i.e. near-sightedness). On the other hand, when the rays of light focus behind the retina, the condition is known as hypermetropia or hyperopia (i.e. farsightedness). Both myopic and hyperopic conditions result in varying degrees of vision impairment and, as is well known, in most cases the conditions are correctable.... Spectacles or eyeglasses are commonly used to correct myopic or hyperopic conditions. For various reasons, however, many persons who suffer with these conditions prefer not to wear eyeglasses. Fortunately for these individuals, it is known that surgical procedures can be employed which will reshape the cornea in ways that are effective in changing its refractive characteristics. For example, U.S. Pat. No. 4,665,913 which issued to L'Esperance for an invention entitled "Method for Ophthalmological Surgery", and U.S. Pat. No. 4,669,466 which issued to L'Esperance for an invention entitled "Method and Apparatus for Analysis and correction of Abnormal Refractive Errors of the Eye" both disclose a laser system which photoablates corneal tissue from the anterior surface of the eye. In a different manner, U.S. Pat. No. 4,988,348 which issued to Bille for an invention entitled "Method for Reshaping the Cornea", and which is assigned to the same assignee as the present invention, discloses a procedure whereby corneal tissue is first removed to correct vision, and then the newly created surface is smoothed.

Web site: http://www.delphion.com/details?pn=US06110166__

- **Method of laser surgery**

  Inventor(s): Karni; Ziv (Kfar Shemaryahu, IL), Kreindel; Michael (Haifa, IL)

  Assignee(s): ESC Medical Systems Ltd. (Yokneam, IL)

  Patent Number: 5,970,983

  Date filed: July 31, 1997

  Abstract: A method of laser surgery, comprising the steps of selecting lasers whose output radiation has appropriate extinction lengths in the tissue to be ablated, coagulated, and/or shrunk, and directing radiation from those lasers coaxially and substantially simultaneously at the tissue.

  Excerpt(s): The present invention relates to a method for performing laser surgery and, more particularly, to a method for simultaneously ablating, coagulating, and/or shrinking biological tissue.... Directing coherent radiation from a laser at a target is a well known method for precisely cutting that target by ablating or vaporizing a portion of it. When the target is living biological tissue, the dynamic nature of the target poses

special problems. For example, fluids such as blood may flow into the area of the cut, obscuring that area and absorbing part of the energy that otherwise would go into ablating the target.... This problem can be mitigated by directing beams of coherent radiation of two or more wavelengths at the tissue, one beam to ablate the tissue and the other to perform some other action, such as coagulating small blood vessels to prevent inflow of blood. For example, Freiberg, in U.S. Pat. No. 5,139,494, which is incorporated by reference for our purposes as if fully set forth herein, advocates using radiation in a range of wavelengths between about 0.1 and about 0.3 microns, and between about 2.0 and about 12.0 microns, for ablative cutting, and radiation in a range of wavelengths between about 0.3 microns and about 2.0 microns for coagulation. These beams of coherent radiation are directed coaxially at the tissue to be cut. Suitable means for combining laser beams coaxially are well known in the art. One such means is disclosed by Nakajima in U.S. Pat. No. 4,408,602. Another is disclosed by Jako in U.S. Pat. No. 4,503,854. Both of these patents are incorporated by reference for all purposes as if fully set forth herein.

Web site: http://www.delphion.com/details?pn=US05970983__

- **Protective articles for use in laser surgery**

  Inventor(s): Weinberg; Steven L. (League City, TX)

  Assignee(s): Kevtek Medical Products, Inc. (League City, TX)

  Patent Number: 5,324,578

  Date filed: January 2, 1991

  Abstract: A composite of an insulative layer and a fire retardant fabric which is used to make protective articles for laser surgery and which possesses favorable burning, flashing, and resistance to burn through properties. The insulative layer is preferably a hydrogel or other hydrophilic material such as a polyurethane, collagen, polyacrylonitrile, polyvinyl alcohol, or polyvinyl acetal. The fire retardant fabric is preferably a fabric woven or knitted from polyamide or polyimide fibers having a thickness sufficient to provide the desired degree of protection.

  Excerpt(s): The present invention relates to articles for protection of the patient as well as surgical personnel during laser surgery. In more detail, the present invention relates to a composite for use in making articles such as gloves, surgical drapes, aprons and other items of apparel for use in protecting both patient and surgical personnel from damaged tissue resulting from direct incidence of a laser on that tissue during surgery or from fire resulting from incidence of a laser on flammable materials.... Although most damage to the skin or other tissue from a laser is repairable, the extent of the damage varies depending upon the degree of absorption of the laser wavelength and the duration of exposure such that there is potential for serious damage. Adding to that potential is the fact that reflection of the laser beam is potentially as damaging as direct contact with the beam. Various safety measures are employed depending upon the surgical procedure to protect against such damage. For instance, a back drop is used behind the tissue being lased, when possible, and in the abdominal cavity, a wet wooden tongue blade, titanium rod or wet laparotomy sponge can be used to protect underlying tissue. Abdominal and cranial cavities are filled with sterile saline to absorb the energy of the beam. Non-involved, exposed tissue is covered with wet laparotomy sponges, four by fours, or cottonoids. Patients are restrained from movement, and beaded or other non-reflective instruments are used.... Fires can occur by ignition of a drape, endotracheal tube, or article of clothing, plastic, or rubber in the treatment area.

On information and belief, none of the standard surgical drapes will resist impact from a laser beam, Precautions against fire include, for instance, the covering of surgical drapes with wet towels and/or laparotomy sponges, the wetting of all the drapes, sponges and gauzes used in the area of laser application, and the precautions listed above for protecting against laser burns.

Web site: http://www.delphion.com/details?pn=US05324578__

- **Smoke evacuator system for use in laser surgery**

  Inventor(s): Robertson; Philip D. (Colorado Springs, CO), Solorzano; Armando N. (Colorado Springs, CO)

  Assignee(s): Xanar, Inc. (Colorado Springs, CO)

  Patent Number: 4,701,193

  Date filed: September 11, 1985

  Abstract: A smoke evacuator system for by-products of laser surgery including an inline construction of a motor and a filter assembly mounted on opposite sides of a mounting plate. The filter fits in a filter duct and the temperature of the flow between the filter and the vacuum chamber of the vacuum pump can be monitored to determine the clog condition of the filter. The system includes electronic circuitry to activate an alarm device to indicate to the user that the filter is clogged and further circuitry is provided to shutoff the motor after a long period of operation with a clogged filter to prevent damage to the system by overheating.

  Excerpt(s): This invention relates to an apparatus for filtering the undesired by-products of laser surgery from a surgical site and more particularly to an apparatus which has an automatic indicator for notifying the user when the filter is clogged and in need of replacement.... The present application relates to a smoke evacuator system for laser surgery. Two other applications are being filed simultaneously and are assigned to the same assignee as the present application: the first relating to a filter used with the system; and, the second relating to electronic circuitry for the system.... Laser surgery is becoming a more common as surgical modality with a large variety of uses. When a tissue is subjected to a high energy laser beam the tissue is vaporized. It is desirable to remove the vapor and other by-products from the surgical site in a controlled manner. The word smoke is intended to mean the by-products of laser surgery which are primarily gases, but can include some small amounts of liquid and solid particulate matter. The most common means of removing the vapor and other by-products is to use a suction tube at the surgical site to establish a flow of air which is then delivered to a filter placed in a housing with the motors and pumps that establish the vacuum flow. Present day vacuum apparatus usually works satisfactorily but are often heavy, difficult to move, noisy and expensive. Many present day vacuum apparatus do not have variable suction levels.

  Web site: http://www.delphion.com/details?pn=US04701193__

- **Tracheal tube for laser surgery**

  Inventor(s): Depel; William A. (Lowell, IN), Shapiro; Seymour W. (Lowell, IN)

  Assignee(s): Bivona, Inc. (Gary, IN)

  Patent Number: 5,027,812

  Date filed: May 4, 1990

  Abstract: A cuffed tracheal tube for use in intubation of a trachea of a patient during laser surgery involving the head or neck of the patient, includes a flexible aluminum conduit, and an expandable cuff carried at one end of the conduit and including a body of sponge-like material enclosed within a cover filled with water which saturates the sponge-like body while expanding the cuff to provide a seal between the tracheal tube and the trachea of the patient. The flexible aluminum conduit and the water saturated cuff define a heat dispersion medium for absorbing laser energy engaging the tracheal tube.

  Excerpt(s): The present invention relates to tracheal tubes and, more particularly, to tracheal tubes for use in laser surgery.... As is well known in the art, tracheal tubes are commonly inserted into a person's trachea for various purposes. One such purpose is to provide a means for administering a general anesthetic. Such tubes usually are provided with a tracheal cuff to insure a tracheal seal, both to prevent loss of administered gas and to prevent aspiration of body fluids. Thus, tracheal tubes commonly in use, are provided with a cuff at one end of the tube, which is expandable outwardly into engagement with the inner wall of the trachea. Cuffed tracheal tubes as known in the art, include those having cuffs or balloons made of latex rubber, plastic, silicone, etc. The cuff is mounted on the main tube and is usually attached to surround the tube in communication with an inflation line. When being inserted into the trachea, the cuff is in uninflated or, deflated condition. After the intubation device has been inserted into the trachea, the cuff is inflated like a balloon, by feeding air into the cuff to expand the cuff into engagement with the inner wall of the trachea to provide a seal thereagainst.... Another type of cuffed tracheal tube embodies a cover filled with resilient material, with the cuff normally being disposed in expanded position and being collapsed by applying a vacuum thereto during insertion or removal of the tube into or from the trachea, respectively.

  Web site: http://www.delphion.com/details?pn=US05027812__

- **Tube and material for use in laser surgery**

  Inventor(s): Geil; James A. (St. John, MO)

  Assignee(s): Sherwood Medical Company (St. Louis, MO)

  Patent Number: 4,632,108

  Date filed: February 21, 1985

  Abstract: A flexible tubular assembly has a distal end disposed within the trachea of a patient and a proximal end outside the body of the patient. An inflatable balloon carried on the distal end of tubular assembly can be inflated into sealing contact with the trachea. A first conduit in the tubular assembly conveys anesthesia and ventilation gases through the assembly and a second conduit is used to inflate the balloon. The flexible tubular assembly includes a polymeric matrix having a reflective filler embedded therein. The filler includes finely divided particles having a metallic surface coating

which is reflective to infrared laser radiation. The tubular assembly also includes a smoke removal lumen with an opening proximal the balloon to remove smoke generated during laser surgery.

Excerpt(s): This invention relates generally to laser surgery, and more particularly to materials and endotracheal tubes useful in such surgery.... Tracheal tubes are used during surgical procedures to provide ventilation and anesthesia for the patient. The distal ends of these tubes are inserted into the lower portions of the trachea and have a balloon disposed at the distal end which may be inflated from outside the patient through an auxiliary lumen, so as to provide an effective leak resistant seal between the tube and the trachea. Such tubes, however, in the case of laser surgery of the throat, present certain difficulties. For example, materials such as polyvinyl chloride (PVC) that are normally used to make endotracheal tubes absorb infrared energy from the laser if the laser beam happens to strike the tube. As a result, the laser can in effect burn a hole through the tube with potentially serious consequences for the patient. Not only does the tube convey high concentrations of oxygen, but in many cases the gas flowing through the main lumen of the endotracheal tube may be another highly flammable gas. A hole burned through the tube wall exposing the oxygen or flammable anesthestic gas can cause ignition of the tube while in the patient's trachea with obvious catastrophic results.... Of course a material that would resist penetration by a laser beam could find additional uses for shielding during laser surgery on other parts of the body.

Web site: http://www.delphion.com/details?pn=US04632108__

Patent Applications on Laser Surgery

As of December 2000, U.S. patent applications are open to public viewing.[6] Applications are patent requests which have yet to be granted. (The process to achieve a patent can take several years.) The following patent applications have been filed since December 2000 relating to laser surgery:

- **Device and method for reducing corneal induced aberrations during ophthalmic laser surgery**

  Inventor(s): Kurtz, Ronald M. (Irvine, CA), Suarez, Carlos G. (Irvine, CA)

  Correspondence: NEIL K. NYDEGGER; NYDEGGER & ASSOCIATES; 348 Olive Street; San Diego; CA; 92103; US

  Patent Application Number: 20010021844

  Date filed: April 13, 2001

  Abstract: A disposable lens for reconfiguring the cornea of an eye for ophthalmic laser surgery includes a lens which has a flat anterior surface that is formed opposite a contact surface. A skirt surrounds the contact surface and extends outwardly therefrom to define a chamber. The skirt is formed with a groove which creates a suction channel between the skirt and the contact surface in the chamber. In its operation, the lens is positioned over the cornea and a vacuum pump is selectively activated to create a partial vacuum in the suction channel. Due to this partial vacuum, the cornea is drawn into the chamber where it is urged against the contact surface of the lens. The result of this is that the cornea is flattened into a configuration where the introduction of spherical aberration and coma into a light beam passing into the cornea is reduced or eliminated.

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[6] This has been a common practice outside the United States prior to December 2000.

Excerpt(s): This application is a continuation-in-part of application Ser. No. 09/172,819, filed Oct. 15, 1998, which is currently pending. The contents of application Ser. No. 09/172,819 are incorporated herein by reference.... The present invention pertains generally to surgical devices. More particularly, the present invention pertains to surgical lenses which are used in ophthalmic laser surgery. The present invention is particularly, but not exclusively, useful as a lens for temporarily reconfiguring the cornea from an imperfect shape which causes light passing through the cornea to experience aberration into a shape that allows light to pass through the cornea with little or no aberration.... For ophthalmic laser procedures involving the photodisruption of eye tissue, it is extremely important for the laser beam to be properly focused to a spot at a prescribed location inside the tissue. To make accurate incisions with the laser, it is extremely important that the focal spot have good definition. Specifically, it is desirable that the laser beam reach the focal spot free from aberrations that can distort the definition of the focal spot.

Web site: http://appft1.uspto.gov/netahtml/PTO/search-bool.html

- **Laser surgery apparatus**

Inventor(s): Fujieda, Masanao; (Toyohashi-shi, JP)

Correspondence: RADER FISHMAN & GRAUER PLLC; LION BUILDING; 1233 20TH STREET N.W., SUITE 501; WASHINGTON; DC; 20036; US

Patent Application Number: 20020040218

Date filed: September 28, 2001

Abstract: A laser surgery apparatus is provided to minimize a burden on a patient and to obtain a good result of a surgical operation. The laser surgery apparatus for performing surgery on a patient's eye by irradiating a laser beam thereonto comprises an irradiation device provided with an irradiation optical system for irradiating the laser beam onto the patient's eye, a control device for controlling the irradiation device, and an informing device for informing the patient of at least either a first period of a laser irradiation period or a second period of the laser irradiation period or both.

Excerpt(s): The present invention relates to a laser surgery apparatus for performing surgery on a patient's eye by irradiating a laser beam thereonto.... For a laser surgery apparatus for performing surgery on a patient's eye by irradiating a laser beam thereonto, for example, a corneal surgery (keratorefractive surgery) apparatus which employs an excimer laser beam has been known. This kind of apparatus is used to correct a refractive error by irradiating an excimer laser beam onto a corneal surface for ablation of the corneal surface so as to alter a corneal curvature or to remove an affected part in the cornea. This type of apparatus requires the patient's eye to be stabilized (fixed) by having the eye fixed on a fixation target for irradiating a laser beam onto a desired position of the patient's eye. However, irradiation of a laser beam by using this kind of apparatus takes one minute or so at the most. The patient's eye has to be constantly fixed from beginning to end during laser irradiation, and the tension of the patient resulting from the eye fixation puts a serious burden on him/her.... The present invention has been made in view of the above circumstances and has an object to overcome the above problems and to provide a laser surgery apparatus with which a burden on a patient is expected to be minimized, and a good result of a surgical operation is expected to be obtained.

Web site: http://appft1.uspto.gov/netahtml/PTO/search-bool.html

- **Method and apparatus for monitoring laser surgery**

  Inventor(s): LaHaye, Leon C. (Arnaudville, LA)

  Correspondence: Samuel C. Miller, III; BURNS, DOANE, SWECKER & MATHIS, L.L.P. P. O. Box 1404; Alexandria; VA; 22313-1404; US

  Patent Application Number: 20010056276

  Date filed: March 26, 2001

  Abstract: A method and system for laser surgery produces controlled laser pulses and simultaneously verifies that a correct sequence of pulses are being delivered to the patient. A photo detector receives a predetermined portion of the energy of the treatment pulses as they exit the system. A separate monitoring computer compares an output signal from the photo detector with reference information for the treatment sequence. The system is exemplified in an implementation in an ophthalmic laser surgery system.

  Excerpt(s): This application is a continuation-in-part of U.S. Application Ser. No. 09/359,371, filed Jul. 23, 1999, the contents of which is hereby incorporated by reference.... This invention relates to laser surgery apparatus and methods adapted for use, for example, in the monitoring of laser systems used in ophthalmic laser surgery.... Laser systems have been used in ophthalmic surgery for modifying the cornea of the patient. Systems such as shown in U.S. Pat. No. 4,729,372 to L'Esperance contemplate the controlled ablation of the cornea of the patient with a pulsed excimer laser. Operations performed with the system include corneal transplants and keratotomics.

  Web site: http://appft1.uspto.gov/netahtml/PTO/search-bool.html

Keeping Current

In order to stay informed about patents and patent applications dealing with laser surgery, you can access the U.S. Patent Office archive via the Internet at the following Web address: **http://www.uspto.gov/patft/index.html**. You will see two broad options: (1) Issued Patent, and (2) Published Applications. To see a list of issued patents, perform the following steps: Under "Issued Patents," click "Quick Search." Then, type "laser surgery" (or synonyms) into the "Term 1" box. After clicking on the search button, scroll down to see the various patents which have been granted to date on laser surgery.

You can also use this procedure to view pending patent applications concerning laser surgery. Simply go back to **http://www.uspto.gov/patft/index.html**. Select "Quick Search" under "Published Applications." Then proceed with the steps listed above.

CHAPTER 5. BOOKS ON LASER SURGERY

Overview

This chapter provides bibliographic book references relating to laser surgery. In addition to online booksellers such as **www.amazon.com** and **www.bn.com**, excellent sources for book titles on laser surgery include the Combined Health Information Database and the National Library of Medicine. Your local medical library also may have these titles available for loan.

Book Summaries: Federal Agencies

The Combined Health Information Database collects various book abstracts from a variety of healthcare institutions and federal agencies. To access these summaries, go directly to the following hyperlink: **http://chid.nih.gov/detail/detail.html**. You will need to use the "Detailed Search" option. To find book summaries, use the drop boxes at the bottom of the search page where "You may refine your search by." Select the dates and language you prefer. For the format option, select "Monograph/Book." Now type "laser surgery" (or synonyms) into the "For these words:" box. You should check back periodically with this database which is updated every three months. The following is a typical result when searching for books on laser surgery:

- **Smith's General Urology. Fifteenth Edition**

  Source: Columbus, OH: McGraw-Hill, Inc. 2000. 868 p.

  Contact: Available from McGraw-Hill. Medical Publishing. 1221 P.O. Box 182615, Columbus, OH 43272-5046. (800) 262-4729. PRICE: $54.95;plus shipping and handling. ISBN: 0838586074.

  Summary: This textbook offers a practical and concise guide to the understanding, diagnosis, and treatment of urologic diseases. The text includes 47 chapters covering the anatomy of the genitourinary tract, embryology of the genitourinary system, symptoms of disorders of the genitourinary tract, physical examination of the genitourinary tract, urologic laboratory examination, radiology of the urinary tract, vascular interventional radiology, percutaneous endourology and ureterorenoscopy, laparoscopic surgery, radionuclide imaging, retrograde instrumentation of the urinary tract, urinary obstruction and stasis, vesicoureteral reflux (return of urine through the ureters to the

kidney), bacterial infections, specific infections, sexually transmitted diseases, urinary stone (urolithiasis) disease, extracorporeal shock wave lithotripsy (ESWL, used to break up stones), injuries to the genitourinary tract, immunology and immunotherapy of urologic cancers, urothelial carcinoma (cancers of the bladder, ureter, and renal pelvis), renal parenchymal neoplasms (growths in the body of the kidney), neoplasms of the prostate gland, genital tumors, urinary diversion and bladder substitution, urologic **laser surgery,** chemotherapy of urologic tumors, radiotherapy of urologic tumors, neuropathic (arising from the nervous system) bladder disorders, urodynamic studies, urinary incontinence (involuntary loss of urine), disorders of the adrenal glands, disorders of the kidneys, diagnosis of medical renal diseases, oliguria (acute renal failure, lack of urination), chronic renal failure (CRF) and dialysis, renal transplantation, disorders of the ureter and ureteropelvic junction, disorders of the bladder and prostate (and seminal vesicles), disorders of the penis and male urethra, disorders of the female urethra, disorders of the testis and scrotum (and spermatic cord), skin diseases of the external genitalia, abnormalities of sexual determination and differentiation, renovascular hypertension, male infertility, and male sexual dysfunction. Each chapter concludes with references categorized by subject; the text concludes with an appendix of normal laboratory values and a subject index. The text features over 400 illustrations, including CT scans, radionuclide imaging scans, and x rays.

Book Summaries: Online Booksellers

Commercial Internet-based booksellers, such as Amazon.com and Barnes&Noble.com, offer summaries which have been supplied by each title's publisher. Some summaries also include customer reviews. Your local bookseller may have access to in-house and commercial databases that index all published books (e.g. Books in Print®). **IMPORTANT NOTE:** Online booksellers typically produce search results for medical and non-medical books. When searching for "laser surgery" at online booksellers' Web sites, you may discover non-medical books that use the generic term "laser surgery" (or a synonym) in their titles. The following is indicative of the results you might find when searching for "laser surgery" (sorted alphabetically by title; follow the hyperlink to view more details at Amazon.com):

- **Advances in nd: Yag Laser Surgery** by Stephen N. Joffe, Yanao Oguro (Editor); ISBN: 0387965068; http://www.amazon.com/exec/obidos/ASIN/0387965068/icongroupinterna
- **Aesthetic Laser Surgery, Resurfacing** by Thomas L. Roberts, Cynthia Weinstein; ISBN: 0815128126; http://www.amazon.com/exec/obidos/ASIN/0815128126/icongroupinterna
- **Aesthetic Laser Surgery: A Text and Video Atlas** by Brooke R. Seckel; ISBN: 0316780073; http://www.amazon.com/exec/obidos/ASIN/0316780073/icongroupinterna
- **Aesthetic Laser Surgery: Laser Skin Resurfacing/Laser Blepharoplasty and Management of the Lax Lowerlid** by Thomas L., Iii Roberts, Cynthia Weinstein; ISBN: 0815186517; http://www.amazon.com/exec/obidos/ASIN/0815186517/icongroupinterna
- **Annual of Opthalmic Laser Surgery** by William E. Benson (Editor), et al; ISBN: 1878132571; http://www.amazon.com/exec/obidos/ASIN/1878132571/icongroupinterna

- **Arthroscopic Laser Surgery: Clinical Applications** by Allen T. Brillhart (Editor) (1995); ISBN: 038794186X; http://www.amazon.com/exec/obidos/ASIN/038794186X/icongroupinterna
- **Atlas of Cutaneous Laser Surgery** by David B. Apfelberg (Editor); ISBN: 0881677647; http://www.amazon.com/exec/obidos/ASIN/0881677647/icongroupinterna
- **Basic and Advanced Laser Surgery in Gynecology** by Michael S. Baggish (Editor); ISBN: 083850521X; http://www.amazon.com/exec/obidos/ASIN/083850521X/icongroupinterna
- **Beauty and the Beam: Your Complete Guide to Cosmetic Laser Surgery (Quality Medical Home Health Library)** by Deborah S. Sarnoff, Joan Swirsky; ISBN: 0312194412; http://www.amazon.com/exec/obidos/ASIN/0312194412/icongroupinterna
- **Color Atlas/Text of Excimer Laser Surgery** (1993); ISBN: 4260142259; http://www.amazon.com/exec/obidos/ASIN/4260142259/icongroupinterna
- **Color Atlas/Text of Excimer Laser Surgery: The Cornea** by Frank B. Thompson, Peter J. McDonnell; ISBN: 0896402258; http://www.amazon.com/exec/obidos/ASIN/0896402258/icongroupinterna
- **Complications of Laser Surgery of the Head and Neck** by Marvin Fried, et al; ISBN: 0815132913; http://www.amazon.com/exec/obidos/ASIN/0815132913/icongroupinterna
- **Controversies and Coversations in Cutaneous Laser Surgery** by Kenneth A. Arndt (Editor), et al; ISBN: 1579472613; http://www.amazon.com/exec/obidos/ASIN/1579472613/icongroupinterna
- **Corneal Laser Surgery** by James J. Salz; ISBN: 0815175132; http://www.amazon.com/exec/obidos/ASIN/0815175132/icongroupinterna
- **Corneal Laser Surgery - Slide Set** by James J. Salz (1994); ISBN: 0815178298; http://www.amazon.com/exec/obidos/ASIN/0815178298/icongroupinterna
- **Cosmetic Laser Surgery** by Richard E., Md Fitzpatrick, Mitchel P., MD Goldman; ISBN: 0815186746; http://www.amazon.com/exec/obidos/ASIN/0815186746/icongroupinterna
- **Cosmetic Laser Surgery: A Practitioner's Guide, 2nd Edition** by Tina S. Alster (Editor), David B. Apfelberg (Editor); ISBN: 0471252700; http://www.amazon.com/exec/obidos/ASIN/0471252700/icongroupinterna
- **Current Techniques in Ophthalmic Laser Surgery** by Lawrence J., Md. Singerman (Editor), et al; ISBN: 0750670320; http://www.amazon.com/exec/obidos/ASIN/0750670320/icongroupinterna
- **Current Techniques in Ophthalmic Laser Surgery** by William E. Benson, et al (1994); ISBN: 1878132393; http://www.amazon.com/exec/obidos/ASIN/1878132393/icongroupinterna
- **Cutaneous Laser Surgery: The Art and Science of Selective Photothermolysis** by Mitchel P. Goldman, Richard E. Fitzpatrick (1999); ISBN: 0815136102; http://www.amazon.com/exec/obidos/ASIN/0815136102/icongroupinterna
- **Endoscopic Laser Surgery (Clinical Practice of Gynecology, Vol 2, No 1)** by M. Baggish (Editor); ISBN: 0444015329; http://www.amazon.com/exec/obidos/ASIN/0444015329/icongroupinterna

- **Endoscopic Laser Surgery Handbook** by Stanley M. Shapshay (Editor); ISBN: 0824777115; http://www.amazon.com/exec/obidos/ASIN/0824777115/icongroupinterna
- **Endoscopic Laser Surgery of the Trachea and Esophagus** by Wolfgang Steiner; ISBN: 3131252715; http://www.amazon.com/exec/obidos/ASIN/3131252715/icongroupinterna
- **Endoscopic Laser Surgery of the Upper Aerodigestive Tract: With Special Emphasis on Cancer Surgery** by Petra Ambrosch, et al (2000); ISBN: 0865779961; http://www.amazon.com/exec/obidos/ASIN/0865779961/icongroupinterna
- **Excimer laser surgery for corneal disorders** by Peter S. Hersh; ISBN: 3131079614; http://www.amazon.com/exec/obidos/ASIN/3131079614/icongroupinterna
- **Gynecologic Laser Surgery** by Joseph H. Bellina (Editor); ISBN: 0306407418; http://www.amazon.com/exec/obidos/ASIN/0306407418/icongroupinterna
- **Gynecological Laser Surgery (Reproductive and Perinatal Medicine, Volume 6)** by Royal College of Obstetricians, Gynaecologists; ISBN: 0916859274; http://www.amazon.com/exec/obidos/ASIN/0916859274/icongroupinterna
- **Illustrated Cutaneous & Aesthetic Laser Surgery** by Jeffrey S. Dover, et al; ISBN: 0838542573; http://www.amazon.com/exec/obidos/ASIN/0838542573/icongroupinterna
- **Laser Surgery and Medicine: Principles and Practice** by Carmen A. Puliafito (Editor); ISBN: 0471120707; http://www.amazon.com/exec/obidos/ASIN/0471120707/icongroupinterna
- **Laser Surgery Characterization and Therapeutics**; ISBN: 0892529423; http://www.amazon.com/exec/obidos/ASIN/0892529423/icongroupinterna
- **Laser Surgery for the Management of Ent Malignancies: A Controversial Issue** by J P Guyot (Editor) (2003); ISBN: 380557570X; http://www.amazon.com/exec/obidos/ASIN/380557570X/icongroupinterna
- **Laser Surgery in Children** by H.-P Berlien (Editor), P.P. Schmittenbecher (Editor); ISBN: 3540626336; http://www.amazon.com/exec/obidos/ASIN/3540626336/icongroupinterna
- **Laser Surgery in Gynecology and Obstetrics** by William R. Keye (Editor) (1990); ISBN: 0815150334; http://www.amazon.com/exec/obidos/ASIN/0815150334/icongroupinterna
- **Laser Surgery in Gynecology: A Clinical Guide** by V. Cecil Wright, John C. Fisher; ISBN: 0721640079; http://www.amazon.com/exec/obidos/ASIN/0721640079/icongroupinterna
- **Laser Surgery in Ophthalmology: Practical Applications** by Thomas A. Weingeist, Scott R. Sneed (Editor); ISBN: 0838579035; http://www.amazon.com/exec/obidos/ASIN/0838579035/icongroupinterna
- **Laser Surgery in Otolaryngology** by Ossif, Karlan (2000); ISBN: 0815165749; http://www.amazon.com/exec/obidos/ASIN/0815165749/icongroupinterna
- **Laser Surgery of the Posterior Segment** by Steven M. Bloom, Alexander J. Brucker (1997); ISBN: 0397584237; http://www.amazon.com/exec/obidos/ASIN/0397584237/icongroupinterna

- **Laser Surgery: Advanced Characterization, Therapeutics, and Systems (Volume 1066)** by K. Atsumi (Editor), et al; ISBN: 0819401013; http://www.amazon.com/exec/obidos/ASIN/0819401013/icongroupinterna
- **PAL VIDEO: CORNEAL LASER SURGERY** by Salz; ISBN: 081518056X; http://www.amazon.com/exec/obidos/ASIN/081518056X/icongroupinterna
- **Principles and Practice of Gynecologic Laser Surgery** by Joseph H. Bellina, Gaetano Bandieramonte (1984); ISBN: 0306415437; http://www.amazon.com/exec/obidos/ASIN/0306415437/icongroupinterna
- **Proceedings of Laser Surgery: Advanced Characterization, Therapeutics, and Systems III: 21-23 January 1992 Los Angeles, California (Spie Proceeding)** by R. R. Anderson (Editor) (1992); ISBN: 0819407895; http://www.amazon.com/exec/obidos/ASIN/0819407895/icongroupinterna
- **Proceedings of laser surgery--advanced characterization, therapeutics, and systems II : January 14, 16-19, 1990, Los Angeles, California**; ISBN: 0819402419; http://www.amazon.com/exec/obidos/ASIN/0819402419/icongroupinterna
- **Pulsed Yag Laser Surgery** by Daniel Aron-Rosa (Editor); ISBN: 094343212X; http://www.amazon.com/exec/obidos/ASIN/094343212X/icongroupinterna
- **Skin Savvy: The Essential Guide to Cosmetic Laser Surgery** by Tina Alster, et al; ISBN: 0967169496; http://www.amazon.com/exec/obidos/ASIN/0967169496/icongroupinterna
- **The Essential Guide to Cosmetic Laser Surgery: The Revolutionary New Way to Erase Wrinkles, Age Spots, Scars, Birthmarks, Moles, Tattoos...and How Not to Get Burned in the Process** by Tina S. Alster, et al; ISBN: 1887110097; http://www.amazon.com/exec/obidos/ASIN/1887110097/icongroupinterna
- **The Excimer Manual: A Clinician's Guide to Excimer Laser Surgery** by Jonathan H., Md. Talamo (Editor), Ronald R., Md. Krueger (Editor); ISBN: 0316831751; http://www.amazon.com/exec/obidos/ASIN/0316831751/icongroupinterna
- **Understanding Cosmetic Laser Surgery (Understanding Health and Sickness Series)** by Robert Langdon (2004); ISBN: 1578065860; http://www.amazon.com/exec/obidos/ASIN/1578065860/icongroupinterna

The National Library of Medicine Book Index

The National Library of Medicine at the National Institutes of Health has a massive database of books published on healthcare and biomedicine. Go to the following Internet site, **http://locatorplus.gov/**, and then select "Search LOCATORplus." Once you are in the search area, simply type "laser surgery" (or synonyms) into the search box, and select "books only." From there, results can be sorted by publication date, author, or relevance. The following was recently catalogued by the National Library of Medicine:[7]

[7] In addition to LOCATORPlus, in collaboration with authors and publishers, the National Center for Biotechnology Information (NCBI) is currently adapting biomedical books for the Web. The books may be accessed in two ways: (1) by searching directly using any search term or phrase (in the same way as the bibliographic database PubMed), or (2) by following the links to PubMed abstracts. Each PubMed abstract has a "Books" button that displays a facsimile of the abstract in which some phrases are hypertext links. These phrases are also found in the books available at NCBI. Click on hyperlinked results in the list of books in which the phrase is found. Currently, the majority of the links are between the books and PubMed. In the future, more links will be created

- **Laser--optoelectronics in medicine: proceedings of the 7th Congress International Society for Laser Surgery and Medicine in connection with Laser 87 Optoelectronics** Author: International Society for Laser Surgery and Medicine. Congress; Year: 1988; Berlin; New York: Springer-Verlag, 1988; ISBN: 038718130X http://www.amazon.com/exec/obidos/ASIN/038718130X/icongroupinterna

Chapters on Laser Surgery

In order to find chapters that specifically relate to laser surgery, an excellent source of abstracts is the Combined Health Information Database. You will need to limit your search to book chapters and laser surgery using the "Detailed Search" option. Go to the following hyperlink: **http://chid.nih.gov/detail/detail.html**. To find book chapters, use the drop boxes at the bottom of the search page where "You may refine your search by." Select the dates and language you prefer, and the format option "Book Chapter." Type "laser surgery" (or synonyms) into the "For these words:" box. The following is a typical result when searching for book chapters on laser surgery:

- **Benign Prostate Problems**

  Source: in Blaivas, J.G. Conquering Bladder and Prostate Problems: The Authoritative Guide for Men and Women. New York, NY: Plenum Publishing Corporation. 1998. p. 157-176.

  Contact: Available from Kluwer Academic-Plenum Publishing Corporation. 233 Spring Street, New York, NY 10013-1578. (800) 221-9369 or (212) 620-8035. Fax (212) 647-1898. Website: www.plenum.com. PRICE: $26.95. ISBN: 0306458640.

  Summary: The prostate is a specialized gland that surrounds the male urethra near the opening to the bladder. It produces secretions that are mixed with sperm during ejaculation. This chapter on benign prostate problems is from a book for people who have urinary bladder and prostate problems: people who urinate too often, who plan their daily activities around the availability of a bathroom, men with prostate problems, women with incontinence, and people with bladder pain. The book is written in a clear, nontechnical, humorous style that makes the material more accessible to the lay reader. In middle age (beginning around age 40 years) the prostate gland increases in size; this condition is called benign prostatic hyperplasia (BPH). BPH is often associated with lower urinary tract symptoms (difficulty in urinating, for example) and it can cause bladder and kidney problems, but for most men it is more of a nuisance than a threat to their health. The other major cause of prostate enlargement is cancer of the prostate. The chapter describes lower urinary tract symptoms in men and how to know when they warrant a trip to the health care provider. Diagnostic tests utilized include the patient history and examination, urinalysis, urine culture and sensitivities, cystoscopy, urodynamics, and prostate ultrasound. The author then discusses treatment options, including watchful waiting, medications, and surgical procedures: transurethral prostatectomy (TURP), transurethral incision of the prostate (TUIP), and open prostatectomy. Other treatment options include minimally invasive therapies such as hyperthermia, **laser surgery,** transurethral needle ablation (TUNA), high intensity focused ultrasound, and prostatic stents. The author reiterates that, in most patients,

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between the books and other types of information, such as gene and protein sequences and macromolecular structures. See **http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?db=Books**.

treatment is elective, but an accurate diagnosis is important to exclude more serious conditions such as bladder or prostate cancer. 4 figures. 1 table.

- **What Do I Need to Know About Diabetic Eye Disease?**

  Source: in Hirsch, I.B. 12 Things You Must Know About Diabetes Care Right Now!. Alexandria, VA: American Diabetes Association. 2000. p. 77-85.

  Contact: Available from American Diabetes Association (ADA). Order Fulfillment Department, P.O. Box 930850, Atlanta, GA 31193-0850. (800) 232-6733. Fax (770) 442-9742. Website: www.diabetes.org. PRICE: $14.95 plus shipping and handling. ISBN: 1580400612.

  Summary: This chapter provides information on diabetic eye disease. The major eye problems that cause people who have diabetes to lose their eyesight are diabetic retinopathy, cataracts, and glaucoma. These problems can be avoided or treated to lessen their impact if they are diagnosed early. Diabetic retinopathy is a disease of the retina. One type of retinopathy is background or nonproliferative retinopathy, and another is proliferative retinopathy. Both types of retinopathy can be treated with **laser surgery.** The Diabetes Control and Complications Trial and the United Kingdom Prospective Diabetes Study both showed that careful blood glucose control reduces the chances of getting diabetic retinopathy. Cataracts cause the lens of the eye to cloud. This problem is particularly frequent in older people who have diabetes. Treatment involves surgery or the use of sunglasses to relieve visual symptoms. Glaucoma is more common in people who have type 2 diabetes. Vision loss from glaucoma is due to nerve damage from increased pressure in the eye. Treatment options include eyedrops or oral medications. The chapter provides guidelines on the frequency of eye examinations among people who have type 1 and type 2 diabetes, women with diabetes who are pregnant, and people who already have eye disease. The chapter includes a list of questions a patient may ask a doctor and questions a doctor may ask a patient. 1 figure.

CHAPTER 6. MULTIMEDIA ON LASER SURGERY

Overview

In this chapter, we show you how to keep current on multimedia sources of information on laser surgery. We start with sources that have been summarized by federal agencies, and then show you how to find bibliographic information catalogued by the National Library of Medicine.

Video Recordings

An excellent source of multimedia information on laser surgery is the Combined Health Information Database. You will need to limit your search to "Videorecording" and "laser surgery" using the "Detailed Search" option. Go directly to the following hyperlink: **http://chid.nih.gov/detail/detail.html**. To find video productions, use the drop boxes at the bottom of the search page where "You may refine your search by." Select the dates and language you prefer, and the format option "Videorecording (videotape, videocassette, etc.)." Type "laser surgery" (or synonyms) into the "For these words:" box. The following is a typical result when searching for video recordings on laser surgery:

- **Lasers for Eyes**

  Source: Princeton, NJ: Films for Humanities and Sciences. 1990.

  Contact: Available from Films for the Humanities and Sciences. P.O. Box 2053, Princeton, NJ 08543-2053. (800) 257-5126. PRICE: $149 (purchase), or $75 (rental), plus 5 percent of total cost for shipping and handling. Order Number FM-2356.

  Summary: Lasers have revolutionized eye surgery, saving sight where blindness would once have been inevitable and replacing formerly complicated, painful surgery with quicker, safer, less painful, more successful procedures. This patient education video program covers the five principal areas of eye disease in which **laser surgery** is making important contributions: cataracts, macular degeneration, glaucoma, retinal tears, and diabetic retinopathy. The videotape explains each condition and how it is repaired by **laser surgery,** identifies the likeliest victims of each condition, and warns of the potential dangers of **laser surgery.** (AA-M).

- **Best Things in Life: Controlling Diabetic Eye Disease**

  Source: Bethesda, MD: National Eye Health Education Program. 1996. (videorecording).

  Contact: Available from National Eye Health Education Program. 2020 Vision Place, Bethesda, MD 20892-3655. (800) 869-2020 or (301) 496-5248. PRICE: Single copy free.

  Summary: This videocassette provides information about the diagnosis and treatment of diabetic eye disease. A woman with diabetes and her dietitian appear throughout the video. Two other narrators provide additional information. The authors note that people with diabetes are 25 times more likely to lose their vision. The risk of acquiring diabetic eye disease increases over time; at least 50 percent of the people who have had diabetes for 20 years or more will show signs of it. However, most people will not lose their vision if they receive treatment. In fact, 90 percent of people with diabetic retinopathy, even when it is in the most advanced stages, can save their vision if they seek help. Although diabetic retinopathy may not exhibit any symptoms, affected individuals may notice a change in colors, blurring at the center of an object, cloudy vision, or loss of peripheral vision. The video includes an explanation of diabetic retinopathy and notes that **laser surgery,** used to destroy abnormal blood vessels, is the most effective treatment. The authors also discuss cataracts, which can be removed and replaced, and glaucoma, which can be controlled with medication or surgical care. Eye exams with an ophthalmologist or optometrist may involve a visual acuity test and a test that measures pressure in the eye. The most important test is the annual comprehensive eye exam through dilated pupils. (AA-M).

Bibliography: Multimedia on Laser Surgery

The National Library of Medicine is a rich source of information on healthcare-related multimedia productions including slides, computer software, and databases. To access the multimedia database, go to the following Web site: **http://locatorplus.gov/**. Select "Search LOCATORplus." Once in the search area, simply type in laser surgery (or synonyms). Then, in the option box provided below the search box, select "Audiovisuals and Computer Files." From there, you can choose to sort results by publication date, author, or relevance. The following multimedia has been indexed on laser surgery (for more information, follow the hyperlink indicated):

- **CO2 laser surgery of the lower genital tract [videorecording]** Source: produced by DG, Davis & Geck, American Cyanamid Company; Year: 1985; Format: Videorecording; [Wayne, N.J.]: American Cyanamid, c1985
- **Endoscopic gastrointestinal laser surgery [videorecording]** Source: from the Motion Picture Library of the American College of Surgeons; Year: 1989; Format: Videorecording; Danbury, Conn.: American College of Surgeons, Davis & Geck Surgical Film-Video Library, [1989]
- **Laser surgery [videorecording]** Source: HSN, Hospital Satellite Network program of continuing education; Year: 1986; Format: Videorecording; Los Angeles, Calif.: The Network, c1986

CHAPTER 7. PERIODICALS AND NEWS ON LASER SURGERY

Overview

In this chapter, we suggest a number of news sources and present various periodicals that cover laser surgery.

News Services and Press Releases

One of the simplest ways of tracking press releases on laser surgery is to search the news wires. In the following sample of sources, we will briefly describe how to access each service. These services only post recent news intended for public viewing.

PR Newswire

To access the PR Newswire archive, simply go to **http://www.prnewswire.com/**. Select your country. Type "laser surgery" (or synonyms) into the search box. You will automatically receive information on relevant news releases posted within the last 30 days. The search results are shown by order of relevance.

Reuters Health

The Reuters' Medical News and Health eLine databases can be very useful in exploring news archives relating to laser surgery. While some of the listed articles are free to view, others are available for purchase for a nominal fee. To access this archive, go to **http://www.reutershealth.com/en/index.html** and search by "laser surgery" (or synonyms). The following was recently listed in this archive for laser surgery:

- **Laser surgery treats female genital mutilation**
  Source: Reuters Health eLine
  Date: January 09, 2003
- **Israeli study doubts laser surgery for sleep apnea**
  Source: Reuters Health eLine
  Date: April 15, 2002

- **Favorable results of laser surgery for sleep apnea deteriorate with time**
  Source: Reuters Medical News
  Date: April 15, 2002
- **Optometrists Not Authorized To Perform Laser Surgery In Oklahoma**
  Source: Reuters Medical News
  Date: July 09, 1997
- **Laser Surgery Safe, Effective Therapy For Glaucoma**
  Source: Reuters Medical News
  Date: December 15, 1995
- **Cervical Laser Surgery Does Not Affect Fertility**
  Source: Reuters Medical News
  Date: October 03, 1995
- **Laser Surgery Corrects Myopia**
  Source: Reuters Medical News
  Date: April 14, 1995

The NIH

Within MEDLINEplus, the NIH has made an agreement with the New York Times Syndicate, the AP News Service, and Reuters to deliver news that can be browsed by the public. Search news releases at **http://www.nlm.nih.gov/medlineplus/alphanews_a.html**. MEDLINEplus allows you to browse across an alphabetical index. Or you can search by date at the following Web page: **http://www.nlm.nih.gov/medlineplus/newsbydate.html**. Often, news items are indexed by MEDLINEplus within its search engine.

Business Wire

Business Wire is similar to PR Newswire. To access this archive, simply go to **http://www.businesswire.com/**. You can scan the news by industry category or company name.

Market Wire

Market Wire is more focused on technology than the other wires. To browse the latest press releases by topic, such as alternative medicine, biotechnology, fitness, healthcare, legal, nutrition, and pharmaceuticals, access Market Wire's Medical/Health channel at **http://www.marketwire.com/mw/release_index?channel=MedicalHealth**. Or simply go to Market Wire's home page at **http://www.marketwire.com/mw/home**, type "laser surgery" (or synonyms) into the search box, and click on "Search News." As this service is technology oriented, you may wish to use it when searching for press releases covering diagnostic procedures or tests.

Search Engines

Medical news is also available in the news sections of commercial Internet search engines. See the health news page at Yahoo (**http://dir.yahoo.com/Health/News_and_Media/**), or

you can use this Web site's general news search page at **http://news.yahoo.com/**. Type in "laser surgery" (or synonyms). If you know the name of a company that is relevant to laser surgery, you can go to any stock trading Web site (such as **http://www.etrade.com/**) and search for the company name there. News items across various news sources are reported on indicated hyperlinks. Google offers a similar service at **http://news.google.com/**.

BBC

Covering news from a more European perspective, the British Broadcasting Corporation (BBC) allows the public free access to their news archive located at **http://www.bbc.co.uk/**. Search by "laser surgery" (or synonyms).

Newsletter Articles

Use the Combined Health Information Database, and limit your search criteria to "newsletter articles." Again, you will need to use the "Detailed Search" option. Go directly to the following hyperlink: **http://chid.nih.gov/detail/detail.html**. Go to the bottom of the search page where "You may refine your search by." Select the dates and language that you prefer. For the format option, select "Newsletter Article." Type "laser surgery" (or synonyms) into the "For these words:" box. You should check back periodically with this database as it is updated every three months. The following is a typical result when searching for newsletter articles on laser surgery:

- **Laser Surgery for Cancer of the Larynx (Voice Box)**

  Source: News from SPOHNC. News from Support for People with Oral and Head and Neck Cancer, Inc. 12(4): 1-2, 7. Winter 2002.

  Contact: Available from Support for People with Oral and Head and Neck Cancer, Inc. (SPOHNC). P.O. Box 53, Locust Valley, NY 11560-0053. (516) 759-5333. E-mail: info@spohnc.org. Website: www.spohnc.org.

  Summary: Over the past 30 years, surgical lasers have become a very useful tool in the treatment of cancer of the head and neck. This newsletter article describes the use of laser surgery for cancer of the larynx (voice box). Many surgeons have come to favor endoscopic excision over radiation therapy for early cancers on the vocal folds in order to avoid the disadvantages of radiation. The carbon dioxide laser was used in a large portion of the patients who were treated with endoscopic excision, which is an ambulatory surgery procedure. The authors note that high cure rates have been achieved treating early glottic (vocal cord) cancer with endoscopic excision, usually using the carbon dioxide laser. The authors caution that the decision as to when it is best to use, or not to use, a laser in the treatment of cancer of the larynx is complex. 8 references.

- **Let There Be Light: Cosmetic Laser Surgery Comes of Age**

  Source: Dermatology Focus. 15(3):1-2; January 1997.

  Summary: This newsletter article for health professionals presents information on the use of the newest generation of lasers in cosmetic surgery. However, their use is hampered by the difficulty in using them and by the lack of published guidelines for

operating parameters. Findings on the clinical application of these new lasers and their safe and effective use are presented.

- **Laser Surgery: Sometimes the Right Choice, Sometimes Not**

  Source: Mayo Clinic Health Letter. 18(4): 1-3. April 2000.

  Contact: Available from Mayo Clinic Health Letter. 200 First Street SW, Rochester, MN 55905. (800) 333-9037 or (303) 604-1465. E-mail: HealthLetter@Mayo.edu.

  Summary: This newsletter article provides people who may need a surgical procedure with information on laser surgery. Laser is a acronym that stands for light amplification by stimulated emission of radiation. Laser beams are strong beams of light produced by electrically simulating a solid, liquid, or gas. Lasers are usually named for the substances that produce them. Uses include cutting or destroying abnormal or diseased tissue, shrinking or destroying tumors or lesions, burning off or vaporizing tissue, sculpting tissue, and sealing bleeding blood vessels. Lasers have some distinct advantages over traditional methods, such as causing minimal bleeding, posing less risk of infection, causing minimal scarring, and being faster than traditional surgery. However, in many cases, conventional surgery is more effective than laser surgery, and laser surgery is not necessarily pain free or risk free. The article discusses common uses of laser surgery in dermatology, plastic surgery, ophthalmology, gastroenterology, gynecology, urology, cardiology, neurosurgery, dentistry, otorhinolaryngology, and orthopedics.

Academic Periodicals covering Laser Surgery

Numerous periodicals are currently indexed within the National Library of Medicine's PubMed database that are known to publish articles relating to laser surgery. In addition to these sources, you can search for articles covering laser surgery that have been published by any of the periodicals listed in previous chapters. To find the latest studies published, go to **http://www.ncbi.nlm.nih.gov/pubmed**, type the name of the periodical into the search box, and click "Go."

If you want complete details about the historical contents of a journal, you can also visit the following Web site: **http://www.ncbi.nlm.nih.gov/entrez/jrbrowser.cgi**. Here, type in the name of the journal or its abbreviation, and you will receive an index of published articles. At **http://locatorplus.gov/**, you can retrieve more indexing information on medical periodicals (e.g. the name of the publisher). Select the button "Search LOCATORplus." Then type in the name of the journal and select the advanced search option "Journal Title Search."

APPENDICES

APPENDIX A. PHYSICIAN RESOURCES

Overview

In this chapter, we focus on databases and Internet-based guidelines and information resources created or written for a professional audience.

NIH Guidelines

Commonly referred to as "clinical" or "professional" guidelines, the National Institutes of Health publish physician guidelines for the most common diseases. Publications are available at the following by relevant Institute[8]:

- Office of the Director (OD); guidelines consolidated across agencies available at **http://www.nih.gov/health/consumer/conkey.htm**
- National Institute of General Medical Sciences (NIGMS); fact sheets available at **http://www.nigms.nih.gov/news/facts/**
- National Library of Medicine (NLM); extensive encyclopedia (A.D.A.M., Inc.) with guidelines: **http://www.nlm.nih.gov/medlineplus/healthtopics.html**
- National Cancer Institute (NCI); guidelines available at **http://www.cancer.gov/cancerinfo/list.aspx?viewid=5f35036e-5497-4d86-8c2c-714a9f7c8d25**
- National Eye Institute (NEI); guidelines available at **http://www.nei.nih.gov/order/index.htm**
- National Heart, Lung, and Blood Institute (NHLBI); guidelines available at **http://www.nhlbi.nih.gov/guidelines/index.htm**
- National Human Genome Research Institute (NHGRI); research available at **http://www.genome.gov/page.cfm?pageID=10000375**
- National Institute on Aging (NIA); guidelines available at **http://www.nia.nih.gov/health/**

[8] These publications are typically written by one or more of the various NIH Institutes.

- National Institute on Alcohol Abuse and Alcoholism (NIAAA); guidelines available at **http://www.niaaa.nih.gov/publications/publications.htm**
- National Institute of Allergy and Infectious Diseases (NIAID); guidelines available at **http://www.niaid.nih.gov/publications/**
- National Institute of Arthritis and Musculoskeletal and Skin Diseases (NIAMS); fact sheets and guidelines available at **http://www.niams.nih.gov/hi/index.htm**
- National Institute of Child Health and Human Development (NICHD); guidelines available at **http://www.nichd.nih.gov/publications/pubskey.cfm**
- National Institute on Deafness and Other Communication Disorders (NIDCD); fact sheets and guidelines at **http://www.nidcd.nih.gov/health/**
- National Institute of Dental and Craniofacial Research (NIDCR); guidelines available at **http://www.nidr.nih.gov/health/**
- National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK); guidelines available at **http://www.niddk.nih.gov/health/health.htm**
- National Institute on Drug Abuse (NIDA); guidelines available at **http://www.nida.nih.gov/DrugAbuse.html**
- National Institute of Environmental Health Sciences (NIEHS); environmental health information available at **http://www.niehs.nih.gov/external/facts.htm**
- National Institute of Mental Health (NIMH); guidelines available at **http://www.nimh.nih.gov/practitioners/index.cfm**
- National Institute of Neurological Disorders and Stroke (NINDS); neurological disorder information pages available at **http://www.ninds.nih.gov/health_and_medical/disorder_index.htm**
- National Institute of Nursing Research (NINR); publications on selected illnesses at **http://www.nih.gov/ninr/news-info/publications.html**
- National Institute of Biomedical Imaging and Bioengineering; general information at **http://grants.nih.gov/grants/becon/becon_info.htm**
- Center for Information Technology (CIT); referrals to other agencies based on keyword searches available at **http://kb.nih.gov/www_query_main.asp**
- National Center for Complementary and Alternative Medicine (NCCAM); health information available at **http://nccam.nih.gov/health/**
- National Center for Research Resources (NCRR); various information directories available at **http://www.ncrr.nih.gov/publications.asp**
- Office of Rare Diseases; various fact sheets available at **http://rarediseases.info.nih.gov/html/resources/rep_pubs.html**
- Centers for Disease Control and Prevention; various fact sheets on infectious diseases available at **http://www.cdc.gov/publications.htm**

NIH Databases

In addition to the various Institutes of Health that publish professional guidelines, the NIH has designed a number of databases for professionals.[9] Physician-oriented resources provide a wide variety of information related to the biomedical and health sciences, both past and present. The format of these resources varies. Searchable databases, bibliographic citations, full-text articles (when available), archival collections, and images are all available. The following are referenced by the National Library of Medicine:[10]

- **Bioethics:** Access to published literature on the ethical, legal, and public policy issues surrounding healthcare and biomedical research. This information is provided in conjunction with the Kennedy Institute of Ethics located at Georgetown University, Washington, D.C.: **http://www.nlm.nih.gov/databases/databases_bioethics.html**
- **HIV/AIDS Resources:** Describes various links and databases dedicated to HIV/AIDS research: **http://www.nlm.nih.gov/pubs/factsheets/aidsinfs.html**
- **NLM Online Exhibitions:** Describes "Exhibitions in the History of Medicine": **http://www.nlm.nih.gov/exhibition/exhibition.html**. Additional resources for historical scholarship in medicine: **http://www.nlm.nih.gov/hmd/hmd.html**
- **Biotechnology Information:** Access to public databases. The National Center for Biotechnology Information conducts research in computational biology, develops software tools for analyzing genome data, and disseminates biomedical information for the better understanding of molecular processes affecting human health and disease: **http://www.ncbi.nlm.nih.gov/**
- **Population Information:** The National Library of Medicine provides access to worldwide coverage of population, family planning, and related health issues, including family planning technology and programs, fertility, and population law and policy: **http://www.nlm.nih.gov/databases/databases_population.html**
- **Cancer Information:** Access to cancer-oriented databases: **http://www.nlm.nih.gov/databases/databases_cancer.html**
- **Profiles in Science:** Offering the archival collections of prominent twentieth-century biomedical scientists to the public through modern digital technology: **http://www.profiles.nlm.nih.gov/**
- **Chemical Information:** Provides links to various chemical databases and references: **http://sis.nlm.nih.gov/Chem/ChemMain.html**
- **Clinical Alerts:** Reports the release of findings from the NIH-funded clinical trials where such release could significantly affect morbidity and mortality: **http://www.nlm.nih.gov/databases/alerts/clinical_alerts.html**
- **Space Life Sciences:** Provides links and information to space-based research (including NASA): **http://www.nlm.nih.gov/databases/databases_space.html**
- **MEDLINE:** Bibliographic database covering the fields of medicine, nursing, dentistry, veterinary medicine, the healthcare system, and the pre-clinical sciences: **http://www.nlm.nih.gov/databases/databases_medline.html**

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[9] Remember, for the general public, the National Library of Medicine recommends the databases referenced in MEDLINE*plus* (**http://medlineplus.gov/** or **http://www.nlm.nih.gov/medlineplus/databases.html**).

[10] See **http://www.nlm.nih.gov/databases/databases.html**.

- **Toxicology and Environmental Health Information (TOXNET):** Databases covering toxicology and environmental health: **http://sis.nlm.nih.gov/Tox/ToxMain.html**
- **Visible Human Interface:** Anatomically detailed, three-dimensional representations of normal male and female human bodies: **http://www.nlm.nih.gov/research/visible/visible_human.html**

The Combined Health Information Database

A comprehensive source of information on clinical guidelines written for professionals is the Combined Health Information Database. You will need to limit your search to one of the following: Brochure/Pamphlet, Fact Sheet, or Information Package, and "laser surgery" using the "Detailed Search" option. Go directly to the following hyperlink: **http://chid.nih.gov/detail/detail.html**. To find associations, use the drop boxes at the bottom of the search page where "You may refine your search by." For the publication date, select "All Years." Select your preferred language and the format option "Fact Sheet." Type "laser surgery" (or synonyms) into the "For these words:" box. The following is a sample result:

- **Prostate Diseases: A Special Report from the Harvard Health Letter**

  Source: Boston, MA: Harvard Health Letter. 1994. 25 p.

  Contact: Available from Harvard Medical School Health Publications Group. Department PRO, P.O. Box 380, Boston, MA 02117. (617) 432-1485. Fax (617) 432-1506. PRICE: $16 (as of 1995); multiple-copy discount rates available.

  Summary: This report provides information about prostatic diseases, focusing on benign prostatic hyperplasia (BPH) and prostate cancer. The first section of the report outlines the anatomy and physiology of the prostate and discusses diagnostic tests used to confirm prostatic diseases; tests covered include the digital rectal examination, the PSA test, ultrasonography, and biopsy. The second section discusses BPH, covering the symptoms of BPH, when to consult a health care provider, and treatment options including drug therapy, transurethral resection, **laser surgery,** balloon dilation, prostatic urethral stents, and heat therapies. The final section, on prostate cancer, discusses early detection strategies, more detailed diagnostic tests, the prevention of prostate cancer, and treatment options including watchful waiting, radical prostactectomy, radiation therapy, and hormone therapy. The booklet concludes with a brief discussion on the importance of support groups, a glossary of relevant terms, and a list of resource materials and organizations. 6 figures. 2 tables.

The NLM Gateway[11]

The NLM (National Library of Medicine) Gateway is a Web-based system that lets users search simultaneously in multiple retrieval systems at the U.S. National Library of Medicine (NLM). It allows users of NLM services to initiate searches from one Web interface, providing one-stop searching for many of NLM's information resources or databases.[12] To use the NLM Gateway, simply go to the search site at **http://gateway.nlm.nih.gov/gw/Cmd**.

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[11] Adapted from NLM: **http://gateway.nlm.nih.gov/gw/Cmd?Overview.x**.

[12] The NLM Gateway is currently being developed by the Lister Hill National Center for Biomedical Communications (LHNCBC) at the National Library of Medicine (NLM) of the National Institutes of Health (NIH).

Type "laser surgery" (or synonyms) into the search box and click "Search." The results will be presented in a tabular form, indicating the number of references in each database category.

Results Summary

Category	Items Found
Journal Articles	20666
Books / Periodicals / Audio Visual	479
Consumer Health	23
Meeting Abstracts	19
Other Collections	3
Total	21190

HSTAT[13]

HSTAT is a free, Web-based resource that provides access to full-text documents used in healthcare decision-making.[14] These documents include clinical practice guidelines, quick-reference guides for clinicians, consumer health brochures, evidence reports and technology assessments from the Agency for Healthcare Research and Quality (AHRQ), as well as AHRQ's Put Prevention Into Practice.[15] Simply search by "laser surgery" (or synonyms) at the following Web site: **http://text.nlm.nih.gov**.

Coffee Break: Tutorials for Biologists[16]

Coffee Break is a general healthcare site that takes a scientific view of the news and covers recent breakthroughs in biology that may one day assist physicians in developing treatments. Here you will find a collection of short reports on recent biological discoveries. Each report incorporates interactive tutorials that demonstrate how bioinformatics tools are used as a part of the research process. Currently, all Coffee Breaks are written by NCBI staff.[17] Each report is about 400 words and is usually based on a discovery reported in one or more articles from recently published, peer-reviewed literature.[18] This site has new articles every few weeks, so it can be considered an online magazine of sorts. It is intended for

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[13] Adapted from HSTAT: **http://www.nlm.nih.gov/pubs/factsheets/hstat.html**.

[14] The HSTAT URL is **http://hstat.nlm.nih.gov/**.

[15] Other important documents in HSTAT include: the National Institutes of Health (NIH) Consensus Conference Reports and Technology Assessment Reports; the HIV/AIDS Treatment Information Service (ATIS) resource documents; the Substance Abuse and Mental Health Services Administration's Center for Substance Abuse Treatment (SAMHSA/CSAT) Treatment Improvement Protocols (TIP) and Center for Substance Abuse Prevention (SAMHSA/CSAP) Prevention Enhancement Protocols System (PEPS); the Public Health Service (PHS) Preventive Services Task Force's *Guide to Clinical Preventive Services*; the independent, nonfederal Task Force on Community Services' *Guide to Community Preventive Services*; and the Health Technology Advisory Committee (HTAC) of the Minnesota Health Care Commission (MHCC) health technology evaluations.

[16] Adapted from **http://www.ncbi.nlm.nih.gov/Coffeebreak/Archive/FAQ.html**.

[17] The figure that accompanies each article is frequently supplied by an expert external to NCBI, in which case the source of the figure is cited. The result is an interactive tutorial that tells a biological story.

[18] After a brief introduction that sets the work described into a broader context, the report focuses on how a molecular understanding can provide explanations of observed biology and lead to therapies for diseases. Each vignette is accompanied by a figure and hypertext links that lead to a series of pages that interactively show how NCBI tools and resources are used in the research process.

general background information. You can access the Coffee Break Web site at the following hyperlink: **http://www.ncbi.nlm.nih.gov/Coffeebreak/**.

Other Commercial Databases

In addition to resources maintained by official agencies, other databases exist that are commercial ventures addressing medical professionals. Here are some examples that may interest you:

- **CliniWeb International:** Index and table of contents to selected clinical information on the Internet; see **http://www.ohsu.edu/cliniweb/**.
- **Medical World Search:** Searches full text from thousands of selected medical sites on the Internet; see **http://www.mwsearch.com/**.

APPENDIX B. PATIENT RESOURCES

Overview

Official agencies, as well as federally funded institutions supported by national grants, frequently publish a variety of guidelines written with the patient in mind. These are typically called "Fact Sheets" or "Guidelines." They can take the form of a brochure, information kit, pamphlet, or flyer. Often they are only a few pages in length. Since new guidelines on laser surgery can appear at any moment and be published by a number of sources, the best approach to finding guidelines is to systematically scan the Internet-based services that post them.

Patient Guideline Sources

The remainder of this chapter directs you to sources which either publish or can help you find additional guidelines on topics related to laser surgery. Due to space limitations, these sources are listed in a concise manner. Do not hesitate to consult the following sources by either using the Internet hyperlink provided, or, in cases where the contact information is provided, contacting the publisher or author directly.

The National Institutes of Health

The NIH gateway to patients is located at **http://health.nih.gov/**. From this site, you can search across various sources and institutes, a number of which are summarized below.

Topic Pages: MEDLINEplus

The National Library of Medicine has created a vast and patient-oriented healthcare information portal called MEDLINEplus. Within this Internet-based system are "health topic pages" which list links to available materials relevant to laser surgery. To access this system, log on to **http://www.nlm.nih.gov/medlineplus/healthtopics.html**. From there you can either search using the alphabetical index or browse by broad topic areas. Recently, MEDLINEplus listed the following when searched for "laser surgery":

- Other guides

  Laser Eye Surgery
  http://www.nlm.nih.gov/medlineplus/lasereyesurgery.html

  Plastic & Cosmetic Surgery
  http://www.nlm.nih.gov/medlineplus/plasticcosmeticsurgery.html

  Refractive Errors
  http://www.nlm.nih.gov/medlineplus/refractiveerrors.html

  Scars
  http://www.nlm.nih.gov/medlineplus/scars.html

  Skin Pigmentation Disorders
  http://www.nlm.nih.gov/medlineplus/skinpigmentationdisorders.html

You may also choose to use the search utility provided by MEDLINEplus at the following Web address: **http://www.nlm.nih.gov/medlineplus/**. Simply type a keyword into the search box and click "Search." This utility is similar to the NIH search utility, with the exception that it only includes materials that are linked within the MEDLINEplus system (mostly patient-oriented information). It also has the disadvantage of generating unstructured results. We recommend, therefore, that you use this method only if you have a very targeted search.

The Combined Health Information Database (CHID)

CHID Online is a reference tool that maintains a database directory of thousands of journal articles and patient education guidelines on laser surgery. CHID offers summaries that describe the guidelines available, including contact information and pricing. CHID's general Web site is **http://chid.nih.gov/**. To search this database, go to **http://chid.nih.gov/detail/detail.html**. In particular, you can use the advanced search options to look up pamphlets, reports, brochures, and information kits. The following was recently posted in this archive:

- **Prostate Health: Basic Facts for Better Health. What Every Man Should Know**

  Source: Baltimore, MD: American Foundation for Urologic Disease. 200x. 32 p.

  Contact: Available from American Foundation for Urologic Disease (AFUD). 1128 North Charles Street, Baltimore, MD 21201. (800) 242-2383. Website: www.afud.org. PRICE: $13.00 for pack of 50; plus shipping and handling.

  Summary: Designed for men over the age of 40, this health education brochure explains how the prostate works, the problems that can happen with the prostate, the tests that are used to diagnose prostate diseases, and treatment options. Some of the prostate problems discussed are enlarged prostate (benign prostatic hyperplasia, BPH), prostatitis (inflammation of the prostate), and prostate cancer. The brochure focuses on the importance of the digital rectal examination (DRE) to identify prostate problems of all sorts and to identify them early enough for successful treatment options to be initiated. Some symptoms that may indicate a prostate problem include a weak urinary stream, difficulty starting urination, interruption of the stream (stopping and starting), pain or burning on urination, urgency (difficulty postponing urination), frequent urination, awakening often at night to urinate, and blood in the urine. Diagnostic methods include a thorough medical history, the physical examination (including the

DRE), and the prostate specific antigen (PSA) test. For BPH, if men are not bothered by their symptoms, they may just be put on a program of watchful waiting, which entails regular followup but no actual treatment. Other treatments are drug therapy, thermal (heat based) therapy, surgery, and alternative treatments (such as herbal remedies). The brochure describes the four types of surgery that may be used for BPH: transurethral resection of the prostate (TURP), transurethral incision of the prostate (TUIP), open prostatectomy (removal of the prostate), and **laser surgery.** Prostatitis (acute, chronic, or noninfectious) is treated based on type; treatment can include antimicrobials, muscle relaxants, and lifestyle changes. When prostate cancer is diagnosed early, the chances for curative treatment are greatly increased. After classification, the cancer is treated by surgery, radiation therapy, hormonal therapy, or a combination. The brochure concludes with a glossary of terms used in the text. 3 figures. 1 table.

- **Guide to Skin Cancers and Precancers, A**

  Source: New York, NY: Skin Cancer Foundation. 2002. 18 p.

  Contact: Available from Skin Cancer Foundation. Box 561, New York, NY 10156. (212) 725-5176. Fax (212) 725-5751. E-mail: info@skincancer.org. Website: www.skincancer.org. PRICE: Contact for current pricing; bulk orders available. Item No. BR-19.

  Summary: This booklet provides the general public with information on skin precancers and cancers. Actinic keratosis (AK), or solar keratosis, is the most common type of precancerous skin lesion. AKs most often appear on skin surfaces that have been frequently exposed to the sun or to artificial sources of ultraviolet light. They range in size from 1 millimeter to 1 inch in diameter. AKs usually appear as small crusty, scaly, or crumbly bumps or horns that are dry and rough to the touch. Untreated AKs may develop into squamous cell carcinoma (SCC). Treatment options for AKs include cryosurgery; curettage and desiccation; topical medications such as 5-fluorouracil cream or solution, hyaluronic acid/diclofenac, and imiquimod cream; chemical peeling; **laser surgery;**; and photodynamic therapy. The most common skin cancers are basal cell carcinoma (BCC) and SCC. Both are mainly caused by long term sun exposure, so they typically occur in areas that are exposed to the sun. Although BCCs rarely spread to vital organs, they can lead to disfigurement. SCCs have a greater chance of spreading and becoming life threatening if untreated. Treatment options for BCCs and SCCs include curettage and electrodesiccation, excisional surgery, radiation, and Mohs micrographic surgery. In addition, cryosurgery, **laser surgery,** and photodynamic therapy can be used to treat BCCs and SCCs. The deadliest form of skin cancer is melanoma. It is most often caused by intense, intermittent exposure to the sun, especially before age 18. Melanoma is treatable in its earliest stage, but if left untreated, it will spread to vital organs. People should check their skin every month for lesions that are asymmetrical and have border irregularity, color variability, and a diameter larger than a pencil eraser. Treatment options for melanoma discovered at an early stage include excisional surgery, Mohs micrographic surgery, and regional lymph node dissection. Approaches for treating melanoma that has spread include radiation, chemotherapy, and immunotherapy. Skin cancers can be prevented by taking appropriate sun safety measures. 18 figures.

- **Questions and Answers About Rosacea**

  Source: Bethesda, MD: National Institute of Arthritis and Musculoskeletal and Skin Diseases (NIAMS) Information Clearinghouse. 2002. 16 p.

Contact: Available from National Institute of Arthritis and Musculoskeletal and Skin Diseases (NIAMS) Information Clearinghouse. 1 AMS Circle, Bethesda, MD 20892-3675. (877) 226-4267 or (301) 495-4484. Fax (301) 718-6366. TTY (301) 565-2966. E-mail: NIAMSInfo@mail.nih.gov. Website: www.niams.nih.gov. PRICE: 1 to 25 copies free. Order Number: AR-181 QA (booklet), or AR-181L QA (large print).

Summary: This booklet uses a question and answer format to provide people who have rosacea with information on the causes, symptoms, and treatment of this chronic skin disease that affects both the skin and the eyes. The disorder is characterized by redness, bumps, pimples, and, at later stages, thickened skin on the nose. The disease usually occurs in adults between 30 and 60 years old, and it tends to occur in people who have fair skin. Rosacea is classified into types based on symptoms. The earliest stage is prerosacea. At this stage, signs and symptoms include frequent episodes of flushing and intermittent redness of the face and neck. Another type of rosacea, called vascular rosacea, is characterized by persistent flushing and redness. This type commonly occurs in women. Some people who have vascular rosacea also develop inflammatory rosacea. In this form of the disease, pink bumps and pimples develop, and thin red lines appear on the face. A condition known as rhinophyma, which is characterized by an enlarged, bulbous red nose, may develop in a few men who have rosacea. In addition to skin problems, rosacea may cause redness, burning, and tearing of the eye, as well as the sensation of a foreign body in the eye. Although the exact cause of rosacea is unknown, genetic predisposition and several types of environmental factors are thought to be related to its development. Rosacea cannot be cured, but it can be controlled through the use of topical or oral antibiotics, isotretinoin, electrosurgery and **laser surgery,** and sunscreening agents. The fact sheet includes a list of additional sources of information.

- **Treatment Choices for BPH: Enlarged Prostate**

  Source: Baltimore, MD: Prostate Health Council. American Foundation for Urologic Disease. 1996. 10 p.

  Contact: Available from American Foundation for Urologic Disease. 1126 North Charles Street, Baltimore, MD 21201. (800) 242-2383 or (410) 468-1800. Fax (410) 468-1808. Website: www.afud.org. PRICE: Single copy free.

  Summary: This booklet was written to help patients make informed choices about treatment options for their benign prostatic hyperplasia (BPH). The brochure begins with a description of the prostate and its role. More than half of men over age 60 have BPH, an enlarged prostate that is not cancerous. BPH affects the inner part of the prostate first. As a result, the prostate may begin to squeeze the urethra. This sometimes causes problems in urinating. BPH generally does not interfere with sexual functioning. BPH should be treated only if the symptoms are severe enough to affect lifestyle or if the urinary tract is seriously affected. Currently, the main ways of dealing with BPH are watchful waiting, alpha-blocker drug treatment, finasteride drug treatment, and surgery. Surgery often does the best job of relieving symptoms, but it also has more risk than the other treatments. The brochure also describes **laser surgery** and other new treatments, including electrovaporization and thermal therapy. The brochure outlines the benefits and risks of each type of traditional therapy. The booklet concludes with a glossary of related terms; a pretest and answers are also included.

- **Enlarged Prostate: BPH and Male Urinary Problems**

  Source: Baltimore, MD: American Foundation for Urologic Disease. 1998. 12 p.

Contact: Available from American Foundation for Urologic Disease (AFUD). 1128 North Charles Street, Baltimore, MD 21201. (800) 242-2383. Website: www.afud.org. PRICE: $13.00 for pack of 50; plus shipping and handling.

Summary: This brochure describes a particular prostate disease: noncancerous enlargement of the prostate or benign prostatic hyperplasia (BPH). Topics include the anatomy and physiology of the prostate, a definition of BPH, the symptoms of BPH, how it is diagnosed, how it differs from prostate cancer, when to see a specialist, when BPH requires treatment, surgical treatment, nonsurgical treatments, and lifestyle issues. A brief quiz at the beginning of the brochure emphasizes the information that all men should know. The prostate is a gland of the male reproductive system; the gland is made up largely of muscular and glandular tissues and its main function is to produce fluid for semen, which transports sperm. The symptoms of BPH can include a weak urinary stream, difficulty starting urination, interruption of the stream (stopping and starting), pain or burning on urination, urgency (difficulty postponing urination), frequent urination, and awakening frequently at night to urinate. Diagnostic methods include a thorough medical history and the physical examination, including the digital rectal examination. For BPH, if men are not bothered by their symptoms, they may just be put on a program of watchful waiting, which entails regular followup but no actual treatment. Other treatments are drug therapy, thermal (heat based) therapy, surgery, and alternative treatments (such as herbal remedies). The brochure describes the four types of surgery that may be used for BPH: transurethral resection of the prostate (TURP), transurethral incision of the prostate (TUIP), open prostatectomy (removal of the prostate), and **laser surgery.** The brochure reiterates the differences between BPH and prostate cancer and cautions readers that they must stay vigilant for the signs of prostate cancer, which is best treated when detected early. The brochure concludes with a glossary of terms used in the text and the answers to the pretest. 5 figures.

- **Laser Ablation of Tumors**

  Source: Nutley, NJ: Roche Laboratories. 1990. 3 p.

  Contact: Available from Maria L. Bergamo, MD. Roche Laboratories. 340 Kingsland Street, Nutley, NJ 07110. (201) 235-5000.

  Summary: This brochure discusses laser ablation therapy for tumors. Although radical surgery is usually still the treatment of choice in patients with potentially curable rectal cancers, endoscopic laser ablation has become increasingly popular as a palliative measure, particularly in cases of advanced metastatic disease or in patients whose age or concomitant medical conditions make surgery an unacceptably high risk. Focusing on the Nd-YAG laser, this brochure discusses the power, potential and problems of lasers; the cost-effectiveness of **laser surgery;**; and use of lasers for total tumor removal. A report on one clinical study of 35 surgical patients is included. Two color photographs illustrate laser ablation of colonic adenomas and Nd-YAG laser palliation of obstructing colon cancer. 4 references.

- **Diabetic Retinopathy: Information for Patients**

  Source: Bethesda, MD: National Eye Institute, National Institutes of Health. 1995. 19 p.

  Contact: Available from National Eye Health Education Program. 2020 Vision Place, Bethesda, MD 20892-3655. (800) 869-2020 or (301) 496-5248. E-mail: 2020@b31.nei.nih.gov. Single copy free; bulk copies available.

Summary: This brochure helps people with diabetic retinopathy and their families better understand the disease. The brochure describes the cause, symptoms, diagnosis, and treatment of diabetic retinopathy. Topics include the physiology of the retina and how diabetic retinopathy damages the retina; risk factors for this disease; diagnostic testing, including the visual acuity test, pupil dilation, ophthalmoscopy, tonometry, and fluorescein angiography; treatment options, including **laser surgery** and vitrectomy; current research projects in this area; and recommendations for protecting one's vision. The brochure concludes with a list of resource organizations through which readers may get more information. The back pocket of the brochure includes a flyer providing suggestions for patients about talking and working with their health care providers.

- **Rosacea**

  Source: Schaumburg, IL: American Academy of Dermatology. 1995. 6 p.

  Contact: Available from American Academy of Dermatology. P.O. Box 681069, Schaumburg, IL 60168-1069. (888) 462-3376 or (847) 330-0230. http://www.aad.org/index.html. PRICE: Single copy free; bulk prices available.

  Summary: This brochure is for people with rosacea, a skin disease that causes redness and swelling on the face. It details the progression of symptoms, from flushing or blushing easily to persistent facial redness involving the cheeks, forehead, and chin, and in more advanced cases, to a condition known as rhinophyma. The brochure explains which people are most likely to develop rosacea. Patients are advised to avoid hot drinks, spicy foods, and alcoholic beverages; practice good sun protection; avoid rubbing, scrubbing, or massaging the face; and avoid irritating cosmetics and facial products. The treatment options outlined include gels and creams, oral antibiotics, cortisone creams, and **laser surgery.** 2 photographs.

- **Your Vision: Diabetic Eye Disease**

  Source: Waco, TX: Health Edco. 1995. 2 p.

  Contact: Available from Health Edco. P.O. Box 21207, Waco, TX 76702-1207. (800) 299-3366, ext. 295. Fax (817) 751-0221. PRICE: $2.00 each for 1-99 copies, $0.43 each for 100-199 copies.

  Summary: This brochure provides information about diabetic eye disease and its symptoms, causes, and treatments. The brochure notes that diabetic retinopathy and cataracts are the most common diabetic eye diseases. Other eye diseases that occur more often in people with diabetes are blocked blood vessels in the eye, glaucoma, and eye infections. Diabetic retinopathy is caused by abnormal blood vessels in the retina; cataracts are caused by a coating that forms on the back side of the lens. People with cataracts may have hazy vision, but symptoms of diabetic retinopathy are uncommon in the early stages. The most common form of treatment for diabetic retinopathy is **laser surgery.** Standard surgical techniques are used to remove cataracts. The brochure points out that regular eye exams are critical to identifying and following the stages of diabetic retinopathy and cataracts. The brochure includes color illustrations.

- **Treatment for Spider and Varicose Veins**

  Source: Schaumburg, IL: American Society for Dermatologic Surgery (ASDS). 1998. 6 p.

  Contact: Available from American Society for Dermatologic Surgery. ATTN: Pamphlets, 930 North Meacham Road, Schaumburg, IL 60173-6016. (800) 441-2737 or (847) 330-9830. Fax (847) 330-1135. Website: www.asds-net.org. PRICE: Package of 50 for members,

$25.00; for nonmembers, $40.00; bulk orders sold to physicians only. Call '800' number or access website for single free copy.

Summary: This brochure uses a question and answer format to provide the general public with information on the treatment of spider and varicose veins. The fact sheet describes these veins and the factors contributing to them, identifies the health hazards posed by varicose veins, presents treatment methods, and notes possible complications. One method of treating spider or varicose veins is sclerotherapy. This relatively inexpensive procedure involves injecting a saline or specially developed chemical solution into the vein; this causes it to close up or collapse and become scar tissue that is eventually absorbed. Other methods include **laser surgery,** electrodesiccation, surgical ligation and stripping, and ambulatory phlebectomy. The fact sheet provides information on the American Society for Dermatologic Surgery and presents a source for further information.

- **What's It Going to Cost You? HPV [Genital Warts]**

  Contact: Health Edco, Division of WRS Group, Inc., PO Box 21207, Waco, TX, 76702-1207, (254) 776-6461.

  Summary: This brochure, for adolescents, discusses the sexually transmitted disease (STD), human papillomavirus (HPV). HPV causes genital warts and is one of the most common STDs in the United States. The following aspects of HPV are discussed: (1) symptoms; (2) diagnosis; (3) transmission through skin-to-skin, oral, vaginal, or anal sex with an infected person; (4) prevention measures such as practicing sexual abstinence, monogamy, safer sex with condoms, and avoidance of substance abuse; (5) treatment using acids, **laser surgery,** and cryotherapy; (6) the financial costs for treating HPV; and (7) the possible long-term effects including cervical, anal, or penile cancer as well as sterility in women.

- **Anal Warts: Questions and Answers**

  Source: Arlington Heights, IL: American Society of Colon and Rectal Surgeons. 1996. 2 p.

  Contact: Available from American Society of Colon and Rectal Surgeons. 85 West Algonquin Road, Suite 550, Arlington Heights, IL 60005. (800) 791-0001 or (847) 290-9184. Fax (847) 290-9203. Price: Single copy free; bulk copies available.

  Summary: This brochure, from the American Society of Colon and Rectal Surgeons, provides basic information about anal warts (condyloma acuminata). Anal warts are thought to be caused by the human papilloma virus. The brochure provides information on the symptoms and treatment of anal warts. The brochure notes that if the warts are not removed, the warts generally grow larger and become more and more numerous. In addition, there is evidence that these warts can become cancerous if left untreated for a long time. Treatment options include medications, electrical cautery, **laser surgery,** and surgical removal. The cautery and excision technique can be performed on an outpatient basis, and the patient can go home after the procedure. Most people are moderately uncomfortable for a few days after treatment, and pain medication may be prescribed. Depending on the extent of the disease, some people return to work the next day, while others may remain out of work for several days. The brochure provides tips to avoid recurrence and reinfection, including: continue observation for several months, and abstain from sexual contact with individuals who have anal (or genital) warts. The brochure concludes with a brief description of the specialty practiced by colon and rectal surgeons. 1 figure. (AA-M).

- **Genital Warts**

  Contact: Washington State Department of Health Office of STD Services, PO Box 47842, Olympia, WA, 98504-7842, http://www.doh.wa.gov/cfh/STD/default.htm.

  Summary: This brochure, written for the general public provides information about the human papillomavirus (HPV) and genital warts. Genital warts are caused by a subgroup of viruses called the human papillomavirus (HPV) and are transmitted from skin-to-skin contact during sexual intercourse. The brochure provides a description of genital warts and informs the readers that they can appear on the sex organ as well as in the throat, mouth, and anus. Warts are usually diagnosed through a visual exam, a Pap smear, and other tests if necessary. Warts can hurt if they rub against something or grow in a place where there are other infections. Individuals should not scratch their warts. Rarely, infants of mother with genital warts get warts in their throats. Warts have been linked to cervical cancer in women, making it more essential that they have their condition monitored regularly by a physician. As of the time of this writing, warts cannot be cured. Warts can be treated by freezing, using a topical medication to get rid of them during any given outbreak, or undergoing **laser surgery**. Individuals with genital warts should inform their sex partners about their conditions so that they too can get tested. Condoms should be used as a part of safer sex to help prevent the spread of genital warts; however, condoms are not wholly effective in this case, as warts may be spread from contact with areas not covered by the condom. Individuals can help to prevent genital warts by abstaining from sex, avoiding substance abuse, which affects decision making about sex, avoiding injection drug use, learning more about STDs in general, limiting their sex partners, talking with their partners about safer sex with condoms, and engaging in safer sex with condoms.

- **Prostate Enlargement: Benign Prostatic Hyperplasia**

  Source: Bethesda, MD: National Kidney and Urologic Diseases Information Clearinghouse (NKUDIC), National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK), National Institutes of Health (NIH). 1998. 12 p.

  Contact: Available from National Kidney and Urologic Diseases Information Clearinghouse (NKUDIC). 3 Information Way, Bethesda, MD 20892-3580. (800) 891-5390 or (301) 654-4415. Fax (301)634-0716. E-mail: nkudic@info.niddk.nih.gov. Website: http://www.niddk.nih.gov/health/kidney/nkudic.htm. PRICE: Full-text available online at no charge; single copy free; bulk orders available. Order number: KU-22.

  Summary: This fact sheet describes benign prostatic hyperplasia (BPH), the enlargement of the prostate gland associated with aging. Though the prostate continues to grow during most of a man's life, the enlargement does not usually cause problems until late in life. As the prostate enlarges, the layer of tissue surrounding it stops it from expanding, causing the gland to press against the urethra, like a clamp on a garden hose. The narrowing of the urethra and partial emptying of the bladder cause many of the problems associated with BPH. The fact sheet describes the theories regarding the cause of BPH, the symptoms, diagnostic tests used to confirm the condition (including the digital rectal exam, the prostate specific antigen, or PSA, blood test, rectal ultrasound, urine flow study, intravenous pyelogram or IVP, and cystoscopy), and treatment options. Treatment options include watchful waiting, which entails monitoring the patient regularly but not undertaking any interventions; drug therapy, including the use of finasteride and the alpha blockers terazosin, doxazosin, and tamsulosin; transurethral microwave procedures (TUMT); transurethral needle ablation (TUNA); and surgical options, including transurethral (TURP), open, or **laser surgery.**

The fact sheet then reviews the postoperative recovery time and what patients can expect during this process. Additional topics covered include postoperative problems with urinating, bleeding, and sexual function after surgery (including erections, ejaculation, and orgasm). The fact sheet encourages men to continue to have a rectal exam once a year, even after surgery. Although some signs of BPH and prostate cancer are the same, having BPH does not seem to increase the chances of getting prostate cancer. Nevertheless, a man who has BPH may have undetected prostate cancer at the same time or may develop prostate cancer in the future. The fact sheet concludes with a brief overview of the current research activities on BPH. Appended to the text are a reading list, a glossary of terms, and a brief description of the National Kidney and Urologic Diseases Information Clearinghouse (NKUDIC). 3 figures. 7 references.

- **Treating Skin Disorders Associated With Tuberous Sclerosis**

  Source: Tuberous Sclerosis Alliance. 2002. 2 p.

  Contact: Available from Tuberous Sclerosis Alliance. 801 Roeder Road, Suite 750, Silver Spring, MD 20110. (301) 562-9820 or (800) 225-6872. Fax: (301) 562-9870. Website: www.tsalliance.org.

  Summary: This fact sheet discusses treating the skin manifestations associated with tuberous sclerosis. Ash leaf spots are light areas of skin that look like ash tree leaves. The pigment-- producing cells in these spots are unable to produce sufficient pigment for a normal skin tone. Cosmetic products are available for covering these spots, and research is being conducted on treatments to stimulate pigment in the skin. Surgical excision or laser treatments are used to treat severe cases of shagreen patches and forehead plaques, lesions that contain excess fibrous tissue. Angiofibromas of the face are characterized by small, red spots on the cheeks, nose, and chin. A tunable dye laser destroys blood cells in the skin and is used in treating early forms of the condition. Surgical removal, laser resurfacing, and dermabrasion are used in well-devloped fibrous angiofibromas. Carbon dioxide or erbium:YAG skin resurfacing **laser surgery** is the best choice when large areas of the face are affected. Surgical excision is the most common technique for removing periungual fibromas of the fingernails and toenails and gingival fibromas of the gums of the mouth.

- **Interstitial Cystitis and Surgical Procedures**

  Source: Rockville, MD: Interstitial Cystitis Association (ICA). 2000. [2 p.].

  Contact: Available from Interstitial Cystitis Association (ICA). 51 Monroe Street, Suite 1402, Rockville, MD 20850. (301) 610-5300. Fax (301) 610-5308. E-mail: ICAmail@ichelp.org. Website: www.ichelp.org. PRICE: $1.00 plus shipping and handling; $5.00 per packet of 16.

  Summary: This fact sheet presents an overview of surgical procedures that interstitial cystitis (IC) patients may choose to consider. Bladder surgery is generally considered the treatment of last resort by IC patients and their doctors. The obvious reason is that surgery is invasive and irreversible, but in addition, many patients who choose to have surgery may not improve. Some patients, in fact, do worse after surgery. Potential complications from these procedures also need to be considered. Researchers have pointed out that with an ever enlarging array of treatment options available to the IC patient, surgery should be considered only when all other choices have failed. The fact sheet stresses that readers should consult a urologist experienced in treating IC for advice about surgical options. Types of bladder surgery described are augmentation cystoplasty, urinary diversion, internal pouch (Kock pouch), and orthotopic diversion.

The fact sheet also describes **laser surgery,** which is sometimes indicated for the ulcerative form of IC. The fact sheet includes a surgery checklist, a list of questions to ask the doctor when considering surgery. The fact sheet includes the contact information for the Interstitial Cystitis Association (ICA), with their website (www.ichelp.org). 1 table. 6 references.

- **Angiomas**

  Source: Kirksville, MO: American Osteopathic College of Dermatology (AOCD). 2001. 1 p.

  Contact: Available online from American Osteopathic College of Dermatology. 1501 East Illinois Street, P.O. Box 7525, Kirksville, MO 63501. (800) 449-2623 or (660) 665-2184. Fax (660) 627-2623. E-mail: info@aocd.org. Website: www.aocd.org/skin/dermatologic_diseases/ index.html.

  Summary: This fact sheet provides people who have angiomas with information on these benign growths consisting of small blood vessels. Types of angiomas include spider and cherry angiomas and angiokeratomas. Spider angiomas occur more frequently in childhood and during pregnancy. Cherry angiomas are due to aging. Angiokeratomas consist of overgrown blood vessels and skin cells and are not dangerous. Angiomas do not require treatment unless they bleed or are bothersome. Treatment options include electrodessication, liquid nitrogen, or **laser surgery.** These methods lead to similar amounts of discomfort and usually produce a good cosmetic result. 2 figures.

- **Tattoo Removal**

  Source: Schaumburg, IL: American Society for Dermatologic Surgery (ASDS). 1998. 2 p.

  Contact: Available from American Society for Dermatologic Surgery. 930 North Meacham Road, Schaumburg, IL 60173-6016. (800) 441-2737 or (847) 330-9830. Fax (847) 330-0050. Website: www.asds-net.org. PRICE: Call '800' number or access website for single free copy.

  Summary: This fact sheet provides the general public with information on removing tattoos. Although a tattoo used to be permanent, physicians have developed safe and effective methods to successfully remove them. Removal techniques are tailored to each individual case because each tattoo is unique. The most common techniques are dermabrasion, surgical excision, and **laser surgery**. The fact sheet describes each technique and highlights possible side effects or complications. Also included are information on the American Society for Dermatologic Surgery and a source for further information.

- **Interstitial Cystitis Association Treatment Guidelines. [Pautas de Tratamiento de la Asociacion para la Cistitis Intersticial]**

  Source: Rockville, MD: Interstitial Cystitis Association (ICA). 2003. [2 p.].

  Contact: Available from Interstitial Cystitis Association (ICA). 110 North Washington Street, Suite 340, Rockville, MD 20850. (301) 610-5300. Fax (301) 610-5308. E-mail: ICAmail@ichelp.org. Website: www.ichelp.org. PRICE: $1.00 for members; $1.25 for nonmembers; plus shipping and handling. Item number: RFTG01.

  Summary: This fact sheet reviews the treatment guidelines for interstitial cystitis (IC), a chronic, painful inflammatory condition of the bladder wall. Although there is no cure

for IC, many treatment options are currently available. These guidelines are designed to help physicians and patients develop a step by step treatment plan. Since IC symptoms vary from patient to patient, it is important to consider which treatment, or combination of treatments, is appropriate for each individual. The fact sheet reviews the symptoms of IC, which include frequency, urgency, pain, and other related disorders. The fact sheet then covers the diagnosis of IC (which is often difficult), including the role of urine cultures, eliminating other diseases or conditions, and the role of cystoscopy. Noninvasive techniques, such as diet modification and self help, may be used in combination with other, more aggressive treatment modalities, and are considered a first step in relieving IC symptoms. The fact sheet reviews the oral medications used, including tricyclic antidepressants, antihistamines, Elmiron, and pain medications; the use of bladder instillations, including DMSO (dimethyl sulfoxide); and invasive therapies, including transcutaneous electric nerve stimulation (TENS), sacral nerve stimulation implant, **laser surgery,** and surgery. The fact sheet includes the contact information for the Interstitial Cystitis Association (ICA). 2 references.

- **Laser Applications in Dermatologic Surgery**

  Source: Schaumburg, IL: American Society for Dermatologic Surgery (ASDS). 1998. 2 p.

  Contact: Available from American Society for Dermatologic Surgery. 930 North Meacham Road, Schaumburg, IL 60173-6016. (800) 441-2737 or (847) 330-9830. Fax (847) 330-0050. Website: www.asds-net.org. PRICE: Call '800' number or access website for single free copy.

  Summary: This fact sheet uses a question and answer format to provide the general public with information on the use of lasers in dermatology. Laser stands for Light Amplification by the Stimulated Emission of Radiation. The fact sheet explains how a laser works, what type of laser should be used to treat various skin conditions, and who is qualified to perform **laser surgery.** It presents an overview of the types of lasers, including the carbon dioxide laser, the argon laser, the yellow and red light lasers, the Q-switched neodymium laser, and the KTP laser, and their uses in dermatology. Other topics include the benefits of **laser surgery** and other applications of laser technology. In addition, the fact sheet provides information on the American Society for Dermatologic Surgery and presents a source for further information.

- **Treating Diabetic Retinopathy: Setting Your Sights on Saving Your Vision**

  Source: San Bruno, CA: StayWell Company. 2000. 15 p.

  Contact: Available from StayWell Company. Order Department, 1100 Grundy Lane, San Bruno, CA 94066-9821. (800) 333-3032. Fax (650) 244-4512. E-mail: email@staywell.com. Website: www.staywell.com. PRICE: $1.75 plus shipping and handling; bulk copies available.

  Summary: This illustrated booklet provides people who have diabetes with information on preventing and treating diabetic retinopathy. This complication of diabetes may start without symptoms and worsen over time. In people who have retinopathy, the blood vessels in the eye may go through a series of changes, including the leakage or closure of capillaries or the growth of weak new capillaries. Types of diabetic retinopathy include nonproliferative and proliferative diabetic retinopathy. People who have nonproliferative retinopathy may have capillary leakage, capillary closure, or both. In proliferative retinopathy, new, but weak, blood vessels grow and burst. Regular eye examinations are important to monitor and catch any eye problems before vision damage occurs. During an eye evaluation, the doctor will obtain a medical history,

measure vision with an eye chart or other special tools, and perform other diagnostic tests. Managing diabetes by controlling blood glucose levels and blood pressure, eating healthy meals, and exercising may slow the progress of diabetic retinopathy. If diabetic retinopathy does develop, one treatment option is **laser surgery** to reduce swelling, destroy closed blood vessels, seal weak vessels, and reduce or stop the growth of new blood vessels. In addition, removal of the vitreous may be needed if bleeding into the vitreous has occurred.

- **Klippel-Trenaunay Syndrome**

  Source: Mt. Freedom, NJ: Sturge-Weber Foundation. 1998. 8 p.

  Contact: Available from Sturge-Weber Foundation. P.O. Box 418, Mt. Freedom, NJ 07970. (800) 627-5482 or (973) 895-4445. Fax (973) 895-4846. E-mail: SWF@sturge-weber.com. Website: www.sturge-weber.com. PRICE: $2.00.

  Summary: This pamphlet provides people who have Klippel-Trenaunay (KT) syndrome, a rare congenital malformation, with information on its symptoms, etiology, and treatment. Its etiology is unknown. Features may include a port wine stain, soft tissue and bony hypertrophy, venous malformations, and lymphatic abnormalities. Although KT is usually limited to one limb, it may occur in multiple limbs or in the head or trunk area. Internal organs may also be involved. Treatment modalities include wearing elastic garments and undergoing **laser surgery** and other surgical procedures. In addition, the pamphlet provides information on the Sturge-Weber Foundation.

- **Squamous Cell Carcinoma**

  Source: Schaumburg, IL: American Academy of Dermatology (AAD). 2001. 6 p.

  Contact: Available from American Academy of Dermatology, Marketing Department. P.O. Box 2289, Carol Stream, IL 60132-2289. (847) 240-1280. Fax (847) 240-1859. E-mail: orderdept@aad.org. Website: www.aad.org. PRICE: Single copy free; bulk prices available.

  Summary: This pamphlet uses a question and answer format to provide people who have squamous cell carcinoma (SCC) with information on its etiology, features, and treatment. SCC, the second most common cancer of the skin, arises in the outer layer of the skin. This form of skin cancer generally appears as a crusted or scaly area of the skin, with a red, inflamed base. Although SCC is common in sun exposed areas of the body, it can occur anywhere on the body. Exposure to ultraviolet light through the sun or tanning salons greatly increases the chance of developing skin cancer. People with light skin who sunburn easily are at highest risk. Other risk factors include age, heavy sun exposure, and severe sunburn as a child. SCC can present as a growing tumor, a nonhealing ulcer, or just as a crust. Although SCCs are locally destructive, certain aggressive types of SCCs or those that are left untreated can spread to lymph nodes and other organs. A skin biopsy is usually needed to confirm the diagnosis. Various surgical techniques are used to treat SCC, including surgical excision, Mohs micrographic surgery, **laser surgery,** cryosurgery with liquid nitrogen, radiation therapy, and electrodesiccation and curettage. Ultraviolet light avoidance is the main form of SCC prevention. 4 figures.

- **Rosacea: What Is It, and What Can I Do About It?**

  Source: American Family Physician. 66(3): 442. August 1, 2002.

Summary: This patient education sheet discusses rosacea, a skin disease of unknown origin, that affects the skin of the face. Symptoms of rosacea include flushing, blotchy rash, acne-like spots, redness, itching, or gritty feeling in the eye. Patients should avoid anything that irritates the skin. Sunscreen with an SPF of 15 or higher should be used when outside for extended periods. Green tinted makeup can help cover the rash or flare-ups. Topical or oral antibiotics are used to treat rosacea. In some cases, skin **laser surgery** may be necessary.

The National Guideline Clearinghouse™

The National Guideline Clearinghouse™ offers hundreds of evidence-based clinical practice guidelines published in the United States and other countries. You can search this site located at **http://www.guideline.gov/** by using the keyword "laser surgery" (or synonyms). The following was recently posted:

- **CO2 laser surgery of the face and eyelids**

  Source: American Society of Plastic Surgeons - Medical Specialty Society; 1998 June 26; 10 pages

  http://www.guideline.gov/summary/summary.aspx?doc_id=1713&nbr=939&string=laser+AND+surgery

Healthfinder™

Healthfinder™ is sponsored by the U.S. Department of Health and Human Services and offers links to hundreds of other sites that contain healthcare information. This Web site is located at **http://www.healthfinder.gov**. Again, keyword searches can be used to find guidelines. The following was recently found in this database:

- **Cosmetic Laser Surgery: A High-Tech Weapon in the Fight Against Aging Skin**

  Summary: This brochure discusses the use of laser in cosmetic surgery and provides information about the different procedures.

  Source: Federal Citizen Information Center, U.S. General Services Administration

  http://www.healthfinder.gov/scripts/recordpass.asp?RecordType=0&RecordID=5967

The NIH Search Utility

The NIH search utility allows you to search for documents on over 100 selected Web sites that comprise the NIH-WEB-SPACE. Each of these servers is "crawled" and indexed on an ongoing basis. Your search will produce a list of various documents, all of which will relate in some way to laser surgery. The drawbacks of this approach are that the information is not organized by theme and that the references are often a mix of information for professionals and patients. Nevertheless, a large number of the listed Web sites provide useful background information. We can only recommend this route, therefore, for relatively rare or specific disorders, or when using highly targeted searches. To use the NIH search utility, visit the following Web page: **http://search.nih.gov/index.html**.

Additional Web Sources

A number of Web sites are available to the public that often link to government sites. These can also point you in the direction of essential information. The following is a representative sample:

- AOL: **http://search.aol.com/cat.adp?id=168&layer=&from=subcats**
- Family Village: **http://www.familyvillage.wisc.edu/specific.htm**
- Google: **http://directory.google.com/Top/Health/Conditions_and_Diseases/**
- Med Help International: **http://www.medhelp.org/HealthTopics/A.html**
- Open Directory Project: **http://dmoz.org/Health/Conditions_and_Diseases/**
- Yahoo.com: **http://dir.yahoo.com/Health/Diseases_and_Conditions/**
- WebMD®Health: **http://my.webmd.com/health_topics**

Finding Associations

There are several Internet directories that provide lists of medical associations with information on or resources relating to laser surgery. By consulting all of associations listed in this chapter, you will have nearly exhausted all sources for patient associations concerned with laser surgery.

The National Health Information Center (NHIC)

The National Health Information Center (NHIC) offers a free referral service to help people find organizations that provide information about laser surgery. For more information, see the NHIC's Web site at **http://www.health.gov/NHIC/** or contact an information specialist by calling 1-800-336-4797.

Directory of Health Organizations

The Directory of Health Organizations, provided by the National Library of Medicine Specialized Information Services, is a comprehensive source of information on associations. The Directory of Health Organizations database can be accessed via the Internet at **http://www.sis.nlm.nih.gov/Dir/DirMain.html**. It is composed of two parts: DIRLINE and Health Hotlines.

The DIRLINE database comprises some 10,000 records of organizations, research centers, and government institutes and associations that primarily focus on health and biomedicine. To access DIRLINE directly, go to the following Web site: **http://dirline.nlm.nih.gov/**. Simply type in "laser surgery" (or a synonym), and you will receive information on all relevant organizations listed in the database.

Health Hotlines directs you to toll-free numbers to over 300 organizations. You can access this database directly at **http://www.sis.nlm.nih.gov/hotlines/**. On this page, you are given the option to search by keyword or by browsing the subject list. When you have received

your search results, click on the name of the organization for its description and contact information.

The Combined Health Information Database

Another comprehensive source of information on healthcare associations is the Combined Health Information Database. Using the "Detailed Search" option, you will need to limit your search to "Organizations" and "laser surgery". Type the following hyperlink into your Web browser: **http://chid.nih.gov/detail/detail.html**. To find associations, use the drop boxes at the bottom of the search page where "You may refine your search by." For publication date, select "All Years." Then, select your preferred language and the format option "Organization Resource Sheet." Type "laser surgery" (or synonyms) into the "For these words:" box. You should check back periodically with this database since it is updated every three months.

The National Organization for Rare Disorders, Inc.

The National Organization for Rare Disorders, Inc. has prepared a Web site that provides, at no charge, lists of associations organized by health topic. You can access this database at the following Web site: **http://www.rarediseases.org/search/orgsearch.html**. Type "laser surgery" (or a synonym) into the search box, and click "Submit Query."

APPENDIX C. FINDING MEDICAL LIBRARIES

Overview

In this Appendix, we show you how to quickly find a medical library in your area.

Preparation

Your local public library and medical libraries have interlibrary loan programs with the National Library of Medicine (NLM), one of the largest medical collections in the world. According to the NLM, most of the literature in the general and historical collections of the National Library of Medicine is available on interlibrary loan to any library. If you would like to access NLM medical literature, then visit a library in your area that can request the publications for you.[19]

Finding a Local Medical Library

The quickest method to locate medical libraries is to use the Internet-based directory published by the National Network of Libraries of Medicine (NN/LM). This network includes 4626 members and affiliates that provide many services to librarians, health professionals, and the public. To find a library in your area, simply visit **http://nnlm.gov/members/adv.html** or call 1-800-338-7657.

Medical Libraries in the U.S. and Canada

In addition to the NN/LM, the National Library of Medicine (NLM) lists a number of libraries with reference facilities that are open to the public. The following is the NLM's list and includes hyperlinks to each library's Web site. These Web pages can provide information on hours of operation and other restrictions. The list below is a small sample of

[19] Adapted from the NLM: **http://www.nlm.nih.gov/psd/cas/interlibrary.html**.

libraries recommended by the National Library of Medicine (sorted alphabetically by name of the U.S. state or Canadian province where the library is located)[20]:

- **Alabama:** Health InfoNet of Jefferson County (Jefferson County Library Cooperative, Lister Hill Library of the Health Sciences), **http://www.uab.edu/infonet/**
- **Alabama:** Richard M. Scrushy Library (American Sports Medicine Institute)
- **Arizona:** Samaritan Regional Medical Center: The Learning Center (Samaritan Health System, Phoenix, Arizona), **http://www.samaritan.edu/library/bannerlibs.htm**
- **California:** Kris Kelly Health Information Center (St. Joseph Health System, Humboldt), **http://www.humboldt1.com/~kkhic/index.html**
- **California:** Community Health Library of Los Gatos, **http://www.healthlib.org/orgresources.html**
- **California:** Consumer Health Program and Services (CHIPS) (County of Los Angeles Public Library, Los Angeles County Harbor-UCLA Medical Center Library) - Carson, CA, **http://www.colapublib.org/services/chips.html**
- **California:** Gateway Health Library (Sutter Gould Medical Foundation)
- **California:** Health Library (Stanford University Medical Center), **http://www-med.stanford.edu/healthlibrary/**
- **California:** Patient Education Resource Center - Health Information and Resources (University of California, San Francisco), **http://sfghdean.ucsf.edu/barnett/PERC/default.asp**
- **California:** Redwood Health Library (Petaluma Health Care District), **http://www.phcd.org/rdwdlib.html**
- **California:** Los Gatos PlaneTree Health Library, **http://planetreesanjose.org/**
- **California:** Sutter Resource Library (Sutter Hospitals Foundation, Sacramento), **http://suttermedicalcenter.org/library/**
- **California:** Health Sciences Libraries (University of California, Davis), **http://www.lib.ucdavis.edu/healthsci/**
- **California:** ValleyCare Health Library & Ryan Comer Cancer Resource Center (ValleyCare Health System, Pleasanton), **http://gaelnet.stmarys-ca.edu/other.libs/gbal/east/vchl.html**
- **California:** Washington Community Health Resource Library (Fremont), **http://www.healthlibrary.org/**
- **Colorado:** William V. Gervasini Memorial Library (Exempla Healthcare), **http://www.saintjosephdenver.org/yourhealth/libraries/**
- **Connecticut:** Hartford Hospital Health Science Libraries (Hartford Hospital), **http://www.harthosp.org/library/**
- **Connecticut:** Healthnet: Connecticut Consumer Health Information Center (University of Connecticut Health Center, Lyman Maynard Stowe Library), **http://library.uchc.edu/departm/hnet/**

[20] Abstracted from **http://www.nlm.nih.gov/medlineplus/libraries.html**.

- **Connecticut:** Waterbury Hospital Health Center Library (Waterbury Hospital, Waterbury), **http://www.waterburyhospital.com/library/consumer.shtml**
- **Delaware:** Consumer Health Library (Christiana Care Health System, Eugene du Pont Preventive Medicine & Rehabilitation Institute, Wilmington), **http://www.christianacare.org/health_guide/health_guide_pmri_health_info.cfm**
- **Delaware:** Lewis B. Flinn Library (Delaware Academy of Medicine, Wilmington), **http://www.delamed.org/chls.html**
- **Georgia:** Family Resource Library (Medical College of Georgia, Augusta), **http://cmc.mcg.edu/kids_families/fam_resources/fam_res_lib/frl.htm**
- **Georgia:** Health Resource Center (Medical Center of Central Georgia, Macon), **http://www.mccg.org/hrc/hrchome.asp**
- **Hawaii:** Hawaii Medical Library: Consumer Health Information Service (Hawaii Medical Library, Honolulu), **http://hml.org/CHIS/**
- **Idaho:** DeArmond Consumer Health Library (Kootenai Medical Center, Coeur d'Alene), **http://www.nicon.org/DeArmond/index.htm**
- **Illinois:** Health Learning Center of Northwestern Memorial Hospital (Chicago), **http://www.nmh.org/health_info/hlc.html**
- **Illinois:** Medical Library (OSF Saint Francis Medical Center, Peoria), **http://www.osfsaintfrancis.org/general/library/**
- **Kentucky:** Medical Library - Services for Patients, Families, Students & the Public (Central Baptist Hospital, Lexington), **http://www.centralbap.com/education/community/library.cfm**
- **Kentucky:** University of Kentucky - Health Information Library (Chandler Medical Center, Lexington), **http://www.mc.uky.edu/PatientEd/**
- **Louisiana:** Alton Ochsner Medical Foundation Library (Alton Ochsner Medical Foundation, New Orleans), **http://www.ochsner.org/library/**
- **Louisiana:** Louisiana State University Health Sciences Center Medical Library-Shreveport, **http://lib-sh.lsuhsc.edu/**
- **Maine:** Franklin Memorial Hospital Medical Library (Franklin Memorial Hospital, Farmington), **http://www.fchn.org/fmh/lib.htm**
- **Maine:** Gerrish-True Health Sciences Library (Central Maine Medical Center, Lewiston), **http://www.cmmc.org/library/library.html**
- **Maine:** Hadley Parrot Health Science Library (Eastern Maine Healthcare, Bangor), **http://www.emh.org/hll/hpl/guide.htm**
- **Maine:** Maine Medical Center Library (Maine Medical Center, Portland), **http://www.mmc.org/library/**
- **Maine:** Parkview Hospital (Brunswick), **http://www.parkviewhospital.org/**
- **Maine:** Southern Maine Medical Center Health Sciences Library (Southern Maine Medical Center, Biddeford), **http://www.smmc.org/services/service.php3?choice=10**
- **Maine:** Stephens Memorial Hospital's Health Information Library (Western Maine Health, Norway), **http://www.wmhcc.org/Library/**

- **Manitoba, Canada:** Consumer & Patient Health Information Service (University of Manitoba Libraries), **http://www.umanitoba.ca/libraries/units/health/reference/chis.html**
- **Manitoba, Canada:** J.W. Crane Memorial Library (Deer Lodge Centre, Winnipeg), **http://www.deerlodge.mb.ca/crane_library/about.asp**
- **Maryland:** Health Information Center at the Wheaton Regional Library (Montgomery County, Dept. of Public Libraries, Wheaton Regional Library), **http://www.mont.lib.md.us/healthinfo/hic.asp**
- **Massachusetts:** Baystate Medical Center Library (Baystate Health System), **http://www.baystatehealth.com/1024/**
- **Massachusetts:** Boston University Medical Center Alumni Medical Library (Boston University Medical Center), **http://med-libwww.bu.edu/library/lib.html**
- **Massachusetts:** Lowell General Hospital Health Sciences Library (Lowell General Hospital, Lowell), **http://www.lowellgeneral.org/library/HomePageLinks/WWW.htm**
- **Massachusetts:** Paul E. Woodard Health Sciences Library (New England Baptist Hospital, Boston), **http://www.nebh.org/health_lib.asp**
- **Massachusetts:** St. Luke's Hospital Health Sciences Library (St. Luke's Hospital, Southcoast Health System, New Bedford), **http://www.southcoast.org/library/**
- **Massachusetts:** Treadwell Library Consumer Health Reference Center (Massachusetts General Hospital), **http://www.mgh.harvard.edu/library/chrcindex.html**
- **Massachusetts:** UMass HealthNet (University of Massachusetts Medical School, Worchester), **http://healthnet.umassmed.edu/**
- **Michigan:** Botsford General Hospital Library - Consumer Health (Botsford General Hospital, Library & Internet Services), **http://www.botsfordlibrary.org/consumer.htm**
- **Michigan:** Helen DeRoy Medical Library (Providence Hospital and Medical Centers), **http://www.providence-hospital.org/library/**
- **Michigan:** Marquette General Hospital - Consumer Health Library (Marquette General Hospital, Health Information Center), **http://www.mgh.org/center.html**
- **Michigan:** Patient Education Resouce Center - University of Michigan Cancer Center (University of Michigan Comprehensive Cancer Center, Ann Arbor), **http://www.cancer.med.umich.edu/learn/leares.htm**
- **Michigan:** Sladen Library & Center for Health Information Resources - Consumer Health Information (Detroit), **http://www.henryford.com/body.cfm?id=39330**
- **Montana:** Center for Health Information (St. Patrick Hospital and Health Sciences Center, Missoula)
- **National:** Consumer Health Library Directory (Medical Library Association, Consumer and Patient Health Information Section), **http://caphis.mlanet.org/directory/index.html**
- **National:** National Network of Libraries of Medicine (National Library of Medicine) - provides library services for health professionals in the United States who do not have access to a medical library, **http://nnlm.gov/**
- **National:** NN/LM List of Libraries Serving the Public (National Network of Libraries of Medicine), **http://nnlm.gov/members/**

- **Nevada:** Health Science Library, West Charleston Library (Las Vegas-Clark County Library District, Las Vegas), **http://www.lvccld.org/special_collections/medical/index.htm**
- **New Hampshire:** Dartmouth Biomedical Libraries (Dartmouth College Library, Hanover), **http://www.dartmouth.edu/~biomed/resources.htmld/conshealth.htmld/**
- **New Jersey:** Consumer Health Library (Rahway Hospital, Rahway), **http://www.rahwayhospital.com/library.htm**
- **New Jersey:** Dr. Walter Phillips Health Sciences Library (Englewood Hospital and Medical Center, Englewood), **http://www.englewoodhospital.com/links/index.htm**
- **New Jersey:** Meland Foundation (Englewood Hospital and Medical Center, Englewood), **http://www.geocities.com/ResearchTriangle/9360/**
- **New York:** Choices in Health Information (New York Public Library) - NLM Consumer Pilot Project participant, **http://www.nypl.org/branch/health/links.html**
- **New York:** Health Information Center (Upstate Medical University, State University of New York, Syracuse), **http://www.upstate.edu/library/hic/**
- **New York:** Health Sciences Library (Long Island Jewish Medical Center, New Hyde Park), **http://www.lij.edu/library/library.html**
- **New York:** ViaHealth Medical Library (Rochester General Hospital), **http://www.nyam.org/library/**
- **Ohio:** Consumer Health Library (Akron General Medical Center, Medical & Consumer Health Library), **http://www.akrongeneral.org/hwlibrary.htm**
- **Oklahoma:** The Health Information Center at Saint Francis Hospital (Saint Francis Health System, Tulsa), **http://www.sfh-tulsa.com/services/healthinfo.asp**
- **Oregon:** Planetree Health Resource Center (Mid-Columbia Medical Center, The Dalles), **http://www.mcmc.net/phrc/**
- **Pennsylvania:** Community Health Information Library (Milton S. Hershey Medical Center, Hershey), **http://www.hmc.psu.edu/commhealth/**
- **Pennsylvania:** Community Health Resource Library (Geisinger Medical Center, Danville), **http://www.geisinger.edu/education/commlib.shtml**
- **Pennsylvania:** HealthInfo Library (Moses Taylor Hospital, Scranton), **http://www.mth.org/healthwellness.html**
- **Pennsylvania:** Hopwood Library (University of Pittsburgh, Health Sciences Library System, Pittsburgh), **http://www.hsls.pitt.edu/guides/chi/hopwood/index_html**
- **Pennsylvania:** Koop Community Health Information Center (College of Physicians of Philadelphia), **http://www.collphyphil.org/kooppg1.shtml**
- **Pennsylvania:** Learning Resources Center - Medical Library (Susquehanna Health System, Williamsport), **http://www.shscares.org/services/lrc/index.asp**
- **Pennsylvania:** Medical Library (UPMC Health System, Pittsburgh), **http://www.upmc.edu/passavant/library.htm**
- **Quebec, Canada:** Medical Library (Montreal General Hospital), **http://www.mghlib.mcgill.ca/**

- **South Dakota:** Rapid City Regional Hospital Medical Library (Rapid City Regional Hospital), **http://www.rcrh.org/Services/Library/Default.asp**
- **Texas:** Houston HealthWays (Houston Academy of Medicine-Texas Medical Center Library), **http://hhw.library.tmc.edu/**
- **Washington:** Community Health Library (Kittitas Valley Community Hospital), **http://www.kvch.com/**
- **Washington:** Southwest Washington Medical Center Library (Southwest Washington Medical Center, Vancouver), **http://www.swmedicalcenter.com/body.cfm?id=72**

ONLINE GLOSSARIES

The Internet provides access to a number of free-to-use medical dictionaries. The National Library of Medicine has compiled the following list of online dictionaries:

- ADAM Medical Encyclopedia (A.D.A.M., Inc.), comprehensive medical reference: **http://www.nlm.nih.gov/medlineplus/encyclopedia.html**
- MedicineNet.com Medical Dictionary (MedicineNet, Inc.): **http://www.medterms.com/Script/Main/hp.asp**
- Merriam-Webster Medical Dictionary (Inteli-Health, Inc.): **http://www.intelihealth.com/IH/**
- Multilingual Glossary of Technical and Popular Medical Terms in Eight European Languages (European Commission) - Danish, Dutch, English, French, German, Italian, Portuguese, and Spanish: **http://allserv.rug.ac.be/~rvdstich/eugloss/welcome.html**
- On-line Medical Dictionary (CancerWEB): **http://cancerweb.ncl.ac.uk/omd/**
- Rare Diseases Terms (Office of Rare Diseases): **http://ord.aspensys.com/asp/diseases/diseases.asp**
- Technology Glossary (National Library of Medicine) - Health Care Technology: **http://www.nlm.nih.gov/nichsr/ta101/ta10108.htm**

Beyond these, MEDLINEplus contains a very patient-friendly encyclopedia covering every aspect of medicine (licensed from A.D.A.M., Inc.). The ADAM Medical Encyclopedia can be accessed at **http://www.nlm.nih.gov/medlineplus/encyclopedia.html**. ADAM is also available on commercial Web sites such as drkoop.com (**http://www.drkoop.com/**) and Web MD (**http://my.webmd.com/adam/asset/adam_disease_articles/a_to_z/a**). The NIH suggests the following Web sites in the ADAM Medical Encyclopedia when searching for information on laser surgery:

- **Basic Guidelines for Laser Surgery**

  Laser surgery
  Web site: http://www.nlm.nih.gov/medlineplus/ency/article/002958.htm

- **Signs & Symptoms for Laser Surgery**

  Edema
  Web site: http://www.nlm.nih.gov/medlineplus/ency/article/003103.htm

  Problems breathing
  Web site: http://www.nlm.nih.gov/medlineplus/ency/article/003075.htm

  Swelling
  Web site: http://www.nlm.nih.gov/medlineplus/ency/article/003103.htm

- **Background Topics for Laser Surgery**

  Bleeding
  Web site: http://www.nlm.nih.gov/medlineplus/ency/article/000045.htm

  Blood loss
  Web site: http://www.nlm.nih.gov/medlineplus/ency/article/000045.htm

Online Dictionary Directories

The following are additional online directories compiled by the National Library of Medicine, including a number of specialized medical dictionaries:

- Medical Dictionaries: Medical & Biological (World Health Organization): **http://www.who.int/hlt/virtuallibrary/English/diction.htm#Medical**
- MEL-Michigan Electronic Library List of Online Health and Medical Dictionaries (Michigan Electronic Library): **http://mel.lib.mi.us/health/health-dictionaries.html**
- Patient Education: Glossaries (DMOZ Open Directory Project): **http://dmoz.org/Health/Education/Patient_Education/Glossaries/**
- Web of Online Dictionaries (Bucknell University): **http://www.yourdictionary.com/diction5.html#medicine**

LASER SURGERY DICTIONARY

The definitions below are derived from official public sources, including the National Institutes of Health [NIH] and the European Union [EU].

Abdomen: That portion of the body that lies between the thorax and the pelvis. [NIH]

Abdominal: Having to do with the abdomen, which is the part of the body between the chest and the hips that contains the pancreas, stomach, intestines, liver, gallbladder, and other organs. [NIH]

Ablate: In surgery, is to remove. [NIH]

Ablation: The removal of an organ by surgery. [NIH]

Ablation zone: The area of tissue that is removed during laser surgery. [NIH]

Accommodation: Adjustment, especially that of the eye for various distances. [EU]

Acne: A disorder of the skin marked by inflammation of oil glands and hair glands. [NIH]

Acne Vulgaris: A chronic disorder of the pilosebaceous apparatus associated with an increase in sebum secretion. It is characterized by open comedones (blackheads), closed comedones (whiteheads), and pustular nodules. The cause is unknown, but heredity and age are predisposing factors. [NIH]

Acoustic: Having to do with sound or hearing. [NIH]

Acrylonitrile: A highly poisonous compound used widely in the manufacture of plastics, adhesives and synthetic rubber. [NIH]

Acupuncture Analgesia: Analgesia produced by the insertion of acupuncture needles at certain points in the body. These activate the small myelinated nerve fibers in the muscle which transmit impulses to the spinal cord and then activate three centers - the spinal cord, midbrain and pituitary hypothalamus - to produce analgesia. [NIH]

Acute renal: A condition in which the kidneys suddenly stop working. In most cases, kidneys can recover from almost complete loss of function. [NIH]

Adenoma: A benign epithelial tumor with a glandular organization. [NIH]

Adjuvant: A substance which aids another, such as an auxiliary remedy; in immunology, nonspecific stimulator (e.g., BCG vaccine) of the immune response. [EU]

Adnexa: The appendages of the eye, as the lacrimal apparatus, the eyelids, and the extraocular muscles. [NIH]

Adrenal Glands: Paired glands situated in the retroperitoneal tissues at the superior pole of each kidney. [NIH]

Adrenergic: Activated by, characteristic of, or secreting epinephrine or substances with similar activity; the term is applied to those nerve fibres that liberate norepinephrine at a synapse when a nerve impulse passes, i.e., the sympathetic fibres. [EU]

Adverse Effect: An unwanted side effect of treatment. [NIH]

Aerosol: A solution of a drug which can be atomized into a fine mist for inhalation therapy. [EU]

Agar: A complex sulfated polymer of galactose units, extracted from Gelidium cartilagineum, Gracilaria confervoides, and related red algae. It is used as a gel in the preparation of solid culture media for microorganisms, as a bulk laxative, in making

emulsions, and as a supporting medium for immunodiffusion and immunoelectrophoresis. [NIH]

Age of Onset: The age or period of life at which a disease or the initial symptoms or manifestations of a disease appear in an individual. [NIH]

Air Embolism: Occurs when the lungs over expand to the point that air bubbles are forced through the air sacs of the lungs into the circulatory system. [NIH]

Air Pressure: The force per unit area that the air exerts on any surface in contact with it. Primarily used for articles pertaining to air pressure within a closed environment. [NIH]

Air Sacs: Thin-walled sacs or spaces which function as a part of the respiratory system in birds, fishes, insects, and mammals. [NIH]

Airway: A device for securing unobstructed passage of air into and out of the lungs during general anesthesia. [NIH]

Algorithms: A procedure consisting of a sequence of algebraic formulas and/or logical steps to calculate or determine a given task. [NIH]

Allergic Rhinitis: Inflammation of the nasal mucous membrane associated with hay fever; fits may be provoked by substances in the working environment. [NIH]

Alpha Particles: Positively charged particles composed of two protons and two neutrons, i.e., helium nuclei, emitted during disintegration of very heavy isotopes; a beam of alpha particles or an alpha ray has very strong ionizing power, but weak penetrability. [NIH]

Alpha-1: A protein with the property of inactivating proteolytic enzymes such as leucocyte collagenase and elastase. [NIH]

Alternative medicine: Practices not generally recognized by the medical community as standard or conventional medical approaches and used instead of standard treatments. Alternative medicine includes the taking of dietary supplements, megadose vitamins, and herbal preparations; the drinking of special teas; and practices such as massage therapy, magnet therapy, spiritual healing, and meditation. [NIH]

Aluminum: A metallic element that has the atomic number 13, atomic symbol Al, and atomic weight 26.98. [NIH]

Alveoli: Tiny air sacs at the end of the bronchioles in the lungs. [NIH]

Amenorrhea: Absence of menstruation. [NIH]

Amine: An organic compound containing nitrogen; any member of a group of chemical compounds formed from ammonia by replacement of one or more of the hydrogen atoms by organic (hydrocarbon) radicals. The amines are distinguished as primary, secondary, and tertiary, according to whether one, two, or three hydrogen atoms are replaced. The amines include allylamine, amylamine, ethylamine, methylamine, phenylamine, propylamine, and many other compounds. [EU]

Amino acid: Any organic compound containing an amino (-NH2 and a carboxyl (- COOH) group. The 20 a-amino acids listed in the accompanying table are the amino acids from which proteins are synthesized by formation of peptide bonds during ribosomal translation of messenger RNA; all except glycine, which is not optically active, have the L configuration. Other amino acids occurring in proteins, such as hydroxyproline in collagen, are formed by posttranslational enzymatic modification of amino acids residues in polypeptide chains. There are also several important amino acids, such as the neurotransmitter y-aminobutyric acid, that have no relation to proteins. Abbreviated AA. [EU]

Amplification: The production of additional copies of a chromosomal DNA sequence, found as either intrachromosomal or extrachromosomal DNA. [NIH]

Ampulla: A sac-like enlargement of a canal or duct. [NIH]

Anaesthesia: Loss of feeling or sensation. Although the term is used for loss of tactile sensibility, or of any of the other senses, it is applied especially to loss of the sensation of pain, as it is induced to permit performance of surgery or other painful procedures. [EU]

Anal: Having to do with the anus, which is the posterior opening of the large bowel. [NIH]

Analgesic: An agent that alleviates pain without causing loss of consciousness. [EU]

Analog: In chemistry, a substance that is similar, but not identical, to another. [NIH]

Anaplasia: Loss of structural differentiation and useful function of neoplastic cells. [NIH]

Anatomical: Pertaining to anatomy, or to the structure of the organism. [EU]

Anesthesia: A state characterized by loss of feeling or sensation. This depression of nerve function is usually the result of pharmacologic action and is induced to allow performance of surgery or other painful procedures. [NIH]

Angiogenesis: Blood vessel formation. Tumor angiogenesis is the growth of blood vessels from surrounding tissue to a solid tumor. This is caused by the release of chemicals by the tumor. [NIH]

Angioplasty: Endovascular reconstruction of an artery, which may include the removal of atheromatous plaque and/or the endothelial lining as well as simple dilatation. These are procedures performed by catheterization. When reconstruction of an artery is performed surgically, it is called endarterectomy. [NIH]

Angiosarcoma: A type of cancer that begins in the lining of blood vessels. [NIH]

Animal model: An animal with a disease either the same as or like a disease in humans. Animal models are used to study the development and progression of diseases and to test new treatments before they are given to humans. Animals with transplanted human cancers or other tissues are called xenograft models. [NIH]

Ankle: That part of the lower limb directly above the foot. [NIH]

Anogenital: Pertaining to the anus and external genitals. [EU]

Anorectal: Pertaining to the anus and rectum or to the junction region between the two. [EU]

Anterior chamber: The space in front of the iris and behind the cornea. [NIH]

Antibacterial: A substance that destroys bacteria or suppresses their growth or reproduction. [EU]

Antibiotic: A drug used to treat infections caused by bacteria and other microorganisms. [NIH]

Antibody: A type of protein made by certain white blood cells in response to a foreign substance (antigen). Each antibody can bind to only a specific antigen. The purpose of this binding is to help destroy the antigen. Antibodies can work in several ways, depending on the nature of the antigen. Some antibodies destroy antigens directly. Others make it easier for white blood cells to destroy the antigen. [NIH]

Antigen: Any substance which is capable, under appropriate conditions, of inducing a specific immune response and of reacting with the products of that response, that is, with specific antibody or specifically sensitized T-lymphocytes, or both. Antigens may be soluble substances, such as toxins and foreign proteins, or particulate, such as bacteria and tissue cells; however, only the portion of the protein or polysaccharide molecule known as the antigenic determinant (q.v.) combines with antibody or a specific receptor on a lymphocyte. Abbreviated Ag. [EU]

Anti-inflammatory: Having to do with reducing inflammation. [NIH]

Antimetabolite: A chemical that is very similar to one required in a normal biochemical reaction in cells. Antimetabolites can stop or slow down the reaction. [NIH]

Antimicrobial: Killing microorganisms, or suppressing their multiplication or growth. [EU]

Antineoplastic: Inhibiting or preventing the development of neoplasms, checking the maturation and proliferation of malignant cells. [EU]

Antipyretic: An agent that relieves or reduces fever. Called also antifebrile, antithermic and febrifuge. [EU]

Anus: The opening of the rectum to the outside of the body. [NIH]

Aperture: A natural hole of perforation, especially one in a bone. [NIH]

Aphakia: Absence of crystalline lens totally or partially from field of vision, from any cause except after cataract extraction. Aphakia is mainly congenital or as result of lens dislocation and subluxation. [NIH]

Apnea: A transient absence of spontaneous respiration. [NIH]

Apocrine Glands: Large, branched, specialized sweat glands that empty into the upper portion of a hair follicle instead of directly onto the skin. [NIH]

Applicability: A list of the commodities to which the candidate method can be applied as presented or with minor modifications. [NIH]

Aqueous: Having to do with water. [NIH]

Aqueous humor: Clear, watery fluid that flows between and nourishes the lens and the cornea; secreted by the ciliary processes. [NIH]

Argon: A noble gas with the atomic symbol Ar, atomic number 18, and atomic weight 39.948. It is used in fluorescent tubes and wherever an inert atmosphere is desired and nitrogen cannot be used. [NIH]

Arterial: Pertaining to an artery or to the arteries. [EU]

Arteries: The vessels carrying blood away from the heart. [NIH]

Arterioles: The smallest divisions of the arteries located between the muscular arteries and the capillaries. [NIH]

Arteriolosclerosis: Sclerosis and thickening of the walls of the smaller arteries (arterioles). Hyaline arteriolosclerosis, in which there is homogeneous pink hyaline thickening of the arteriolar walls, is associated with benign nephrosclerosis. Hyperplastic arteriolosclerosis, in which there is a concentric thickening with progressive narrowing of the lumina may be associated with malignant hypertension, nephrosclerosis, and scleroderma. [EU]

Arteriosclerosis: Thickening and loss of elasticity of arterial walls. Atherosclerosis is the most common form of arteriosclerosis and involves lipid deposition and thickening of the intimal cell layers within arteries. Additional forms of arteriosclerosis involve calcification of the media of muscular arteries (Monkeberg medial calcific sclerosis) and thickening of the walls of small arteries or arterioles due to cell proliferation or hyaline deposition (arteriolosclerosis). [NIH]

Artery: Vessel-carrying blood from the heart to various parts of the body. [NIH]

Aseptic: Free from infection or septic material; sterile. [EU]

Asphyxia: A pathological condition caused by lack of oxygen, manifested in impending or actual cessation of life. [NIH]

Aspiration: The act of inhaling. [NIH]

Astigmatism: A condition in which the surface of the cornea is not spherical; causes a blurred image to be received at the retina. [NIH]

Axons: Nerve fibers that are capable of rapidly conducting impulses away from the neuron cell body. [NIH]

Bacteria: Unicellular prokaryotic microorganisms which generally possess rigid cell walls, multiply by cell division, and exhibit three principal forms: round or coccal, rodlike or bacillary, and spiral or spirochetal. [NIH]

Bacterial Infections: Infections by bacteria, general or unspecified. [NIH]

Bacteriophage: A virus whose host is a bacterial cell; A virus that exclusively infects bacteria. It generally has a protein coat surrounding the genome (DNA or RNA). One of the coliphages most extensively studied is the lambda phage, which is also one of the most important. [NIH]

Bacteriuria: The presence of bacteria in the urine with or without consequent urinary tract infection. Since bacteriuria is a clinical entity, the term does not preclude the use of urine/microbiology for technical discussions on the isolation and segregation of bacteria in the urine. [NIH]

Balloon dilation: A treatment for benign prostatic hyperplasia or prostate enlargement. A tiny balloon is inflated inside the urethra to make it wider so urine can flow more freely from the bladder. [NIH]

Basal cell carcinoma: A type of skin cancer that arises from the basal cells, small round cells found in the lower part (or base) of the epidermis, the outer layer of the skin. [NIH]

Basal cells: Small, round cells found in the lower part (or base) of the epidermis, the outer layer of the skin. [NIH]

Base: In chemistry, the nonacid part of a salt; a substance that combines with acids to form salts; a substance that dissociates to give hydroxide ions in aqueous solutions; a substance whose molecule or ion can combine with a proton (hydrogen ion); a substance capable of donating a pair of electrons (to an acid) for the formation of a coordinate covalent bond. [EU]

Benign: Not cancerous; does not invade nearby tissue or spread to other parts of the body. [NIH]

Benign prostatic hyperplasia: A benign (noncancerous) condition in which an overgrowth of prostate tissue pushes against the urethra and the bladder, blocking the flow of urine. Also called benign prostatic hypertrophy or BPH. [NIH]

Bilateral: Affecting both the right and left side of body. [NIH]

Bile: An emulsifying agent produced in the liver and secreted into the duodenum. Its composition includes bile acids and salts, cholesterol, and electrolytes. It aids digestion of fats in the duodenum. [NIH]

Bioavailability: The degree to which a drug or other substance becomes available to the target tissue after administration. [EU]

Biological response modifier: BRM. A substance that stimulates the body's response to infection and disease. [NIH]

Biometry: The use of statistical methods to analyze biological observations and phenomena. [NIH]

Biopsy: Removal and pathologic examination of specimens in the form of small pieces of tissue from the living body. [NIH]

Biotechnology: Body of knowledge related to the use of organisms, cells or cell-derived constituents for the purpose of developing products which are technically, scientifically and clinically useful. Alteration of biologic function at the molecular level (i.e., genetic engineering) is a central focus; laboratory methods used include transfection and cloning technologies, sequence and structure analysis algorithms, computer databases, and gene and

protein structure function analysis and prediction. [NIH]

Biotransformation: The chemical alteration of an exogenous substance by or in a biological system. The alteration may inactivate the compound or it may result in the production of an active metabolite of an inactive parent compound. The alteration may be either non-synthetic (oxidation-reduction, hydrolysis) or synthetic (glucuronide formation, sulfate conjugation, acetylation, methylation). This also includes metabolic detoxication and clearance. [NIH]

Birthmark: A circumscribed area of pigmentation or vascularization, usually in the form of a congenital benign neoplasm occurring in the skin or in various ocular tissues. [NIH]

Bladder: The organ that stores urine. [NIH]

Blood Glucose: Glucose in blood. [NIH]

Blood pressure: The pressure of blood against the walls of a blood vessel or heart chamber. Unless there is reference to another location, such as the pulmonary artery or one of the heart chambers, it refers to the pressure in the systemic arteries, as measured, for example, in the forearm. [NIH]

Blood vessel: A tube in the body through which blood circulates. Blood vessels include a network of arteries, arterioles, capillaries, venules, and veins. [NIH]

Blushing: Involuntary reddening, especially of the face, associated with feelings of embarrassment, confusion, or shame. [NIH]

Body Fluids: Liquid components of living organisms. [NIH]

Bone Marrow: The soft tissue filling the cavities of bones. Bone marrow exists in two types, yellow and red. Yellow marrow is found in the large cavities of large bones and consists mostly of fat cells and a few primitive blood cells. Red marrow is a hematopoietic tissue and is the site of production of erythrocytes and granular leukocytes. Bone marrow is made up of a framework of connective tissue containing branching fibers with the frame being filled with marrow cells. [NIH]

Bone scan: A technique to create images of bones on a computer screen or on film. A small amount of radioactive material is injected into a blood vessel and travels through the bloodstream; it collects in the bones and is detected by a scanner. [NIH]

Bowel: The long tube-shaped organ in the abdomen that completes the process of digestion. There is both a small and a large bowel. Also called the intestine. [NIH]

Brachytherapy: A collective term for interstitial, intracavity, and surface radiotherapy. It uses small sealed or partly-sealed sources that may be placed on or near the body surface or within a natural body cavity or implanted directly into the tissues. [NIH]

Branch: Most commonly used for branches of nerves, but applied also to other structures. [NIH]

Breakdown: A physical, metal, or nervous collapse. [NIH]

Broadband: A wide frequency range. Sound whose energy is distributed over a broad range of frequency (generally, more than one octave). [NIH]

Bronchi: The larger air passages of the lungs arising from the terminal bifurcation of the trachea. [NIH]

Bronchial: Pertaining to one or more bronchi. [EU]

Bronchoscopes: Endoscopes for the visualization of the interior of the bronchi. [NIH]

Bronchus: A large air passage that leads from the trachea (windpipe) to the lung. [NIH]

Bupivacaine: A widely used local anesthetic agent. [NIH]

Burns: Injuries to tissues caused by contact with heat, steam, chemicals (burns, chemical), electricity (burns, electric), or the like. [NIH]

Burns, Electric: Burns produced by contact with electric current or from a sudden discharge of electricity. [NIH]

Cadaver: A dead body, usually a human body. [NIH]

Calcification: Deposits of calcium in the tissues of the breast. Calcification in the breast can be seen on a mammogram, but cannot be detected by touch. There are two types of breast calcification, macrocalcification and microcalcification. Macrocalcifications are large deposits and are usually not related to cancer. Microcalcifications are specks of calcium that may be found in an area of rapidly dividing cells. Many microcalcifications clustered together may be a sign of cancer. [NIH]

Calibration: Determination, by measurement or comparison with a standard, of the correct value of each scale reading on a meter or other measuring instrument; or determination of the settings of a control device that correspond to particular values of voltage, current, frequency, or other output. [NIH]

Callus: A callosity or hard, thick skin; the bone-like reparative substance that is formed round the edges and fragments of broken bone. [NIH]

Capillary: Any one of the minute vessels that connect the arterioles and venules, forming a network in nearly all parts of the body. Their walls act as semipermeable membranes for the interchange of various substances, including fluids, between the blood and tissue fluid; called also vas capillare. [EU]

Capsules: Hard or soft soluble containers used for the oral administration of medicine. [NIH]

Carbon Dioxide: A colorless, odorless gas that can be formed by the body and is necessary for the respiration cycle of plants and animals. [NIH]

Carcinoma: Cancer that begins in the skin or in tissues that line or cover internal organs. [NIH]

Cardiac: Having to do with the heart. [NIH]

Cardiology: The study of the heart, its physiology, and its functions. [NIH]

Cardiovascular: Having to do with the heart and blood vessels. [NIH]

Cardiovascular disease: Any abnormal condition characterized by dysfunction of the heart and blood vessels. CVD includes atherosclerosis (especially coronary heart disease, which can lead to heart attacks), cerebrovascular disease (e.g., stroke), and hypertension (high blood pressure). [NIH]

Cardiovascular System: The heart and the blood vessels by which blood is pumped and circulated through the body. [NIH]

Carotene: The general name for a group of pigments found in green, yellow, and leafy vegetables, and yellow fruits. The pigments are fat-soluble, unsaturated aliphatic hydrocarbons functioning as provitamins and are converted to vitamin A through enzymatic processes in the intestinal wall. [NIH]

Case report: A detailed report of the diagnosis, treatment, and follow-up of an individual patient. Case reports also contain some demographic information about the patient (for example, age, gender, ethnic origin). [NIH]

Case series: A group or series of case reports involving patients who were given similar treatment. Reports of case series usually contain detailed information about the individual patients. This includes demographic information (for example, age, gender, ethnic origin) and information on diagnosis, treatment, response to treatment, and follow-up after

treatment. [NIH]

Cataract: An opacity, partial or complete, of one or both eyes, on or in the lens or capsule, especially an opacity impairing vision or causing blindness. The many kinds of cataract are classified by their morphology (size, shape, location) or etiology (cause and time of occurrence). [EU]

Catheter: A flexible tube used to deliver fluids into or withdraw fluids from the body. [NIH]

Catheterization: Use or insertion of a tubular device into a duct, blood vessel, hollow organ, or body cavity for injecting or withdrawing fluids for diagnostic or therapeutic purposes. It differs from intubation in that the tube here is used to restore or maintain patency in obstructions. [NIH]

Caudal: Denoting a position more toward the cauda, or tail, than some specified point of reference; same as inferior, in human anatomy. [EU]

Cause of Death: Factors which produce cessation of all vital bodily functions. They can be analyzed from an epidemiologic viewpoint. [NIH]

Cell: The individual unit that makes up all of the tissues of the body. All living things are made up of one or more cells. [NIH]

Cell Division: The fission of a cell. [NIH]

Cell proliferation: An increase in the number of cells as a result of cell growth and cell division. [NIH]

Cellobiose: A disaccharide consisting of two glucose units in beta (1-4) glycosidic linkage. Obtained from the partial hydrolysis of cellulose. [NIH]

Cellulose: A polysaccharide with glucose units linked as in cellobiose. It is the chief constituent of plant fibers, cotton being the purest natural form of the substance. As a raw material, it forms the basis for many derivatives used in chromatography, ion exchange materials, explosives manufacturing, and pharmaceutical preparations. [NIH]

Central Nervous System: The main information-processing organs of the nervous system, consisting of the brain, spinal cord, and meninges. [NIH]

Cerebrovascular: Pertaining to the blood vessels of the cerebrum, or brain. [EU]

Cerebrum: The largest part of the brain. It is divided into two hemispheres, or halves, called the cerebral hemispheres. The cerebrum controls muscle functions of the body and also controls speech, emotions, reading, writing, and learning. [NIH]

Cervical: Relating to the neck, or to the neck of any organ or structure. Cervical lymph nodes are located in the neck; cervical cancer refers to cancer of the uterine cervix, which is the lower, narrow end (the "neck") of the uterus. [NIH]

Cervical intraepithelial neoplasia: CIN. A general term for the growth of abnormal cells on the surface of the cervix. Numbers from 1 to 3 may be used to describe how much of the cervix contains abnormal cells. [NIH]

Cervix: The lower, narrow end of the uterus that forms a canal between the uterus and vagina. [NIH]

Character: In current usage, approximately equivalent to personality. The sum of the relatively fixed personality traits and habitual modes of response of an individual. [NIH]

Chemotherapy: Treatment with anticancer drugs. [NIH]

Chin: The anatomical frontal portion of the mandible, also known as the mentum, that contains the line of fusion of the two separate halves of the mandible (symphysis menti). This line of fusion divides inferiorly to enclose a triangular area called the mental protuberance. On each side, inferior to the second premolar tooth, is the mental foramen for

the passage of blood vessels and a nerve. [NIH]

Choanal Atresia: Congenital bony or membranous occlusion of one or both choanae, due to failure of the embryonic bucconasal membrane to rupture. [NIH]

Cholesterol: The principal sterol of all higher animals, distributed in body tissues, especially the brain and spinal cord, and in animal fats and oils. [NIH]

Choroid: The thin, highly vascular membrane covering most of the posterior of the eye between the retina and sclera. [NIH]

Chromosomal: Pertaining to chromosomes. [EU]

Chronic: A disease or condition that persists or progresses over a long period of time. [NIH]

Chronic renal: Slow and progressive loss of kidney function over several years, often resulting in end-stage renal disease. People with end-stage renal disease need dialysis or transplantation to replace the work of the kidneys. [NIH]

Cicatricial: Ectropion due to scar tissue on the margins or the surrounding surfaces of the eyelids. [NIH]

Ciliary: Inflammation or infection of the glands of the margins of the eyelids. [NIH]

Ciliary processes: The extensions or projections of the ciliary body that secrete aqueous humor. [NIH]

Circulatory system: The system that contains the heart and the blood vessels and moves blood throughout the body. This system helps tissues get enough oxygen and nutrients, and it helps them get rid of waste products. The lymph system, which connects with the blood system, is often considered part of the circulatory system. [NIH]

CIS: Cancer Information Service. The CIS is the National Cancer Institute's link to the public, interpreting and explaining research findings in a clear and understandable manner, and providing personalized responses to specific questions about cancer. Access the CIS by calling 1-800-4-CANCER, or by using the Web site at http://cis.nci.nih.gov. [NIH]

Clamp: A u-shaped steel rod used with a pin or wire for skeletal traction in the treatment of certain fractures. [NIH]

Clinical study: A research study in which patients receive treatment in a clinic or other medical facility. Reports of clinical studies can contain results for single patients (case reports) or many patients (case series or clinical trials). [NIH]

Clinical trial: A research study that tests how well new medical treatments or other interventions work in people. Each study is designed to test new methods of screening, prevention, diagnosis, or treatment of a disease. [NIH]

Cloning: The production of a number of genetically identical individuals; in genetic engineering, a process for the efficient replication of a great number of identical DNA molecules. [NIH]

Coagulation: 1. The process of clot formation. 2. In colloid chemistry, the solidification of a sol into a gelatinous mass; an alteration of a disperse phase or of a dissolved solid which causes the separation of the system into a liquid phase and an insoluble mass called the clot or curd. Coagulation is usually irreversible. 3. In surgery, the disruption of tissue by physical means to form an amorphous residuum, as in electrocoagulation and photocoagulation. [EU]

Cofactor: A substance, microorganism or environmental factor that activates or enhances the action of another entity such as a disease-causing agent. [NIH]

Collagen: A polypeptide substance comprising about one third of the total protein in mammalian organisms. It is the main constituent of skin, connective tissue, and the organic

substance of bones and teeth. Different forms of collagen are produced in the body but all consist of three alpha-polypeptide chains arranged in a triple helix. Collagen is differentiated from other fibrous proteins, such as elastin, by the content of proline, hydroxyproline, and hydroxylysine; by the absence of tryptophan; and particularly by the high content of polar groups which are responsible for its swelling properties. [NIH]

Collapse: 1. A state of extreme prostration and depression, with failure of circulation. 2. Abnormal falling in of the walls of any part of organ. [EU]

Colon: The long, coiled, tubelike organ that removes water from digested food. The remaining material, solid waste called stool, moves through the colon to the rectum and leaves the body through the anus. [NIH]

Communicable disease: A disease that can be transmitted by contact between persons. [NIH]

Complement: A term originally used to refer to the heat-labile factor in serum that causes immune cytolysis, the lysis of antibody-coated cells, and now referring to the entire functionally related system comprising at least 20 distinct serum proteins that is the effector not only of immune cytolysis but also of other biologic functions. Complement activation occurs by two different sequences, the classic and alternative pathways. The proteins of the classic pathway are termed 'components of complement' and are designated by the symbols C1 through C9. C1 is a calcium-dependent complex of three distinct proteins C1q, C1r and C1s. The proteins of the alternative pathway (collectively referred to as the properdin system) and complement regulatory proteins are known by semisystematic or trivial names. Fragments resulting from proteolytic cleavage of complement proteins are designated with lower-case letter suffixes, e.g., C3a. Inactivated fragments may be designated with the suffix 'i', e.g. C3bi. Activated components or complexes with biological activity are designated by a bar over the symbol e.g. C1 or C4b,2a. The classic pathway is activated by the binding of C1 to classic pathway activators, primarily antigen-antibody complexes containing IgM, IgG1, IgG3; C1q binds to a single IgM molecule or two adjacent IgG molecules. The alternative pathway can be activated by IgA immune complexes and also by nonimmunologic materials including bacterial endotoxins, microbial polysaccharides, and cell walls. Activation of the classic pathway triggers an enzymatic cascade involving C1, C4, C2 and C3; activation of the alternative pathway triggers a cascade involving C3 and factors B, D and P. Both result in the cleavage of C5 and the formation of the membrane attack complex. Complement activation also results in the formation of many biologically active complement fragments that act as anaphylatoxins, opsonins, or chemotactic factors. [EU]

Complementary and alternative medicine: CAM. Forms of treatment that are used in addition to (complementary) or instead of (alternative) standard treatments. These practices are not considered standard medical approaches. CAM includes dietary supplements, megadose vitamins, herbal preparations, special teas, massage therapy, magnet therapy, spiritual healing, and meditation. [NIH]

Complementary medicine: Practices not generally recognized by the medical community as standard or conventional medical approaches and used to enhance or complement the standard treatments. Complementary medicine includes the taking of dietary supplements, megadose vitamins, and herbal preparations; the drinking of special teas; and practices such as massage therapy, magnet therapy, spiritual healing, and meditation. [NIH]

Computational Biology: A field of biology concerned with the development of techniques for the collection and manipulation of biological data, and the use of such data to make biological discoveries or predictions. This field encompasses all computational methods and theories applicable to molecular biology and areas of computer-based techniques for solving biological problems including manipulation of models and datasets. [NIH]

Computed tomography: CT scan. A series of detailed pictures of areas inside the body,

taken from different angles; the pictures are created by a computer linked to an x-ray machine. Also called computerized tomography and computerized axial tomography (CAT) scan. [NIH]

Computer Simulation: Computer-based representation of physical systems and phenomena such as chemical processes. [NIH]

Conception: The onset of pregnancy, marked by implantation of the blastocyst; the formation of a viable zygote. [EU]

Concomitant: Accompanying; accessory; joined with another. [EU]

Condoms: A sheath that is worn over the penis during sexual behavior in order to prevent pregnancy or spread of sexually transmitted disease. [NIH]

Conduction: The transfer of sound waves, heat, nervous impulses, or electricity. [EU]

Condyloma: C. acuminatum; a papilloma with a central core of connective tissue in a treelike structure covered with epithelium, usually occurring on the mucous membrane or skin of the external genitals or in the perianal region. [EU]

Condylomata Acuminata: Sexually transmitted form of anogenital warty growth caused by the human papillomaviruses. [NIH]

Cone: One of the special retinal receptor elements which are presumed to be primarily concerned with perception of light and color stimuli when the eye is adapted to light. [NIH]

Connective Tissue: Tissue that supports and binds other tissues. It consists of connective tissue cells embedded in a large amount of extracellular matrix. [NIH]

Connective Tissue: Tissue that supports and binds other tissues. It consists of connective tissue cells embedded in a large amount of extracellular matrix. [NIH]

Contamination: The soiling or pollution by inferior material, as by the introduction of organisms into a wound, or sewage into a stream. [EU]

Contraindications: Any factor or sign that it is unwise to pursue a certain kind of action or treatment, e. g. giving a general anesthetic to a person with pneumonia. [NIH]

Cornea: The transparent part of the eye that covers the iris and the pupil and allows light to enter the inside. [NIH]

Coronary: Encircling in the manner of a crown; a term applied to vessels; nerves, ligaments, etc. The term usually denotes the arteries that supply the heart muscle and, by extension, a pathologic involvement of them. [EU]

Coronary heart disease: A type of heart disease caused by narrowing of the coronary arteries that feed the heart, which needs a constant supply of oxygen and nutrients carried by the blood in the coronary arteries. When the coronary arteries become narrowed or clogged by fat and cholesterol deposits and cannot supply enough blood to the heart, CHD results. [NIH]

Coronary Thrombosis: Presence of a thrombus in a coronary artery, often causing a myocardial infarction. [NIH]

Corpus: The body of the uterus. [NIH]

Cortex: The outer layer of an organ or other body structure, as distinguished from the internal substance. [EU]

Cortisone: A natural steroid hormone produced in the adrenal gland. It can also be made in the laboratory. Cortisone reduces swelling and can suppress immune responses. [NIH]

Cranial: Pertaining to the cranium, or to the anterior (in animals) or superior (in humans) end of the body. [EU]

Credentialing: The recognition of professional or technical competence through registration, certification, licensure, admission to association membership, the award of a diploma or degree, etc. [NIH]

Cryosurgery: The use of freezing as a special surgical technique to destroy or excise tissue. [NIH]

Cryotherapy: Any method that uses cold temperature to treat disease. [NIH]

Curare: Plant extracts from several species, including Strychnos toxifera, S. castelnaei, S. crevauxii, and Chondodendron tomentosum, that produce paralysis of skeletal muscle and are used adjunctively with general anesthesia. These extracts are toxic and must be used with the administration of artificial respiration. [NIH]

Curative: Tending to overcome disease and promote recovery. [EU]

Curettage: Removal of tissue with a curette, a spoon-shaped instrument with a sharp edge. [NIH]

Curette: A spoon-shaped instrument with a sharp edge. [NIH]

Cutaneous: Having to do with the skin. [NIH]

Cystitis: Inflammation of the urinary bladder. [EU]

Cystoscopy: Endoscopic examination, therapy or surgery of the urinary bladder. [NIH]

Cytokine: Small but highly potent protein that modulates the activity of many cell types, including T and B cells. [NIH]

Cytoplasm: The protoplasm of a cell exclusive of that of the nucleus; it consists of a continuous aqueous solution (cytosol) and the organelles and inclusions suspended in it (phaneroplasm), and is the site of most of the chemical activities of the cell. [EU]

Cytotoxic: Cell-killing. [NIH]

Decarboxylation: The removal of a carboxyl group, usually in the form of carbon dioxide, from a chemical compound. [NIH]

Decision Making: The process of making a selective intellectual judgment when presented with several complex alternatives consisting of several variables, and usually defining a course of action or an idea. [NIH]

Degenerative: Undergoing degeneration : tending to degenerate; having the character of or involving degeneration; causing or tending to cause degeneration. [EU]

Density: The logarithm to the base 10 of the opacity of an exposed and processed film. [NIH]

Dentists: Individuals licensed to practice dentistry. [NIH]

Dermatology: A medical specialty concerned with the skin, its structure, functions, diseases, and treatment. [NIH]

Dermis: A layer of vascular connective tissue underneath the epidermis. The surface of the dermis contains sensitive papillae. Embedded in or beneath the dermis are sweat glands, hair follicles, and sebaceous glands. [NIH]

Desiccation: Removal of moisture from a substance (chemical, food, tissue, etc.). [NIH]

Dexterity: Ability to move the hands easily and skillfully. [NIH]

Diabetes Mellitus: A heterogeneous group of disorders that share glucose intolerance in common. [NIH]

Diabetic Retinopathy: Retinopathy associated with diabetes mellitus, which may be of the background type, progressively characterized by microaneurysms, interretinal punctuate macular edema, or of the proliferative type, characterized by neovascularization of the retina and optic disk, which may project into the vitreous, proliferation of fibrous tissue, vitreous

hemorrhage, and retinal detachment. [NIH]

Diagnostic procedure: A method used to identify a disease. [NIH]

Diaphragm: The musculofibrous partition that separates the thoracic cavity from the abdominal cavity. Contraction of the diaphragm increases the volume of the thoracic cavity aiding inspiration. [NIH]

Diastolic: Of or pertaining to the diastole. [EU]

Diclofenac: A non-steroidal anti-inflammatory agent (NSAID) with antipyretic and analgesic actions. It is primarily available as the sodium salt, diclofenac sodium. [NIH]

Diclofenac Sodium: The sodium form of diclofenac. It is used for its analgesic and anti-inflammatory properties. [NIH]

Dietitian: An expert in nutrition who helps people plan what and how much food to eat. [NIH]

Digestion: The process of breakdown of food for metabolism and use by the body. [NIH]

Digestive system: The organs that take in food and turn it into products that the body can use to stay healthy. Waste products the body cannot use leave the body through bowel movements. The digestive system includes the salivary glands, mouth, esophagus, stomach, liver, pancreas, gallbladder, small and large intestines, and rectum. [NIH]

Digestive tract: The organs through which food passes when food is eaten. These organs are the mouth, esophagus, stomach, small and large intestines, and rectum. [NIH]

Digital rectal examination: DRE. An examination in which a doctor inserts a lubricated, gloved finger into the rectum to feel for abnormalities. [NIH]

Dilatation: The act of dilating. [NIH]

Dilation: A process by which the pupil is temporarily enlarged with special eye drops (mydriatic); allows the eye care specialist to better view the inside of the eye. [NIH]

Dimethyl: A volatile metabolite of the amino acid methionine. [NIH]

Dimethyl Sulfoxide: A highly polar organic liquid, that is used widely as a chemical solvent. Because of its ability to penetrate biological membranes, it is used as a vehicle for topical application of pharmaceuticals. It is also used to protect tissue during cryopreservation. Dimethyl sulfoxide shows a range of pharmacological activity including analgesia and anti-inflammation. [NIH]

Direct: 1. Straight; in a straight line. 2. Performed immediately and without the intervention of subsidiary means. [EU]

Dissection: Cutting up of an organism for study. [NIH]

Distal: Remote; farther from any point of reference; opposed to proximal. In dentistry, used to designate a position on the dental arch farther from the median line of the jaw. [EU]

Diverticula: Plural form of diverticulum. [NIH]

Diverticulum: A pathological condition manifested as a pouch or sac opening from a tubular or sacular organ. [NIH]

Dorsal: 1. Pertaining to the back or to any dorsum. 2. Denoting a position more toward the back surface than some other object of reference; same as posterior in human anatomy; superior in the anatomy of quadrupeds. [EU]

Doxazosin: A selective alpha-1-adrenergic blocker that lowers serum cholesterol. It is also effective in the treatment of hypertension. [NIH]

Drive: A state of internal activity of an organism that is a necessary condition before a given stimulus will elicit a class of responses; e.g., a certain level of hunger (drive) must be present

before food will elicit an eating response. [NIH]

Drug Interactions: The action of a drug that may affect the activity, metabolism, or toxicity of another drug. [NIH]

Duct: A tube through which body fluids pass. [NIH]

Duodenum: The first part of the small intestine. [NIH]

Edema: Excessive amount of watery fluid accumulated in the intercellular spaces, most commonly present in subcutaneous tissue. [NIH]

Efficacy: The extent to which a specific intervention, procedure, regimen, or service produces a beneficial result under ideal conditions. Ideally, the determination of efficacy is based on the results of a randomized control trial. [NIH]

Effusion: The escape of fluid into a part or tissue, as an exudation or a transudation. [EU]

Ejaculation: The release of semen through the penis during orgasm. [NIH]

Elastic: Susceptible of resisting and recovering from stretching, compression or distortion applied by a force. [EU]

Elasticity: Resistance and recovery from distortion of shape. [NIH]

Elastin: The protein that gives flexibility to tissues. [NIH]

Elective: Subject to the choice or decision of the patient or physician; applied to procedures that are advantageous to the patient but not urgent. [EU]

Electrocoagulation: Electrosurgical procedures used to treat hemorrhage (e.g., bleeding ulcers) and to ablate tumors, mucosal lesions, and refractory arrhythmias. [NIH]

Electrode: Component of the pacing system which is at the distal end of the lead. It is the interface with living cardiac tissue across which the stimulus is transmitted. [NIH]

Electrodesiccation: The drying of tissue by a high-frequency electric current applied with a needle-shaped electrode. [NIH]

Embolism: Blocking of a blood vessel by a blood clot or foreign matter that has been transported from a distant site by the blood stream. [NIH]

Embryology: The study of the development of an organism during the embryonic and fetal stages of life. [NIH]

Emulsion: A preparation of one liquid distributed in small globules throughout the body of a second liquid. The dispersed liquid is the discontinuous phase, and the dispersion medium is the continuous phase. When oil is the dispersed liquid and an aqueous solution is the continuous phase, it is known as an oil-in-water emulsion, whereas when water or aqueous solution is the dispersed phase and oil or oleaginous substance is the continuous phase, it is known as a water-in-oil emulsion. Pharmaceutical emulsions for which official standards have been promulgated include cod liver oil emulsion, cod liver oil emulsion with malt, liquid petrolatum emulsion, and phenolphthalein in liquid petrolatum emulsion. [EU]

Endarterectomy: Surgical excision, performed under general anesthesia, of the atheromatous tunica intima of an artery. When reconstruction of an artery is performed as an endovascular procedure through a catheter, it is called atherectomy. [NIH]

Endocrinology: A subspecialty of internal medicine concerned with the metabolism, physiology, and disorders of the endocrine system. [NIH]

Endometrial: Having to do with the endometrium (the layer of tissue that lines the uterus). [NIH]

Endometriosis: A condition in which tissue more or less perfectly resembling the uterine mucous membrane (the endometrium) and containing typical endometrial granular and

stromal elements occurs aberrantly in various locations in the pelvic cavity. [NIH]

Endometrium: The layer of tissue that lines the uterus. [NIH]

Endophthalmitis: Suppurative inflammation of the tissues of the internal structures of the eye; not all layers of the uvea are affected. Fungi, necrosis of intraocular tumors, and retained intraocular foreign bodies often cause a purulent endophthalmitis. [NIH]

Endoscope: A thin, lighted tube used to look at tissues inside the body. [NIH]

Endoscopic: A technique where a lateral-view endoscope is passed orally to the duodenum for visualization of the ampulla of Vater. [NIH]

Endoscopy: Endoscopic examination, therapy or surgery performed on interior parts of the body. [NIH]

End-stage renal: Total chronic kidney failure. When the kidneys fail, the body retains fluid and harmful wastes build up. A person with ESRD needs treatment to replace the work of the failed kidneys. [NIH]

Environmental Health: The science of controlling or modifying those conditions, influences, or forces surrounding man which relate to promoting, establishing, and maintaining health. [NIH]

Enzymatic: Phase where enzyme cuts the precursor protein. [NIH]

Enzyme: A protein that speeds up chemical reactions in the body. [NIH]

Eosinophil: A polymorphonuclear leucocyte with large eosinophilic granules in its cytoplasm, which plays a role in hypersensitivity reactions. [NIH]

Eosinophilic: A condition found primarily in grinding workers caused by a reaction of the pulmonary tissue, in particular the eosinophilic cells, to dust that has entered the lung. [NIH]

Epidermal: Pertaining to or resembling epidermis. Called also epidermic or epidermoid. [EU]

Epidermis: Nonvascular layer of the skin. It is made up, from within outward, of five layers: 1) basal layer (stratum basale epidermidis); 2) spinous layer (stratum spinosum epidermidis); 3) granular layer (stratum granulosum epidermidis); 4) clear layer (stratum lucidum epidermidis); and 5) horny layer (stratum corneum epidermidis). [NIH]

Epidermoid carcinoma: A type of cancer in which the cells are flat and look like fish scales. Also called squamous cell carcinoma. [NIH]

Epiglottis: Thin leaf-shaped cartilage, covered with mucous membrane, at the root of the tongue, which folds back over the entrance to the larynx, covering it, during the act of swallowing. [NIH]

Epithelial: Refers to the cells that line the internal and external surfaces of the body. [NIH]

Epithelial Cells: Cells that line the inner and outer surfaces of the body. [NIH]

Epithelium: One or more layers of epithelial cells, supported by the basal lamina, which covers the inner or outer surfaces of the body. [NIH]

Erbium: Erbium. An element of the rare earth family of metals. It has the atomic symbol Er, atomic number 68, and atomic weight 167.26. [NIH]

Erectile: The inability to get or maintain an erection for satisfactory sexual intercourse. Also called impotence. [NIH]

Ergonomics: Study of the relationships between man and machines; adjusting the design of machines to the need and capacities of man; study of the effect of machines on man's behavior. [NIH]

Erythema: Redness of the skin produced by congestion of the capillaries. This condition may result from a variety of causes. [NIH]

Esophageal: Having to do with the esophagus, the muscular tube through which food passes from the throat to the stomach. [NIH]

Esophageal Varices: Stretched veins in the esophagus that occur when the liver is not working properly. If the veins burst, the bleeding can cause death. [NIH]

Esophagus: The muscular tube through which food passes from the throat to the stomach. [NIH]

Ethnic Groups: A group of people with a common cultural heritage that sets them apart from others in a variety of social relationships. [NIH]

Etomidate: Imidazole derivative anesthetic and hypnotic with little effect on blood gases, ventilation, or the cardiovascular system. It has been proposed as an induction anesthetic. [NIH]

Evacuation: An emptying, as of the bowels. [EU]

Excimer laser: An ultraviolet laser used in refractive surgery to remove corneal tissue. [NIH]

Excisional: The surgical procedure of removing a tumor by cutting it out. The biopsy is then examined under a microscope. [NIH]

Exogenous: Developed or originating outside the organism, as exogenous disease. [EU]

Extensor: A muscle whose contraction tends to straighten a limb; the antagonist of a flexor. [NIH]

External-beam radiation: Radiation therapy that uses a machine to aim high-energy rays at the cancer. Also called external radiation. [NIH]

Extracorporeal: Situated or occurring outside the body. [EU]

Extraction: The process or act of pulling or drawing out. [EU]

Extraocular: External to or outside of the eye. [NIH]

Extremity: A limb; an arm or leg (membrum); sometimes applied specifically to a hand or foot. [EU]

Eye Infections: Infection, moderate to severe, caused by bacteria, fungi, or viruses, which occurs either on the external surface of the eye or intraocularly with probable inflammation, visual impairment, or blindness. [NIH]

Eye socket: One of the two cavities in the skull which contains an eyeball. Each eye is located in a bony socket or orbit. [NIH]

Facial: Of or pertaining to the face. [EU]

Facial Expression: Observable changes of expression in the face in response to emotional stimuli. [NIH]

Fallopian tube: The oviduct, a muscular tube about 10 cm long, lying in the upper border of the broad ligament. [NIH]

Family Planning: Programs or services designed to assist the family in controlling reproduction by either improving or diminishing fertility. [NIH]

Farsightedness: The common term for hyperopia. [NIH]

Fat: Total lipids including phospholipids. [NIH]

Fatigue: The state of weariness following a period of exertion, mental or physical, characterized by a decreased capacity for work and reduced efficiency to respond to stimuli. [NIH]

Fetus: The developing offspring from 7 to 8 weeks after conception until birth. [NIH]

Fibrosis: Any pathological condition where fibrous connective tissue invades any organ,

usually as a consequence of inflammation or other injury. [NIH]

Filler: An inactive substance used to make a product bigger or easier to handle. For example, fillers are often used to make pills or capsules because the amount of active drug is too small to be handled conveniently. [NIH]

Filtration: The passage of a liquid through a filter, accomplished by gravity, pressure, or vacuum (suction). [EU]

Finasteride: An orally active testosterone 5-alpha-reductase inhibitor. It is used as a surgical alternative for treatment of benign prostatic hyperplasia. [NIH]

Fistulas: An abnormal passage from one hollow structure of the body to another, or from a hollow structure to the surface, formed by an abscess, disease process, incomplete closure of a wound, or by a congenital anomaly. [NIH]

Fixation: 1. The act or operation of holding, suturing, or fastening in a fixed position. 2. The condition of being held in a fixed position. 3. In psychiatry, a term with two related but distinct meanings : (1) arrest of development at a particular stage, which like regression (return to an earlier stage), if temporary is a normal reaction to setbacks and difficulties but if protracted or frequent is a cause of developmental failures and emotional problems, and (2) a close and suffocating attachment to another person, especially a childhood figure, such as one's mother or father. Both meanings are derived from psychoanalytic theory and refer to 'fixation' of libidinal energy either in a specific erogenous zone, hence fixation at the oral, anal, or phallic stage, or in a specific object, hence mother or father fixation. 4. The use of a fixative (q.v.) to preserve histological or cytological specimens. 5. In chemistry, the process whereby a substance is removed from the gaseous or solution phase and localized, as in carbon dioxide fixation or nitrogen fixation. 6. In ophthalmology, direction of the gaze so that the visual image of the object falls on the fovea centralis. 7. In film processing, the chemical removal of all undeveloped salts of the film emulsion, leaving only the developed silver to form a permanent image. [EU]

Flatus: Gas passed through the rectum. [NIH]

Fluorescein Angiography: Visualization of a vascular system after intravenous injection of a fluorescein solution. The images may be photographed or televised. It is used especially in studying the retinal and uveal vasculature. [NIH]

Fluorouracil: A pyrimidine analog that acts as an antineoplastic antimetabolite and also has immunosuppressant. It interferes with DNA synthesis by blocking the thymidylate synthetase conversion of deoxyuridylic acid to thymidylic acid. [NIH]

Flushing: A transient reddening of the face that may be due to fever, certain drugs, exertion, stress, or a disease process. [NIH]

Fold: A plication or doubling of various parts of the body. [NIH]

Foramen: A natural hole of perforation, especially one in a bone. [NIH]

Forearm: The part between the elbow and the wrist. [NIH]

Fovea: The central part of the macula that provides the sharpest vision. [NIH]

Friction: Surface resistance to the relative motion of one body against the rubbing, sliding, rolling, or flowing of another with which it is in contact. [NIH]

Fundus: The larger part of a hollow organ that is farthest away from the organ's opening. The bladder, gallbladder, stomach, uterus, eye, and cavity of the middle ear all have a fundus. [NIH]

Fungi: A kingdom of eukaryotic, heterotrophic organisms that live as saprobes or parasites, including mushrooms, yeasts, smuts, molds, etc. They reproduce either sexually or

asexually, and have life cycles that range from simple to complex. Filamentous fungi refer to those that grow as multicelluar colonies (mushrooms and molds). [NIH]

Gallbladder: The pear-shaped organ that sits below the liver. Bile is concentrated and stored in the gallbladder. [NIH]

Gamma Rays: Very powerful and penetrating, high-energy electromagnetic radiation of shorter wavelength than that of x-rays. They are emitted by a decaying nucleus, usually between 0.01 and 10 MeV. They are also called nuclear x-rays. [NIH]

Ganglia: Clusters of multipolar neurons surrounded by a capsule of loosely organized connective tissue located outside the central nervous system. [NIH]

Gas: Air that comes from normal breakdown of food. The gases are passed out of the body through the rectum (flatus) or the mouth (burp). [NIH]

Gas exchange: Primary function of the lungs; transfer of oxygen from inhaled air into the blood and of carbon dioxide from the blood into the lungs. [NIH]

Gastric: Having to do with the stomach. [NIH]

Gastrin: A hormone released after eating. Gastrin causes the stomach to produce more acid. [NIH]

Gastroenterology: A subspecialty of internal medicine concerned with the study of the physiology and diseases of the digestive system and related structures (esophagus, liver, gallbladder, and pancreas). [NIH]

Gastrointestinal: Refers to the stomach and intestines. [NIH]

Gels: Colloids with a solid continuous phase and liquid as the dispersed phase; gels may be unstable when, due to temperature or other cause, the solid phase liquifies; the resulting colloid is called a sol. [NIH]

Gene: The functional and physical unit of heredity passed from parent to offspring. Genes are pieces of DNA, and most genes contain the information for making a specific protein. [NIH]

Gene Expression: The phenotypic manifestation of a gene or genes by the processes of gene action. [NIH]

Genital: Pertaining to the genitalia. [EU]

Genitourinary: Pertaining to the genital and urinary organs; urogenital; urinosexual. [EU]

Genitourinary system: The parts of the body that play a role in reproduction, getting rid of waste products in the form of urine, or both. [NIH]

Germ Cells: The reproductive cells in multicellular organisms. [NIH]

Germanium: A rare metal element with a blue-gray appearance and atomic symbol Ge, atomic number 32, and atomic weight 72.59. [NIH]

Gestation: The period of development of the young in viviparous animals, from the time of fertilization of the ovum until birth. [EU]

Gingival Hyperplasia: A pathological increase in the depth of the gingival crevice surrounding a tooth at the gum margin. [NIH]

Gland: An organ that produces and releases one or more substances for use in the body. Some glands produce fluids that affect tissues or organs. Others produce hormones or participate in blood production. [NIH]

Gloves, Surgical: Gloves, usually rubber, worn by surgeons, examining physicians, dentists, and other health personnel for the mutual protection of personnel and patient. [NIH]

Glucose: D-Glucose. A primary source of energy for living organisms. It is naturally

occurring and is found in fruits and other parts of plants in its free state. It is used therapeutically in fluid and nutrient replacement. [NIH]

Governing Board: The group in which legal authority is vested for the control of health-related institutions and organizations. [NIH]

Grade: The grade of a tumor depends on how abnormal the cancer cells look under a microscope and how quickly the tumor is likely to grow and spread. Grading systems are different for each type of cancer. [NIH]

Graft: Healthy skin, bone, or other tissue taken from one part of the body and used to replace diseased or injured tissue removed from another part of the body. [NIH]

Graft Rejection: An immune response with both cellular and humoral components, directed against an allogeneic transplant, whose tissue antigens are not compatible with those of the recipient. [NIH]

Grafting: The operation of transfer of tissue from one site to another. [NIH]

Granuloma: A relatively small nodular inflammatory lesion containing grouped mononuclear phagocytes, caused by infectious and noninfectious agents. [NIH]

Groin: The external junctural region between the lower part of the abdomen and the thigh. [NIH]

Growth: The progressive development of a living being or part of an organism from its earliest stage to maturity. [NIH]

Gynecology: A medical-surgical specialty concerned with the physiology and disorders primarily of the female genital tract, as well as female endocrinology and reproductive physiology. [NIH]

Hair follicles: Shafts or openings on the surface of the skin through which hair grows. [NIH]

Hay Fever: A seasonal variety of allergic rhinitis, marked by acute conjunctivitis with lacrimation and itching, regarded as an allergic condition triggered by specific allergens. [NIH]

Health Education: Education that increases the awareness and favorably influences the attitudes and knowledge relating to the improvement of health on a personal or community basis. [NIH]

Heart attack: A seizure of weak or abnormal functioning of the heart. [NIH]

Hemophilia: Refers to a group of hereditary disorders in which affected individuals fail to make enough of certain proteins needed to form blood clots. [NIH]

Hemorrhoids: Varicosities of the hemorrhoidal venous plexuses. [NIH]

Hemostasis: The process which spontaneously arrests the flow of blood from vessels carrying blood under pressure. It is accomplished by contraction of the vessels, adhesion and aggregation of formed blood elements, and the process of blood or plasma coagulation. [NIH]

Hereditary: Of, relating to, or denoting factors that can be transmitted genetically from one generation to another. [NIH]

Heredity: 1. The genetic transmission of a particular quality or trait from parent to offspring. 2. The genetic constitution of an individual. [EU]

Hidradenitis: The inflammation of a sweat gland (usually of the apocrine type). The condition can be idiopathic or occur as a result of or in association with another underlying condition. Neutrophilic eccrine hidradenitis is a relatively rare variant that has been reported in patients undergoing chemotherapy, usually for non-Hodgkin lymphomas or leukemic conditions. [NIH]

Hidradenitis Suppurativa: A chronic suppurative and cicatricial disease of the apocrine glands occurring chiefly in the axillae in women and in the groin and anal regions in men. It is characterized by poral occlusion with secondary bacterial infection, evolving into abscesses which eventually rupture. As the disease becomes chronic, ulcers appear, sinus tracts enlarge, fistulas develop, and fibrosis and scarring become evident. Hormonal mechanisms are expected in its pathogenesis. [NIH]

High-Frequency Jet Ventilation: Respiratory support system used primarily with rates of about 100 to 200/min with volumes of from about one to three times predicted anatomic dead space. Used to treat respiratory failure and maintain ventilation under severe circumstances. [NIH]

Histamine: 1H-Imidazole-4-ethanamine. A depressor amine derived by enzymatic decarboxylation of histidine. It is a powerful stimulant of gastric secretion, a constrictor of bronchial smooth muscle, a vasodilator, and also a centrally acting neurotransmitter. [NIH]

Histidine: An essential amino acid important in a number of metabolic processes. It is required for the production of histamine. [NIH]

Homogeneous: Consisting of or composed of similar elements or ingredients; of a uniform quality throughout. [EU]

Hormonal: Pertaining to or of the nature of a hormone. [EU]

Hormonal therapy: Treatment of cancer by removing, blocking, or adding hormones. Also called hormone therapy or endocrine therapy. [NIH]

Hormone: A substance in the body that regulates certain organs. Hormones such as gastrin help in breaking down food. Some hormones come from cells in the stomach and small intestine. [NIH]

Hormone therapy: Treatment of cancer by removing, blocking, or adding hormones. Also called endocrine therapy. [NIH]

Host: Any animal that receives a transplanted graft. [NIH]

Human papillomavirus: HPV. A virus that causes abnormal tissue growth (warts) and is often associated with some types of cancer. [NIH]

Hydrogel: A network of cross-linked hydrophilic macromolecules used in biomedical applications. [NIH]

Hydrogen: The first chemical element in the periodic table. It has the atomic symbol H, atomic number 1, and atomic weight 1. It exists, under normal conditions, as a colorless, odorless, tasteless, diatomic gas. Hydrogen ions are protons. Besides the common H1 isotope, hydrogen exists as the stable isotope deuterium and the unstable, radioactive isotope tritium. [NIH]

Hydrophilic: Readily absorbing moisture; hygroscopic; having strongly polar groups that readily interact with water. [EU]

Hydroxylysine: A hydroxylated derivative of the amino acid lysine that is present in certain collagens. [NIH]

Hydroxyproline: A hydroxylated form of the imino acid proline. A deficiency in ascorbic acid can result in impaired hydroxyproline formation. [NIH]

Hypermetropia: Visual disorder caused by an insufficient refractive power of the eye; only objects far from the eyes appear to be in focus. [NIH]

Hyperopia: Farsightedness; ability to see distant objects more clearly than close objects; may be corrected with glasses or contact lenses. [NIH]

Hyperplasia: An increase in the number of cells in a tissue or organ, not due to tumor

formation. It differs from hypertrophy, which is an increase in bulk without an increase in the number of cells. [NIH]

Hypersensitivity: Altered reactivity to an antigen, which can result in pathologic reactions upon subsequent exposure to that particular antigen. [NIH]

Hypertension: Persistently high arterial blood pressure. Currently accepted threshold levels are 140 mm Hg systolic and 90 mm Hg diastolic pressure. [NIH]

Hyperthermia: A type of treatment in which body tissue is exposed to high temperatures to damage and kill cancer cells or to make cancer cells more sensitive to the effects of radiation and certain anticancer drugs. [NIH]

Hypertrophy: General increase in bulk of a part or organ, not due to tumor formation, nor to an increase in the number of cells. [NIH]

Hypnotic: A drug that acts to induce sleep. [EU]

Hypopharynx: The portion of the pharynx between the inferior portion of the oropharynx and the larynx. [NIH]

Hypopigmentation: A condition caused by a deficiency in melanin formation or a loss of pre-existing melanin or melanocytes. It can be complete or partial and may result from trauma, inflammation, and certain infections. [NIH]

Id: The part of the personality structure which harbors the unconscious instinctive desires and strivings of the individual. [NIH]

Idiopathic: Describes a disease of unknown cause. [NIH]

Immune response: The activity of the immune system against foreign substances (antigens). [NIH]

Immune system: The organs, cells, and molecules responsible for the recognition and disposal of foreign ("non-self") material which enters the body. [NIH]

Immunization: Deliberate stimulation of the host's immune response. Active immunization involves administration of antigens or immunologic adjuvants. Passive immunization involves administration of immune sera or lymphocytes or their extracts (e.g., transfer factor, immune RNA) or transplantation of immunocompetent cell producing tissue (thymus or bone marrow). [NIH]

Immunologic: The ability of the antibody-forming system to recall a previous experience with an antigen and to respond to a second exposure with the prompt production of large amounts of antibody. [NIH]

Immunology: The study of the body's immune system. [NIH]

Immunosuppressant: An agent capable of suppressing immune responses. [EU]

Immunosuppressive: Describes the ability to lower immune system responses. [NIH]

Immunosuppressive therapy: Therapy used to decrease the body's immune response, such as drugs given to prevent transplant rejection. [NIH]

Immunotherapy: Manipulation of the host's immune system in treatment of disease. It includes both active and passive immunization as well as immunosuppressive therapy to prevent graft rejection. [NIH]

Impairment: In the context of health experience, an impairment is any loss or abnormality of psychological, physiological, or anatomical structure or function. [NIH]

Implant radiation: A procedure in which radioactive material sealed in needles, seeds, wires, or catheters is placed directly into or near the tumor. Also called [NIH]

Implantation: The insertion or grafting into the body of biological, living, inert, or

radioactive material. [EU]

In situ: In the natural or normal place; confined to the site of origin without invasion of neighbouring tissues. [EU]

In vitro: In the laboratory (outside the body). The opposite of in vivo (in the body). [NIH]

In vivo: In the body. The opposite of in vitro (outside the body or in the laboratory). [NIH]

Incision: A cut made in the body during surgery. [NIH]

Incontinence: Inability to control the flow of urine from the bladder (urinary incontinence) or the escape of stool from the rectum (fecal incontinence). [NIH]

Indicative: That indicates; that points out more or less exactly; that reveals fairly clearly. [EU]

Induction: The act or process of inducing or causing to occur, especially the production of a specific morphogenetic effect in the developing embryo through the influence of evocators or organizers, or the production of anaesthesia or unconsciousness by use of appropriate agents. [EU]

Infancy: The period of complete dependency prior to the acquisition of competence in walking, talking, and self-feeding. [NIH]

Infarction: A pathological process consisting of a sudden insufficient blood supply to an area, which results in necrosis of that area. It is usually caused by a thrombus, an embolus, or a vascular torsion. [NIH]

Infection: 1. Invasion and multiplication of microorganisms in body tissues, which may be clinically unapparent or result in local cellular injury due to competitive metabolism, toxins, intracellular replication, or antigen-antibody response. The infection may remain localized, subclinical, and temporary if the body's defensive mechanisms are effective. A local infection may persist and spread by extension to become an acute, subacute, or chronic clinical infection or disease state. A local infection may also become systemic when the microorganisms gain access to the lymphatic or vascular system. 2. An infectious disease. [EU]

Infertility: The diminished or absent ability to conceive or produce an offspring while sterility is the complete inability to conceive or produce an offspring. [NIH]

Infiltration: The diffusion or accumulation in a tissue or cells of substances not normal to it or in amounts of the normal. Also, the material so accumulated. [EU]

Inflammation: A pathological process characterized by injury or destruction of tissues caused by a variety of cytologic and chemical reactions. It is usually manifested by typical signs of pain, heat, redness, swelling, and loss of function. [NIH]

Infusion: A method of putting fluids, including drugs, into the bloodstream. Also called intravenous infusion. [NIH]

Inlay: In dentistry, a filling first made to correspond with the form of a dental cavity and then cemented into the cavity. [NIH]

Insufflation: The act of blowing a powder, vapor, or gas into any body cavity for experimental, diagnostic, or therapeutic purposes. [NIH]

Insulin: A protein hormone secreted by beta cells of the pancreas. Insulin plays a major role in the regulation of glucose metabolism, generally promoting the cellular utilization of glucose. It is also an important regulator of protein and lipid metabolism. Insulin is used as a drug to control insulin-dependent diabetes mellitus. [NIH]

Interferometry: Measurement of distances or movements by means of the phenomena caused by the interference of two rays of light (optical interferometry) or of sound (acoustic interferometry). [NIH]

Interferon: A biological response modifier (a substance that can improve the body's natural response to disease). Interferons interfere with the division of cancer cells and can slow tumor growth. There are several types of interferons, including interferon-alpha, -beta, and -gamma. These substances are normally produced by the body. They are also made in the laboratory for use in treating cancer and other diseases. [NIH]

Interferon-alpha: One of the type I interferons produced by peripheral blood leukocytes or lymphoblastoid cells when exposed to live or inactivated virus, double-stranded RNA, or bacterial products. It is the major interferon produced by virus-induced leukocyte cultures and, in addition to its pronounced antiviral activity, it causes activation of NK cells. [NIH]

Intermittent: Occurring at separated intervals; having periods of cessation of activity. [EU]

Internal Medicine: A medical specialty concerned with the diagnosis and treatment of diseases of the internal organ systems of adults. [NIH]

Internal radiation: A procedure in which radioactive material sealed in needles, seeds, wires, or catheters is placed directly into or near the tumor. Also called brachytherapy, implant radiation, or interstitial radiation therapy. [NIH]

Interstitial: Pertaining to or situated between parts or in the interspaces of a tissue. [EU]

Intestines: The section of the alimentary canal from the stomach to the anus. It includes the large intestine and small intestine. [NIH]

Intracellular: Inside a cell. [NIH]

Intraepithelial: Within the layer of cells that form the surface or lining of an organ. [NIH]

Intraocular: Within the eye. [EU]

Intraocular pressure: Pressure of the fluid inside the eye; normal IOP varies among individuals. [NIH]

Intravascular: Within a vessel or vessels. [EU]

Intravenous: IV. Into a vein. [NIH]

Intravenous pyelogram: IVP. A series of x-rays of the kidneys, ureters, and bladder. The x-rays are taken after a dye is injected into a blood vessel. The dye is concentrated in the urine, which outlines the kidneys, ureters, and bladder on the x-rays. [NIH]

Intubation: Introduction of a tube into a hollow organ to restore or maintain patency if obstructed. It is differentiated from catheterization in that the insertion of a catheter is usually performed for the introducing or withdrawing of fluids from the body. [NIH]

Invasive: 1. Having the quality of invasiveness. 2. Involving puncture or incision of the skin or insertion of an instrument or foreign material into the body; said of diagnostic techniques. [EU]

Involuntary: Reaction occurring without intention or volition. [NIH]

Ionizing: Radiation comprising charged particles, e. g. electrons, protons, alpha-particles, etc., having sufficient kinetic energy to produce ionization by collision. [NIH]

Ions: An atom or group of atoms that have a positive or negative electric charge due to a gain (negative charge) or loss (positive charge) of one or more electrons. Atoms with a positive charge are known as cations; those with a negative charge are anions. [NIH]

Iris: The most anterior portion of the uveal layer, separating the anterior chamber from the posterior. It consists of two layers - the stroma and the pigmented epithelium. Color of the iris depends on the amount of melanin in the stroma on reflection from the pigmented epithelium. [NIH]

Irradiation: The use of high-energy radiation from x-rays, neutrons, and other sources to kill

cancer cells and shrink tumors. Radiation may come from a machine outside the body (external-beam radiation therapy) or from materials called radioisotopes. Radioisotopes produce radiation and can be placed in or near the tumor or in the area near cancer cells. This type of radiation treatment is called internal radiation therapy, implant radiation, interstitial radiation, or brachytherapy. Systemic radiation therapy uses a radioactive substance, such as a radiolabeled monoclonal antibody, that circulates throughout the body. Irradiation is also called radiation therapy, radiotherapy, and x-ray therapy. [NIH]

Irrigation: The washing of a body cavity or surface by flowing solution which is inserted and then removed. Any drug in the irrigation solution may be absorbed. [NIH]

Isotretinoin: A topical dermatologic agent that is used in the treatment of acne vulgaris and several other skin diseases. The drug has teratogenic and other adverse effects. [NIH]

Joint: The point of contact between elements of an animal skeleton with the parts that surround and support it. [NIH]

Kb: A measure of the length of DNA fragments, 1 Kb = 1000 base pairs. The largest DNA fragments are up to 50 kilobases long. [NIH]

Keratectomy: The surgical removal of corneal tissue. [NIH]

Keratoconus: A disorder characterized by an irregular corneal surface (cone-shaped) resulting in blurred and distorted images. [NIH]

Keratosis: Any horny growth such as a wart or callus. [NIH]

Keratotomy: A surgical incision (cut) of the cornea. [NIH]

Kidney Pelvis: The flattened, funnel-shaped expansion connecting the ureter to the kidney calices. [NIH]

Kidney stone: A stone that develops from crystals that form in urine and build up on the inner surfaces of the kidney, in the renal pelvis, or in the ureters. [NIH]

Kinetic: Pertaining to or producing motion. [EU]

Lacrimal: Pertaining to the tears. [EU]

Lacrimal Apparatus: The tear-forming and tear-conducting system which includes the lacrimal glands, eyelid margins, conjunctival sac, and the tear drainage system. [NIH]

Laparotomy: A surgical incision made in the wall of the abdomen. [NIH]

Large Intestine: The part of the intestine that goes from the cecum to the rectum. The large intestine absorbs water from stool and changes it from a liquid to a solid form. The large intestine is 5 feet long and includes the appendix, cecum, colon, and rectum. Also called colon. [NIH]

Laryngeal: Having to do with the larynx. [NIH]

Laryngoscope: A thin, lighted tube used to examine the larynx (voice box). [NIH]

Larynx: An irregularly shaped, musculocartilaginous tubular structure, lined with mucous membrane, located at the top of the trachea and below the root of the tongue and the hyoid bone. It is the essential sphincter guarding the entrance into the trachea and functioning secondarily as the organ of voice. [NIH]

Laser Surgery: The use of a laser either to vaporize surface lesions or to make bloodless cuts in tissue. It does not include the coagulation of tissue by laser. [NIH]

Latent: Phoria which occurs at one distance or another and which usually has no troublesome effect. [NIH]

Lens: The transparent, double convex (outward curve on both sides) structure suspended between the aqueous and vitreous; helps to focus light on the retina. [NIH]

Leucocyte: All the white cells of the blood and their precursors (myeloid cell series, lymphoid cell series) but commonly used to indicate granulocytes exclusive of lymphocytes. [NIH]

Leukoplakia: A white patch that may develop on mucous membranes such as the cheek, gums, or tongue and may become cancerous. [NIH]

Library Services: Services offered to the library user. They include reference and circulation. [NIH]

Lidocaine: A local anesthetic and cardiac depressant used as an antiarrhythmia agent. Its actions are more intense and its effects more prolonged than those of procaine but its duration of action is shorter than that of bupivacaine or prilocaine. [NIH]

Ligament: A band of fibrous tissue that connects bones or cartilages, serving to support and strengthen joints. [EU]

Ligation: Application of a ligature to tie a vessel or strangulate a part. [NIH]

Lipid: Fat. [NIH]

Lithotripsy: The destruction of a calculus of the kidney, ureter, bladder, or gallbladder by physical forces, including crushing with a lithotriptor through a catheter. Focused percutaneous ultrasound and focused hydraulic shock waves may be used without surgery. Lithotripsy does not include the dissolving of stones by acids or litholysis. Lithotripsy by laser is laser lithotripsy. [NIH]

Liver: A large, glandular organ located in the upper abdomen. The liver cleanses the blood and aids in digestion by secreting bile. [NIH]

Liver scan: An image of the liver created on a computer screen or on film. A radioactive substance is injected into a blood vessel and travels through the bloodstream. It collects in the liver, especially in abnormal areas, and can be detected by the scanner. [NIH]

Localized: Cancer which has not metastasized yet. [NIH]

Lubricants: Oily or slippery substances. [NIH]

Lumbar: Pertaining to the loins, the part of the back between the thorax and the pelvis. [EU]

Lumen: The cavity or channel within a tube or tubular organ. [EU]

Lymph: The almost colorless fluid that travels through the lymphatic system and carries cells that help fight infection and disease. [NIH]

Lymph node: A rounded mass of lymphatic tissue that is surrounded by a capsule of connective tissue. Also known as a lymph gland. Lymph nodes are spread out along lymphatic vessels and contain many lymphocytes, which filter the lymphatic fluid (lymph). [NIH]

Lymphatic: The tissues and organs, including the bone marrow, spleen, thymus, and lymph nodes, that produce and store cells that fight infection and disease. [NIH]

Lymphatic system: The tissues and organs that produce, store, and carry white blood cells that fight infection and other diseases. This system includes the bone marrow, spleen, thymus, lymph nodes and a network of thin tubes that carry lymph and white blood cells. These tubes branch, like blood vessels, into all the tissues of the body. [NIH]

Lymphocyte: A white blood cell. Lymphocytes have a number of roles in the immune system, including the production of antibodies and other substances that fight infection and diseases. [NIH]

Lymphoid: Referring to lymphocytes, a type of white blood cell. Also refers to tissue in which lymphocytes develop. [NIH]

Macrophage: A type of white blood cell that surrounds and kills microorganisms, removes

dead cells, and stimulates the action of other immune system cells. [NIH]

Macula: A stain, spot, or thickening. Often used alone to refer to the macula retinae. [EU]

Macula Lutea: An oval area in the retina, 3 to 5 mm in diameter, usually located temporal to the superior pole of the eye and slightly below the level of the optic disk. [NIH]

Macular Degeneration: Degenerative changes in the macula lutea of the retina. [NIH]

Magnetic Resonance Imaging: Non-invasive method of demonstrating internal anatomy based on the principle that atomic nuclei in a strong magnetic field absorb pulses of radiofrequency energy and emit them as radiowaves which can be reconstructed into computerized images. The concept includes proton spin tomographic techniques. [NIH]

Malformation: A morphologic defect resulting from an intrinsically abnormal developmental process. [EU]

Malignancy: A cancerous tumor that can invade and destroy nearby tissue and spread to other parts of the body. [NIH]

Malignant: Cancerous; a growth with a tendency to invade and destroy nearby tissue and spread to other parts of the body. [NIH]

Mandible: The largest and strongest bone of the face constituting the lower jaw. It supports the lower teeth. [NIH]

Mastectomy: Surgery to remove the breast (or as much of the breast tissue as possible). [NIH]

Medial: Lying near the midsaggital plane of the body; opposed to lateral. [NIH]

MEDLINE: An online database of MEDLARS, the computerized bibliographic Medical Literature Analysis and Retrieval System of the National Library of Medicine. [NIH]

Melanin: The substance that gives the skin its color. [NIH]

Melanocytes: Epidermal dendritic pigment cells which control long-term morphological color changes by alteration in their number or in the amount of pigment they produce and store in the pigment containing organelles called melanosomes. Melanophores are larger cells which do not exist in mammals. [NIH]

Melanoma: A form of skin cancer that arises in melanocytes, the cells that produce pigment. Melanoma usually begins in a mole. [NIH]

Membrane: A very thin layer of tissue that covers a surface. [NIH]

Menstruation: The normal physiologic discharge through the vagina of blood and mucosal tissues from the nonpregnant uterus. [NIH]

Mental: Pertaining to the mind; psychic. 2. (L. mentum chin) pertaining to the chin. [EU]

Metabolite: Any substance produced by metabolism or by a metabolic process. [EU]

Metastasis: The spread of cancer from one part of the body to another. Tumors formed from cells that have spread are called "secondary tumors" and contain cells that are like those in the original (primary) tumor. The plural is metastases. [NIH]

Metastatic: Having to do with metastasis, which is the spread of cancer from one part of the body to another. [NIH]

Methionine: A sulfur containing essential amino acid that is important in many body functions. It is a chelating agent for heavy metals. [NIH]

MI: Myocardial infarction. Gross necrosis of the myocardium as a result of interruption of the blood supply to the area; it is almost always caused by atherosclerosis of the coronary arteries, upon which coronary thrombosis is usually superimposed. [NIH]

Microbe: An organism which cannot be observed with the naked eye; e. g. unicellular

animals, lower algae, lower fungi, bacteria. [NIH]

Microorganism: An organism that can be seen only through a microscope. Microorganisms include bacteria, protozoa, algae, and fungi. Although viruses are not considered living organisms, they are sometimes classified as microorganisms. [NIH]

Migration: The systematic movement of genes between populations of the same species, geographic race, or variety. [NIH]

Millimeter: A measure of length. A millimeter is approximately 26-times smaller than an inch. [NIH]

Modeling: A treatment procedure whereby the therapist presents the target behavior which the learner is to imitate and make part of his repertoire. [NIH]

Modification: A change in an organism, or in a process in an organism, that is acquired from its own activity or environment. [NIH]

Molecular: Of, pertaining to, or composed of molecules : a very small mass of matter. [EU]

Molecular Structure: The location of the atoms, groups or ions relative to one another in a molecule, as well as the number, type and location of covalent bonds. [NIH]

Molecule: A chemical made up of two or more atoms. The atoms in a molecule can be the same (an oxygen molecule has two oxygen atoms) or different (a water molecule has two hydrogen atoms and one oxygen atom). Biological molecules, such as proteins and DNA, can be made up of many thousands of atoms. [NIH]

Monitor: An apparatus which automatically records such physiological signs as respiration, pulse, and blood pressure in an anesthetized patient or one undergoing surgical or other procedures. [NIH]

Monoclonal: An antibody produced by culturing a single type of cell. It therefore consists of a single species of immunoglobulin molecules. [NIH]

Mononuclear: A cell with one nucleus. [NIH]

Morphology: The science of the form and structure of organisms (plants, animals, and other forms of life). [NIH]

Motor nerve: An efferent nerve conveying an impulse that excites muscular contraction. [NIH]

Muscle relaxant: An agent that specifically aids in reducing muscle tension, as those acting at the polysynaptic neurons of motor nerves (e.g. meprobamate) or at the myoneural junction (curare and related compounds). [EU]

Muscle tension: A force in a material tending to produce extension; the state of being stretched. [NIH]

Mutilation: Injuries to the body. [NIH]

Mydriatic: 1. Dilating the pupil. 2. Any drug that dilates the pupil. [EU]

Myocardium: The muscle tissue of the heart composed of striated, involuntary muscle known as cardiac muscle. [NIH]

Myopia: That error of refraction in which rays of light entering the eye parallel to the optic axis are brought to a focus in front of the retina, as a result of the eyeball being too long from front to back (axial m.) or of an increased strength in refractive power of the media of the eye (index m.). Called also nearsightedness, because the near point is less distant than it is in emmetropia with an equal amplitude of accommodation. [EU]

Narcotic: 1. Pertaining to or producing narcosis. 2. An agent that produces insensibility or stupor, applied especially to the opioids, i.e. to any natural or synthetic drug that has

morphine-like actions. [EU]

Nasal Cavity: The proximal portion of the respiratory passages on either side of the nasal septum, lined with ciliated mucosa, extending from the nares to the pharynx. [NIH]

Nasal Mucosa: The mucous membrane lining the nasal cavity. [NIH]

Nearsightedness: The common term for myopia. [NIH]

Need: A state of tension or dissatisfaction felt by an individual that impels him to action toward a goal he believes will satisfy the impulse. [NIH]

Neodymium: Neodymium. An element of the rare earth family of metals. It has the atomic symbol Nd, atomic number 60, and atomic weight 144.24, and is used in industrial applications. [NIH]

Neoplasia: Abnormal and uncontrolled cell growth. [NIH]

Neoplasm: A new growth of benign or malignant tissue. [NIH]

Nerve: A cordlike structure of nervous tissue that connects parts of the nervous system with other tissues of the body and conveys nervous impulses to, or away from, these tissues. [NIH]

Nervous System: The entire nerve apparatus composed of the brain, spinal cord, nerves and ganglia. [NIH]

Neural: 1. Pertaining to a nerve or to the nerves. 2. Situated in the region of the spinal axis, as the neutral arch. [EU]

Neurologic: Having to do with nerves or the nervous system. [NIH]

Neurons: The basic cellular units of nervous tissue. Each neuron consists of a body, an axon, and dendrites. Their purpose is to receive, conduct, and transmit impulses in the nervous system. [NIH]

Neurosurgery: A surgical specialty concerned with the treatment of diseases and disorders of the brain, spinal cord, and peripheral and sympathetic nervous system. [NIH]

Neurotransmitter: Any of a group of substances that are released on excitation from the axon terminal of a presynaptic neuron of the central or peripheral nervous system and travel across the synaptic cleft to either excite or inhibit the target cell. Among the many substances that have the properties of a neurotransmitter are acetylcholine, norepinephrine, epinephrine, dopamine, glycine, y-aminobutyrate, glutamic acid, substance P, enkephalins, endorphins, and serotonin. [EU]

Neutrons: Electrically neutral elementary particles found in all atomic nuclei except light hydrogen; the mass is equal to that of the proton and electron combined and they are unstable when isolated from the nucleus, undergoing beta decay. Slow, thermal, epithermal, and fast neutrons refer to the energy levels with which the neutrons are ejected from heavier nuclei during their decay. [NIH]

Nevus: A benign growth on the skin, such as a mole. A mole is a cluster of melanocytes and surrounding supportive tissue that usually appears as a tan, brown, or flesh-colored spot on the skin. The plural of nevus is nevi (NEE-vye). [NIH]

Nitrogen: An element with the atomic symbol N, atomic number 7, and atomic weight 14. Nitrogen exists as a diatomic gas and makes up about 78% of the earth's atmosphere by volume. It is a constituent of proteins and nucleic acids and found in all living cells. [NIH]

Nitrous Oxide: Nitrogen oxide (N2O). A colorless, odorless gas that is used as an anesthetic and analgesic. High concentrations cause a narcotic effect and may replace oxygen, causing death by asphyxia. It is also used as a food aerosol in the preparation of whipping cream. [NIH]

Nuclei: A body of specialized protoplasm found in nearly all cells and containing the

chromosomes. [NIH]

Nucleic acid: Either of two types of macromolecule (DNA or RNA) formed by polymerization of nucleotides. Nucleic acids are found in all living cells and contain the information (genetic code) for the transfer of genetic information from one generation to the next. [NIH]

Nursing Care: Care given to patients by nursing service personnel. [NIH]

Ocular: 1. Of, pertaining to, or affecting the eye. 2. Eyepiece. [EU]

Oliguria: Clinical manifestation of the urinary system consisting of a decrease in the amount of urine secreted. [NIH]

Oncology: The study of cancer. [NIH]

Opacity: Degree of density (area most dense taken for reading). [NIH]

Ophthalmic: Pertaining to the eye. [EU]

Ophthalmologist: A medical doctor specializing in the diagnosis and medical or surgical treatment of visual disorders and eye disease. [NIH]

Ophthalmology: A surgical specialty concerned with the structure and function of the eye and the medical and surgical treatment of its defects and diseases. [NIH]

Ophthalmoscope: A lighted instrument used to examine the inside of the eye, including the retina and the optic nerve. [NIH]

Ophthalmoscopy: Examination of the interior of the eye with an ophthalmoscope. [NIH]

Opsin: A protein formed, together with retinene, by the chemical breakdown of meta-rhodopsin. [NIH]

Optic Chiasm: The X-shaped structure formed by the meeting of the two optic nerves. At the optic chiasm the fibers from the medial part of each retina cross to project to the other side of the brain while the lateral retinal fibers continue on the same side. As a result each half of the brain receives information about the contralateral visual field from both eyes. [NIH]

Optic Disk: The portion of the optic nerve seen in the fundus with the ophthalmoscope. It is formed by the meeting of all the retinal ganglion cell axons as they enter the optic nerve. [NIH]

Optic Nerve: The 2nd cranial nerve. The optic nerve conveys visual information from the retina to the brain. The nerve carries the axons of the retinal ganglion cells which sort at the optic chiasm and continue via the optic tracts to the brain. The largest projection is to the lateral geniculate nuclei; other important targets include the superior colliculi and the suprachiasmatic nuclei. Though known as the second cranial nerve, it is considered part of the central nervous system. [NIH]

Optic nerve head: The circular area (disc) where the optic nerve connects to the retina. [NIH]

Optometrist: A primary eye care provider who diagnoses, manages, and treats disorders of the visual system and eye diseases. [NIH]

Orbit: One of the two cavities in the skull which contains an eyeball. Each eye is located in a bony socket or orbit. [NIH]

Orbital: Pertaining to the orbit (= the bony cavity that contains the eyeball). [EU]

Orgasm: The crisis of sexual excitement in either humans or animals. [NIH]

Oropharynx: Oral part of the pharynx. [NIH]

Orthopedics: A surgical specialty which utilizes medical, surgical, and physical methods to treat and correct deformities, diseases, and injuries to the skeletal system, its articulations,

and associated structures. [NIH]

Osteomyelitis: Inflammation of bone caused by a pyogenic organism. It may remain localized or may spread through the bone to involve the marrow, cortex, cancellous tissue, and periosteum. [EU]

Otolaryngology: A surgical specialty concerned with the study and treatment of disorders of the ear, nose, and throat. [NIH]

Otorhinolaryngology: That branch of medicine concerned with medical and surgical treatment of the head and neck, including the ears, nose and throat. [EU]

Outpatient: A patient who is not an inmate of a hospital but receives diagnosis or treatment in a clinic or dispensary connected with the hospital. [NIH]

Ovaries: The pair of female reproductive glands in which the ova, or eggs, are formed. The ovaries are located in the pelvis, one on each side of the uterus. [NIH]

Overall survival: The percentage of subjects in a study who have survived for a defined period of time. Usually reported as time since diagnosis or treatment. Often called the survival rate. [NIH]

Paediatric: Of or relating to the care and medical treatment of children; belonging to or concerned with paediatrics. [EU]

Palate: The structure that forms the roof of the mouth. It consists of the anterior hard palate and the posterior soft palate. [NIH]

Palliative: 1. Affording relief, but not cure. 2. An alleviating medicine. [EU]

Pancreas: A mixed exocrine and endocrine gland situated transversely across the posterior abdominal wall in the epigastric and hypochondriac regions. The endocrine portion is comprised of the Islets of Langerhans, while the exocrine portion is a compound acinar gland that secretes digestive enzymes. [NIH]

Papilloma: A benign epithelial neoplasm which may arise from the skin, mucous membranes or glandular ducts. [NIH]

Papillomavirus: A genus of Papovaviridae causing proliferation of the epithelium, which may lead to malignancy. A wide range of animals are infected including humans, chimpanzees, cattle, rabbits, dogs, and horses. [NIH]

Parallax: The apparent change in direction or lateral displacement of a viewed object when the eye is moved from one position to another, or when the object is viewed first with one eye and then with the other. [NIH]

Paralysis: Loss of ability to move all or part of the body. [NIH]

Patch: A piece of material used to cover or protect a wound, an injured part, etc.: a patch over the eye. [NIH]

Pathogenesis: The cellular events and reactions that occur in the development of disease. [NIH]

Pathologic: 1. Indicative of or caused by a morbid condition. 2. Pertaining to pathology (= branch of medicine that treats the essential nature of the disease, especially the structural and functional changes in tissues and organs of the body caused by the disease). [EU]

Patient Education: The teaching or training of patients concerning their own health needs. [NIH]

Patient Satisfaction: The degree to which the individual regards the health care service or product or the manner in which it is delivered by the provider as useful, effective, or beneficial. [NIH]

Pelvic: Pertaining to the pelvis. [EU]

Pelvis: The lower part of the abdomen, located between the hip bones. [NIH]

Penis: The external reproductive organ of males. It is composed of a mass of erectile tissue enclosed in three cylindrical fibrous compartments. Two of the three compartments, the corpus cavernosa, are placed side-by-side along the upper part of the organ. The third compartment below, the corpus spongiosum, houses the urethra. [NIH]

Peptic: Pertaining to pepsin or to digestion; related to the action of gastric juices. [EU]

Peptic Ulcer: Ulcer that occurs in those portions of the alimentary tract which come into contact with gastric juice containing pepsin and acid. It occurs when the amount of acid and pepsin is sufficient to overcome the gastric mucosal barrier. [NIH]

Peptic Ulcer Hemorrhage: Bleeding from a peptic ulcer. [NIH]

Perception: The ability quickly and accurately to recognize similarities and differences among presented objects, whether these be pairs of words, pairs of number series, or multiple sets of these or other symbols such as geometric figures. [NIH]

Percutaneous: Performed through the skin, as injection of radiopacque material in radiological examination, or the removal of tissue for biopsy accomplished by a needle. [EU]

Perennial: Lasting through the year of for several years. [EU]

Perforation: 1. The act of boring or piercing through a part. 2. A hole made through a part or substance. [EU]

Perianal: Located around the anus. [EU]

Perinatal: Pertaining to or occurring in the period shortly before and after birth; variously defined as beginning with completion of the twentieth to twenty-eighth week of gestation and ending 7 to 28 days after birth. [EU]

Perineal: Pertaining to the perineum. [EU]

Perineum: The area between the anus and the sex organs. [NIH]

Periorbital: Situated around the orbit, or eye socket. [EU]

Peripheral vision: Side vision; ability to see objects and movement outside of the direct line of vision. [NIH]

Phallic: Pertaining to the phallus, or penis. [EU]

Pharmaceutical Preparations: Drugs intended for human or veterinary use, presented in their finished dosage form. Included here are materials used in the preparation and/or formulation of the finished dosage form. [NIH]

Pharmacokinetic: The mathematical analysis of the time courses of absorption, distribution, and elimination of drugs. [NIH]

Pharmacologic: Pertaining to pharmacology or to the properties and reactions of drugs. [EU]

Pharynx: The hollow tube about 5 inches long that starts behind the nose and ends at the top of the trachea (windpipe) and esophagus (the tube that goes to the stomach). [NIH]

Photocoagulation: Using a special strong beam of light (laser) to seal off bleeding blood vessels such as in the eye. The laser can also burn away blood vessels that should not have grown in the eye. This is the main treatment for diabetic retinopathy. [NIH]

Photodynamic therapy: Treatment with drugs that become active when exposed to light. These drugs kill cancer cells. [NIH]

Physical Examination: Systematic and thorough inspection of the patient for physical signs of disease or abnormality. [NIH]

Physiologic: Having to do with the functions of the body. When used in the phrase

"physiologic age," it refers to an age assigned by general health, as opposed to calendar age. [NIH]

Physiology: The science that deals with the life processes and functions of organismus, their cells, tissues, and organs. [NIH]

Pigmentation: Coloration or discoloration of a part by a pigment. [NIH]

Pigments: Any normal or abnormal coloring matter in plants, animals, or micro-organisms. [NIH]

Pitch: The subjective awareness of the frequency or spectral distribution of a sound. [NIH]

Plants: Multicellular, eukaryotic life forms of the kingdom Plantae. They are characterized by a mainly photosynthetic mode of nutrition; essentially unlimited growth at localized regions of cell divisions (meristems); cellulose within cells providing rigidity; the absence of organs of locomotion; absense of nervous and sensory systems; and an alteration of haploid and diploid generations. [NIH]

Plaque: A clear zone in a bacterial culture grown on an agar plate caused by localized destruction of bacterial cells by a bacteriophage. The concentration of infective virus in a fluid can be estimated by applying the fluid to a culture and counting the number of. [NIH]

Plasma: The clear, yellowish, fluid part of the blood that carries the blood cells. The proteins that form blood clots are in plasma. [NIH]

Pleomorphic: Occurring in various distinct forms. In terms of cells, having variation in the size and shape of cells or their nuclei. [NIH]

Pneumonia: Inflammation of the lungs. [NIH]

Polycystic: An inherited disorder characterized by many grape-like clusters of fluid-filled cysts that make both kidneys larger over time. These cysts take over and destroy working kidney tissue. PKD may cause chronic renal failure and end-stage renal disease. [NIH]

Polysaccharide: A type of carbohydrate. It contains sugar molecules that are linked together chemically. [NIH]

Polyvinyl Alcohol: A polymer prepared from polyvinyl acetates by replacement of the acetate groups with hydroxyl groups. It is used as a pharmaceutic aid and ophthalmic lubricant as well as in the manufacture of surface coatings artificial sponges, cosmetics, and other products. [NIH]

Polyvinyl Chloride: A polyvinyl resin used extensively in the manufacture of plastics, including medical devices, tubing, and other packaging. It is also used as a rubber substitute. [NIH]

Port: An implanted device through which blood may be withdrawn and drugs may be infused without repeated needle sticks. Also called a port-a-cath. [NIH]

Port-a-cath: An implanted device through which blood may be withdrawn and drugs may be infused without repeated needle sticks. Also called a port. [NIH]

Posterior: Situated in back of, or in the back part of, or affecting the back or dorsal surface of the body. In lower animals, it refers to the caudal end of the body. [EU]

Postoperative: After surgery. [NIH]

Practice Guidelines: Directions or principles presenting current or future rules of policy for the health care practitioner to assist him in patient care decisions regarding diagnosis, therapy, or related clinical circumstances. The guidelines may be developed by government agencies at any level, institutions, professional societies, governing boards, or by the convening of expert panels. The guidelines form a basis for the evaluation of all aspects of health care and delivery. [NIH]

Precancerous: A term used to describe a condition that may (or is likely to) become cancer. Also called premalignant. [NIH]

Predisposition: A latent susceptibility to disease which may be activated under certain conditions, as by stress. [EU]

Premalignant: A term used to describe a condition that may (or is likely to) become cancer. Also called precancerous. [NIH]

Prenatal: Existing or occurring before birth, with reference to the fetus. [EU]

Probe: An instrument used in exploring cavities, or in the detection and dilatation of strictures, or in demonstrating the potency of channels; an elongated instrument for exploring or sounding body cavities. [NIH]

Procaine: A local anesthetic of the ester type that has a slow onset and a short duration of action. It is mainly used for infiltration anesthesia, peripheral nerve block, and spinal block. (From Martindale, The Extra Pharmacopoeia, 30th ed, p1016). [NIH]

Progeny: The offspring produced in any generation. [NIH]

Progression: Increase in the size of a tumor or spread of cancer in the body. [NIH]

Progressive: Advancing; going forward; going from bad to worse; increasing in scope or severity. [EU]

Projection: A defense mechanism, operating unconsciously, whereby that which is emotionally unacceptable in the self is rejected and attributed (projected) to others. [NIH]

Proliferative Retinopathy: A disease of the small blood vessels of the retina of the eye. [NIH]

Proline: A non-essential amino acid that is synthesized from glutamic acid. It is an essential component of collagen and is important for proper functioning of joints and tendons. [NIH]

Prone: Having the front portion of the body downwards. [NIH]

Prone Position: The posture of an individual lying face down. [NIH]

Prophylaxis: An attempt to prevent disease. [NIH]

Prostate: A gland in males that surrounds the neck of the bladder and the urethra. It secretes a substance that liquifies coagulated semen. It is situated in the pelvic cavity behind the lower part of the pubic symphysis, above the deep layer of the triangular ligament, and rests upon the rectum. [NIH]

Prostate gland: A gland in the male reproductive system just below the bladder. It surrounds part of the urethra, the canal that empties the bladder, and produces a fluid that forms part of semen. [NIH]

Prostatectomy: Complete or partial surgical removal of the prostate. Three primary approaches are commonly employed: suprapubic - removal through an incision above the pubis and through the urinary bladder; retropubic - as for suprapubic but without entering the urinary bladder; and transurethral (transurethral resection of prostate). [NIH]

Prostatic Hyperplasia: Enlargement or overgrowth of the prostate gland as a result of an increase in the number of its constituent cells. [NIH]

Prostatitis: Inflammation of the prostate. [EU]

Protein S: The vitamin K-dependent cofactor of activated protein C. Together with protein C, it inhibits the action of factors VIIIa and Va. A deficiency in protein S can lead to recurrent venous and arterial thrombosis. [NIH]

Proteins: Polymers of amino acids linked by peptide bonds. The specific sequence of amino acids determines the shape and function of the protein. [NIH]

Protocol: The detailed plan for a clinical trial that states the trial's rationale, purpose, drug or

vaccine dosages, length of study, routes of administration, who may participate, and other aspects of trial design. [NIH]

Protons: Stable elementary particles having the smallest known positive charge, found in the nuclei of all elements. The proton mass is less than that of a neutron. A proton is the nucleus of the light hydrogen atom, i.e., the hydrogen ion. [NIH]

Proximal: Nearest; closer to any point of reference; opposed to distal. [EU]

Psoriasis: A common genetically determined, chronic, inflammatory skin disease characterized by rounded erythematous, dry, scaling patches. The lesions have a predilection for nails, scalp, genitalia, extensor surfaces, and the lumbosacral region. Accelerated epidermopoiesis is considered to be the fundamental pathologic feature in psoriasis. [NIH]

Psychiatric: Pertaining to or within the purview of psychiatry. [EU]

Psychiatry: The medical science that deals with the origin, diagnosis, prevention, and treatment of mental disorders. [NIH]

Pterygoid: A canal in the sphenoid bone for the vidian nerve. [NIH]

Public Policy: A course or method of action selected, usually by a government, from among alternatives to guide and determine present and future decisions. [NIH]

Pulmonary: Relating to the lungs. [NIH]

Pulmonary Artery: The short wide vessel arising from the conus arteriosus of the right ventricle and conveying unaerated blood to the lungs. [NIH]

Pulse: The rhythmical expansion and contraction of an artery produced by waves of pressure caused by the ejection of blood from the left ventricle of the heart as it contracts. [NIH]

Pupil: The aperture in the iris through which light passes. [NIH]

Purifying: Respiratory equipment whose function is to remove contaminants from otherwise wholesome air. [NIH]

Purulent: Consisting of or containing pus; associated with the formation of or caused by pus. [EU]

Pyogenic: Producing pus; pyopoietic (= liquid inflammation product made up of cells and a thin fluid called liquor puris). [EU]

Race: A population within a species which exhibits general similarities within itself, but is both discontinuous and distinct from other populations of that species, though not sufficiently so as to achieve the status of a taxon. [NIH]

Radial Keratotomy: Commonly referred to as RK; a surgical procedure designed to correct myopia (nearsightedness) by flattening the cornea using radial cuts. [NIH]

Radiation: Emission or propagation of electromagnetic energy (waves/rays), or the waves/rays themselves; a stream of electromagnetic particles (electrons, neutrons, protons, alpha particles) or a mixture of these. The most common source is the sun. [NIH]

Radiation therapy: The use of high-energy radiation from x-rays, gamma rays, neutrons, and other sources to kill cancer cells and shrink tumors. Radiation may come from a machine outside the body (external-beam radiation therapy), or it may come from radioactive material placed in the body in the area near cancer cells (internal radiation therapy, implant radiation, or brachytherapy). Systemic radiation therapy uses a radioactive substance, such as a radiolabeled monoclonal antibody, that circulates throughout the body. Also called radiotherapy. [NIH]

Radical mastectomy: Surgery for breast cancer in which the breast, chest muscles, and all of

the lymph nodes under the arm are removed. For many years, this was the operation most used, but it is used now only when the tumor has spread to the chest muscles. Also called the Halsted radical mastectomy. [NIH]

Radioactive: Giving off radiation. [NIH]

Radioimmunotherapy: Radiotherapy where cytotoxic radionuclides are linked to antibodies in order to deliver toxins directly to tumor targets. Therapy with targeted radiation rather than antibody-targeted toxins (immunotoxins) has the advantage that adjacent tumor cells, which lack the appropriate antigenic determinants, can be destroyed by radiation cross-fire. Radioimmunotherapy is sometimes called targeted radiotherapy, but this latter term can also refer to radionuclides linked to non-immune molecules (radiotherapy). [NIH]

Radiolabeled: Any compound that has been joined with a radioactive substance. [NIH]

Radiological: Pertaining to radiodiagnostic and radiotherapeutic procedures, and interventional radiology or other planning and guiding medical radiology. [NIH]

Radiology: A specialty concerned with the use of x-ray and other forms of radiant energy in the diagnosis and treatment of disease. [NIH]

Radionuclide Imaging: Process whereby a radionuclide is injected or measured (through tissue) from an external source, and a display is obtained from any one of several rectilinear scanner or gamma camera systems. The image obtained from a moving detector is called a scan, while the image obtained from a stationary camera device is called a scintiphotograph. [NIH]

Radiotherapy: The use of ionizing radiation to treat malignant neoplasms and other benign conditions. The most common forms of ionizing radiation used as therapy are x-rays, gamma rays, and electrons. A special form of radiotherapy, targeted radiotherapy, links a cytotoxic radionuclide to a molecule that targets the tumor. When this molecule is an antibody or other immunologic molecule, the technique is called radioimmunotherapy. [NIH]

Randomized: Describes an experiment or clinical trial in which animal or human subjects are assigned by chance to separate groups that compare different treatments. [NIH]

Randomized clinical trial: A study in which the participants are assigned by chance to separate groups that compare different treatments; neither the researchers nor the participants can choose which group. Using chance to assign people to groups means that the groups will be similar and that the treatments they receive can be compared objectively. At the time of the trial, it is not known which treatment is best. It is the patient's choice to be in a randomized trial. [NIH]

Receptor: A molecule inside or on the surface of a cell that binds to a specific substance and causes a specific physiologic effect in the cell. [NIH]

Recombinant: A cell or an individual with a new combination of genes not found together in either parent; usually applied to linked genes. [EU]

Rectal: By or having to do with the rectum. The rectum is the last 8 to 10 inches of the large intestine and ends at the anus. [NIH]

Rectum: The last 8 to 10 inches of the large intestine. [NIH]

Recurrence: The return of a sign, symptom, or disease after a remission. [NIH]

Reductase: Enzyme converting testosterone to dihydrotestosterone. [NIH]

Refer: To send or direct for treatment, aid, information, de decision. [NIH]

Reflective: Capable of throwing back light, images, sound waves : reflecting. [EU]

Reflux: The term used when liquid backs up into the esophagus from the stomach. [NIH]

Refraction: A test to determine the best eyeglasses or contact lenses to correct a refractive

error (myopia, hyperopia, or astigmatism). [NIH]

Refractive Errors: Deviations from the average or standard indices of refraction of the eye through its dioptric or refractive apparatus. [NIH]

Refractive Power: The ability of an object, such as the eye, to bend light as light passes through it. [NIH]

Regimen: A treatment plan that specifies the dosage, the schedule, and the duration of treatment. [NIH]

Regional lymph node: In oncology, a lymph node that drains lymph from the region around a tumor. [NIH]

Reinfection: A second infection by the same pathogenic agent, or a second infection of an organ such as the kidney by a different pathogenic agent. [EU]

Relaxant: 1. Lessening or reducing tension. 2. An agent that lessens tension. [EU]

Reliability: Used technically, in a statistical sense, of consistency of a test with itself, i. e. the extent to which we can assume that it will yield the same result if repeated a second time. [NIH]

Remission: A decrease in or disappearance of signs and symptoms of cancer. In partial remission, some, but not all, signs and symptoms of cancer have disappeared. In complete remission, all signs and symptoms of cancer have disappeared, although there still may be cancer in the body. [NIH]

Renal pelvis: The area at the center of the kidney. Urine collects here and is funneled into the ureter, the tube that connects the kidney to the bladder. [NIH]

Renovascular: Of or pertaining to the blood vessels of the kidneys. [EU]

Reproductive system: In women, this system includes the ovaries, the fallopian tubes, the uterus (womb), the cervix, and the vagina (birth canal). The reproductive system in men includes the prostate, the testes, and the penis. [NIH]

Resection: Removal of tissue or part or all of an organ by surgery. [NIH]

Respiration: The act of breathing with the lungs, consisting of inspiration, or the taking into the lungs of the ambient air, and of expiration, or the expelling of the modified air which contains more carbon dioxide than the air taken in (Blakiston's Gould Medical Dictionary, 4th ed.). This does not include tissue respiration (= oxygen consumption) or cell respiration (= cell respiration). [NIH]

Respiratory failure: Inability of the lungs to conduct gas exchange. [NIH]

Respiratory Physiology: Functions and activities of the respiratory tract as a whole or of any of its parts. [NIH]

Restoration: Broad term applied to any inlay, crown, bridge or complete denture which restores or replaces loss of teeth or oral tissues. [NIH]

Retina: The ten-layered nervous tissue membrane of the eye. It is continuous with the optic nerve and receives images of external objects and transmits visual impulses to the brain. Its outer surface is in contact with the choroid and the inner surface with the vitreous body. The outer-most layer is pigmented, whereas the inner nine layers are transparent. [NIH]

Retinal: 1. Pertaining to the retina. 2. The aldehyde of retinol, derived by the oxidative enzymatic splitting of absorbed dietary carotene, and having vitamin A activity. In the retina, retinal combines with opsins to form visual pigments. One isomer, 11-cis retinal combines with opsin in the rods (scotopsin) to form rhodopsin, or visual purple. Another, all-trans retinal (trans-r.); visual yellow; xanthopsin) results from the bleaching of rhodopsin by light, in which the 11-cis form is converted to the all-trans form. Retinal also combines

with opsins in the cones (photopsins) to form the three pigments responsible for colour vision. Called also retinal, and retinene1. [EU]

Retinal Detachment: Separation of the inner layers of the retina (neural retina) from the pigment epithelium. Retinal detachment occurs more commonly in men than in women, in eyes with degenerative myopia, in aging and in aphakia. It may occur after an uncomplicated cataract extraction, but it is seen more often if vitreous humor has been lost during surgery. (Dorland, 27th ed; Newell, Ophthalmology: Principles and Concepts, 7th ed, p310-12). [NIH]

Retinal Ganglion Cells: Cells of the innermost nuclear layer of the retina, the ganglion cell layer, which project axons through the optic nerve to the brain. They are quite variable in size and in the shapes of their dendritic arbors, which are generally confined to the inner plexiform layer. [NIH]

Retinol: Vitamin A. It is essential for proper vision and healthy skin and mucous membranes. Retinol is being studied for cancer prevention; it belongs to the family of drugs called retinoids. [NIH]

Retinopathy: 1. Retinitis (= inflammation of the retina). 2. Retinosis (= degenerative, noninflammatory condition of the retina). [EU]

Retrograde: 1. Moving backward or against the usual direction of flow. 2. Degenerating, deteriorating, or catabolic. [EU]

Retroperitoneal: Having to do with the area outside or behind the peritoneum (the tissue that lines the abdominal wall and covers most of the organs in the abdomen). [NIH]

Retropubic: A potential space between the urinary bladder and the symphisis and body of the pubis. [NIH]

Retrospective: Looking back at events that have already taken place. [NIH]

Rhinitis: Inflammation of the mucous membrane of the nose. [NIH]

Rhinophyma: A manifestation of severe Acne rosacea resulting in significant enlargement of the nose and occurring primarily in men. It is caused by hypertrophy of the sebaceous glands and surrounding connective tissue. The nose is reddened and marked with numerous telangiectasias. [NIH]

Rhodopsin: A photoreceptor protein found in retinal rods. It is a complex formed by the binding of retinal, the oxidized form of retinol, to the protein opsin and undergoes a series of complex reactions in response to visible light resulting in the transmission of nerve impulses to the brain. [NIH]

Risk factor: A habit, trait, condition, or genetic alteration that increases a person's chance of developing a disease. [NIH]

Rod: A reception for vision, located in the retina. [NIH]

Rubber: A high-molecular-weight polymeric elastomer derived from the milk juice (latex) of Hevea brasiliensis and other trees. It is a substance that can be stretched at room temperature to atleast twice its original length and after releasing the stress, retractrapidly, and recover its original dimensions fully. Synthetic rubber is made from many different chemicals, including styrene, acrylonitrile, ethylene, propylene, and isoprene. [NIH]

Scalpel: A small pointed knife with a convex edge. [NIH]

Scans: Pictures of structures inside the body. Scans often used in diagnosing, staging, and monitoring disease include liver scans, bone scans, and computed tomography (CT) or computerized axial tomography (CAT) scans and magnetic resonance imaging (MRI) scans. In liver scanning and bone scanning, radioactive substances that are injected into the

bloodstream collect in these organs. A scanner that detects the radiation is used to create pictures. In CT scanning, an x-ray machine linked to a computer is used to produce detailed pictures of organs inside the body. MRI scans use a large magnet connected to a computer to create pictures of areas inside the body. [NIH]

Sclerosis: A pathological process consisting of hardening or fibrosis of an anatomical structure, often a vessel or a nerve. [NIH]

Sclerotherapy: Treatment of varicose veins, hemorrhoids, gastric and esophageal varices, and peptic ulcer hemorrhage by injection or infusion of chemical agents which cause localized thrombosis and eventual fibrosis and obliteration of the vessels. [NIH]

Screening: Checking for disease when there are no symptoms. [NIH]

Scrotum: In males, the external sac that contains the testicles. [NIH]

Sebaceous: Gland that secretes sebum. [NIH]

Sebaceous gland: Gland that secretes sebum. [NIH]

Secretion: 1. The process of elaborating a specific product as a result of the activity of a gland; this activity may range from separating a specific substance of the blood to the elaboration of a new chemical substance. 2. Any substance produced by secretion. [EU]

Sediment: A precipitate, especially one that is formed spontaneously. [EU]

Semen: The thick, yellowish-white, viscid fluid secretion of male reproductive organs discharged upon ejaculation. In addition to reproductive organ secretions, it contains spermatozoa and their nutrient plasma. [NIH]

Seminal vesicles: Glands that help produce semen. [NIH]

Sensibility: The ability to receive, feel and appreciate sensations and impressions; the quality of being sensitive; the extend to which a method gives results that are free from false negatives. [NIH]

Serum: The clear liquid part of the blood that remains after blood cells and clotting proteins have been removed. [NIH]

Sexual Abstinence: Refraining from sexual intercourse. [NIH]

Sexually Transmitted Diseases: Diseases due to or propagated by sexual contact. [NIH]

Shame: An emotional attitude excited by realization of a shortcoming or impropriety. [NIH]

Sharpness: The apparent blurring of the border between two adjacent areas of a radiograph having different optical densities. [NIH]

Shock: The general bodily disturbance following a severe injury; an emotional or moral upset occasioned by some disturbing or unexpected experience; disruption of the circulation, which can upset all body functions: sometimes referred to as circulatory shock. [NIH]

Side effect: A consequence other than the one(s) for which an agent or measure is used, as the adverse effects produced by a drug, especially on a tissue or organ system other than the one sought to be benefited by its administration. [EU]

Signs and Symptoms: Clinical manifestations that can be either objective when observed by a physician, or subjective when perceived by the patient. [NIH]

Skeletal: Having to do with the skeleton (boney part of the body). [NIH]

Skeleton: The framework that supports the soft tissues of vertebrate animals and protects many of their internal organs. The skeletons of vertebrates are made of bone and/or cartilage. [NIH]

Skin graft: Skin that is moved from one part of the body to another. [NIH]

Skin Manifestations: Dermatologic disorders attendant upon non-dermatologic disease or injury. [NIH]

Skull: The skeleton of the head including the bones of the face and the bones enclosing the brain. [NIH]

Sleep apnea: A serious, potentially life-threatening breathing disorder characterized by repeated cessation of breathing due to either collapse of the upper airway during sleep or absence of respiratory effort. [NIH]

Small intestine: The part of the digestive tract that is located between the stomach and the large intestine. [NIH]

Smooth muscle: Muscle that performs automatic tasks, such as constricting blood vessels. [NIH]

Snoring: Rough, noisy breathing during sleep, due to vibration of the uvula and soft palate. [NIH]

Sodium: An element that is a member of the alkali group of metals. It has the atomic symbol Na, atomic number 11, and atomic weight 23. With a valence of 1, it has a strong affinity for oxygen and other nonmetallic elements. Sodium provides the chief cation of the extracellular body fluids. Its salts are the most widely used in medicine. (From Dorland, 27th ed) Physiologically the sodium ion plays a major role in blood pressure regulation, maintenance of fluid volume, and electrolyte balance. [NIH]

Soft tissue: Refers to muscle, fat, fibrous tissue, blood vessels, or other supporting tissue of the body. [NIH]

Solid tumor: Cancer of body tissues other than blood, bone marrow, or the lymphatic system. [NIH]

Solvent: 1. Dissolving; effecting a solution. 2. A liquid that dissolves or that is capable of dissolving; the component of a solution that is present in greater amount. [EU]

Sound wave: An alteration of properties of an elastic medium, such as pressure, particle displacement, or density, that propagates through the medium, or a superposition of such alterations. [NIH]

Specialist: In medicine, one who concentrates on 1 special branch of medical science. [NIH]

Species: A taxonomic category subordinate to a genus (or subgenus) and superior to a subspecies or variety, composed of individuals possessing common characters distinguishing them from other categories of individuals of the same taxonomic level. In taxonomic nomenclature, species are designated by the genus name followed by a Latin or Latinized adjective or noun. [EU]

Spectrum: A charted band of wavelengths of electromagnetic vibrations obtained by refraction and diffraction. By extension, a measurable range of activity, such as the range of bacteria affected by an antibiotic (antibacterial s.) or the complete range of manifestations of a disease. [EU]

Sperm: The fecundating fluid of the male. [NIH]

Spermatic: A cord-like structure formed by the vas deferens and the blood vessels, nerves and lymphatics of the testis. [NIH]

Sphenoid: An unpaired cranial bone with a body containing the sphenoid sinus and forming the posterior part of the medial walls of the orbits. [NIH]

Sphincter: A ringlike band of muscle fibres that constricts a passage or closes a natural orifice; called also musculus sphincter. [EU]

Spinal cord: The main trunk or bundle of nerves running down the spine through holes in

the spinal bone (the vertebrae) from the brain to the level of the lower back. [NIH]

Spleen: An organ that is part of the lymphatic system. The spleen produces lymphocytes, filters the blood, stores blood cells, and destroys old blood cells. It is located on the left side of the abdomen near the stomach. [NIH]

Squamous: Scaly, or platelike. [EU]

Squamous cell carcinoma: Cancer that begins in squamous cells, which are thin, flat cells resembling fish scales. Squamous cells are found in the tissue that forms the surface of the skin, the lining of the hollow organs of the body, and the passages of the respiratory and digestive tracts. Also called epidermoid carcinoma. [NIH]

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Squamous cells: Flat cells that look like fish scales under a microscope. These cells cover internal and external surfaces of the body. [NIH]

Squamous intraepithelial lesion: SIL. A general term for the abnormal growth of squamous cells on the surface of the cervix. The changes in the cells are described as low grade or high grade, depending on how much of the cervix is affected and how abnormal the cells appear. [NIH]

Staging: Performing exams and tests to learn the extent of the cancer within the body, especially whether the disease has spread from the original site to other parts of the body. [NIH]

Stasis: A word termination indicating the maintenance of (or maintaining) a constant level; preventing increase or multiplication. [EU]

Steel: A tough, malleable, iron-based alloy containing up to, but no more than, two percent carbon and often other metals. It is used in medicine and dentistry in implants and instrumentation. [NIH]

Stenosis: Narrowing or stricture of a duct or canal. [EU]

Stents: Devices that provide support for tubular structures that are being anastomosed or for body cavities during skin grafting. [NIH]

Sterile: Unable to produce children. [NIH]

Sterility: 1. The inability to produce offspring, i.e., the inability to conceive (female s.) or to induce conception (male s.). 2. The state of being aseptic, or free from microorganisms. [EU]

Steroid: A group name for lipids that contain a hydrogenated cyclopentanoperhydrophenanthrene ring system. Some of the substances included in this group are progesterone, adrenocortical hormones, the gonadal hormones, cardiac aglycones, bile acids, sterols (such as cholesterol), toad poisons, saponins, and some of the carcinogenic hydrocarbons. [EU]

Stimulant: 1. Producing stimulation; especially producing stimulation by causing tension on muscle fibre through the nervous tissue. 2. An agent or remedy that produces stimulation. [EU]

Stimulus: That which can elicit or evoke action (response) in a muscle, nerve, gland or other excitable issue, or cause an augmenting action upon any function or metabolic process. [NIH]

Stomach: An organ of digestion situated in the left upper quadrant of the abdomen between the termination of the esophagus and the beginning of the duodenum. [NIH]

Stool: The waste matter discharged in a bowel movement; feces. [NIH]

Stress: Forcibly exerted influence; pressure. Any condition or situation that causes strain or tension. Stress may be either physical or psychologic, or both. [NIH]

Stricture: The abnormal narrowing of a body opening. Also called stenosis. [NIH]

Stroke: Sudden loss of function of part of the brain because of loss of blood flow. Stroke may be caused by a clot (thrombosis) or rupture (hemorrhage) of a blood vessel to the brain. [NIH]

Stroma: The middle, thickest layer of tissue in the cornea. [NIH]

Stromal: Large, veil-like cell in the bone marrow. [NIH]

Styrene: A colorless, toxic liquid with a strong aromatic odor. It is used to make rubbers, polymers and copolymers, and polystyrene plastics. [NIH]

Subacute: Somewhat acute; between acute and chronic. [EU]

Subclinical: Without clinical manifestations; said of the early stage(s) of an infection or other disease or abnormality before symptoms and signs become apparent or detectable by clinical examination or laboratory tests, or of a very mild form of an infection or other disease or abnormality. [EU]

Subcutaneous: Beneath the skin. [NIH]

Subcutaneous Emphysema: Presence of air or gas in the subcutaneous tissues of the body. [NIH]

Substance P: An eleven-amino acid neurotransmitter that appears in both the central and peripheral nervous systems. It is involved in transmission of pain, causes rapid contractions of the gastrointestinal smooth muscle, and modulates inflammatory and immune responses. [NIH]

Substrate: A substance upon which an enzyme acts. [EU]

Suction: The removal of secretions, gas or fluid from hollow or tubular organs or cavities by means of a tube and a device that acts on negative pressure. [NIH]

Sunburn: An injury to the skin causing erythema, tenderness, and sometimes blistering and resulting from excessive exposure to the sun. The reaction is produced by the ultraviolet radiation in sunlight. [NIH]

Sunscreening Agents: Chemical or physical agents that protect the skin from sunburn and erythema by absorbing or blocking ultraviolet radiation. [NIH]

Support group: A group of people with similar disease who meet to discuss how better to cope with their cancer and treatment. [NIH]

Survival Rate: The proportion of survivors in a group, e.g., of patients, studied and followed over a period, or the proportion of persons in a specified group alive at the beginning of a time interval who survive to the end of the interval. It is often studied using life table methods. [NIH]

Sweat: The fluid excreted by the sweat glands. It consists of water containing sodium chloride, phosphate, urea, ammonia, and other waste products. [NIH]

Sweat Glands: Sweat-producing structures that are embedded in the dermis. Each gland consists of a single tube, a coiled body, and a superficial duct. [NIH]

Sympathetic Nervous System: The thoracolumbar division of the autonomic nervous system. Sympathetic preganglionic fibers originate in neurons of the intermediolateral column of the spinal cord and project to the paravertebral and prevertebral ganglia, which in turn project to target organs. The sympathetic nervous system mediates the body's response to stressful situations, i.e., the fight or flight reactions. It often acts reciprocally to the parasympathetic system. [NIH]

Symphysis: A secondary cartilaginous joint. [NIH]

Synovial: Of pertaining to, or secreting synovia. [EU]

Synovial Membrane: The inner membrane of a joint capsule surrounding a freely movable joint. It is loosely attached to the external fibrous capsule and secretes synovial fluid. [NIH]

Synovitis: Inflammation of a synovial membrane. It is usually painful, particularly on motion, and is characterized by a fluctuating swelling due to effusion within a synovial sac. Synovitis is qualified as fibrinous, gonorrhoeal, hyperplastic, lipomatous, metritic, puerperal, rheumatic, scarlatinal, syphilitic, tuberculous, urethral, etc. [EU]

Systemic: Affecting the entire body. [NIH]

Systolic: Indicating the maximum arterial pressure during contraction of the left ventricle of the heart. [EU]

Telangiectasia: The permanent enlargement of blood vessels, causing redness in the skin or mucous membranes. [NIH]

Temporal: One of the two irregular bones forming part of the lateral surfaces and base of the skull, and containing the organs of hearing. [NIH]

Teratogenic: Tending to produce anomalies of formation, or teratism (= anomaly of formation or development : condition of a monster). [EU]

Teratoma: A type of germ cell tumor that may contain several different types of tissue, such as hair, muscle, and bone. Teratomas occur most often in the ovaries in women, the testicles in men, and the tailbone in children. Not all teratomas are malignant. [NIH]

Testicles: The two egg-shaped glands found inside the scrotum. They produce sperm and male hormones. Also called testes. [NIH]

Testis: Either of the paired male reproductive glands that produce the male germ cells and the male hormones. [NIH]

Testosterone: A hormone that promotes the development and maintenance of male sex characteristics. [NIH]

Therapeutics: The branch of medicine which is concerned with the treatment of diseases, palliative or curative. [NIH]

Thermal: Pertaining to or characterized by heat. [EU]

Thoracic: Having to do with the chest. [NIH]

Thorax: A part of the trunk between the neck and the abdomen; the chest. [NIH]

Threshold: For a specified sensory modality (e. g. light, sound, vibration), the lowest level (absolute threshold) or smallest difference (difference threshold, difference limen) or intensity of the stimulus discernible in prescribed conditions of stimulation. [NIH]

Thrombosis: The formation or presence of a blood clot inside a blood vessel. [NIH]

Thymus: An organ that is part of the lymphatic system, in which T lymphocytes grow and multiply. The thymus is in the chest behind the breastbone. [NIH]

Tissue: A group or layer of cells that are alike in type and work together to perform a specific function. [NIH]

Tomography: Imaging methods that result in sharp images of objects located on a chosen plane and blurred images located above or below the plane. [NIH]

Tone: 1. The normal degree of vigour and tension; in muscle, the resistance to passive elongation or stretch; tonus. 2. A particular quality of sound or of voice. 3. To make permanent, or to change, the colour of silver stain by chemical treatment, usually with a heavy metal. [EU]

Tonometry: The standard to determine the fluid pressure inside the eye (intraocular

pressure). [NIH]

Tonsil: A round-to-oval mass of lymphoid tissue embedded in the lateral wall of the pharynx situated on each side of the fauces, between the anterior and posterior pillars of the soft palate. [NIH]

Tonus: A state of slight tension usually present in muscles even when they are not undergoing active contraction. [NIH]

Topical: On the surface of the body. [NIH]

Toxic: Having to do with poison or something harmful to the body. Toxic substances usually cause unwanted side effects. [NIH]

Toxicity: The quality of being poisonous, especially the degree of virulence of a toxic microbe or of a poison. [EU]

Toxicokinetics: Study of the absorption, distribution, metabolism, and excretion of test substances. [NIH]

Toxicology: The science concerned with the detection, chemical composition, and pharmacologic action of toxic substances or poisons and the treatment and prevention of toxic manifestations. [NIH]

Toxins: Specific, characterizable, poisonous chemicals, often proteins, with specific biological properties, including immunogenicity, produced by microbes, higher plants, or animals. [NIH]

Trachea: The cartilaginous and membranous tube descending from the larynx and branching into the right and left main bronchi. [NIH]

Tracheostomy: Surgical formation of an opening into the trachea through the neck, or the opening so created. [NIH]

Tracheostomy tube: A 2-inch- to 3-inch-long curved metal or plastic tube placed in a surgically created opening (tracheostomy) in the windpipe to keep it open. Also called a trach ("trake") tube. [NIH]

Traction: The act of pulling. [NIH]

Transcutaneous: Transdermal. [EU]

Transcutaneous Electric Nerve Stimulation: Electrical stimulation of nerves and/or muscles to relieve pain; it is used less frequently to produce anesthesia. The optimal placements of electrodes or "trigger points" may correspond with acupuncture analgesia points. TENS is sometimes referred to as acupuncture-like when using a low frequency stimulus. [NIH]

Transfection: The uptake of naked or purified DNA into cells, usually eukaryotic. It is analogous to bacterial transformation. [NIH]

Transfusion: The infusion of components of blood or whole blood into the bloodstream. The blood may be donated from another person, or it may have been taken from the person earlier and stored until needed. [NIH]

Transplantation: Transference of a tissue or organ, alive or dead, within an individual, between individuals of the same species, or between individuals of different species. [NIH]

Transurethral: Performed through the urethra. [EU]

Transurethral resection: Surgery performed with a special instrument inserted through the urethra. Also called TUR. [NIH]

Transurethral Resection of Prostate: Resection of the prostate using a cystoscope passed through the urethra. [NIH]

Transurethral resection of the prostate: Surgical procedure to remove tissue from the prostate using an instrument inserted through the urethra. Also called TURP. [NIH]

Trauma: Any injury, wound, or shock, must frequently physical or structural shock, producing a disturbance. [NIH]

Trees: Woody, usually tall, perennial higher plants (Angiosperms, Gymnosperms, and some Pterophyta) having usually a main stem and numerous branches. [NIH]

Tricyclic: Containing three fused rings or closed chains in the molecular structure. [EU]

Tryptophan: An essential amino acid that is necessary for normal growth in infants and for nitrogen balance in adults. It is a precursor serotonin and niacin. [NIH]

Tuberous Sclerosis: A rare congenital disease in which the essential pathology is the appearance of multiple tumors in the cerebrum and in other organs, such as the heart or kidneys. [NIH]

Tumour: 1. Swelling, one of the cardinal signs of inflammations; morbid enlargement. 2. A new growth of tissue in which the multiplication of cells is uncontrolled and progressive; called also neoplasm. [EU]

Turbinates: The scroll-like bony plates with curved margins on the lateral wall of the nasal cavity. [NIH]

Type 2 diabetes: Usually characterized by a gradual onset with minimal or no symptoms of metabolic disturbance and no requirement for exogenous insulin. The peak age of onset is 50 to 60 years. Obesity and possibly a genetic factor are usually present. [NIH]

Ulcer: A localized necrotic lesion of the skin or a mucous surface. [NIH]

Ultrasonography: The visualization of deep structures of the body by recording the reflections of echoes of pulses of ultrasonic waves directed into the tissues. Use of ultrasound for imaging or diagnostic purposes employs frequencies ranging from 1.6 to 10 megahertz. [NIH]

Ultraviolet radiation: Invisible rays that are part of the energy that comes from the sun. UV radiation can damage the skin and cause melanoma and other types of skin cancer. UV radiation that reaches the earth's surface is made up of two types of rays, called UVA and UVB rays. UVB rays are more likely than UVA rays to cause sunburn, but UVA rays pass deeper into the skin. Scientists have long thought that UVB radiation can cause melanoma and other types of skin cancer. They now think that UVA radiation also may add to skin damage that can lead to skin cancer and cause premature aging. For this reason, skin specialists recommend that people use sunscreens that reflect, absorb, or scatter both kinds of UV radiation. [NIH]

Unconscious: Experience which was once conscious, but was subsequently rejected, as the "personal unconscious". [NIH]

Unresectable: Unable to be surgically removed. [NIH]

Ureter: One of a pair of thick-walled tubes that transports urine from the kidney pelvis to the bladder. [NIH]

Urethra: The tube through which urine leaves the body. It empties urine from the bladder. [NIH]

Urinalysis: Examination of urine by chemical, physical, or microscopic means. Routine urinalysis usually includes performing chemical screening tests, determining specific gravity, observing any unusual color or odor, screening for bacteriuria, and examining the sediment microscopically. [NIH]

Urinary: Having to do with urine or the organs of the body that produce and get rid of

urine. [NIH]

Urinary tract: The organs of the body that produce and discharge urine. These include the kidneys, ureters, bladder, and urethra. [NIH]

Urinate: To release urine from the bladder to the outside. [NIH]

Urine: Fluid containing water and waste products. Urine is made by the kidneys, stored in the bladder, and leaves the body through the urethra. [NIH]

Urodynamic: Measures of the bladder's ability to hold and release urine. [NIH]

Urogenital: Pertaining to the urinary and genital apparatus; genitourinary. [EU]

Urogenital Diseases: Diseases of the urogenital tract. [NIH]

Urolithiasis: Stones in the urinary system. [NIH]

Urologic Diseases: Diseases of the urinary tract in both male and female. It does not include the male genitalia for which urogenital diseases is used for general discussions of diseases of both the urinary tract and the genitalia. [NIH]

Urologist: A doctor who specializes in diseases of the urinary organs in females and the urinary and sex organs in males. [NIH]

Urology: A surgical specialty concerned with the study, diagnosis, and treatment of diseases of the urinary tract in both sexes and the genital tract in the male. It includes the specialty of andrology which addresses both male genital diseases and male infertility. [NIH]

Uterus: The small, hollow, pear-shaped organ in a woman's pelvis. This is the organ in which a fetus develops. Also called the womb. [NIH]

Uvula: Uvula palatinae; specifically, the tongue-like process which projects from the middle of the posterior edge of the soft palate. [NIH]

Vaccine: A substance or group of substances meant to cause the immune system to respond to a tumor or to microorganisms, such as bacteria or viruses. [NIH]

Vagina: The muscular canal extending from the uterus to the exterior of the body. Also called the birth canal. [NIH]

Vaginal: Of or having to do with the vagina, the birth canal. [NIH]

Valves: Flap-like structures that control the direction of blood flow through the heart. [NIH]

Varicose: The common ulcer in the lower third of the leg or near the ankle. [NIH]

Varicose vein: An abnormal swelling and tortuosity especially of the superficial veins of the legs. [EU]

Vas Deferens: The excretory duct of the testes that carries spermatozoa. It rises from the scrotum and joins the seminal vesicles to form the ejaculatory duct. [NIH]

Vascular: Pertaining to blood vessels or indicative of a copious blood supply. [EU]

Vasodilator: An agent that widens blood vessels. [NIH]

Vector: Plasmid or other self-replicating DNA molecule that transfers DNA between cells in nature or in recombinant DNA technology. [NIH]

Vein: Vessel-carrying blood from various parts of the body to the heart. [NIH]

Venous: Of or pertaining to the veins. [EU]

Ventilation: 1. In respiratory physiology, the process of exchange of air between the lungs and the ambient air. Pulmonary ventilation (usually measured in litres per minute) refers to the total exchange, whereas alveolar ventilation refers to the effective ventilation of the alveoli, in which gas exchange with the blood takes place. 2. In psychiatry, verbalization of one's emotional problems. [EU]

Ventricle: One of the two pumping chambers of the heart. The right ventricle receives oxygen-poor blood from the right atrium and pumps it to the lungs through the pulmonary artery. The left ventricle receives oxygen-rich blood from the left atrium and pumps it to the body through the aorta. [NIH]

Ventricular: Pertaining to a ventricle. [EU]

Venules: The minute vessels that collect blood from the capillary plexuses and join together to form veins. [NIH]

Verruca: A circumscribed, cutaneous excrescence having a papilliferous surface; a small, circumscribed, epidermal tumor. [NIH]

Vertebrae: A bony unit of the segmented spinal column. [NIH]

Vesicoureteral: An abnormal condition in which urine backs up into the ureters, and occasionally into the kidneys, raising the risk of infection. [NIH]

Veterinary Medicine: The medical science concerned with the prevention, diagnosis, and treatment of diseases in animals. [NIH]

Villi: The tiny, fingerlike projections on the surface of the small intestine. Villi help absorb nutrients. [NIH]

Villous: Of a surface, covered with villi. [NIH]

Viral: Pertaining to, caused by, or of the nature of virus. [EU]

Virulence: The degree of pathogenicity within a group or species of microorganisms or viruses as indicated by case fatality rates and/or the ability of the organism to invade the tissues of the host. [NIH]

Virus: Submicroscopic organism that causes infectious disease. In cancer therapy, some viruses may be made into vaccines that help the body build an immune response to, and kill, tumor cells. [NIH]

Visual Acuity: Acuteness or clearness of vision, especially of form vision, which is dependent mainly on the sharpness of the retinal focus. [NIH]

Vitrectomy: Removal of the whole or part of the vitreous body in treating endophthalmitis, diabetic retinopathy, retinal detachment, intraocular foreign bodies, and some types of glaucoma. [NIH]

Vitreous: Glasslike or hyaline; often used alone to designate the vitreous body of the eye (corpus vitreum). [EU]

Vitreous Body: The transparent, semigelatinous substance that fills the cavity behind the crystalline lens of the eye and in front of the retina. It is contained in a thin hyoid membrane and forms about four fifths of the optic globe. [NIH]

Vitreous Hemorrhage: Hemorrhage into the vitreous body. [NIH]

Vitreous Humor: The transparent, colorless mass of gel that lies behind the lens and in front of the retina and fills the center of the eyeball. [NIH]

Vitro: Descriptive of an event or enzyme reaction under experimental investigation occurring outside a living organism. Parts of an organism or microorganism are used together with artificial substrates and/or conditions. [NIH]

Vivo: Outside of or removed from the body of a living organism. [NIH]

Vocal cord: The vocal folds of the larynx. [NIH]

Voice Quality: Voice quality is that component of speech which gives the primary distinction to a given speaker's voice when pitch and loudness are excluded. It involves both phonatory and resonatory characteristics. Some of the descriptions of voice quality are

harshness, breathiness and nasality. [NIH]

Volition: Voluntary activity without external compulsion. [NIH]

Vulgaris: An affection of the skin, especially of the face, the back and the chest, due to chronic inflammation of the sebaceous glands and the hair follicles. [NIH]

Vulva: The external female genital organs, including the clitoris, vaginal lips, and the opening to the vagina. [NIH]

Wart: A raised growth on the surface of the skin or other organ. [NIH]

Watchful waiting: Closely monitoring a patient's condition but withholding treatment until symptoms appear or change. Also called observation. [NIH]

White blood cell: A type of cell in the immune system that helps the body fight infection and disease. White blood cells include lymphocytes, granulocytes, macrophages, and others. [NIH]

Windpipe: A rigid tube, 10 cm long, extending from the cricoid cartilage to the upper border of the fifth thoracic vertebra. [NIH]

Womb: A hollow, thick-walled, muscular organ in which the impregnated ovum is developed into a child. [NIH]

Xenograft: The cells of one species transplanted to another species. [NIH]

X-ray: High-energy radiation used in low doses to diagnose diseases and in high doses to treat cancer. [NIH]

X-ray therapy: The use of high-energy radiation from x-rays to kill cancer cells and shrink tumors. Radiation may come from a machine outside the body (external-beam radiation therapy) or from materials called radioisotopes. Radioisotopes produce radiation and can be placed in or near the tumor or in the area near cancer cells. This type of radiation treatment is called internal radiation therapy, implant radiation, interstitial radiation, or brachytherapy. Systemic radiation therapy uses a radioactive substance, such as a radiolabeled monoclonal antibody, that circulates throughout the body. X-ray therapy is also called radiation therapy, radiotherapy, and irradiation. [NIH]

Yttrium: An element of the rare earth family of metals. It has the atomic symbol Y, atomic number 39, and atomic weight 88.91. In conjunction with other rare earths, yttrium is used as a phosphor in television receivers and is a component of the yttrium-aluminum garnet (YAG) lasers. [NIH]

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