General Anesthesia

A Medical Dictionary, Bibliography,
and Annotated Research Guide to
Internet References

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and Philip M. Parker, Ph.D., Editors

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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 general anesthesia. 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 general anesthesia 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 general anesthesia, 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 general anesthesia, 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 general anesthesia. 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 general anesthesia, 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 general anesthesia.

The Editors

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

CHAPTER 1. STUDIES ON GENERAL ANESTHESIA

Overview

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

The Combined Health Information Database

The Combined Health Information Database summarizes studies across numerous federal agencies. To limit your investigation to research studies and general anesthesia, 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 "general anesthesia" (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:

- **General Anesthesia Protocol for the Dental Patient: Emphasis for Older Adults**

  Source: SCD. Special Care in Dentistry. 20(3): 81-108. May-June 2000.

  Contact: Available from Special Care Dentistry. 211 East Chicago Avenue, Chicago, IL 60611. (312) 440-2660. Fax (312) 440-2824.

  Summary: As the population ages, with increased retention of the natural dentition, there will be a greater responsibility for dental professionals to maintain the oral health of medically, behaviorally, cognitively, and physically impaired adults. This lengthy article describes the use of **general anesthesia** in a hospital environment for this population. Oral sedatives and nitrous oxide analgesia are frequently and successfully used for dental treatments in these patients. However, many compromised older adults

cannot safely tolerate dental treatment with these sedative techniques in an outpatient setting. Coordinated with medical and anesthesia specialists, **general anesthesia** is a viable, safe, and effective treatment tool for providing comprehensive dental and oral surgical treatment for the older patient. The authors consider the numerous risks and benefits involved in the comprehensive treatment of dental and periodontal diseases at one visit under **general anesthesia.** Not every older adult is eligible for treatment under **general anesthesia,** usually due to underlying medical conditions. Patients must satisfy acceptance criteria for **general anesthesia;** undergo thorough evaluations and accurate documentation of necessary medical, dental, nutritional, social, and behavioral factors; and be treated by an interactive, multidisciplinary health care team. Detailed, lengthy appendices offer recordkeeping forms and patient care strategies. 34 references.

- **Dental Health Behavior of Children with BBTD Treated Using General Anesthesia or Sedation, and of Their Parents in a Recall Examination**

  Source: Journal of Dentistry for Children. 67(1): 50-54. January-February 2000.

  Contact: Available from American Society of Dentistry for Children. John Hancock Center, 875 North Michigan Avenue, Suite 4040, Chicago, IL 60611-1901. (312) 943-1244.

  Summary: Baby bottle tooth decay (BBTD) or 'nursing caries' are terms used to describe a form of rampant caries (cavities or decay) of the primary dentition originating from prolonged use of bottle feeding. Treatment of BBTD generally requires sedation or **general anesthesia** because the very young are unable to cope with the procedures. This article reports on a study undertaken to compare the dental status and dental health behavior of children with BBTD treated using **general anesthesia** or sedation, and the dental health behavior of their parents, in a recall examination. Prior studies demonstrated that children who have been sedated or under **general anesthesia** exhibit changes in postoperative behavior not seen by children receiving routine dental treatment. The study followed 65 children who were treated between 1995 and 1997 using **general anesthesia** (n = 34) or sedation (n = 31). The authors hypothesized that because **general anesthesia** is a more radical and dramatic mode of treatment, parents of those children would change their families' dental health behaviors to avoid future dental disease and the subsequent treatment. The authors discuss the variables and results that they found, concluding that some preventive behaviors regarding children's dental health were indeed more frequently adopted among the families of children treated using **general anesthesia.** In light of the knowledge that children who had dental treatment using **general anesthesia** or sedation may be more vulnerable to future caries attacks, the authors recommend the teaching preventive behaviors to parents of these groups be reinforced. 3 tables. 22 references.

- **Implications of Parental Compliance on Decision Making in Care Provided Using General Anesthesia in a Low-Income Population**

  Source: Journal of Dentistry for Children. 67(3): 197-199. May-June 2000.

  Contact: Available from American Society of Dentistry for Children. John Hancock Center, 875 Michigan Avenue, Suite 4040, Chicago, IL 60611-1901. (312) 943-1244.

  Summary: Children of low income families have been shown to be at high risk for the development of dental caries and to receive less dental care than children of higher socioeconomic families. This article reports on a study undertaken to determine the parental compliance in bringing the child back to the dentist following complete oral rehabilitation using **general anesthesia** in a low income population. The retrospective study was completed examining the dental records of 244 healthy, low income children

(covered by Medicaid) who were treated in the operating room for dental rehabilitation in 1994 and 1995 (age range 18 months to twelve years, with the majority between two and five years old). All of the parents and children were given oral hygiene instructions and informed of the importance of routine follow up dental care. They were also given oral and written instructions in their native language regarding return visits at the time of surgery. During the time in which the study was made, 43 percent of the children did not return to the dental clinic for any procedure. Thirty-six percent returned for the initial postoperative visit, but had not returned for recall (usually 3 to 6 months postop). Three percent did not return for the postoperative, but did have a subsequent recall. Twelve percent followed the instruction and returned for both the postoperative and recall. Twenty percent of the patients treated before the eruption of the primary second molars required subsequent dental rehabilitation using **general anesthesia.** The authors conclude that, because of the high failure rate of amalgam and composite restorations seen in other studies, along with low compliance of parents in bringing their children back for follow up care, a definitive treatment plan of stainless steel crowns, pulp therapy, and or extraction is indicated in children of low income families treated using **general anesthesia.** In addition, space maintenance such as bands and loops, lower lingual holding arches and distal shoes may be contraindicated until compliance can be established. Full coverage (dental sealants) of primary molars should be considered even without evidence of extensive lesions. Extra emphasis should be given to education of the families in the importance of dental health and of returning for follow up care. 2 tables. 16 references.

- **Retrospective Review of Service to Provide Comprehensive Dental Care Under General Anesthesia**

  Source: SCD. Special Care in Dentistry. 15(3): 97-101. May-June 1995.

  Summary: Day stay **general anesthesia** is indicated for a number of dental reasons, not least for those patients who are unable to accept routine dental care (such as very young children or people with severe anxiety or disabilities). Since 1979, the Dental Hospital of the University of Newcastle upon Tyne, United Kingdom, has provided a weekly day stay service for the dental care of such patients. This service was reviewed in 1983 and again in 1993; this article reports on the latter study in which the provision of care for 265 patients was reviewed and compared to the 96 patients reviewed in the earlier studies. The types of treatments being offered to children under **general anesthesia** have changed between the two review periods: more fissure sealants have been provided, more restorations were placed in primary teeth, fewer restorations were carried out for permanent teeth, and more extractions have been undertaken. The authors underscore the need for a very aggressive approach to preventive dental care for patients treated by this modality. 7 tables. 15 references. (AA-M).

- **Comprehensive Dental Care and General Anesthetic Management of Hereditary Epidermolysis Bullosa: A Review of Fourteen Cases**

  Source: Oral Surgery, Oral Medicine, Oral Pathology. Volume 70: 573-578. November 1990.

  Summary: Dental management of persons with epidermolysis bullosa remains challenging because of the severe hard and soft tissue manifestations of these diseases. This article reports on a study that reviewed the dental treatment of 14 cases requiring 24 general anesthetics. Twenty-three of the cases were managed with oral tracheal intubation to accomplish full-mouth dental rehabilitation. Dental therapy consisted of preventive, restorative, and surgical procedures. There were no serious postoperative

complications and no airway problems were experienced. Although extensive intraoral mucosal blistering did occur in several cases, postoperative healing progressed normally. The author notes that soft tissue trauma may be lessened through the use of small suction tips, flat tissue retractors, and extensive lubrication of all tissues requiring manipulation. 4 figures. 3 tables. 30 references. (AA-M).

- **Special Considerations Concerning General Anesthesia for Dental Treatment of Handicapped Patients**

  Source: Anesthesia Progress. 42(3-4): 93-94. 1995.

  Summary: Patients with disabilities should have access to regular dental care in order to maintain good oral health. This article outlines special considerations concerning **general anesthesia** for the dental treatment of patients with disabilities. The author stresses that the choice of anesthesia to be administered depends on multiple factors: the health of the patients; his or her ability to cooperate; the preference of the patient, parent, or guardian; the anticipated dental procedure to be done; the familiarity of the operating dentist with the conditions presented by various forms of anesthesia; the skill of the operating dentist; and the experience and training of the anesthesiologist. In addition to the anesthetic equipment, supplies, and medications required, the author describes the use of appropriate monitoring equipment. The author notes that drugs and techniques that provide a rapid emergence from anesthesia will permit handicapped patients to return to their own particular state of normalcy and will facilitate ambulation and early discharge. Special considerations may include difficulty in determining the chief complaint, history of present illness, past medical and surgical history, oral examination, and physical examination. For the operating dentist who has no formal training in sedation or **general anesthesia,** the properly trained and equipped office-based dentist anesthesiologist is an attractive option to the hospital or ambulatory centers in safely providing conscious sedation, deep sedation, or **general anesthesia** utilizing a variety of anesthetic drugs and techniques specifically designed for selected dental patients with disabilities. (AA-M).

- **General Anesthesia for Developmentally Disabled Dental Care Patients: A Comparison of Reinforced Laryngeal Mask Airway and Endotracheal Intubation Anesthesia**

  Source: Special Care in Dentistry. 23(4): 135-138. July-August 2003.

  Summary: Providing dental care for developmentally disabled patients who require **general anesthesia** is challenging for both dentists and anesthesiologists. This article reports on a study that compared the effectiveness of two anesthetic methods for dental care. The researchers retrospectively analyzed morbidity data following anesthesia using either a reinforced laryngeal mask airway (LMA) or endotracheal intubation anesthesia for a two-year time period. The subjects were developmentally disabled patients receiving dental care. Patients who were anesthetized with a reinforced laryngeal mask airway had a significantly shorter recovery period and lower postanesthetic complication rates when compared to patients undergoing endotracheal intubation anesthesia. Although hypoxemia (low levels of oxygen in the blood) during dental care occurred more frequently when using the reinforced laryngeal mask airway, the difference was not significant. Nausea and vomiting were the major complications in the postanesthetic care unit and after discharge. When complication rates were compared in the two patient groups, nausea and vomiting were significantly higher during postanesthetic care and after discharge in the intubated group. 4 tables. 23 references.

- **General Anesthesia: An Alternative to Sedation for Pediatric Endoscopic Procedures**

  Source: Gastroenterology Nursing. 13(3): 166-168. Winter 1991.

  Summary: The main objective of pediatric endoscopy is to examine completely the upper or lower gastrointestinal tract with the least trauma and risk to the child. This article proposes that **general anesthesia** be used as an alternative to sedation for pediatric endoscopic procedures. The author presents a detailed description of this method as it has been used successfully at a midwest children's hospital for a number of years. The advantages and disadvantages of using **general anesthesia** are discussed. 4 references. (AA-M).

- **General Anesthesia for the Provision of Dental Treatment to Adults with Developmental Disability**

  Source: Anesthesia Progress. 45(1): 12-17. Winter 1998.

  Contact: Available from American Dental Society of Anesthesiology. 810 East 10th Street, P.O. Box 1897, Lawrence, KS 66044-8897.

  Summary: The management of the behavior of mentally challenged adults when providing required dental care is often a problem, whether in the dental office or in a hospital setting. The authors of this article describe their institution's designated program to provide dental care to this group of patients. They note that, because of the high incidence of poor cooperation, which may include aggressive antagonistic behavior, many of these patients are scheduled for dental care under **general anesthesia** with an incomplete preoperative medical assessment. The authors report on their study undertaken to determine the impact and limitations that an incomplete medical assessment may present in the delivery of dental care under **general anesthesia** to adults with developmental disabilities. The medical records of 139 patients treated in the program between 1992 and 1994 were reviewed to determine the patient profiles, anesthesia management, and complications. The charts of these patients, who underwent dental and radiographic examination, scaling and prophylaxis, and restoration and extraction of teeth under **general anesthesia,** were reviewed. There were 149 procedures performed on these patients, some more than once. The mean age was 29.5 years. Males predominated females by a ratio of 2 to 1. All had multiple diagnoses, medical problems, and medications. Twenty-three patients had Down syndrome, four had schizophrenia disorders, 42 had seizure disorders, 11 had hypothyroidism, seven had heart disease, and 14 had central nervous system and neuromuscular disorders. One hundred had intravenous, 25 had mask inhalation, and 24 had intramuscular ketamine induction. Ten patients experienced intraoperative complications, including nonfatal ventricular arrhythmia, slight fall in blood pressure and hypertension (greater than 20 percent of preoperative value), and four individuals developed laryngospasm. In the Post Anesthetic Care Unit, five patients experienced minor airway problems resulting in a desaturation of oxygen to a level below 85 percent. The authors conclude that adults with developmental disabilities can be safely managed under **general anesthesia** for dental treatment in a hospital setting with minimal morbidity and without extensive preoperative investigations. 2 tables. 24 references. (AA-M).

- **Operation Under General Anesthesia as a Risk Factor for Age-Related Cognitive Decline: Results from a Large Cross-Sectional Population Study**

  Source: JAGS. Journal of the American Geriatrics Society. 46: 1258-1265. 1998.

Summary: This article describes a study that evaluated an operation under **general anesthesia** as a possible risk factor for age-related cognitive decline. Researchers used a retrospective, population-based, cross-sectional design to study 1,257 healthy subjects aged 24 to 86 years old. Of these, 1,257 healthy subjects, 946 had a history of undergoing at least one operation under **general anesthesia.** Measurements included the history of an operation under **general anesthesia,** number of operations, duration of anesthesia, cognitive performance, subjective health, and subjective memory. Data showed that a history of an operation under **general anesthesia,** the number of operations, and the total duration of anesthesia significantly contributed to the number of subjective health-related complaints but did not predict cognitive performance or memory complaints. No interactions with age were found. The authors concluded that no support exists for a history of an operation under **general anesthesia** being a determinant or risk factor for accelerated, age-related cognitive decline. 1 figure, 4 tables, 29 references (AA-M).

- **Future Caries Susceptibility in Children with Early Childhood Caries Following Treatment Under General Anesthesia**

  Source: Pediatric Dentistry. 22(4): 302-306. July-August 2000.

  Contact: Available from American Academy of Pediatric Dentistry. Publications Department, 211 East Chicago Avenue, Suite 700, Chicago, IL 60611-2616.

  Summary: This article reports on a study undertaken to assess the susceptibility of children to the future development of caries following comprehensive treatment for early childhood caries (ECC, also known as baby bottle tooth decay or BBTD) under **general anesthesia.** The patients selected for this retrospective study were identified by analyzing 4,143 dental records of children receiving treatment at the Franciscan Children's Hospital and Rehabilitation Center (Boston, Massachusetts). Of these, ECC was diagnosed in 42 patients before their admission to the operating room. A control group of 31 caries free children was selected randomly from the dental records at the same treatment facility. The caries (dental cavities) status of the children diagnosed with ECC was evaluated and compared with the control group. Children in both groups were seen for recall at intervals of six to nine months over a two year period. Thirty-three of 42 (79 percent) of the ECC children compared to nine of 31 (29 percent) of the control children had detectable carious lesions at subsequent recall visits. Children with ECC demonstrated a mean number of 3.2 plus or minus 3.3 new carious lesions compared to a mean of only 0.7 plus or minus 1.6 carious lesions in the control group. In addition, of the 42 patients treated for ECC under **general anesthesia,** seven (17 percent) required retreatment under **general anesthesia** within two years following their initial full mouth rehabilitation. The prevalence of new smooth surface caries (NSSC) in the ECC group was significantly higher than the control group. Despite increased preventive measures implemented for children who experienced ECC, the authors conclude that this group of children is still highly predisposed to greater caries incidence in later years. These findings strongly suggest that more aggressive preventive therapies may be required to prevent the future development of carious lesions in children who experienced ECC. 1 figure. 2 tables. 22 references.

- **Guidelines for the Elective Use of Conscious Sedation, Deep Sedation and General Anesthesia in Pediatric Dental Patients**

  Source: Pediatric Dentistry. 20(6): 47-53. November 1998.

  Contact: Available from American Academy of Pediatric Dentistry. Publications Department, 211 East Chicago Avenue, Suite 700, Chicago, IL 60611-2616.

Summary: This Guideline, published by the American Academy of Pediatric Dentistry (revised in 1998), summarizes guidelines for the elective use of conscious sedation, deep sedation, and **general anesthesia** in pediatric dental patients. This is a revision from the 1996 guidelines which did not address the issue of **general anesthesia** for pediatric dental patients. The Guideline first discusses the educational preparation and other requirements for safe **general anesthesia** care; provides a brief definition of terms; and outlines the goals of sedation and **general anesthesia.** The Guideline then lists the indications for sedation and **general anesthesia,** local anesthesia considerations during sedation, candidates, the presence of a responsible adult, facilities and equipment, back up emergency services, documentation (informed consent, instructions to parents, dietary precautions, preoperative health evaluation, hospitalized patients, the child's physician, rationale for sedation or **general anesthesia,** baseline vital signs, preprocedural prescriptions, vital signs, and drugs), recovery, conscious sedation, operating facility and equipment, monitoring procedures, deep sedation, intravenous access, and **general anesthesia.** The Guideline also offers four appendices that review the definitions and characteristics for levels of sedation and anesthesia, the recommended discharge criteria, the American Society of Anesthesiologists (ASA) classification system, and appropriate emergency equipment.

Federally Funded Research on General Anesthesia

The U.S. Government supports a variety of research studies relating to general anesthesia. 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 general anesthesia.

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 general anesthesia. The following is typical of the type of information found when searching the CRISP database for general anesthesia:

- **Project Title: A MODEL FOR WRIST AND ELBOW MUSCULOSKELETAL DISORDERS**

  Principal Investigator & Institution: Rempel, David M.; Professor of Medicine; Medicine; University of California San Francisco 500 Parnassus Ave San Francisco, Ca 941222747

  Timing: Fiscal Year 2002; Project Start 01-JUL-2001; Project End 30-JUN-2005

  Summary: Debate exists regarding the relative role of various biomechanical factors (e.g., force, repetition, acceleration, etc.) during repetitive work in the causation of upper extremity musculoskeletal disorders. Most of these factors can be altered in the design of work. We will use our recently developed rabbit finger flexor model to investigate the

[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).

role of these factors in causing entrapment neuropathy of the median nerve at the wrist and tendinosis at the epicondyle. In addition, the study will identify early cellular and biochemical changes in matrix proteins and cytokines. For 2 hours per day, 3 days per week for 10 weeks, the large finger flexor is repetitively stimulated while the fingertip load is controlled. The loading is performed under **general anesthesia.** The system allows for the precise control of repetition rate, peak fingertip force, load duration, and rate of loading. Three experiments will separately investigate the role of repetition rate, peak force, and loading rate on tissue function and structure. Work (integral of force over time) will be held constant across the loading conditions. Median nerve function is evaluated by measuring distal motor latency across the wrist, and morphologic differences in nerve fiber count, fiber density and myeination are quantified. Morphologic differences in the tendon attachment site at the epicondyle are evaluated with semi-quantitative and quantitative methods assessing cellularity, cell shape, collagen fiber linearity, neovascularization, edema, and apoptosis. The antigentic location and density of structural proteins (collagen I,II, ifi, decorin, tenascin, fibronectin), and various cytokines (IL- lb. TNF-a, TGF-B, bFGF, substance P) will be assessed using immunohistochemical methods. A fourth experiment will assess these biochemical endpoints at earlier times of exposure. This study has the potential to identify the characteristics of biomechanical loading, which are injurious; information valuable to occupational health practitioners in adding specificity to ergonomic guidelines for repetitive work. The study also has the potential to identify the biochemical pathways and time-frames of disease progression; information which may lead to new strategies for treating and preventing entrapment neuropathies and tendon disorders related to work.

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

- **Project Title: A STUDY OF ANESTHESIA-ASSISTED HEROIN DETOXIFICATION**

  Principal Investigator & Institution: Kleber, Herbert D.; Professor of Psychiatry and Director; New York State Psychiatric Institute 1051 Riverside Dr New York, Ny 100321098

  Timing: Fiscal Year 2001; Project Start 05-SEP-1999; Project End 31-AUG-2004

  Summary: Heroin dependence has reemerged as a significant public health problem in the 1990's, and with that, there has been renewed interest in improving methods of opioid detoxification. Detoxification is and will continue to be a common first step in the treatment of individuals with heroin dependence. During the past decade, there has been considerable popular attention focused on the utilization of **general anesthesia** during the acute phase of antagonist-precipitated opioid withdrawal, but there have been no controlled studies of anesthesia-assisted detoxification techniques. In particular, follow-up data on the patients detoxified under **general anesthesia** are not available. The research proposed here aims to compare anesthesia-assisted rapid opioid detoxification (AROD) with two alternative detoxification techniques, with attention both to acute measures of withdrawal and to longer-term abstinence and compliance with naltrexone maintenance. Our plan is to carry out a three-year study of 159 patients randomized to one of three detoxification techniques, followed by 12 weeks of outpatient treatment combining naltrexone maintenance and manual-guided relapse prevention/coping skills training psychotherapy. The AROD technique will be compared directly with a buprenorphine-mediated rapid opiate detoxification (BROD), and with a clonidine-assisted opioid detoxification (COD). We incorporate comprehensive assessments of withdrawal severity and cognitive and motor performance, as well as follow-up data over 12 weeks. The strength of our approach lies

in the controlled evaluation of the three detoxification techniques under consistent conditions. We expect to provide information about the safety and immediate- and intermediate-term efficacy of anesthesia-assisted detoxification from heroin. We believe that this information is very important for policy makers and patients, as anesthesia-assisted detoxification techniques have proliferated in this country and throughout the world, exposing patients to the costs and risks of anesthesia, without any evidence of improved outcome for the heroin-dependent individuals who choose anesthesia as a means to detoxification.

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

- **Project Title: AGING AND PERIOPERATIVE OUTCOMES**

  Principal Investigator & Institution: Leung, Jacqueline M.; Anesthesia & Perioperative Care; University of California San Francisco 500 Parnassus Ave San Francisco, Ca 941222747

  Timing: Fiscal Year 2002; Project Start 01-MAR-2001; Project End 28-FEB-2006

  Summary: (Applicant s abstract) People > 65 years of age are expected to exceed 50 million or 20% of the total population by the end of the century. The elderly undergo approximately 40% of all surgical procedures, amounting to an annual expenditure of over $60 billion. Our previous work demonstrated the postoperative in-hospital morbidity rate in octogenarians undergoing non- cardiac surgery to be 25%. By multivariate logistic regression, a history of neurological disease, congestive heart failure and arrhythmia increased the odds of developing any adverse postoperative events. Our work here focuses on the identification of the predictors of perioperative complications in geriatric surgical patients followed by clinical trials to modify the risk factor(s) in order to improve perioperative outcome. Four integrated clinical studies are planned: 1) A prospective, longitudinal cohort study of 600 consecutive geriatric surgical patients undergoing non-cardiac surgery. This study aims to determine the impact of perioperative complications on the functional status and long-term survival of the elderly surgical patients by measuring pre-defined in-hospital adverse postoperative outcomes, and functional and survival status at two years postoperatively. 2) A prospective cohort study of 200 geriatric patients undergoing non-cardiac surgery. This study aims to determine the accuracy of preoperative clinical methods of assessing heart function as compared to echocardiography; and also the prognostic relationship between preoperative diastolic dysfunction and postoperative heart failure. 3) A prospective cohort study of 300 patients undergoing coronary artery bypass graft surgery. This study aims to determine if left atrial dysfunction as measured by intraoperative transesophageal echocardiography provides incremental value in predicting the occurrence of postoperative atrial fibrillation when compared with routine clinical data. In later years, we will perform 4) a randomized, clinical trial of regional versus **general anesthesia** in 500 elderly patients undergoing orthopedic surgery. This study aims to determine the incidence of postoperative cognitive dysfunction and delirium between regional versus **general anesthesia** after controlling for intraoperative anesthetic and hemodynamic management and postoperative pain management. Postoperative cognitive function and delirium will be measured by standard neuropsychological tests and the Confusion Assessment Method. We believe that our studies will provide important results contributing ultimately to the improvement of perioperative outcomes in geriatric patients.

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- **Project Title: ANESHETIC MODULATION OF NATIVE NICOTINIC RECEPTORS**

  Principal Investigator & Institution: Flood, Pamela; Anesthesiology; Columbia University Health Sciences Po Box 49 New York, Ny 10032

  Timing: Fiscal Year 2002; Project Start 01-MAY-2000; Project End 30-APR-2004

  Summary: The principal investigator of this mentored clinical science award is an anesthesiologist who is seeking advanced training in the physiology and pharmacology of **general anesthetic** action in native neurons. The long-term objectives of this proposal are two-fold. The first objective is to provide the principal investigator with the training that will allow her to become an independent medical scientist. The second objective is to understand the mechanism by which two general anesthetics cause clinically relevant changes in the sympathetic nervous system. The first objective will be obtained through mentored research and non-research activity including graduate classes in physiology and pharmacology. Training will be enhanced with weekly journal club, data review sessions departmental lecture series and interaction with colleagues. The second objective will be pursued with studies of **general anesthetic** activity at multiple levels of the sympathetic nervous system. **General anesthetic** modulation of the sympathetic nervous system allows the patient to undergo surgery without hemodynamic changes that would otherwise be detrimental. Modulation of postsynaptic sympathetic nAChRs will be studied using patch clamp recording of dispersed sympathetic ganglia neurons. **General anesthetic** activity at presynaptic nAChRs will be studied by monitoring the frequency of spontaneous synaptic transmission between dispersed sympathetic ganglia neurons and visceral motor neuron explants. The effects of anesthetics on excitatory input from the hypothalamus will be studied using patch clamp recording from dispersed hypothalamic neurons. The resulting information will provide understanding of the molecular mechanism underlying one of the anesthetic effects that limit anesthetic safety.

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- **Project Title: ANESTHESIA AND PULMONARY VASCULAR SIGNAL TRANSDUCTION**

  Principal Investigator & Institution: Murray, Paul A.; Director; Cleveland Clinic Foundation 9500 Euclid Ave Cleveland, Oh 44195

  Timing: Fiscal Year 2003; Project Start 01-APR-1988; Project End 30-APR-2004

  Summary: (provided by applicant): Pulmonary edema resulting from cardiac failure is a major clinical problem. Non-cardiogenic pulmonary edema following cardiac surgery (cardiopulmonary bypass, inflammatory response, etc.) is one of the leading causes of delayed extubation and extended length of stay in the ICU. Pulmonary venous tone is one of the key determinants of transvascular fluid flux into the lung. However, there are only a handful of studies that have investigated the cellular mechanismsthat regulate pulmonary venous tone. Moreover, the extent to which exposure to anesthetic agents alters cellular mechanisms of pulmonary venous tone is entirely unknown. Vascular smooth muscle tone is regulated by the intracellular free Ca2+ concentration and myofilament Ca2+ sensitivity. Vascular smooth muscle tone is modulated by endothelium-derived relaxing and contracting factors. The overall goals of this application are: 1) to elucidate fundamental mechanisms that regulate pulmonary venous tone; and 2) to identify the extent and the cellular mechanisms of action by which general anesthetics alter pulmonary venous tone. The overarching hypothesis for these studies is that the protein kinase C (PKC), tyrosine kinase (TK) and Rho-kinase (ROK) signaling pathways are the primary targets for anesthesia-induced changes in

pulmonary venous tone. Aim 1 will investigate the effects of vasoconstrictor stimuli, alone and in combination with general anesthetics (inhalational and intravenous), on cellular mechanisms that regulate intracellular free Ca2+ concentration in pulmonary venous smooth muscle (PVSM). Aim 2 will investigate the effects of vasoconstrictor stimuli, alone and in combination with general anesthetics, on cellular mechanisms that regulate myofilament Ca2+ sensitivity in PVSM. Aim 3 will investigate the effects of general anesthetics on cellular mechanisms (cAMP, cGMP, K+ATP channel) that regulate vasodilator responses in pulmonary veins, including endothelium-dependent and PVSM components of the response. We believe these studies represent the first comprehensive attempt to identify cellular mechanisms that regulate pulmonary venous tone. Moreover, these studies should elucidate cellular mechanisms of anesthetic action on pulmonary veins, which should provide insight concerning the optimal choice of anesthetic agent to minimize increases in pulmonary venous tone in the perioperative period.

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- **Project Title: ANESTHETIC ACTIONS AT GABA AND GLUTAMATE SYNAPSES**

  Principal Investigator & Institution: Maciver, M Bruce.; Anesthesia; Stanford University Stanford, Ca 94305

  Timing: Fiscal Year 2002; Project Start 01-MAY-1997; Project End 31-MAY-2005

  Summary: Loss of recall (memory) is an essential component of **general anesthesia,** yet the mechanisms underlying this important effect remain unknown. Failure to block recall during anesthesia continues to be a health care problem-over 40,000 incidents of recall are reported annually in the United States. Experiments outlined in the proposed research will investigate anesthetic effects on Long Term Potentiation (LTP) of synaptic transmission, as a cellular basis for anesthetic-induced loss of recall. Mechanisms of action leading to a block of LTP will be investigated using electrophysiological recordings and specific pharmacological probes to isolate the synaptic and molecular targets for three widely used agents: isoflurane, propofol and midazolam. Experiments will be conducted using rat hippocampal brain slices and the well characterized Schaffer-collateral fiber to CA 1 pyramidal neuron synaptic circuit-the best studied synapse for LTP in the brain. The hippocampus is essential for learning and memory in humans and animals and LTP is the leading candidate for a cellular basis of learning in hippocampal cortex. Three Specific Aims will be undertaken in the proposed research: 1) To determine the effective concentration range for anesthetic-induced block of LTP. 2) To determine the involvement of GABA and glutamate-mediated synapses in anesthetic-induced block of LTP. 3) To determine whether postsynaptic actions at or downstream from NMDA receptors contribute to the anesthetic-induced block of LTP. It has not been possible to undertake experiments of this nature before now, because studies of anesthetic concentrations required to block recall, in vivo, have only recently appeared in the literature. Results from our research will provide a quantitative analysis of anesthetic concentrations needed to block LTP, and will determine the mechanisms of action which lead to this block. An understanding of the mechanisms of anesthetic-induced block of LTP could lead to the development of highly targeted agents for producing loss of recall during anesthesia-this could minimize undesirable side effects produced by anesthetics in current use. Preliminary results from our laboratory indicate that isoflurane blocks LTP at concentrations which are indistinguishable from those that block recall in humans, and considerably lower than those needed to block synaptic transmission.

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- **Project Title: ANESTHETIC EFFECTS ON ION CHANNEL STRUCTURES & DYNAMICS**

  Principal Investigator & Institution: Tang, Pei; Assistant Professor; Anesthesiology; University of Pittsburgh at Pittsburgh 350 Thackeray Hall Pittsburgh, Pa 15260

  Timing: Fiscal Year 2002; Project Start 01-JUL-2002; Project End 30-JUN-2006

  Summary: The molecular mechanisms of **general anesthesia** remain unknown. The goal of the proposed studies is to elucidate the important role of ion channel dynamics in the action of volatile anesthetics. Guided by our experimental results, mostly from NMR spectroscopy, we will use large-scale molecular dynamics (MD) simulations to investigate changes in transmembrane channel dynamics due to interaction with anesthetics and nonanesthetics (nonimmobilizers), which are structurally similar to the anesthetics but are peculiarly devoid of any anesthetic effects. Two model channels chosen for this study are gramicidin A (gA) and a homopentameric channel complex composed of the second and third transmembrane domains of the alpha-1 subunits of human glycine receptor (GlyR). The NAMD2 program, developed at the University of Illinois, will be used for parallel computing. The specific aims are: (1) to determine the structures and properties of fluorinated volatile anesthetic and nonanesthetic molecules by ab initio quantum mechanics and MD calculations, and to simulate ion channel dynamics up to 10 ns in fully hydrated membrane systems containing linear and cyclic anesthetics and nonanesthetics; (2) to study the steered ion transport effects on the changes in channel dynamics due to anesthetics and, conversely, to qualitatively analyze the anesthetic-induced changes in the steering force; (3) to investigate the channel dynamics responses to the steered gating movement of the GlyR TM2+TM3 channel in the presence and absence of anesthetic- nonanesthetic pairs; (4) to determine GlyR channel dynamics response to the forced binding and unbinding of anesthetics at the critical anesthetic-sensitive mutation site, S267, in the TM2 of GlyR; and (5) for all the simulation results in Specific Aims 1-4, to quantify the channel and lipid dynamics by analyzing root-mean-square deviation (RMSD) and fluctuations (RMSD), the autocorrelation functions, and generalized order parameters (S2), and to investigate the effects of interfacial water, interfacial lipids, and cavity dynamics on anesthetic-induced changes in channel dynamics. The central hypothesis to be tested is that anesthetics affect transmembrane channel function by profoundly changing the channel dynamics and the channel's association with lipids and interfacial water. The results from the proposed study will significantly advance the science in the following three areas: (1) large-scale parallel computing applications to biological problems, particularly anesthetic interaction with membrane-associated proteins; (2) detailed elucidation of residual dynamic contribution (through conformational entropy change) to the interfacial association between lipids and transmembrane channels; and (3) the development of a protein theory of **general anesthesia** on the basis of dynamics-function relationships.

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- **Project Title: ANESTHETIC MECHANISMS BY IN VIVO BRAIN IMAGING**

  Principal Investigator & Institution: Gyulai, Ferenc E.; Anesthesiology; University of Pittsburgh at Pittsburgh 350 Thackeray Hall Pittsburgh, Pa 15260

  Timing: Fiscal Year 2002; Project Start 01-MAY-2000; Project End 30-APR-2004

  Summary: Positron emission tomography (PET) permits the study of neuroreceptor systems non-invasively in the living brain, and thus offers a means to define the neurophysiological basis of unconsciousness produced by general anesthetics. This

application for a isoflurane of the functional state of the GABAa-receptor (GABAA-R), as well as postsynaptic processes directly linked to the receptor, such as neuronal metabolism, in the intact, living brain. Abundant data obtained from in vitro and small animal models support that the GABAA-R is an important target for general anesthetics, which potential the actions of GABA at the receptor complex. The relevance of this potential of receptor function, however, has not yet been explored; this is due to inherent limitations of previous experiments employing destructive techniques. In sharp contrast, using PET methodology and the benzodiazepine ligand 11C-flumazenil (11C-FMZ), we recently demonstrated in fully intact brain, that isoflurane dose-dependently, and specifically, enhances GABAA-R ligand binding, indicating that modulation of GABAA-R conformational state occurs. This provides the first in vivo support in humans for the well known GABAA-R hypothesis of **general anesthesia.** To determine whether 11C- FMZ binding is a valid reflection of GABAA-R functional state in the living brain, we propose to test the specific hypothesis in non-human primates that the GABAA-R agonist muscimol enhances 11C-FMZ binding in a dose-dependent manner, as has been shown in in vitro studies. If however, binding of 11C-FMZ, a benzodiazepine antagonist, proves to be insensitive to increasing doses of muscimol, the binding of the benzodiazepine agonist midazolam will be used as a probe for GABAA-R function by measuring the displacement of 11C-FMZ by midazolam. To determine whether muscimol-related increase in GABAA- R function translates into enhanced inhibitory transmission, we propose to measure the effect of increasing doses of muscimol on regional neuronal metabolism (rCMR/glu) by 18F-deoxyglucose PET. Subsequently, analogous muscimol 11C-FMZ (midazolam) binding, and muscimol-rCMR/glu effect curves indicating an increase in agonist affinity for the receptor, as well as a decrease in regional neuronal metabolism due to enhanced GABAA-R function, respectively. The proposed experiments are expected to yield insights into the relationship between isoflurane's effect on the GABAA-receptor alone, as well as the translation of this effect into enhanced inhibitory transmission in various brain regions. This project, combined with laboratory experience and coursework, designed as a vehicle for development of the candidate's potential as an investigator of anesthetic mechanisms in the intact, living brain.

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- **Project Title: ANESTHETICS & CEREBRAL CORTICAL SENSORY INTEGRATION**

  Principal Investigator & Institution: Hudetz, Anthony G.; Anesthesiology; Medical College of Wisconsin Po Box26509 Milwaukee, Wi 532260509

  Timing: Fiscal Year 2003; Project Start 01-AUG-1997; Project End 30-JUN-2007

  Summary: (provided by applicant): The overall goal of our research is to better understand the mechanism of **general anesthesia** at an integrative level with special reference to the toss and return of conscious sensory functions. The general hypothesis is that a neural correlate of volatile anesthetic-induced loss of consciousness (LOC) is the disruption of gamma-frequency synchronization of neuronal activity among primary sensory and association cortices. This work focuses onthe anesthetic modulation of visual cortical function in the rat and applies a combination of intracortical field potential (FP) and multichannel unit activity (UA) recordings and functional magnetic resonance imaging (fMRI) to determine the respective effects of halothane and isoflurane. The loss of righting reflex (LORR) will be used as a behavioral index of LOC assessed simultaneously with the electrophysiological recordings in freely moving rats. Four specific hypotheses that we will test are: (1) synchronization of visual stimulus-induced FP gamma oscillations among specific visual and fronto-parietal association

cortical regions is diminished by both agents at concentrations corresponding to LORR; (2) UA of neuronal populations will follow the FP gamma oscillations such that the visual stimulus-related neuronal firing synchrony among cortical regions will be diminished with increasing anesthetic concentration in correlation with the LORR; (3) anesthetic depression of poststimulus cortico-cortical gamma synchronization and the righting reflex will both be restored by cortical arousal achieved by electrical or pharmacological (glutamate, norepinephrine, neurotensin) stimulation of the basal forebrain (n. basalis of Meynert) or the parabrachial region (n. cuneiformis); (4) cortical blood oxygen level dependent (BOLD) fMRI response to visual stimulation will correlate with the gamma FP response and J will be reduced in parallel with cortico-cortical functional connectivity at increasing depth of anesthesia. Analysis of functional connectivity will involve the determination of synchrony and mutual information of FP and UA recorded with chronically implanted bipolar electrodes and high density microelectrode arraysl sampling simultaneously more than 100 neurons. This research should advance our understanding of the neurobiological basis of consciousness and the mechanism of sedative/hypnotic effect of **general anesthetic** agents and may lead to the development of more specific agents and of monitors of anesthetic depth monitors.

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- **Project Title: BACKGROUND POTASSIUM CHANNELS AS ANESTHETIC TARGETS**

  Principal Investigator & Institution: Yost, Charles S.; Assistant Professor; Anesthesia & Perioperative Care; University of California San Francisco 500 Parnassus Ave San Francisco, Ca 941222747

  Timing: Fiscal Year 2002; Project Start 30-SEP-1998; Project End 31-AUG-2004

  Summary: (provided by applicant): A complete understanding of the cellular and molecular basis of the anesthetized state produced by volatile anesthestics remains elusive. Ion channel proteins provide the most likely molecular targets for these agents. Many studies have provided evidence for the involvement of GABAergic and glutamatergic receptor systems in mediating the action of volatile anesthetics. An additional type of ionic current, background potassium currents(also known as resting or baseline K+ currents) have recently been identified as plausible sites for volatile anesthetic action. This grant is a continuation of studies begun six years ago to elucidate the role of background K+ currents in normal physiology and in the anesthetized state. A new structural class of K+ channels with two pore-forming sequences in tandem are responsible for background K+ currents. We have cloned members of this family, demonstrated their presence in the central nervous system and studied their activation by volatile anesthetics at concentrations overlapping the clinical range. Other investigators have recorded the activity of background K+ channels in vivo and demonstrated inhibitory effects on neuronal systems that are enhanced by volatile anesthetics. The aims of this grant are threefold: (1) to characterize the function and anesthetic sensitivity of the remaining undiscovered members of this structural class of ion channels; (2) to study at the cellular level the tissue distribution of tandem pore K+ channels to gain insight into their normal physiologic function; (3) to identify the molecular domains responsible for volatile anesthetic action. With these experiments we expect that a more complete understanding of background K+ channels will emerge and their role in mediating the anesthetic state clarified.

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- **Project Title: BRAIN ION CHANNEL REGULATION IN ANOXIA AND ANESTHESIA**

  Principal Investigator & Institution: Bickler, Philip E.; Anesthesia & Perioperative Care; University of California San Francisco 500 Parnassus Ave San Francisco, Ca 941222747

  Timing: Fiscal Year 2002; Project Start 01-AUG-1994; Project End 30-JUN-2005

  Summary: This abstract is not available.

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

- **Project Title: CENTRAL BAROREFLEX MECHANISMS OF ANESTHETIC ACTION**

  Principal Investigator & Institution: Andresen, Michael C.; Professor; Physiology and Pharmacology; Oregon Health & Science University Portland, or 972393098

  Timing: Fiscal Year 2003; Project Start 01-SEP-1997; Project End 30-APR-2007

  Summary: (provided by applicant): Cardiovascular dysfunction is frequently observed during use of general anesthetics (GA), although relatively little is known about the cellular mechanisms or specific CNS sites affecting cardiovascular regulation. We will use two model in vitro systems to study anesthetic mechanisms in neurons of a major autonomic brainstem reflex, the cardiac baroreceptor reflex (BRX). A major overall hypothesis is that differences in GA actions on cardiovascular regulation results from selective actions at different brainstem sites. The present proposal tests important aspects of this general overall hypothesis by focusing on GA actions on nucleus tractus solitarius (NTS) and nucleus ambiguus (NA) neurons. A major overall goal of this proposal is complementary testing of NTS and NA for differential sensitivities to GAs. NTS and NA are stations in the core cardioregulatory parasympathetic reflex arc. In our dual team approach, we combine complementary expertise in our two labs. Our work is directed toward addressing key elements controlling the activity of NTS and NA neurons and evaluating their susceptibility to GA actions. The new proposed studies focus on the mechanisms by which isoflurane and propofol act within the BRX. The issues of the proposal focus on complementary targets within NTS and NA and we will build upon new understanding of these neurons arising from our previous funding period. Our novel approaches allow us to study NTS neurons receiving baroreceptor contacts and NA cardiac preganglionic parasympathetic neurons in unique brain slice preparations. Afferents differentiated by their axon class evoke very different reflex responses and preliminary findings suggest that these pathways differ fundamentally in the sensitivity of these NTS neurons to anesthetics. NTS studies will address important aspects of this new finding. Cardiac vagal NA neurons were found to be intrinsically silent and glutamatergic, GABAergic, and cholinergic inputs are key. Thus, our focus overall is on modulation of excitability and synaptic transmission. Three major potential broad cellular targets of anesthetics within the medulla include: excitatory synaptic transmission, inhibitory synaptic transmission, and voltage-gated ion channels. By examining different anesthetics, we may also better understand whether potentially new anesthetics might be designed to spare these cardioregulatory sites.

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- **Project Title: DECTECTION OF OCCULT MEDIASTINAL LYMPH NODE MESTASTASES**

  Principal Investigator & Institution: Wallace, Michael B.; Medicine; Medical University of South Carolina P O Box 250854 Charleston, Sc 29425

  Timing: Fiscal Year 2002; Project Start 01-SEP-2002; Project End 31-AUG-2003

Summary: (provided by applicant): Non-small cell lung carcinoma (NSCLC) is the most common cause of cancer death in the United States. The presence of metastatic disease in the mediastinal lymph nodes of NSCLC patients has profound prognostic and therapeutic implications. For instance, patients with documented disease in mediastinal lymph nodes are typically not candidates for surgical treatment, and are often treated with a combination of chemotherapy and radiotherapy. Current methods for detection of disease in mediastinal lymph nodes either lack sensitivity (computed tomography, positron emission tomography), or are invasive requiring **general anesthesia** (mediastinoscopy, thoracoscopy). We believe that endoscopic ultrasound-guided fine needle aspiration (EUS-FNA) of mediastinal lymph nodes in combination with real-time RT-PCR has the potential to dramatically improve lung cancer staging. One limitation of EUS-FNA is that it currently relies on cytologic analysis of the specimen. Such an analysis is dependent on a skilled cytopathologist and lacks sensitivity. The identification of genes overexpressed in lung cancer combined with recent advances in molecular biology provides the opportunity to establish a more sensitive, and specific way to analyze EUS-FNA samples. In Section 6c. Preliminary Studies, we present preliminary data that real-time RT-PCR provides the ability to precisely determine the expression levels of lung cancer-associated mRNA, facilitating the sensitive detection of NSCLC. Furthermore, we present evidence of lung cancer-associated gene overexpression in EUS-FNA samples from patients with presumed NSCLC. The hypothesis of the proposed research is that real-time RT-PCR detection of lung cancer cells in EUS-FNA specimens of mediastinal lymph nodes in NSCLC patients is associated with clinical outcome. The successful development and validation of such a molecular diagnostic assay is likely to have a significant clinical impact. In the R21 component of this grant application we will analyze a preliminary cohort of patients and controls so that criteria for the interpretation of test results can be established. In the R33 component of the grant application these criteria will be prospectively evaluated and correlated with clinical outcome in a second, larger cohort of patients.

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- **Project Title: DEVELOPING AND VALIDATING QUALITY MEASURES FOR CHILDREN**

  Principal Investigator & Institution: Chassin, Mark R.; Health Policy; Mount Sinai School of Medicine of Nyu of New York University New York, Ny 10029

  Timing: Fiscal Year 2002; Project Start 30-SEP-2000; Project End 31-AUG-2004

  Summary: Tympanostomy tube placement is the most common surgical procedure performed on children. In 1994, 556,000 children under age 15 underwent this procedure, which requires **general anesthesia.** One recent study evaluated the indications for surgery in over 6000 children who had been recommended for the procedure by their physicians and found that almost one-quarter of proposed tympanostomy tube placements may be clinically inappropriate. While many guidelines exist to facilitate clinical decision making, physicians often resist using them because of a concern that they do not inadequately account for individual patient variability. No study of appropriateness has examined the extent to which decisions made by practicing physicians deviate from evidence-based guidelines, the reasons physicians might give to explain any such discrepancies, and the extent to which those reasons justify deviations from the guidelines. We propose to develop and validate measures of quality to assess the appropriateness of the use of tympanostomy tubes in children. We will create evidence-based appropriateness guidelines with the assistance of a nationally-representative expert physician panel, which will be constituted by collaborating with

pediatric and surgical specialty societies. We will derive quality measures from those guidelines and apply them retrospectively to a large, economically, racially, and ethnically diverse population of children who underwent the procedure. With the collaborative support of pediatricians and otolaryngologists at 5 New York metropolitan area hospitals, we will assess the appropriateness of approximately 1250 tympanostomy tube placements. For a sample of cases, we will interview surgeons and primary care physicians to ascertain factors not included in the guidelines that the physicians believed justified doing the procedure. We will also interview parents to understand their role in the decision to perform surgery. We will validate the justifications offered by the treating physicians by reconvening the expert physician panel and asking them to rate the appropriateness of the reasons given for deviating from the guidelines. We will revise the guidelines to incorporate the additional factors determined by the panel to be appropriate extenuating circumstances to produce quality measures with enhanced validity. Finally, we will examine the relationship between appropriateness and various patient, parent, and physician attributes.

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- **Project Title: EFFECT OF ETHANOL AND GENERAL ANESTHETICS ON PROTEIN KINASE C IN BRAIN**

  Principal Investigator & Institution: Stubbs, Christopher D.; Thomas Jefferson University Office of Research Administration Philadelphia, Pa 191075587

  Timing: Fiscal Year 2002

  Summary: Protein kinase C [PKC] is a key regulatory element in synaptic signal transduction. During the previous period of support it was found that alcohols and general anesthetics inhibit PKC with a potency that is a linear function of the octanol/buffer partition coefficient indicating a hydrophobic binding site. The effect follows the Meyer-Overton "rule" of alcohol and anesthetic action which requires that anesthetic effects be a linear function of hydrophobicity. The measurements were made in the absence of membrane lipids suggesting the site is on the molecule itself. This observation has also been obtained at the single isoform level with purified recombinant PKCalpha. Evidence obtained so far points to the phorbol ester binding site as the site of alcohol interaction. While membrane lipid-associated PKCalpha is also inhibited by short chain alcohols, by contrast, long chain alcohols and general anesthetics potentiate activity. To further understand the effects of alcohols and general anesthetics on PKC and its role in ethanol intoxication and **general anesthesia** it is proposed to extend and broaden the study to encompass the three major PKC isoforms classes since they possess widely differing properties. Also since PKC has been found to target cytoskeletal elements involved in neurotransmission, we propose to investigate this process following preliminary findings showing ethanol effects. To accomplish this the cDNA encoding the major PKC isoforms that occur in brain, has been obtained and inserted into baculovirus vectors and the PKC expressed in Sf9 cells and purified. It is proposed to investigate the effect of alcohols with respect to activator-and substrate-type differences that have been observed in preliminary experiments. The site of alcohol interaction within PKC and its molecular details will be determined using a series of full length and fusion-protein mutants along with the effects of alcohols on the increased proteolytic sensitivity of activated-PKC that leads to down regulation. Overall the results should contribute to understanding of the mechanism and consequences of ethanol and general anesthetics on synaptic signaling and neurotransmission.

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- **Project Title: GABAA RECEPTOR BETA-SUBUNIT AND GENERAL ANESTHETICS**

  Principal Investigator & Institution: Yang, Jay; Professor; Anesthesiology; Columbia University Health Sciences Po Box 49 New York, Ny 10032

  Timing: Fiscal Year 2002; Project Start 01-APR-1995; Project End 30-JUN-2004

  Summary: The type A gamma amino butyric acid (GABAA) receptor is an important pharmacological target for **general anesthetic** drugs. Recent progress suggests highly specific effects of several general anesthetics at the GABAA receptor; the details of this mechanism, however, are unknown. Additionally there are many different forms of the subunits which make up the GABAA receptor. The interaction between GABAA receptor subunit composition and **general anesthetic** pharmacology remains relatively unexplored, and the significance of this interaction to the function of neurons is unknown. This project tests the hypothesis that the GABAA receptor beta-subunit isoform dictates etomidate modulation of GABA-induced current in neurons. The study consists of a series of deliberate steps beginning with a biophysical characterization of the effects of intravenous general anesthetics at GABAA receptors, followed by an examination of the effects of b-subunit gene-targeting on **general anesthetic** pharmacology and concluding with the creating of neurons with a reversible externally-inducible alteration in sensitivity to etomidate. Specifically, the recently discovered critical role of the beta-subunit and the specific amino acid at location 270 on the beta-subunit will be explored through expression, in HEK293 cells, of different beta-subunit isoforms and point-mutants in an a1bxg2 heteromeric combination. Whole cell patch clamp and rapid GABA perfusion will be used to arrive at a kinetic model of drug action. Next this mechanistic model will be used as a tool to investigate the effects of beta-subunit gene-targeting on **general anesthetic** pharmacology in retinoic-acid-induced P19 neurons. The P19 system offers an unprecedented opportunity to investigate the effect of gene-targeting without the complexities involved in creating a whole animal. Conventional b1-transgenic, b1-knockout, and conditional gene-targeted neurons will be examined. In the next phase of the research project, the best gene-targeting strategy found in these studies will be used to create a gene-targeted mouse with a reversible externally-inducible alteration in sensitivity to general anesthetics. Detailed understanding of how existing general anesthetics work is essential for the development of improved anesthetics without the very significant side effects of existing agents. The experiments proposed will add quantitative and mechanistic information to **general anesthetic** molecular pharmacology and move this field of investigation closer towards truly understanding how these clinically essential drugs work.

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- **Project Title: GABAERGIC CIRCUITS IN AUDITORY CORTEX**

  Principal Investigator & Institution: Banks, Matthew I.; Physiology; University of Wisconsin Madison 750 University Ave Madison, Wi 53706

  Timing: Fiscal Year 2003; Project Start 15-MAR-2003; Project End 31-JAN-2008

  Summary: (provided by applicant): Our long-term objective is to understand the role of cortical GABAA receptor-mediated inhibition in the perception of sensory stimuli, and how modulation of GABAA receptors by general anesthetics and changes in cortical inhibition in various neuropathologies alters sensory perception. In this proposal, we seek to understand how GABAergic cells control the timing of action potentials in auditory cortex (ACx). Firing patterns distributed across populations of pyramidal cells in ACx are postulated to represent certain features of acoustic stimuli. Spikes in these

population codes are either time-locked to transitions in the stimulus, or comprise temporal patterns generated internally. Evidence suggests that networks of cortical interneurons are involved in establishing both types of patterns. Thalamocortical (TC) afferents activate multiple populations of 'feedforward' GABAergic interneurons in ACx. Lemniscal TC fibers target cells in layers III and IV (LIII/IV), while extralemniscal TC afferents target cells in layer I (LI). Activation of the latter afferents triggers gamma frequency oscillations in ACx. We propose that feedforward interneurons in ACx regulate spike timing in pyramidal cells and that this capability is enhanced by network interactions among inhibitory cells. We will test the hypothesis that LI interneurons control internally generated firing patterns, while LIII/IV interneurons coordinate firing patterns that are time-locked to the stimulus. Disruption of cortical timing signals has also been postulated to underlie sensory and cognitive impairment during **general anesthesia,** and modulation of cortical rhythms in ACx is being pursued as a solution to the important medical application of monitoring depth of anesthesia in patients. GABAergic interneurons are central players in normal, pathological and exogenously modulated cortical processing. Thus, understanding how these cells are activated and organized and the functional implications of this structure is critical to understanding cortical information processing. Although evidence abounds that these cells play a pivotal role in setting the response properties of principal cells, we seek to fill the gap in our knowledge of their organization and how they interact with principal cells.

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- **Project Title: GENERAL ANESTHETIC EFFECTS ON SYNAPTIC VESICLE FUNCTION**

  Principal Investigator & Institution: Ryan, Timothy A.; Associate Professor; Weill Medical College of Cornell Univ New York, Ny 10021

  Timing: Fiscal Year 2002

  Summary: (taken from the application). The precise molecular targets of general anesthetics and their binding sites are unknown and the relative contribution of presynaptic versus postsynaptic effects for both the desired and undesired effects of general anesthetics are poorly understood. This proposed study will examine the quantitative impact of representative general anesthetics on parameters controlling presynaptic physiology and on molecular interactions of key presynaptic molecular components. The overall objectives are to determine the subcellular processes, and their molecular substrates, that are targets for **general anesthetic** action in the central nervous system (CNS) by combining physiological and biochemical approaches to this problem. The long-term goal of the proposed studies is to define the effects of general anesthetics on presynaptic function in order to target the rational development of more specific anesthetics with potentially fewer adverse effects. The physiological approach uses the fluorescent tracer FM 1-43 and new genetically encoded fluorescent reporters or Ca2+ sensitive fluorescent dyes to study anesthetic effects on synaptic vesicle exocytosis, endocytosis (recycling) and Ca2+ entry in single presynaptic terminals of hippocampal cell cultures. These experiments will provide detailed information of anesthetic actions on the physiological parameters that control synaptic efficiency at the single synapse level. The biochemical approach is to study anesthetic effects on neurotransmitter secretion in biochemically accessible permeabilized synaptosomes and on protein interactions between identified components of the fusion/exocytosis machinery in brain extracts or using purified recombinant proteins. Our working hypothesis is that general anesthetics alter neurotransmitter release by agent- and transmitter-specific effects on identifiable steps in the synaptic vesicle exocytosis/endocytosis cycle.

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

- **Project Title: GENERAL ANESTHETIC INTERACTIONS WITH GABA-A RECEPTORS**

  Principal Investigator & Institution: Akabas, Myles H.; Associate Professor; Columbia University Health Sciences Po Box 49 New York, Ny 10032

  Timing: Fiscal Year 2002

  Summary: (taken from the application): The gamma-aminobutyric acid Type A (GABA-A) receptors form ligand-activated, anion-selective channels. They are the primary, fast-acting, post-synaptic receptors for GABA, the major inhibitory neurotransmitter in the central nervous system. Current hypotheses suggest that GABA-A receptors may be a primary target for the actions of many general anesthetics. At low concentrations general anesthetics, such as propofol, etomidate, barbiturates and enflurane, potentiate GABA-induced currents, whereas at higher concentrations these anesthetics directly activate GABA-A receptors but do not appear to bind in the GABA binding sites. In order to understand the molecular basis of anesthetic action it is necessary to define the binding sites for these drugs, the conformational changes that occur following binding and the structure of the binding site. Mutations in the alpha-1 subunit of Ser270 (M2) and Ala291 (M3), residues near the extracellular ends of the M2 and M3 membrane-spanning segments, altered the efficacy of the inhaled ether anesthetics (enflurane and isoflurane) to potentiate GABA-induced currents. Whereas, mutations of the aligned residues in the beta subunits altered the efficacy of intravenous anesthetics (etomidate, barbiturates and perhaps propofol) to potentiate GABA-induced. It is uncertain whether these residues are part of anesthetic binding sites or are part of the transduction pathway. Cysteine substituted for these residues in the alpha-1 subunit were accessible to react with the negatively charged, sulfhydryl-specific reagent, pCMBS, applied extracellularly indicating that they are on the water-accessible surface of the protein. If these residues form a binding site(s) for anesthetics then anesthetics should protect the Cys-substituted mutants from modification by pCMBS. The ability of anesthetics to protect these Cys-substitution mutants will be determined. It was previously shown that Cys substituted for six of seventeen residues in the M3 segment were accessible to react with pCMBS. Reaction at four of the six positions was state dependent, it only occurred in the presence of GABA. It will be determined whether potentiating or directly activating concentrations of anesthetics induce changes in the accessibility of M3 segment substituted Cys mutants similar to those induced by GABA. Finally, if the M2 and M3 membrane-spanning segments participate in forming an anesthetic binding site or interactions between them are important for transduction of anesthetic effects then they should be in close proximity. Disulfide bond formation will be used as a molecular ruler to determine the relative proximity, mobility and orientation of the M2 and M3 segments within a single subunit. The successful completion of this proposal could provide new insights into the binding and transduction of anesthetic effects in the GABA-A receptors.

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

- **Project Title: GENERAL ANESTHETIC SITES ON LIGAND-GATED ION CHANNELS**

  Principal Investigator & Institution: Miller, Keith W.; Professor; Massachusetts General Hospital 55 Fruit St Boston, Ma 02114

  Timing: Fiscal Year 2004; Project Start 01-DEC-1998; Project End 30-APR-2009

Summary: (provided by applicant): Some 25 million patients are given **general anesthesia** each year in the USA using agents with very low therapeutic indices. The molecular mechanisms of **general anesthesia** remain unknown, hampering the design of improved agents. General anesthetics act on a superfamily of ligand gated channels which include inhibitory anion channels gated by GABA and glycine, and excitatory cation channels gated by serotonin and acetylcholine. This PPG focuses on the ability of general anesthetics to enhance the activity of the inhibitory GABAA receptor (GABAAR) and to inhibit (and in some cases enhance) the excitatory neuronal serotonin (5-HT3R) and nicotinic acetylcholine receptors (nAcChoR). The overall hypothesis is that the various action of general anesthetics are mediated by a number of binding sites on these receptors, that their location and affinity varies with the anesthetic's structure and the receptor's conformation, and that parallels exist between the two homologous receptors. The overall aims of the PPG are to: (i) locate anesthetic binding sites on the GABAA, 5-HT3 and nAcCho receptors, and (ii) define the functional significance of each site. Two complementary techniques will be employed to detect sites, photoaffinity labeling (Projects 2, 3 and 5) and site directed mutagenesis (Projects 1, 3, 4 and 5). Project 1 will characterize the pharmacology of the 5-HT3 receptor and interact with Projects 2 and 3 who will locate the sites of action on activated (time-resolved photolabeling) and desensitized receptor states of alcohols, etomidate and propofol photolabels. Project 4 will define in detail the kinetic mechanisms of anesthetic action on GABAARs using rapid perfusion patch clamp techniques in wild type and mutated receptors, incorporating the photolabeling results to guide mutagenesis and interpretation. Project 5 will locate **general anesthetic** sites on GABAA receptors using photoactivable general anesthetics. Synthetic and Protein Chemistry Cores are essential for developing novel photoaffinity general anesthetics and for locating the sites of photoincorporation, respectively. A Protein Production Core will supply neuronal receptors to each of the projects.

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- **Project Title: GENERAL ANESTHETICS AND NACCHOR AGONIST AFFINITY**

  Principal Investigator & Institution: Raines, Douglas E.; Massachusetts General Hospital 55 Fruit St Boston, Ma 02114

  Timing: Fiscal Year 2002; Project Start 01-APR-2001; Project End 31-MAR-2005

  Summary: (Verbatim from the applicant's abstract) The broad. Iong-term objective of this project is to define the molecular mechanisms by which general anesthetics act on protein targets in the CNS and periphery. This will guide the development of new anesthetic compounds possessing fewer side effects. The overall aim is to disentangle the effects of general anesthetics on agonist binding, channel gating kinetics, and agonist-induced desensitization in the best-characterized model ligand-gated ion channel (LGIC), the Torpedo nicotinic acetyicholine receptor (nAcChoR), and to identify the physicochemical features of anesthetics that govern their action on each kinetic step. The overall hypothesis is that general anesthetics act on the nAcChoR in a structurally specific manner because anesthetic binding affinity is strongly influenced by attractive electrostatic and repulsive steric interactions between anesthetics and their protein binding sites. The specific aims are: Aim 1: (1) to test the hypothesis that electrostatic (dipolar, quadrupolar, and/or hydrogen bonding) interactions between general anesthetics and the nAcChoR enhance binding to functionally important sites on this receptor and (2) to identify the kinetic step(s) leading to nAcChoR channel opening that are altered by general anesthetics to determine whether an anesthetic's molecular volume or chemical class governs its action. Aim 2: (1) to test the hypothesis that small

general anesthetics increase nAcChoR's rate constant for desensitization by binding to a protein binding site that sterically limits the binding of large anesthetics and (2) to test the hypothesis that general anesthetics stabilize the open channel state and increase the rate constant for desensitization by binding to the same small receptor binding site. The proposed studies will lead to a better understanding of the fundamental interactions between anesthetics and their targets in the CNS and periphery. The nAcChoR was chosen as the experimental model because its function is far better defined than that of any other LGIC, allowing one to interpret anesthetic actions within the framework of a well-established and robust kinetic model. The method used to define anesthetic actions on the nAcChoR is a new rapid sequential mixing stopped-flow fluorescence assay developed and validated by the PI that can assess anesthetic actions on agonist binding, channel gating, and desensitization kinetics without the potentially confounding effects of anesthetic-induced channel blockade.

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

- **Project Title: HOMEOSTATIC CONTROL OF AMNIOTIC FLUID VOLUME**

  Principal Investigator & Institution: Davis, Lowell E.; Professor; Physiology and Pharmacology; Oregon Health & Science University Portland, or 972393098

  Timing: Fiscal Year 2003; Project Start 01-JUN-2000; Project End 31-MAY-2005

  Summary: (Adapted from the Investigator's Abstract) Experiments will be performed on fetal sheep of known gestational ages. Indwelling fetal catheters, flow sensors and amniotic and allantoic fluid catheters will be placed during sterile surgeries under **general anesthesia.** Hypotheses to be tested include: (l) Urine production, although variable, detracts from, rather than contributes to the control of amniotic fluid volume. (2) Neither lung fluid production, nor drinking of amniotic fluid are necessary for an adequate homeostatic response to abnormal production of amniotic fluid. (3) Fetal swallowing may contribute to amniotic fluid volume regulation even if not necessary in sheep. (4) Reabsorption of amniotic fluid is largely insensitive to electrolyte load. (5) Neither the crystalloid osmotic gradient nor the oncotic gradient between amniotic fluid and fetal plasma are involved in volume regulation. (6) The quantity that is being regulated is amniotic fluid volume, rather than intrauterine volume. (7) The absorptive mechanism permits passage of large quantities of macromolecules, such as plasma albumin, even in the absence of drinking.

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

- **Project Title: IMPROVING SAFETY OF PEDIATRIC SEDATION**

  Principal Investigator & Institution: Lightdale, Jenifer R.; Children's Hospital (Boston) Boston, Ma 021155737

  Timing: Fiscal Year 2003; Project Start 01-JUN-2003; Project End 31-MAY-2007

  Summary: (provided by the applicant): Children undergoing non-surgical procedures are routinely sedated with either intravenous (IV) sedation or **general anesthesia** (GA) to ensure their safety, comfort, and cooperation. There are no prediction rules to guide the chief clinical decision as to which children should receive IV sedation and which should be referred to GA. Both types of sedation involve life-threatening risks to patient safety from unanticipated pharmacological effects or medical errors. Intolerance of IV sedation represents an additional important safety issue, as many children become highly agitated, risking unnecessary harm. The primary goal of this Mentored Career Development Award is to provide a mechanism for the candidate, a trained pediatric gastroenterologist, to develop skills in patient safety research while studying complex

issues of sedation choice and patient safety, using gastrointestinal (GI) endoscopy as a high-volume procedural model. With strong mentorship in patient safety and clinical investigation and in collaboration with a multidisciplinary team that includes experts in research design, prediction rules, gastroenterology, anesthesiology and pediatric psychology, the candidate will: 1) use robust, precise methods to prospectively assess intolerance, other adverse events and medical errors during sedation for GI endoscopy; 2) utilize regression modeling to develop prediction rules to improve the safety of sedation for children undergoing this procedure; and 3) tailor existing taxonomies to classify medical errors associated with IV sedation for GI endoscopy. Primary and secondary outcomes data, including measures of intolerance, other adverse events, and errors related to sedation, will be collected in a large prospective, observational pediatric cohort study. The short term goals of this proposal are to allow the candidate to gain: 1) formal education in the quantitative and qualitative tools necessary for conducting health services research; 2) substantial training in the study of patient safety and improvement strategies for pediatric healthcare; and 3) valuable mentorship required to ensure her progress towards becoming an independent clinical scientist. The long-term goals of this research are to develop prediction rules for determining safe sedation regimens for children undergoing GI procedures that may lead to generalizable improvement strategies for pediatric sedation.

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- **Project Title: INTELLIGENT FUZZY ADAPTIVE CONTROL STRATEGIES FOR ANESTHESIA**

  Principal Investigator & Institution: Rahbar Maghsoundi, Phil D.; St. Mary's University 1 Camino Santa Maria San Antonio, Tx 78284

  Timing: Fiscal Year 2002

  Summary: This study will collect hemodynamic and physiological data in conjunction with raw EEG and Auditory Evoked Responses from patients undergoing **general anesthesia** for surgical procedures. This data will be analyzed off-line for correlation of EEG and hemodynamic changes that would be interpreted clinically as changes in anesthesia depth. Utilizing this information, digital signal processing techniques, adaptive control theory and fuzzy logic concepts will be applied to develop intelligent fuzzy adaptive control strategies for anesthesia. These control strategies will be evaluated by their ability to achieve the desired depth of anesthesia while maintaining patient safety. Quadratic cost functions related to the deviation of the hemodynamic and physiological/neurological indices from their safe and desired clinical values will be developed and used to determine anesthetic induced insult/trauma to the patient. Fuzzy cost functions will determine deviation of the estimated depth of anesthesia from the desired depth. These cost functions will form a basis for comparing the performance of the implemented control strategy to that of the attending anesthesiologist. The difference between the estimated and desired depth of anesthesia and the patients weighted Physiological/Neurological trends will be used to calculate the recommended anesthesia. The difference between the estimated and desired depth of anesthesia and the patients weighted Physiological/Neurological trends will be used to calculate the recommended anesthesia management scheme. Anesthetic doses will be monitored for safety and then implemented by the attending anesthesiologist. This study will enroll thirty adult patients of both sexes who are ASA physical status II or I and are scheduled for lumbar discectomy and/or laminectomy under **general anesthesia.** Surface EEC electrodes and ear phones for auditory stimulus will be placed and standard monitors of ECG, blood pressure, pulse oximetry and respiratory gas analysis will be connected.

Baseline awake values will be obtained. Each patient's anesthetic induction will be conducted as determined by the staff anesthesiologist. The EEG, Evoked potentials, ECG, Pulse Rate, Blood Pressure, and the respiratory information will be collected from the OR instrumentation using a high-speed real-time computer. The specific aims and benefits will be reduced workload instrumentation using a high-speed real-time computer. The specific aims and benefits will be reduced workload through: 1) Intelligent and clinically relevant presentation of patient status information; 2) Real-time presentation/recording of succinct clinically relevant presentation of patient status information; 2) Real-time presentation/recording of succinct context sensitive patient/anesthetic status alarms and trend analysis: 3) interpretation of patient status into high-level recommendations on patient well-being and anesthetic management and 4) integrated control of anesthetic gents and a patient gases by the IAM/MS. Also, recorded surgical time histories and embedded reasoning could form the foundation of a computerized anesthesiologist patient simulator.

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- **Project Title: MAPPING THE ALCOHOL SITE OF A NEURONAL POTASSIUM CHANNEL**

  Principal Investigator & Institution: Covarrubias, Manuel L.; Assistant Professor; Pathology, Anat/Cell Biology; Thomas Jefferson University Office of Research Administration Philadelphia, Pa 191075587

  Timing: Fiscal Year 2002; Project Start 01-JAN-1997; Project End 31-MAR-2005

  Summary: This abstract is not available.

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

- **Project Title: MATERNAL ANESTHESIA AND FETAL CEREBRAL OXYGENATION**

  Principal Investigator & Institution: Reynolds, James D.; Anesthesiology; Duke University Durham, Nc 27710

  Timing: Fiscal Year 2002; Project Start 15-DEC-2001; Project End 30-NOV-2003

  Summary: The goal of this exploratory/developmental grant is to use novel technology to determine and differentiate the effects of maternal **general anesthesia** to those of regional anesthesia on fetal cerebral oxygenation. Maintaining an adequate supply of oxygen and nutrients to the fetal brain is of primary importance during manipulations of the gravid female. Prevailing medical practice encourages the use of **general anesthesia** for such procedures as non-obstetric related surgery and emergent cesarean section. However, relatively little is known about the effects of inhalational agents (e.g. isoflurane) upon fetal cerebral oxygen status. By extension, one could propose that regional techniques (e.g. epidermal anesthesia) might have reduced fetal effects because of the localization of anesthetic to the maternal CNS. However, this benefit could be counter-acted by the maternal hypotension and with respect to fetal effects, is the impracticability of measuring oxygen levels. To that end, we are developing a means (near infrared spectroscopy; NIRS) of continually measuring in utero fetal cerebral oxygenation in pregnant sheep. An NIRS device was designed specifically for in utero animal experimentation. Currently, we have validated our NIRS methodology by measuring changes in fetal sheep cerebral oxygenation in response to systemic decreases in oxygen levels produced by umbilical cord occlusion. With the present proposal, we plan to further optimize our technology by applying it to answer a clinically-relevant question: Does maternal anesthesia alter fetal cerebral oxygenation? Completion of this study will yield new information regarding the effects of maternal anesthesia on fetal

cerebral oxygenation and well-being. In addition, this research will produce clinically relevant data that will be of significant interest to anesthesiologists, obstetricians, and general surgeons who are presented parturients with fetal or abdominal distress. It is expected that the results of these studies will be used to further develop and refine standards of care for anesthetic use during pregnancy. These results will also validate our NIRS methodology, and will allow us to refine-optimize the technology and to develop the appropriate analysis tools to quantitatively evaluate the resultant NIRS data. Finally, the results will serve as the basis for a long-term outcome study designed to identify the optimal anesthetic parameters to be used during an episode of fetal distress, maternal surgery, and eventually fetal surgery.

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

- **Project Title: MECHANISMS OF POST-ANESTHETIC CNS DYSFUNCTION IN AGING**

  Principal Investigator & Institution: Crosby, Gregory J.; Brigham and Women's Hospital 75 Francis Street Boston, Ma 02115

  Timing: Fiscal Year 2003; Project Start 01-APR-2003; Project End 31-MAR-2007

  Summary: (provided by applicant): "Healthy" aging is associated with widespread changes in the CNS that include alterations in neurotransmitter systems, synaptic plasticity, and hippocampal neurogenesis. These changes make the aged brain more "fragile" and may account for development of age-related cognitive dysfunction. Elderly patients frequently require surgery and anesthesia but may suffer prolonged cognitive impairment as a result. However, the mechanisms involved are unknown and the role of anesthetic agents is unclear. Using a well-established behavioral model, we have demonstrated that an uncomplicated **general anesthetic** with isoflurane-nitrous oxide produces long-lasting impairment in memory for an established spatial task in aged rats and isoflurane alone disrupts the ability of young and old rats to learn a new task. Moreover, these changes are associated with reduced phosphorylation of a nuclear protein involved in memory, a decrease in a dendritic marker of synaptic plasticity, and an increase in neurogenesis in young adult rats but no change or a decrease in aged rats. This suggests that **general anesthesia** could be a factor in human postoperative cognitive dysfunction and that anesthetic-induced changes in memory processing may explain the impairment. The objectives of this proposal are to characterize the mechanisms of anesthesia-related cognitive impairment and to define the neurobiological basis of it. We will use selective anesthetic and non-anesthetic agents to manipulate GABA and glutaminergic tone, in conjunction with behavioral testing and neurochemistry, to systematically investigate the relationship between prolonged post-anesthetic changes in spatial memory and alterations in cholinergic neurotransmission, synaptic plasticity, and neurogenesis. From this analysis, we expect to be able to draw inferences about whether post-anesthetic impairment is a function of the receptor characteristics of the agents, an imbalance between excitatory and inhibitory neurotransmission, or the state of anesthesia. We will investigate mechanisms of prolonged post-anesthetic learning impairment by examining relationships between anesthetic pharmacology, age, and mediators or makers of learning and memory. As such, these experiments will clarify how **general anesthesia** produces persistent cognitive impairment in aging, enhance understanding of anesthetic effects on memory, and potentially lead to methods to mitigate the cognitive morbidity associated with anesthesia and surgery.

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

- **Project Title: MODULATION OF NEUROENDOCRINE FUNCTION IN SEPSIS**

  Principal Investigator & Institution: Carlson, Drew E.; Associate Professor; Surgery; University of Maryland Balt Prof School Baltimore, Md 21201

  Timing: Fiscal Year 2002; Project Start 01-JUL-2002; Project End 30-JUN-2006

  Summary: REVISED ABSTRACT: In trauma patients sepsis is a life-threatening complication. Our broad objective is to identify possible mechanisms that underlie the abnormalities in neuroendocrine and adrenocortical function that occur in septic patients at risk for death. We hypothesize that inoculations of E. coli into the peritoneal compartment of chronically prepared rats elicit local actions on the endings of vagal afferent nerves to initiate the neuroendocrine response. In contrast, inoculations of E. coli into the vascular compartment cause an increase in circulating mediators that act on the central nervous system. When simultaneous inoculations are made into both the vascular and peritoneal compartments, the ascending signals synergize to augment the early hormonal response. We will test TNFalpha, cyclooxygenase pathways, and neurokinins as mediators of the responses to peritoneal and intravenous inoculations of E. coli and to simultaneous inoculations of E. coli into both compartments. Selective surgical elimination of the afferent nerves from the subdiaphragmatic vagi to the brain and selective surgical elimination of the efferent nerves from the brain to the subdiaphragmatic vagi will be used to test the role of each of these pathways in the responses to the inoculations of E. coli. Since clinical infections can spread from a local site into the circulation, we will determine the ffect of intravenous inoculations that are done 4 or 24 h after peritoneal inoculations. Immunocytochemistry and in situ hybridization for the immediate-early gene product, Fos, will identify areas in the brain that respond to inoculations of E. coli into either compartment alone and central areas where the ascending signals from both compartments converge after inoculations into both compartments. Mediators implicated by the experiments involving the inoculations of E. coli will be examined with immunocytochemistry or in situ hybridization for possible action in the brain. Such mediators will be blocked pharmacologically or surgically to determine their role in the central neural expression of Fos. The mechanisms revealed are likely to play a significant role in the suppression of host defense and the onset of septic shock.

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

- **Project Title: MULTICHANNEL DEEP BRAIN STIMULATION SYSTEM**

  Principal Investigator & Institution: Larsen, Hugh G.; Advanced Bionics Corporation 12740 San Fernando Rd Sylmar, Ca 91342

  Timing: Fiscal Year 2002; Project Start 15-AUG-2002; Project End 31-JUL-2007

  Summary: (provided by applicant): This proposal is submitted in response to RFA-NS-02-004 (Technology development for safe and effective deep brain stimulation). We have addressed Research Objective #3, "The development of stimulators that are rechargeable and/or that have a wider range of stimulation rates, stimulation currents, pulse widths, pulse waveforms, and that permit recording from electrodes as well as stimulation." 1) We will develop a stimulator for deep brain stimulation that is rechargeable and that has a wider range of stimulation rates, stimulation currents, and pulse widths than any other available system. This development will include the external recharger and the tools required to program the stimulator. 2) We will develop a stimulator for deep brain stimulation with the above capabilities that can be mounted in the skull, thereby obviating the need to tunnel a lead through the neck. This allows implantation of the DBS system without the need and the attendant risks of **general anesthesia,** and this

reduces the risk of lead fracture or breakage by avoiding passage of the lead through the highly mobile neck area. 3) We will develop a stimulator for deep brain stimulation that includes sensing of the electrical activity of neurons. This system may use the stimulation electrodes for sensing or may incorporate separate recording electrodes integrated with the stimulation electrode array. The system may also be configured with a connector for a separate recording lead that may be place in a part of the brain that is relatively far removed from the area of stimulation. 4) We plan to make the above stimulators available to members of the NIH Deep Brain Stimulation (DBS) consortium as well as other DBS researchers for research and testing.

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

- **Project Title: NEUROLOGICAL AND COGNITIVE OUTCOMES FOLLOWING CABG**

  Principal Investigator & Institution: Mckhann, Guy; None; Johns Hopkins University 3400 N Charles St Baltimore, Md 21218

  Timing: Fiscal Year 2002; Project Start 10-SEP-1997; Project End 31-MAR-2004

  Summary: (Verbatim from the Applicant's Abstract) In the United States, nearly 650,000 patients undergo coronary artery bypass grafting (CABG) each year. This procedure, although extraordinarily successful in relieving the symptoms of coronary disease, is also associated with a variety of neurologic problems, ranging from stroke to cognitive changes and depression, which remains a major cause of morbidity after surgery. Not only has it been estimated that from 30 and 79 percent of patients show cognitive decline from 2 weeks to 2 months after CABG, but our prior (separately funded) studies showed late decline in certain cognitive domains 1 to 4 years later. The cause of these cognitive changes is unclear: it is generally thought to be related to the use of the cardiopulmonary bypass machine in the operating room, but lack of appropriate control groups has precluded ruling out other causes including the effects of **general anesthesia,** Alzheimer's disease (AD) or depression. Therefore, newer techniques of "off-pump" coronary artery bypass surgery (OPAL), that are similar to CABG but do not use the cardiopulmonary bypass machine, provide a unique opportunity to determine the role of the bypass machine in the development of cognitive problems. The present proposal prospectively compares cognitive outcome in 3 groups of patients with coronary artery disease:-CABG patients (general anesthesia, use of the cardiopulmonary bypass machine)-OPCAB patients (general anesthesia)-Nonsurgical control patients (no surgery or general anesthesia) To address our overall hypothesis that patients undergoing CABG will show cognitive decline that differs in nature and time course from decline in surgical and nonsurgical controls, the following specific aims are proposed. By examining patients with neuropsychological tests chosen to assess different cognitive domains, and measures of depression preoperatively, at 3 months, at 1 year, at 3 years, aim 1 will compare the incidence of cognitive change up to 1 year in the three groups, to determine if decline is specific to CABG. Aim 2 will determine the incidence of change at 3 years after surgery. Aim 3 will clarify the role of depression on cognitive changes and the development of angina after surgery. Aim 4 will evaluate demographic, medical and genetic risk factors associated with cognitive change. The long-term objective of this proposal is to determine the role of the cardiopulmonary bypass machine in cognitive change after CABG with the ultimate purpose of proposing interventions to overcome these adverse effects.

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

- **Project Title: NEUROLOGICAL AND COGNITIVE OUTCOMES FOLLOWING CAGB**

  Principal Investigator & Institution: Mc Khann, Guy M.; Professor; None; Johns Hopkins University 3400 N Charles St Baltimore, Md 21218

  Timing: Fiscal Year 2004; Project Start 10-SEP-1997; Project End 31-MAR-2008

  Summary: (provided by applicant): The goal of this grant, from its inception, has been to understand the pathophysiology and time-course of the neurological and cognitive sequelae of CABG. In our previous funding cycles we focused on the early postoperative changes associated with CABG that included: neurological and cognitive effects in the immediate postoperative period, and cognitive performance at 1 month, 3 months and 1 year after surgery. We have found that by 3 and 12 months after surgery, the cognitive performance of CABG patients does not differ from that of a nonsurgical control group with cardiovascular disease. This suggests that cognitive changes during the immediate postoperative period, if present, may be transient and reversible. However, our findings, as well as those of other groups, indicate that there may be additional important longterm cognitive sequelae that occur many years after CABG (i.e., 5 years following surgery)1. In one study, 42% of patients had significant decline at 5 years2. With more than 400,000 having CABG per year, this translates into an incidence of 160,000 patients with potentially preventable cognitive decline. The relationship of these late changes to CABG remains unclear, however, because previous studies have not included appropriate control groups. In this competing continuation, we compare the CABG group with 3 control groups with the goal of defining the long-term outcomes associated with CABG, with the ultimate goal of providing a rationale for interventions to prevent these complications. The four study groups are: 1) Coronary Artery Bypass Grafting (CABG): surgery using cardiopulmonary bypass and aortic cross-clamping 2) Off-Pump Coronary Artery Bypass (OPCAB): Patients with surgery on the beating heart under **general anesthesia,** but without cardiopulmonary bypass, and with minimal aortic clamping/manipulation 3) Non-surgical controls (NSC): Patients with coronary artery disease, who have not had surgery 4) Healthy Control (HC): Subjects without known cardiovascular or cerebrovascular risk factors. Our overall hypothesis is that late cognitive decline after CABG may be related to underlying cerebrovascular disease, possibly augmented by effects of microemboli during surgery. In the next funding cycle, by comparing the performance of the above groups in several cognitive domains, we will define the nature, time-course and specificity of late changes in cognition associated with CABG, with the following specific aims: Specific Aim 1: To determine if late cognitive change over 5 years is specific to CABG Specific Aim 2: To identify those cognitive domains affected by CABG over a 5-year period. Specific Aim 3: To develop a statistical model that predicts cognitive change in CABG and/or other populations at risk for cerebrovascular disease over the 5-year follow-up period.

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

- **Project Title: NEUROMUSCULAR BLOCKER-INDUCED ASTHMA DURING ANESTHESIA**

  Principal Investigator & Institution: Emala, Charles W.; Anesthesiology; Columbia University Health Sciences Po Box 49 New York, Ny 10032

  Timing: Fiscal Year 2003; Project Start 01-APR-2003; Project End 31-MAR-2007

  Summary: (provided by applicant): Rapacuronium, a new rapidly acting nondepolarizing neuromuscular blocking drug, was released for use in 1999. It was developed specifically to facilitate tracheal intubation during the induction of **general**

anesthesia, but has been associated with life threatening bronchospasm. At least five patients have died and the drug was recently withdrawn from clinical use. The mechanism underlying this airway constriction is not currently known. Possible mechanisms include histamine release, cholinesterase inhibition, M3 muscarinic receptor agonism and M2 muscarinic receptor antagonism. It is extremely important that we understand the mechanism by which this drug induces airway constriction to prevent this from ever occurring again with newly introduced neuromuscular blocking agents. A safe and effective ultra-short acting nondepolarizing neuromuscular blocker is urgently needed for routine clinical use, and until one is found the search will continue. We hypothesize that neuromuscular blocking agents that have selective M2 antagonistic properties potentiate parasympathetic release of acetylcholine mediating bronchoconstriction. During intubation of the trachea, parasympathetic nerves release acetylcholine that act on M3 muscarinic receptors on airway smooth muscle to promote bronchoconstriction. Preliminary data generated from this proposal strongly suggest that the mechanism by which rapacuronium induced fatal bronchospasm is by selective inhibition of M2 muscarinic receptors. We will use in vivo and in vitro approaches to define the mechanism of neuromuscular blocking agent-induced potentiation of bronchoconstriction. Neuromuscular affinities for M2 and M3 muscarinic receptors will be defined by radioligand binding and functional assays (adenylyl cyclase and inositol phosphate assays). Neuromuscular blocking agents effects on acetyl cholinesterase activity will also be measured. The ability of neuromuscular blocking agents to enhance acetylcholine release from parasympathetic nerves will be measured using guinea pig trachea in organ baths. The ability of neuromuscular blocking agents to potentiate vagal nerve mediated bronchoconstriction or to increase airway pressure via histamine release will be measured in vivo using a well-characterized guinea pig model. This mechanism needs to be clearly characterized so that it can serve as a gold standard screen for new agents developed for clinical practice. It is imperative that the mechanism of neuromuscular blocking agents potential to induce bronchospasm be understood so that the millions of patients who undergo **general anesthesia** on a yearly basis are not subjected to unnecessary life threatening bronchospasm.

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

- **Project Title: NMR STUDIES OF MECHANISMS OF GENERAL ANESTHESIA**

  Principal Investigator & Institution: Xu, Yan; Associate Professor; Anesthesiology; University of Pittsburgh at Pittsburgh 350 Thackeray Hall Pittsburgh, Pa 15260

  Timing: Fiscal Year 2002; Project Start 01-JAN-1995; Project End 31-DEC-2003

  Summary: The molecular mechanisms of action of general anesthetics remain an enigma. A superfamily of ligand-gated ion channels has been implicated as the primary target sites for general anesthetics. It has become increasingly clear from our own and other studies that amphiphilicity in regions near the membrane interface is a unifying property of anesthetic binding site(s). Thus, general anesthetics, but not nonimmobilizers (nonanesthetics), have been shown to target amphiphilic interfacial residues of transmembrane channel peptides, and point mutations in the transmembrane domains II and III (TM2 and TM3) of glycine and gamma- aminobutyric acidA (GABAA) receptors can completely abolish or even reverse the sensitivity of these receptors to alcohol and general anesthetics. Complete and detailed elucidation of the structure-function relationship will dramatically advance our understanding of **general anesthetic** action beyond what was even imaginable in the recent past. This competitive renewal will quantify specific interactions of strategically selected pairs of general anesthetics and nonimmobilizers with the TM2 and TM3 domains of the alpha1 subunit

of human glycine receptors (GlyR). State-of-the-art protein expression and purification techniques will be coupled with high-resolution and solid-state nuclear magnetic resonance (NMR) spectroscopy, circular dichroism (CD), and molecular dynamic simulations to accomplish three specific aims: (1) To express the wild-type and mutated TM2 and TM3 segments of GlyR alpha1 subunit for structural study by NMR. (2) To determine, at or near atomic resolution, the structures of the functional TM2 and TM3 segments of the human GlyR alpha1 subunit and the associated anesthetic-insensitive mutants. (3) To investigate the structural motifs contained in TM2 and TM3 for **general anesthetic** binding, and to quantify the effects of **general anesthetic** binding on channel dynamics within the determined structural frame, thereby elucidating the structural requirement that controls the channel sensitivity to general anesthetics. The long-term goal is to relate the structural events to functional changes caused by general anesthetics, paving the way for future in vivo and other studies to finally identify the sites of action of general anesthetics in the central nervous system.

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- **Project Title: NONINVASIVE OPTICAL IMAGING OF VOCAL CORD MICROSTRUCTURE**

  Principal Investigator & Institution: Wong, Brian J.; Otolaryngology-Head/Neck Surgery; University of California Irvine Irvine, Ca 926977600

  Timing: Fiscal Year 2003; Project Start 01-SEP-2003; Project End 31-AUG-2005

  Summary: (provided by applicant): The diagnosis and management of many true vocal cord (TVC) lesions requires biopsy or excision which exposes the patient to the risks of **general anesthesia,** TVC injury, and potential iatrogenic glottic speech impairment. Unfortunately, many TVC lesions cannot be diagnosed without a biopsy, and this is particularly true with early TVC cancer, where chronic laryngitis is often clinically indistinguishable from malignancy. This application addresses this problem by developing a non-contact imaging device to provide high-resolution cross-sectional images of the TVC using Optical Coherence Tomography (OCT). OCT is an emerging imaging modality that uses low-coherence light to construct high-resolution (10-20 microns), cross-sectional images of tissue to depths of up to 3 mm. The specific aims of this study include: 1) design a high speed OCT instrument coupled to a surgical microscope; 2) obtain in vivo morphometric measurement of human TVC microstructure (e.g.; thickness of epithelium, Reinke's space, etc.); and 3) correlate in vivo OCT images with histology obtained from biopsies. This study will enroll approximately 125 adult patients undergoing laryngeal microendoscopy at UC Irvine Medical Center over two years. In over 60%, a tissue biopsy specimen will be available to allow correlation with conventional histology. Since many of these patients will have a biopsy to diagnose cancer, this study will also provide pilot information on the efficacy of OCT in diagnosing early TVC cancer, where the cardinal feature is invasion of the basement membrane. In addition to structural information on TVC microanatomy, the OCT device will provide functional images of specific tissue properties, including birefringence (collagen organization), using polarization-sensitive OCT, and microscopic blood flow, using Optical Doppler Tomography. We expect our instrument to: 1) image vocal cord microstructure including basement membrane integrity; 2) delineate the superficial and deep extent of both benign and malignant TVC neoplasms; and 3) facilitate real-time image guided microsurgery of the TVC, allowing more accurate tissue biopsies or surgery. Further, OCT imaging will provide a means of documenting the evolution of TVC pathology with 3-D images, thus complementing conventional endoscopy and stroboscopy. Application of OCT to microlaryngeal

surgery may reduce iatrogenic phonatory disability by reducing trauma to delicate structures that accompanies conventional techniques.

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- **Project Title: PHOTOLABELING OF ANESTHETIC STEROID BINDING SITES**

  Principal Investigator & Institution: Evers, Alex S.; Professor; Washington University Lindell and Skinker Blvd St. Louis, Mo 63130

  Timing: Fiscal Year 2002; Project Start 01-AUG-2002; Project End 31-JUL-2007

  Summary: Certain endogenous steroids and their synthetic analogues (neuroactive steroids) produce profound and rapid effects on the central nervous system ranging from **general anesthesia** to seizures. While these effects are thought to result from steroid interactions with specific binding sites on the GABA-A receptor, molecular biological and biochemical studies have failed to identify candidate regions or residues that might contribute to a binding site. The overall objective of this project is to identify and characterize the binding sites for neuroactive steroids using photo-affinity labeling techniques. To achieve this goal ZCM-43, a recently developed neuroactive steroid photo-affinity labeling reagent, will be used to photo-label a 35-kDa protein in brain. There are four specific aims of this project: (1) Identify and sequence the 35-kDa protein in brain. There are four specific aims of this project: (1) Identify and sequence the 35-kDa protein using two-dimensional electrophoresis and mass spectrometry. The structural specificity of steroid interaction with the 35-kDa protein will also be examined. (2) Determine the relationship between neuroactive steroid binding to 35-kDa protein and GABA-A receptor modulation using immunoprecipitation, radioligand binding and gene "knockout" techniques. (3) Determine if GABA-A receptors or other proteins in brain also have binding sites for neuroactive steroids. These studies will be performed using novel photo-labeling reagents in which the photo-reactive group is placed in various positions on the steroid backbone. (4) Determine if neuroactive steroids compete with cholesterol for binding sites at the lipid-protein interface These studies will be performed by manipulating membrane cholesterol and examining the effects on GABA-A receptor function as well as by using a cholesterol photo-labeling reagent. The information gained from this project will provide the background knowledge and pharmacological tools to: 1) approach the question of how endogenous neurosteroids modulate CNS function in health and disease and; 2) develop new pharmaceutical agents including potent steroidal anesthetics with minimal side effects, novel anti-convulsants and neuroactive steroid antagonists.

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- **Project Title: PRESURGERY HYPNOSIS--BENEFITS ANALYSIS IN BREAST CANCER**

  Principal Investigator & Institution: Montgomery, Guy; Ruttenberg Cancer Center; Mount Sinai School of Medicine of Nyu of New York University New York, Ny 10029

  Timing: Fiscal Year 2002; Project Start 17-AUG-2001; Project End 31-JUL-2004

  Summary: Over 90% of the 184,000 women diagnosed with breast cancer in 2000 will undergo surgery as part of their curative treatment. Despite improvements in pharmacological management, surgical procedures under **general anesthesia** continue to be associated with clinically significant side effects, chief among which are pain and nausea. These clinical problems are particularly severe following surgical treatment for breast cancer and can require additional pharmacologic intervention, prolong recovery room stay, delay discharge, and lead to unanticipated readmission. Clinical research

with other surgical populations has indicated that hypnosis can reduce intraoperative complications, reduce postoperative symptoms and enhance recovery (e.g., reduce pain, nausea, hospital stays), however, the treatment efficacy of hypnotic techniques with breast cancer surgical patients has yet to be established. A separate line of previous clinical research with surgery populations has indicated that preoperative psychological factors (emotional distress and cognitive expectations) are predictive of patients' postoperative experiences of side effects, but again research on breast cancer surgical patients is scant. The proposed research will bridge the two previous lines of research by combining a randomized clinical trial, (in which the effects of a preoperative hypnosis intervention to control side effects are compared to attention control), with a prospective quasi-naturalistic study, (in which the relations between preoperative psychological factors and patients' reactions to surgery are examined). In addition to establishing the applicability to breast cancer patients of findings in the general psychological, hypnosis and surgical literatures, the goal of proposed study is to make novel theoretical contribution by examining the potential role of psychological factors as the "active ingredients" in the beneficial effects of hypnosis. The proposed study will also make a novel practical contribution by examining cost-effectiveness of the hypnosis intervention, an approach which may have compelling implications for clinical practice as well as future behavioral research. The Specific Aims of the study are: 1) To investigate the impact of a presurgical hypnosis intervention on women scheduled for surgical treatment for breast cancer; 2) To investigate the contribution of preoperative emotional distress, and cognitive expectations to post- surgery side effects and recovery; 3) To determine whether the beneficial effects of the hypnosis intervention are accounted for (mediated) by differences in presurgery cognitive expectations and emotional distress; and 4) To investigate the cost-effectiveness of the presurgical hypnosis invention. o achieve these aims, 140 breast cancer patients scheduled for mastectomy will be randomly assigned to a hypnosis intervention group or an attention control group. The impact of the hypnosis intervention on postoperative nausea, pain, recovery from surgery, and cost- effectiveness will be analyzed within an experimental study design. The influence of presurgery distress and expectations of side effects will be analyzed within quasi-naturalistic study designs. The possible mediational role of these factors in hypnosis effects will be examined will classic statistical approaches.

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- **Project Title: RAPID OPIATE DETOXIFICATION UNDER GENERAL ANESTHESIA**

  Principal Investigator & Institution: D'ambra, Michael N.; Massachusetts General Hospital 55 Fruit St Boston, Ma 02114

  Timing: Fiscal Year 2002

  Summary: This abstract is not available.

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

- **Project Title: ROLES OF NEUROTROPHINS IN OCULAR DOMINANCE PLASTICITY**

  Principal Investigator & Institution: Kasamatsu, Takuji; Smith-Kettlewell Eye Research Institute Research Institute San Francisco, Ca 94115

  Timing: Fiscal Year 2002; Project Start 01-MAY-2000; Project End 30-APR-2005

  Summary: (Adapted from applicant's abstract): Neurotrophins (NTs) comprise a family of macromolecules that play a trophic support role in the developing cortex. They are

also involved in activity-dependent processes in the adult cortex. In the proposed physiological experiments, we will determine whether NT's play a role in the regulation of ocular dominance plasticity in developing visual cortex. There are basically two possible outcomes of cortically infused NTs on developing binocular interactions: one is the suppression of binocular competition and the other its promotion. The two predictions come from two opposing views on the in vivo cellular action of endogenous NTs in the brain. In model 1, NTs are generally necessary for competing, especially immature, axon terminals to survive (survival factor" in Maffei's proposal). In model 2, NTs have a more specific role as a stabilizer of active synapses and whose release in controlled by afferent activity itself ("specific retrograde messenger" in Thoenen's hypothesis). In the proposed study, 6 physiological experiments are designed to maximally distinguish between the two models. Exp 1: Either nerve growth factor (NGF) or brain-derived neurotrophic factor (BDNF) will be directly infused into the kitten visual cortex for a week, concurrently with monocular lid suture. Changes in the ocular dominance distribution, in favor of model 1 or 2 or neither, will be compared between different concentrations of the two NTs. Exp 2: Each of the two NTs will be infused as Exp 1, but the eyes will be untouched to study effects of the competition on a natural level. This will allow examination of the direct chemical action of NTs on cortical activity. Exp 3: As a control for Exp 2, NT-infused, otherwise normal kittens will be kept in the dark during the week of the NT infusion. Exp 4: The effects of NT infusion will be studied in relation to an unusual level of binocular interactions between the tetrodotoxin-injected eye and the lid-sutured fellow eye. Exp 5: NTs will be infused into visual cortex of binocularly deprived kittens. The last two preparations are included because the discrimination between the above-mentioned two models is strong or moderated, if the specific effects of NTs are detectable. Exp 6: We will study whether rapid physiological effects of NTs shown in other in vivo systems also work to induce changes in ocular dominance under **general anesthesia** and paralysis. Exp 7: We will examine the intracortical spread of directly infused BDNF for a week or less. Using the "in vivo dilution curve" thus obtained, we will titrate the lowest-yet-effective concentrations of BDNF for its physiological effects.

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- **Project Title: SENSITIVITY OF AGED RATS TO NRHYPO NEURODEGENERATION**

  Principal Investigator & Institution: Jevtovic-Todorovic, Vesna; Washington University Lindell and Skinker Blvd St. Louis, Mo 63130

  Timing: Fiscal Year 2002; Project Start 01-JUL-2002; Project End 30-JUN-2003

  Summary: Modern medicine is faced with a growing geriatric population and with an increase in the number of elderly patients who require surgical procedures under **general anesthesia.** Ketamine and nitrous oxide (N2O, laughing gas) are used common as general anesthetics for patients of all ages, and in some cases are considered the agents of choice for elderly patients. Both of these agents are frequently used in combination with other **general anesthetic** agents, and sometimes are used in combination with one another, especially for elderly patients who cannot tolerate the cardiopulmonary depressant properties of other general anesthetics. It has been known for some time that ketamine, a non-competitive N-methyl-D- aspartate neurons of adult rats. This is a property of ketamine shares with other NMDA antagonist drugs. Over the years, N2O has been considered safe for patients of all ages, although very little insight has been gained into its mechanism of action. Recently the applicant disocver4ed that N2O acts by the same mechanism as ketamine- it blocks NMDA glutamate receptors

and has all of the same properties as other NMDA antagonists-it blocks NMDA glutamate receptors and has all of the same properties as other NMDA antagonists, including the same neurotoxic properties, The applicant has also observed that when N2O is administered together with ketamine to young adult rats the two agents appear to potentiate one another's neurotoxicity, i.e., the toxicity is augmented to a degree that is greater than can be explained by simple additivity. In other pilot studies, we have observed that the NMDA antagonist, MK801, at a given dose induces much more severe brain damage in aged than in young adult rats. This raises questions about whether N2O and ketamine, either alone or in combination, might contribute to the post-operative delirious state (agitation, delusions, hallucinations, disorientation, confusion, memory impairment) that sometimes occurs post-operatively, and is known to occur much more frequently in elderly than young adult patients. Therefore, we propose studies in young adult and aged rats to clarify the nature and degree of risk associated with exposing the aged brain to N2O and ketamine, either individually or in combination. The experiments will be designed in a way that will help clarify the mechanism underlying the observed increased toxicity of MK801 in aged rats. In addition, we will explore pharmacological mechanisms by which the neurotoxic side effects of these two agents can be prevented.

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- **Project Title: STEM CELLS AND ACCESSORY CELLS IN PERIPHERAL BLOOD**

  Principal Investigator & Institution: Torok-Storb, Beverly J.; Member; Fred Hutchinson Cancer Research Center Box 19024, 1100 Fairview Ave N Seattle, Wa 98109

  Timing: Fiscal Year 2002; Project Start 30-SEP-1995; Project End 31-AUG-2004

  Summary: (provided by applicant): The proposed existence of adult, marrow-derived stem cells that retain the ability to generate various tissues, is an appealing concept with considerable therapeutic potential. With few exceptions the data used to support this stem cell plasticity concept come from murine studies in which immune cytochemistry and molecular probes are used to identify rare donor cells in fixed tissue. Whether these observations are valid, and if valid, whether they pertain to larger longer lived animals remains controversial. To contribute to the resolution of this uncertainty we propose to investigate the contribution of marrow stem cells to skin, liver, and marrow stroma. We hypothesize that if "plastic stem cells" reside in marrow they will contribute to nonhematopoietic tissue regeneration as needed. To test this we will investigate the effect of tissue specific proliferative demand on the detection of donor cells in canine stem cell recipients. All dogs used in these studies will be long term stable chimeras generated under the auspices of DK51 417. Briefly, under **general anesthesia** the chimeric dogs will undergo liver lobectomy, split skin harvest, and marrow aspiration. The harvested tissue will be assessed for % donor cells, the animals will recover, and after 3-5 months the regenerated tissue will also be assessed for % donor cells. Importantly tissue samples will be cultured ex vivo to expand cell populations of interest thereby providing relatively large numbers of morphologically distinct and cytochemically defined cells. Polymerase chain reaction (pcr) amplification of donor versus host DNA will then be used to determine the donor contribution to these defined cell populations. These strategies should improve the signal to noise ratio and make the detection of donor derived cells more reliable. The information gained should help define whether, and under what circumstances, marrow derived stem cells contribute to other tissues following allogeneic transplantation.

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- **Project Title: SUBTLE DISTURBANCES OF COBALAMIN STATUS**

  Principal Investigator & Institution: Carmel, Ralph; Director of Research; New York Methodist Hospital 506 60Th St New York, Ny 11215

  Timing: Fiscal Year 2003; Project Start 01-SEP-1983; Project End 31-MAY-2008

  Summary: (provided by applicant): Low cobalamin (vitamin B12) levels are frequent, especially in the elderly, several million of whom are affected. Most often the low levels reflect "subclinical cobalamin deficiency", an asymptomatic state marked only by metabolic evidence of cobalamin insufficiency. It is unclear if these persons need intervention because progression to clinical deficiency may be uncommon, and many people with low levels have no deficiency at all. The proposal aims to study whether nitrous oxide (N2O), used in most **general anesthesia** in the US, worsens cobalamin status in elderly people who have unrecognized subclinical cobalamin deficiency. The reason for concern is that N2O inactivates cobalamin and therefore can cause neurological dysfunction in some patients with underlying clinically expressed cobalamin deficiency. The elderly are known to have an increased risk of postoperative cognitive complications. The study will recruit patients >60 years old who are scheduled for elective surgery in which N2O use for more than 1 hour is planned. Patients will be randomized in a blinded fashion to receive a standard anesthetic regimen of several agents, in which N2O is either included or replaced by air; the two regimens are equally safe and effective. They will undergo cognitive function and depression scale testing, blood testing of cobalamin-related metabolism, and clinical evaluation before surgery and at 48 hours, 14 days and 28 days after surgery. Those with cognitive changes will be treated with cobalamin and reevaluated after 3 months. Statistical analysis will compare the subgroups' metabolic, neuropsychological, demographic, genetic and clinical data. The primary question is what effect routine N2O anesthesia has on metabolic and clinical status related to subclinical cobalamin deficiency. It will also resolve whether or not the combination of N2O and the deficiency can explain the increased rate of postoperative cognitive problems in the elderly, and thus if preoperative or postoperative attention to cobalamin is needed in the elderly. A secondary goal is to extensively study cobalamin-related and homocysteine-related metabolism in these patients and their conditions, particularly as changes evolve after N2O use and later improvement. The clinical study provides a unique opportunity to establish these metabolic details and to compare their interactions with common genetic mutations in the patients that affect enzymes relevant to cobalamin deficiency, N2O effects, and their contribution to the clinical outcomes.

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- **Project Title: SYNAPTIC INHIBITION BY VOLATILE ANSETHETICS**

  Principal Investigator & Institution: Wu, Ling-Gang; Anesthesiology; Washington University Lindell and Skinker Blvd St. Louis, Mo 63130

  Timing: Fiscal Year 2002; Project Start 01-APR-2002; Project End 31-MAR-2006

  Summary: Volatile anesthetics achieve their anesthetic effects partly by depressing excitatory glutamatergic synaptic transmission. Evidence suggests that depression of glutamatergic synaptic transmission is caused by inhibition of transmitter release. However, the cellular and molecular mechanisms underlying inhibition of transmitter release remain unclear. Based on our preliminary results, I hypothesize that volatile anesthetics depress glutamatergic synaptic transmission by reducing the presynaptic Ca2+ influx by two mechanisms: 1) inhibition of presynaptic Na+ channels, which decreases the action potential amplitude and thus the action potential-evoked Ca2+

influx, and 2) inhibition of presynaptic Ca2+ channels. We will test this hypothesis at a glutamatergic synapse in the medial nucleus of the trapezoid body in rat brainstem slices. This synapse offers a significant advantage over other synapses, because it has a large nerve terminal that allows for direct recordings of presynaptic action potentials, Na+, K+ and Ca2+ currents and fluorescence recordings of Ca2+ influx. These presynaptic recordings can be performed simultaneously with recordings of the postsynaptic excitatory current (EPSC) at the same synapse, which allows us to quantitatively evaluate the involvement of each presynaptic ion channel type in controlling action potential-evoked transmitter release. With these techniques, we will study the action of three commonly used volatile anesthetics, isoflurane, halothane and sevoflurane at clinically relevant concentrations. We will characterize the effects of these anesthetics on presynaptic Na+, K+ and Ca2+ channels and the contribution of each of these effects to depression of the EPSC. In addition, we will investigate whether these anesthetics also inhibit the EPSC by a mechanism independent of modulation of ion channels, i.e., direct inhibition of the release machinery. By revealing mechanisms underlying volatile anesthetic-induced depression of glutamate release, the proposed work will significantly contribute to our understanding of the cellular and molecular mechanisms of **general anesthesia,** and may ultimately help to design better general anesthetics.

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- **Project Title: SYNAPTIC MECHANISMS OF GENERAL ANESTHETIC ACTION**

  Principal Investigator & Institution: Hemmings, Hugh C.; Professor of Anesthesiology and Pharmaco; Anesthesiology; Weill Medical College of Cornell Univ New York, Ny 10021

  Timing: Fiscal Year 2002; Project Start 01-AUG-1998; Project End 31-JUL-2006

  Summary: (provided by applicant): Our long-term goals are to understand the mechanisms of action of general anesthetics on synaptic transmission. Understanding the mechanisms of both the therapeutic and undesired effects of existing general anesthetics will facilitate safe and appropriate clinical use while enabling rational development of more specific agents with reduced side-effects. Our hypothesis is that general anesthetics affect neurotransmitter release by agent-specific and transmitter-specific presynaptic mechanisms. The major goals will be accomplished by combining neurochemical and novel neurophysiological approaches outlined in the following proposed Specific Aims: 1) Determine the mechanisms by which volatile anesthetics inhibit transmitter release by characterizing both membrane delimited (e.g. ion channel or receptor mediated) and intracellular (e.g. involving fusion/exocytosis machinery) mechanisms of presynaptic **general anesthetic** effects. The involvement of presynaptic voltage-gated ion channels, ligand-gated ion channels, and vesicle fusion proteins as targets for anesthetics will be assessed. 2) Determine the electrophysiological effects of general anesthetics on presynaptic ion channels using whole-terminal patch clamp recording techniques of isolated rat neurohypophysial nerve terminals. 3) Elucidate transmitter-specific and brain region-specific effects of anesthetics on neurotransmitter release. Neurochemical techniques will be used to determine whether inhibition of glutamate release by general anesthetics in rat cortical nerve terminals can be generalized to other CNS regions and to other transmitter classes. The proposed experiments employ nerve terminals isolated form various regions of the rat CNS to study presynaptic anesthetic effects in a subcellular fraction that is free of intercellular interactions and amenable to pharmacological and electrophysiological analysis. Methods to be used include neurochemical analysis of the effects of representative

intravenous and volatile anesthetics on spontaneous and evoked release of endogenous and radiolabeled transmitters and electrophysiological recordings of presynaptic ion channels in isolated nerve terminals. Elucidation of the presynaptic effects of general anesthetics and their mechanisms is essential to understanding the molecular and cellular actions of this clinically important class of drugs on neuronal function.

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- **Project Title: THE ROLE OF THE AMYGDALA IN ANESTHETIC-INDUCED AMNESIA**

  Principal Investigator & Institution: Alkire, Michael T.; Assistant Professor; Anesthesiology; University of California Irvine Irvine, Ca 926977600

  Timing: Fiscal Year 2003; Project Start 01-JAN-2003; Project End 31-DEC-2006

  Summary: (provided by applicant): **General anesthetic** agents have two fundamental properties, an ability to cause immobility in response to pain and an ability to cause amnesia. Understanding anesthesia requires understanding both phenomenon. We recently demonstrated, using inhibitory avoidance learning in rats, that the basolateral amygdala (BL) is critically nvolved with mediating the amnesic effects of propofol **general anesthesia.** Propofol does not produce amnesia if the BL is lesioned. Further pilot work found that intra-amygdala microinfusions of the GABA antagonist bicuculline also attenuated the amnesic effects of propofol, suggesting that GABAergic mechanisms may underlie this response. This proposal will help fill the gap in knowledge that exists regarding the role of the amygdala as a mediator of anesthetic-induced amnesia. We specifically aim to: 1) determine whether the amygdala mediates the amnesia of volatile anesthetic agents studied under steady-state learning conditions at equivalent MAC% doses, 2) further elucidate the cellular mechanisms of propofol's amnesic effects, and 3) begin to determine how neuroanatomic pathways to and from the amygdala mediate these effects. We will use the rat inhibitory avoidance model to assess, in vivo, the effects of various anesthetics and amygdala manipulations on memory processing. Initial experiments, following appropriate dose-response studies, will determine whether excitotoxic-induced bilateral lesions of the BL will block the amnesia of the volitile anesthetic agents halothane (thought to act preferentially on the amygdala) and isoflurane (a commonly used inhalational agent). Subsequent experiments will use intra-amygdala microinfusion techniques with the specific GABA blocker picrotoxin to assess the contribution played by the GABAergic system in mediating propofol-induced amnesia. Lesions of a main amygdala pathway, the stria terminalis, will also be studied. Collectively, the proposed experiments should provide the most complete understanding to date of specific brain systems mediating anesthetic-induced amnesia and will provide a solid foundation for further work on the mechanisms of drug induced amnesia.

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

- **Project Title: TREATMENT OF STATUS EPILEPTICUS**

  Principal Investigator & Institution: Kapur, Jaideep; Associate Professor; Neurology; University of Virginia Charlottesville Box 400195 Charlottesville, Va 22904

  Timing: Fiscal Year 2002; Project Start 15-SEP-2000; Project End 31-AUG-2003

  Summary: (Verbatim from the Applicant's Abstract) Convulsive status epilepticus is a prolonged self sustaining seizure which results in high morbidity and mortality. Current treatment of status epilepticus rests primarily on drugs that activate GABM receptors. GABAergic drugs are only effective in initiation phase of status epilepticus and lose

effectiveness in sustained status epilepticus. When these drugs and phenytoin fail status epilepticus is treated with prolonged **general anesthesia** which is associated with high morbidity and mortality. A new class of drugs is necessary for the treatment of sustained status epilepticus. Preliminary studies find that NMDA receptor antagonists are effective in terminating sustained status epilepticus. Further, there is a potential mechanism of NMDA receptor activation during status epilepticus. NMDA receptors are only partially activated during normal low frequency excitatory synaptic activity in the hippocampus due to magnesium block of the receptor. This block can however be relieved by membrane depolarization. Compared to CA1 pyramidal neurons acutely isolated from control animals, the CA1 pyramidal neurons from animals in sustained status epilepticus have a markedly depolarized membrane potential. This depolarization is likely to remove Mg2+ block of NMDA receptors allow their activation. The proposal seeks to extend studies on NMDA receptor mechanisms in sustaining status epilepticus by testing two hypotheses. First, NMDA receptor antagonists are superior to conventional GABAergi c agents in terminating sustained (>60 minutes) status epilepticus and second there is increased activation of NMDA receptors on CA1 pyramidal neurons during sustained status epilepticus. The overall design of experiments seeks to combine insights from NMDA receptor antagonist treatment of experimental status epilepticus with patch clamp analysis of NMDA receptor currents in hippocampal CA1 pyramidal neurons acutely isolated from rats undergoing status epilepticus. This proposal tests hypotheses by fulfilling specific aims: 1) Comparing the efficacy of four classes of NMDA receptor antagonists with two GABAergic agents in controlling sustained status epilepticus and 2) Characterizing the resting membrane potential, NMDA and sensitivity, pH and redox sensitivity of NMDA receptors on CA1 neurons acutely isolated from hippocampi of rats undergoing sustained status epilepticus. These studies will provide animal data to design and execute human clinical trails for treatment of refractory status epilepticus with NMDA receptor antagonists. These studies will provide insights into mechanisms of NMDA receptor activation on vulnerable neurons during status epilepticus.

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- **Project Title: ULTRASOUND AND NERVE STIMULATOR GUIDE**

  Principal Investigator & Institution: Busse, Larry J.; President; Ljb Development, Inc. 345 Longmeadow Ln Fort Mitchell, Ky 41017

  Timing: Fiscal Year 2002; Project Start 01-APR-1999; Project End 28-FEB-2005

  Summary: (Provided by the Applicant): Regional anesthesia (RA) is a powerful technique to reduce both perioperative and chronic pain. RA provides significant benefits to patients since it requires only light sedation and thereby results in a low incidence of postoperative complications. Despite these advantages, only 5-20 percent of eligible patients receives RA. Selection for RA depends primarily on a practitioner's confidence in applying the method. The proposed research will develop a device that will improve physician confidence by providing realtime feedback during RA. The success of the block: depends on locating the deeply placed nerves for peripheral nerve blockade or the neurovaseular bundle for plexus blockade, while avoiding surrounding vital structures. Since target nerves lie in close proximity to major blood vessels, guidance will be provided using a combination of Doppler ultrasound (for long-range direction) and electrical nerve stimulation for confirmation of needle placement. A Doppler Directed Nerve Stimulator (DDNS) using the continuous-wave Doppler method will be built and a clinical study undertaken to study its efficacy for guiding RA. A DDNS prototype using pulsed-wave Doppler will be built and tested for

improved performance and safe about. Successful completion of Phase II will lead to the introduction of a new product for RA delivery. PROPOSED COMMERCIAL APPLICATION: RA potentially benefits both patients and payers since its use promotes rapid recovery, shortened hospital stays and excellent pain control. The overall cost of RA is about 1/3 of costs associated with **general anesthesia.** The development of a disposable device for guiding RA will result in a commercially viable product, which will increase the use of RA and decrease the costs associated with surgical anesthesia and post-operative care.

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

E-Journals: PubMed Central[3]

PubMed Central (PMC) is a digital archive of life sciences journal literature developed and managed by the National Center for Biotechnology Information (NCBI) at the U.S. National Library of Medicine (NLM).[4] Access to this growing archive of e-journals is free and unrestricted.[5] To search, go to **http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?db=Pmc**, and type "general anesthesia" (or synonyms) into the search box. This search gives you access to full-text articles. The following is a sample of items found for general anesthesia in the PubMed Central database:

- **A RELATION BETWEEN HEMODYNAMIC AND PLASMA VOLUME ALTERATIONS DURING GENERAL ANESTHESIA IN MAN.** by Price HL, Helrich M, Conner EH.; 1956 Jan;
  http://www.pubmedcentral.gov/picrender.fcgi?tool=pmcentrez&action=stream&blobtype=pdf&artid=438786
- **Large-scale molecular dynamics simulations of general anesthetic effects on the ion channel in the fully hydrated membrane: The implication of molecular mechanisms of general anesthesia.** by Tang P, Xu Y.; 2002 Dec 10;
  http://www.pubmedcentral.gov/articlerender.fcgi?tool=pmcentrez&artid=138560
- **Modulation of the general anesthetic sensitivity of a protein: a transition between two forms of firefly luciferase.** by Moss GW, Franks NP, Lieb WR.; 1991 Jan 1;
  http://www.pubmedcentral.gov/picrender.fcgi?tool=pmcentrez&action=stream&blobtype=pdf&artid=50764
- **THE EFFECT OF HYPERCAPNIA ON ESTIMATED HEPATIC BLOOD FLOW, CIRCULATING SPLANCHNIC BLOOD VOLUME, AND HEPATIC SULFOBROMOPHTHALEIN CLEARANCE DURING GENERAL ANESTHESIA IN MAN.** by Epstein RM, Wheeler HO, Frumin MJ, Habif DV, Papper EM, Bradley SE.; 1961 Mar;
  http://www.pubmedcentral.gov/picrender.fcgi?tool=pmcentrez&action=stream&blobtype=pdf&artid=290757

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[3] Adapted from the National Library of Medicine: **http://www.pubmedcentral.nih.gov/about/intro.html**.

[4] With PubMed Central, NCBI is taking the lead in preservation and maintenance of open access to electronic literature, just as NLM has done for decades with printed biomedical literature. PubMed Central aims to become a world-class library of the digital age.

[5] The value of PubMed Central, in addition to its role as an archive, lies in the availability of data from diverse sources stored in a common format in a single repository. Many journals already have online publishing operations, and there is a growing tendency to publish material online only, to the exclusion of print.

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.[6] 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 general anesthesia, simply go to the PubMed Web site at **http://www.ncbi.nlm.nih.gov/pubmed**. Type "general anesthesia" (or synonyms) into the search box, and click "Go." The following is the type of output you can expect from PubMed for general anesthesia (hyperlinks lead to article summaries):

- **A child of suspected malignant hyperthermia during general anesthesia for dental surgery.**
  Author(s): Chen LW, Chang WK, Tsou MY, Feng CK, Or CH, Lui PW, Lee TY.
  Source: Acta Anaesthesiol Sin. 1996 September; 34(3): 167-71.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=9084542

- **A comparison of infraclavicular nerve block versus general anesthesia for hand and wrist day-case surgeries.**
  Author(s): Hadzic A, Arliss J, Kerimoglu B, Karaca PE, Yufa M, Claudio RE, Vloka JD, Rosenquist R, Santos AC, Thys DM.
  Source: Anesthesiology. 2004 July; 101(1): 127-32.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=15220781

- **A comparison of psoas compartment block and spinal and general anesthesia for outpatient knee arthroscopy.**
  Author(s): Jankowski CJ, Hebl JR, Stuart MJ, Rock MG, Pagnano MW, Beighley CM, Schroeder DR, Horlocker TT.
  Source: Anesthesia and Analgesia. 2003 October; 97(4): 1003-9, Table of Contents.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=14500148

- **A comparison of the cost of local versus general anesthesia for laparoscopic sterilization in an operating room setting.**
  Author(s): Lipscomb GH, Dell JR, Ling FW, Spellman JR.
  Source: The Journal of the American Association of Gynecologic Laparoscopists. 1996 February; 3(2): 277-81.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=9050640

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[6] 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 prospective randomized study comparing perioperative outcome variables after epidural or general anesthesia for lumbar disc surgery.**
  Author(s): Demirel CB, Kalayci M, Ozkocak I, Altunkaya H, Ozer Y, Acikgoz B.
  Source: Journal of Neurosurgical Anesthesiology. 2003 July; 15(3): 185-92.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=12826965

- **A prospective randomized study comparing short- and intermediate-term perioperative outcome variables after spinal or general anesthesia for lumbar disk and laminectomy surgery.**
  Author(s): Jellish WS, Thalji Z, Stevenson K, Shea J.
  Source: Anesthesia and Analgesia. 1996 September; 83(3): 559-64.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=8780281

- **A questionnaire for measuring patient satisfaction to general anesthesia.**
  Author(s): Sindhvananda W, Leelanukrom R, Juajarungjai S.
  Source: J Med Assoc Thai. 2003 December; 86(12): 1167-76.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=14971526

- **A retrospective comparison of spinal and general anesthesia for vaginal hysterectomy: a time analysis.**
  Author(s): Tessler MJ, Kardash K, Kleiman S, Rossignol M.
  Source: Anesthesia and Analgesia. 1995 October; 81(4): 694-6.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=7573995

- **Acute cardiovascular instability during percutaneous ethanol injection of a hepatocellular carcinoma under general anesthesia.**
  Author(s): Naik B, Lobato E, Urdaneta F.
  Source: Anesthesiology. 2004 May; 100(5): 1307-8.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=15114231

- **Addition of low-dose ketamine to general anesthesia does not improve cardiovascular response during conventional abdominal surgery.**
  Author(s): Hirata S, Seo N, Murayama T, Fujiwara T, Sekiguchi M.
  Source: Anesthesia and Analgesia. 1995 November; 81(5): 1111-2.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=7486062

- **Administering metered dose bronchodilators during general anesthesia.**
  Author(s): Vu H, Kempen PM.
  Source: Anesthesiology. 1996 September; 85(3): 691.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=8853110

- **Adult strabismus surgery under propofol sedation with local versus general anesthesia.**
  Author(s): Greenberg MF, Pollard ZF.
  Source: Journal of Aapos : the Official Publication of the American Association for Pediatric Ophthalmology and Strabismus / American Association for Pediatric Ophthalmology and Strabismus. 2003 April; 7(2): 116-20.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=12736624

- **Alcohols inhibit a cloned potassium channel at a discrete saturable site. Insights into the molecular basis of general anesthesia.**
  Author(s): Covarrubias M, Vyas TB, Escobar L, Wei A.
  Source: The Journal of Biological Chemistry. 1995 August 18; 270(33): 19408-16.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=7642622

- **Alfentanil does not increase resistance of the respiratory system in ASA I patients ventilated mechanically during general anesthesia.**
  Author(s): Conti G, De Cosmo G, Bocci MG, Antonelli M, Ferro G, Costa R, Zito G, Proietti R.
  Source: Canadian Journal of Anaesthesia = Journal Canadien D'anesthesie. 2002 August-September; 49(7): 718-23. English, French.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=12193492

- **An evaluation of the Laryngeal Tube during general anesthesia using mechanical ventilation.**
  Author(s): Gaitini LA, Vaida SJ, Somri M, Kaplan V, Yanovski B, Markovits R, Hagberg CA.
  Source: Anesthesia and Analgesia. 2003 June; 96(6): 1750-5, Table of Contents.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=12761007

- **An outbreak of Serratia marcescens bacteremia after general anesthesia.**
  Author(s): Sebert ME, Manning ML, McGowan KL, Alpern ER, Bell LM.
  Source: Infection Control and Hospital Epidemiology : the Official Journal of the Society of Hospital Epidemiologists of America. 2002 December; 23(12): 733-9.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=12517016

- **An overview of outpatient sedation and general anesthesia for dental care in California.**
  Author(s): Silegy T, Kingston RS.
  Source: J Calif Dent Assoc. 2003 May; 31(5): 405-12.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=12839233

- **An unusual cause of airway obstruction during general anesthesia with a laryngeal mask airway.**
  Author(s): Bernards CM.
  Source: Anesthesiology. 2004 April; 100(4): 1017-8.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=15087642

- **Awareness under general anesthesia.**
  Author(s): Sigalovsky N.
  Source: Aana Journal. 2003 October; 71(5): 373-9. Review.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=14625975

- **Awareness under general anesthesia.**
  Author(s): Chaiwat O, Vacharaksa K, Prakanrattana U.
  Source: J Med Assoc Thai. 2002 September; 85 Suppl 3: S948-55.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=12452234

- **Balancing efficacy with safety in general anesthesia and sedation.**
  Author(s): Bennett CR.
  Source: Anesthesia Progress. 1986 July-August; 33(4): 184-7.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=3465249

- **Basilar artery embolism after surgery under general anesthesia: a case report.**
  Author(s): Fisher CM.
  Source: Neurology. 1993 September; 43(9): 1856-7.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=8414051

- **Behavioral changes of children undergoing dental treatment using sedation versus general anesthesia.**
  Author(s): Camm JH, Mourino AP, Cobb EJ, Doyle TE.
  Source: Pediatr Dent. 1987 June; 9(2): 111-7. No Abstract Available.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=3475679

- **Beneficial effects of the combined techniques of caudal and general anesthesia in the pediatric patient: two case reports.**
  Author(s): Hudson-Goodman P, Martin J.
  Source: Crna. 1992 November; 3(4): 183-5.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=1458251

- **Benefits of epidural anesthesia over general anesthesia in the prevention of deep vein thrombosis following total hip arthroplasty.**
  Author(s): Moran MC.
  Source: The Journal of Arthroplasty. 1995 June; 10(3): 405-6.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=7673924

- **Benzocaine-induced methemoglobinemia during general anesthesia.**
  Author(s): Spielman FJ, Anderson JA, Terry WC.
  Source: Journal of Oral and Maxillofacial Surgery : Official Journal of the American Association of Oral and Maxillofacial Surgeons. 1984 November; 42(11): 740-3.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=6593447

- **Benzodiazepine treatment of penile erection under general anesthesia.**
  Author(s): Baraka A, Sibai AN.
  Source: Anesthesia and Analgesia. 1988 June; 67(6): 596-7.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=3377217

- **Bilateral angle closure glaucoma following general anesthesia.**
  Author(s): Ates H, Kayikcioglu O, Andac K.
  Source: International Ophthalmology. 1999; 23(3): 129-30.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=11456248

- **Bilateral lower limb hypoesthesia after radical prostatectomy in the hyperlordotic position under general anesthesia.**
  Author(s): Beloeil H, Albaladejo P, Hoen S, Eschwege P, Benhamou D.
  Source: Canadian Journal of Anaesthesia = Journal Canadien D'anesthesie. 2003 August-September; 50(7): 653-6.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=12944438

- **Bilateral parotid sialadenopathy associated with general anesthesia: a case report.**
  Author(s): Gombar KK, Singh B.
  Source: Journal of Oral and Maxillofacial Surgery : Official Journal of the American Association of Oral and Maxillofacial Surgeons. 1993 March; 51(3): 328-30; Discussion 330-1.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=8445479

- **Bilateral vocal cord paralysis following general anesthesia.**
  Author(s): Nuutinen J, Karja J.
  Source: The Laryngoscope. 1981 January; 91(1): 83-6.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=7453467

- **BIS monitoring to prevent awareness during general anesthesia.**
  Author(s): O'Connor MF, Daves SM, Tung A, Cook RI, Thisted R, Apfelbaum J.
  Source: Anesthesiology. 2001 March; 94(3): 520-2.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=11374615

- **Blood-pressure and pulse-rate responses to ketamine during general anesthesia.**
  Author(s): Stanley TH.
  Source: Anesthesiology. 1973 December; 39(6): 648-9.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=4761024

- **Brachial plexus anesthesia compared to general anesthesia when a block room is available.**
  Author(s): Armstrong KP, Cherry RA.
  Source: Canadian Journal of Anaesthesia = Journal Canadien D'anesthesie. 2004 January; 51(1): 41-4.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=14709459

- **Brachial plexus injury related to improper positioning during general anesthesia.**
  Author(s): Ngamprasertwong P, Phupong V, Uerpairojkit K.
  Source: Journal of Anesthesia. 2004; 18(2): 132-4.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=15127262

- **Bradycardia and hypotension associated with baclofen used during general anesthesia.**
  Author(s): Sill JC, Schumacher K, Southorn PA, Reuter J, Yaksh TL.
  Source: Anesthesiology. 1986 February; 64(2): 255-8.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=3511771

- **Brain injury under general anesthesia: is monitoring of the EEG helpful?**
  Author(s): Billard V.
  Source: Canadian Journal of Anaesthesia = Journal Canadien D'anesthesie. 2001 December; 48(11): 1055-60. English, French.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=11744578

- **Breathing pattern and arterial blood gases during Nd-YAG laser photoresection of endobronchial lesions under general anesthesia: use of negative pressure ventilation: a preliminary study.**
  Author(s): Vitacca M, Natalini G, Cavaliere S, Clini E, Foccoli P, Candiani A, Ambrosino N.
  Source: Chest. 1997 December; 112(6): 1466-73.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=9404740

- **Bronchial mucus transport in chronic smokers and nonsmokers during general anesthesia.**
  Author(s): Konrad FX, Schreiber T, Brecht-Kraus D, Georgieff M.
  Source: Journal of Clinical Anesthesia. 1993 September-October; 5(5): 375-80.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=8217173

- **Bronchodilator premedication does not decrease respiratory adverse events in pediatric general anesthesia.**
  Author(s): Elwood T, Morris W, Martin LD, Nespeca MK, Wilson DA, Fleisher LA, Robotham JL, Nichols DG.
  Source: Canadian Journal of Anaesthesia = Journal Canadien D'anesthesie. 2003 March; 50(3): 277-84.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=12620952

- **Carbon monoxide and general anesthesia.**
  Author(s): Hampson NB, McDonald SB.
  Source: Chest. 1996 November; 110(5): 1375.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=8915255

- **Cardiac outcomes after regional or general anesthesia. Do we have the answer?**
  Author(s): Go AS, Browner WS.
  Source: Anesthesiology. 1996 January; 84(1): 1-2.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=8572322

- **Cardiac outcomes after regional or general anesthesia: do we know the question?**
  Author(s): Beattie C, Roizen MF, Downing JW.
  Source: Anesthesiology. 1996 November; 85(5): 1207-9.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=8916843

- **Cardiopulmonary bypass before general anesthesia in prosthetic valve thrombosis.**
  Author(s): Erdil N, Cetin L, Nisanoglu V, Sener E, Demirkilic U.
  Source: Asian Cardiovascular & Thoracic Annals. 2002 March; 10(1): 83-4.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=12079984

- **Coagulopathies in patients after transurethral resection of the prostate: spinal versus general anesthesia.**
  Author(s): Smyth R, Cheng D, Asokumar B, Chung F.
  Source: Anesthesia and Analgesia. 1995 October; 81(4): 680-5.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=7573993

- **Cognitive effects after epidural vs general anesthesia in older adults. A randomized trial.**
  Author(s): Williams-Russo P, Sharrock NE, Mattis S, Szatrowski TP, Charlson ME.
  Source: Jama : the Journal of the American Medical Association. 1995 July 5; 274(1): 44-50.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=7791257

- **Cognitive effects after epidural vs general anesthesia.**
  Author(s): Witt WO.
  Source: Jama : the Journal of the American Medical Association. 1995 November 15; 274(19): 1510.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=7474218

- **Cognitive failures after general anesthesia are probably not related to the type of anesthetic used.**
  Author(s): Basgul E, Akinci SB.
  Source: Anesthesia and Analgesia. 2002 June; 94(6): 1669; Author Reply 1669.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=12032051

- **Combined thoracic epidural with light general anesthesia for thymectomy in myasthenia gravis.**
  Author(s): Suwanchinda V, Yok-Ubol B, Prakanrattana U, Udomphunthurak S.
  Source: J Med Assoc Thai. 1995 November; 78(11): 605-10.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=8576672

- **Comparison of intravenous sedation versus general anesthesia on the efficacy of the Doli 50 lithotriptor.**
  Author(s): Sorensen C, Chandhoke P, Moore M, Wolf C, Sarram A.
  Source: The Journal of Urology. 2002 July; 168(1): 35-7.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=12050487

- **Comparison of local and general anesthesia in tension-free (Lichtenstein) hernioplasty: a prospective randomized trial.**
  Author(s): Gonullu NN, Cubukcu A, Alponat A.
  Source: Hernia : the Journal of Hernias and Abdominal Wall Surgery. 2002 March; 6(1): 29-32.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=12090578

- **Comparison of neonatal effects of epidural and general anesthesia for cesarean section.**
  Author(s): Sener EB, Guldogus F, Karakaya D, Baris S, Kocamanoglu S, Tur A.
  Source: Gynecologic and Obstetric Investigation. 2003; 55(1): 41-5.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=12624551

- **Comparison of spinal vs general anesthesia via laryngeal mask airway in inguinal hernia repair.**
  Author(s): Burney RE, Prabhu MA, Greenfield ML, Shanks A, O'Reilly M.
  Source: Archives of Surgery (Chicago, Ill. : 1960). 2004 February; 139(2): 183-7.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=14769578

- **Complications of general anesthesia using nitrous oxide in eyes with preexisting gas bubbles.**
  Author(s): Fu AD, McDonald HR, Eliott D, Fuller DG, Halperin LS, Ramsay RC, Johnson RN, Ai E.
  Source: Retina (Philadelphia, Pa.). 2002 October; 22(5): 569-74.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=12441721

- **Computer assisted physiologic monitoring and stability assessment in vascular surgical patients undergoing general anesthesia--preliminary data.**
  Author(s): Weiss YG, Maliar A, Eidelman LA, Berlatzky Y, Hanson CW 3rd, Deutschman CS, Zajicek G.
  Source: Journal of Clinical Monitoring and Computing. 2000; 16(2): 107-13.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=12578067

- **Computer-assisted auscultation of a bronchopleurocutaneous fistula during general anesthesia.**
  Author(s): Manecke GR Jr, Hartman AR, Poppers PJ.
  Source: Anesthesia and Analgesia. 1996 October; 83(4): 880-2.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=8831340

- **Consciousness unbound: toward a paradigm of general anesthesia.**
  Author(s): Mashour GA.
  Source: Anesthesiology. 2004 February; 100(2): 428-33. Review.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=14739820

- **Control of blood pressure and heart rate in patients randomized to epidural or general anesthesia for lower extremity vascular surgery. Perioperative Ischemia Randomized Anesthesia Trial (PIRAT) Study Group.**
  Author(s): Christopherson R, Glavan NJ, Norris EJ, Beattie C, Rock P, Frank SM, Gottlieb SO.
  Source: Journal of Clinical Anesthesia. 1996 November; 8(7): 578-84.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=8910181

- **Cortisol response to surgery and postoperative confusion in depressed patients under general anesthesia with fentanyl.**
  Author(s): Kudoh A, Takahira Y, Katagai H, Takazawa T.
  Source: Neuropsychobiology. 2002; 46(1): 22-6.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=12207143

- **Decrease of isoprene concentrations in blood during general anesthesia.**
  Author(s): Cailleux A, Moreau X, Delhumeau A, Allain P.
  Source: Biochemical Medicine and Metabolic Biology. 1993 June; 49(3): 321-5.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=8347376

- **Delayed arousal after general anesthesia associated with baclofen.**
  Author(s): Gomar C, Carrero EJ.
  Source: Anesthesiology. 1994 November; 81(5): 1306-7.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=7978496

- **Delayed cord clamping in cesarean section with general anesthesia.**
  Author(s): Erkkola R, Kero P, Kanto J, Korvenranta H, Nanto V, Peltonen T.
  Source: American Journal of Perinatology. 1984 January; 1(2): 165-9.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=6440574

- **Dental health behavior of children with BBTD treated using general anesthesia or sedation, and of their parents in a recall examination.**
  Author(s): Peretz B, Faibis S, Ever-Hadani P, Eidelman E.
  Source: Asdc J Dent Child. 2000 January-February; 67(1): 50-4, 9.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=10736659

- **Dental outpatient general anesthesia.**
  Author(s): Lytle JJ.
  Source: J Calif Dent Assoc. 1994 June; 22(6): 32, 34, 36-8.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=7523622

- **Dental treatment under general anesthesia: a useful procedure in the third millennium? (l).**
  Author(s): Vargas Roman Mdel P, Rodriguez Bermudo S, Machuca Portillo G.
  Source: Medicina Oral : Organo Oficial De La Sociedad Espanola De Medicina Oral Y De La Academia Iberoamericana De Patologia Y Medicina Bucal. 2003 March-April; 8(2): 129-35. Review. English, Spanish.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=12618673

- **Desflurane for outpatient general anesthesia in third molar extraction cases.**
  Author(s): Bandrowsky T, Orr FE, Vorono AA, Bergin-Sperry M.
  Source: Journal of Oral and Maxillofacial Surgery : Official Journal of the American Association of Oral and Maxillofacial Surgeons. 1997 February; 55(2): 129-32; Discussion 132-3.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=9024348

- **Determination of the reliability of three scoring systems to evaluate children after general anesthesia.**
  Author(s): Keegan NJ, Yudkowitz FS, Bodian CA.
  Source: Anaesthesia. 1995 March; 50(3): 200-2.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=7717482

- **Development and psychometric testing of a quality of recovery score after general anesthesia and surgery in adults.**
  Author(s): Myles PS, Hunt JO, Nightingale CE, Fletcher H, Beh T, Tanil D, Nagy A, Rubinstein A, Ponsford JL.
  Source: Anesthesia and Analgesia. 1999 January; 88(1): 83-90.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=9895071

- **Dextromethorphan reduces immediate and late postoperative analgesic requirements and improves patients' subjective scorings after epidural lidocaine and general anesthesia.**
  Author(s): Weinbroum AA.
  Source: Anesthesia and Analgesia. 2002 June; 94(6): 1547-52.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=12032024

- **Diagnosis of myocardial injury by real-time recording of ST segments of the electrocardiogram in a patient receiving general anesthesia for electroconvulsive therapy.**
  Author(s): Steiner LA, Drop LJ, Castelli I, Alfille PH, Schouten R, Welch CA.
  Source: Anesthesiology. 1993 August; 79(2): 383-8.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=8342848

- **Discharge time in patients who receive fentanyl or alfentanil for general anesthesia.**
  Author(s): Heather DJ, Martin-Sheridan D.
  Source: Nurse Anesth. 1993 December; 4(4): 160-5.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=8136396

- **Dissociative amnesia after general anesthesia--a case report.**
  Author(s): Chang Y, Huang CH, Wen YR, Chen JY, Wu GJ.
  Source: Acta Anaesthesiol Sin. 2002 June; 40(2): 101-4.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=12194389

- **Do we finally have a technique for determining how "blocked" patients are under general anesthesia?**
  Author(s): Rowlingson JC.
  Source: Anesthesia and Analgesia. 1998 July; 87(1): 1-3.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=9661535

- **Dobutamine infusion modifies thermoregulation during general anesthesia.**
  Author(s): Shitara T, Wajima Z, Ogawa R.
  Source: Anesthesia and Analgesia. 1996 December; 83(6): 1154-9.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=8942578

- **Does general anesthesia affect sinusoidal liver cells as measured by beta-N-acetyl hexosaminidase serum activity level?**
  Author(s): Scapa E, Pinhasov I, Eshchar J.
  Source: Hepatogastroenterology. 1998 September-October; 45(23): 1813-5.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=9840153

- **Does general anesthesia for dilation and curettage cause more perioperative bleeding?**
  Author(s): Johnson MD, Schlanger M.
  Source: Journal of Clinical Anesthesia. 1997 August; 9(5): 433.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=9257217

- **Does monitoring end-tidal isoflurane concentration improve titration during general anesthesia?**
  Author(s): Liu J, Klein KW, Griffin JD, White PF.
  Source: Journal of Clinical Anesthesia. 1995 May; 7(3): 186-91.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=7669306

- **Dynamic imaging of the pediatric upper airway during general anesthesia.**
  Author(s): Reber A, Paganoni R, Frei FJ.
  Source: Journal of Clinical Monitoring and Computing. 1998 April; 14(3): 199-202.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=9676869

- **Early alterations in the number of circulating lymphocyte subpopulations and enhanced proinflammatory immune response during opioid-based general anesthesia.**
  Author(s): Brand JM, Frohn C, Luhm J, Kirchner H, Schmucker P.
  Source: Shock (Augusta, Ga.). 2003 September; 20(3): 213-7.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=12923491

- **Echocardiographic monitoring during induction of general anesthesia with a miniaturized esophageal probe.**
  Author(s): Zimmermann P, Greim C, Trautner H, Sagmeister U, Kraemer K, Roewer N.
  Source: Anesthesia and Analgesia. 2003 January; 96(1): 21-7, Table of Contents.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=12505917

- **EEG Predicts movement response to surgical stimuli during general anesthesia with combinations of isoflurane, 70% N2O, and fentanyl.**
  Author(s): Dutton RC, Smith WD, Smith NT.
  Source: Journal of Clinical Monitoring. 1996 March; 12(2): 127-39.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=8823633

- **Effect of elective surgery under general anesthesia on mental status variables in elderly women and men: 10-month follow-up.**
  Author(s): Goldstein MZ, Fogel BS, Young BL.
  Source: Int Psychogeriatr. 1996 Spring; 8(1): 135-49.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=8805094

- **Effect of general anesthesia on the defibrillation energy requirement in patients undergoing defibrillator implantation.**
  Author(s): Knight BP, Pelosi F, Flemming M, Morady F, Strickberger SA.
  Source: Journal of Interventional Cardiac Electrophysiology : an International Journal of Arrhythmias and Pacing. 1999 December; 3(4): 325-8.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=10525247

- **Effect of general anesthesia on the severity of mitral regurgitation by transesophageal echocardiography.**
  Author(s): Grewal KS, Malkowski MJ, Piracha AR, Astbury JC, Kramer CM, Dianzumba S, Reichek N.
  Source: The American Journal of Cardiology. 2000 January 15; 85(2): 199-203.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=10955377

- **Effect of infraorbital nerve block under general anesthesia on consumption of isoflurane and postoperative pain in endoscopic endonasal maxillary sinus surgery by Higashizawa and Koga.**
  Author(s): Yasan H, Dogru H.
  Source: Journal of Anesthesia. 2003; 17(1): 68; Author Reply 69.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=12908694

- **Effect of laryngeal mask airway on esophageal motility during general anesthesia.**
  Author(s): Son Y, Park SK, Cheong YP, Choi YS, Ahn JY, Kim YH, Choi SC, Lee KK.
  Source: Journal of Clinical Anesthesia. 2002 November; 14(7): 518-23.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=12477587

- **Effect of spinal versus general anesthesia on bladder compliance and intraabdominal pressure during transurethral procedures.**
  Author(s): Olsfanger D, Zohar E, Fredman B, Richter S, Jedeikin R.
  Source: Journal of Clinical Anesthesia. 1999 June; 11(4): 328-31.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=10470636

- **Effectiveness and safety of combined epidural and general anesthesia for laparoscopic cholecystectomy.**
  Author(s): Luchetti M, Palomba R, Sica G, Massa G, Tufano R.
  Source: Reg Anesth. 1996 September-October; 21(5): 465-9.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=8896010

- **Effects of general anesthesia and paralysis on upper airway changes due to head position in humans.**
  Author(s): Sivarajan M, Joy JV.
  Source: Anesthesiology. 1996 October; 85(4): 787-93.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=8873549

- **Effects of intermaxillary fixation during orthognathic surgery on respiratory function after general anesthesia.**
  Author(s): Yamaguchi H.
  Source: Anesthesia Progress. 2001 Fall; 48(4): 125-9.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=11724220

- **Effects of rapacuronium on respiratory function during general anesthesia: a comparison with cis-atracurium.**
  Author(s): Tobias JD, Johnson JO, Sprague K, Johnson G.
  Source: Anesthesiology. 2001 October; 95(4): 908-12.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=11605931

- **Effects of vaginal birth versus caesarean section birth with general anesthesia on blood gases and brain energy metabolism in neonatal rats.**
  Author(s): Vaillancourt C, Berger N, Boksa P.
  Source: Experimental Neurology. 1999 November; 160(1): 142-50.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=10630199

- **Efficacy of simulated intravenous test dose in the elderly during general anesthesia.**
  Author(s): Tanaka M, Nishikawa T.
  Source: Regional Anesthesia and Pain Medicine. 1999 September-October; 24(5): 393-8.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=10499748

- **Electrophysiologist-implanted transvenous cardioverter defibrillators using local versus general anesthesia.**
  Author(s): Manolis AS, Maounis T, Vassilikos V, Chiladakis J, Cokkinos DV.
  Source: Pacing and Clinical Electrophysiology : Pace. 2000 January; 23(1): 96-105.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=10666758

- **Epidural catheterization in general anesthesia.**
  Author(s): Lierz P, Heinatz A, Gustorff B, Felleiter P.
  Source: Anesthesia and Analgesia. 2003 November; 97(5): 1547; Author Reply 1547.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=14570694

- **Epiglottic hematoma leading to airway obstruction after general anesthesia.**
  Author(s): Brown I, Kleinman B.
  Source: Journal of Clinical Anesthesia. 2002 February; 14(1): 34-5.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=11880019

- **Evaluation of endoscopic retrograde cholangiopancreatography under conscious sedation and general anesthesia.**
  Author(s): Raymondos K, Panning B, Bachem I, Manns MP, Piepenbrock S, Meier PN.
  Source: Endoscopy. 2002 September; 34(9): 721-6.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=12195330

- **Evolution of a protocol for ketamine-induced sedation as an alternative to general anesthesia for interventional radiologic procedures in pediatric patients.**
  Author(s): Mason KP, Michna E, DiNardo JA, Zurakowski D, Karian VE, Connor L, Burrows PE.
  Source: Radiology. 2002 November; 225(2): 457-65.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=12409580

- **Factitious disorder as a cause of failure to awaken after general anesthesia.**
  Author(s): Albrecht RF 2nd, Wagner SR 4th, Leicht CH, Lanier WL.
  Source: Anesthesiology. 1995 July; 83(1): 201-4.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=7604999

- **Factors associated with mothers selecting general anesthesia for lower segment caesarean section.**
  Author(s): Holdcroft A, Parshall AM, Knowles MG, Waite KE, Morgan BM.
  Source: Journal of Psychosomatic Obstetrics and Gynaecology. 1995 September; 16(3): 167-70.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=8528383

- **Failure rates of restorative procedures following dental rehabilitation under general anesthesia.**
  Author(s): Tate AR, Ng MW, Needleman HL, Acs G.
  Source: Pediatr Dent. 2002 January-February; 24(1): 69-71.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=11874065

- **Failure to awaken after general anesthesia due to cerebrovascular events.**
  Author(s): Black S, Enneking FK, Cucchiara RF.
  Source: Journal of Neurosurgical Anesthesiology. 1998 January; 10(1): 10-5.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=9438612

- **False-low carbon monoxide diffusing capacity measurement after general anesthesia.**
  Author(s): Gilbert R, Arafat N, Williams L.
  Source: Chest. 1996 February; 109(2): 592.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=8620761

- **Fast-tracking after immersion lithotripsy: general anesthesia versus monitored anesthesia care.**
  Author(s): Coloma M, Chiu JW, White PF, Tongier WK, Duffy LL, Armbruster SC.
  Source: Anesthesia and Analgesia. 2000 July; 91(1): 92-6.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=10866893

- **Fatal acute myocardial infarction during general anesthesia in a 7-yr-old boy associated with total intramural coronary arteries.**
  Author(s): Iwama H, Kaneko T, Watanabe K, Takasu M, Terada K, Sugiyama Y.
  Source: Anesthesiology. 1997 August; 87(2): 426-9.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=9286909

- **Feasibility of urodynamic study (combined cystometry and electromyography of the external urethral sphincter) under general anesthesia in children.**
  Author(s): Ameda K, Kakizaki H, Yamashita T, Nonomura K, Shinno Y, Kemmotsu O, Koyanagi T.
  Source: International Journal of Urology : Official Journal of the Japanese Urological Association. 1997 January; 4(1): 32-9.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=9179664

- **Fentanyl-induced rigidity during emergence from general anesthesia potentiated by venlafexine.**
  Author(s): Roy S, Fortier LP.
  Source: Canadian Journal of Anaesthesia = Journal Canadien D'anesthesie. 2003 January; 50(1): 32-5.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=12514147

- **Fetal heart rate changes during general anesthesia.**
  Author(s): Faustin D, Gutierrez L, Chaudhry MR, Estefan M.
  Source: N Y State J Med. 1990 May; 90(5): 272. No Abstract Available.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=2348951

- **Fiberoptic laryngoscopy under general anesthesia in neonates.**
  Author(s): Hoeve LJ, van Poppelen RH.
  Source: International Journal of Pediatric Otorhinolaryngology. 1990 January; 18(3): 241-5.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=2323904

- **Flumazenil reverses sedation after midazolam-induced general anesthesia in ambulatory surgery patients.**
  Author(s): Philip BK, Simpson TH, Hauch MA, Mallampati SR.
  Source: Anesthesia and Analgesia. 1990 October; 71(4): 371-6.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=2119152

- **Followups on the 25th anniversary of the postop' adjustable suture (versus intraoperative adjustments based on the binocular alignment under general anesthesia, in eye muscle surgery for strabismus.**
  Author(s): Apt L.
  Source: Binocul Vis Strabismus Q. 2002 Summer; 17(2): 80; Author Reply 80. No Abstract Available.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=12067260

- **Forearm compartment syndrome from intravenous mannitol extravasation during general anesthesia.**
  Author(s): Edwards JJ, Samuels D, Fu ES.
  Source: Anesthesia and Analgesia. 2003 January; 96(1): 245-6, Table of Contents.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=12505960

- **Frequency and severity of desaturation events during general anesthesia in children with and without upper respiratory infections.**
  Author(s): Rolf N, Cote CJ.
  Source: Journal of Clinical Anesthesia. 1992 May-June; 4(3): 200-3.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=1610574

- **Frequency of hypotension and bradycardia during general anesthesia, epidural anesthesia, or integrated epidural-general anesthesia for total hip replacement.**
  Author(s): Borghi B, Casati A, Iuorio S, Celleno D, Michael M, Serafini P, Pusceddu A, Fanelli G; on Behalf of the Study Group on Orthopedic Anesthesia of the Italian Society of Anesthesia, Analgesia, and Intensive Care (SIAARTI).
  Source: Journal of Clinical Anesthesia. 2002 March; 14(2): 102-6.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=11943521

- **Frozen shoulder: arthroscopy and manipulation under general anesthesia and early passive motion.**
  Author(s): Andersen NH, Sojbjerg JO, Johannsen HV, Sneppen O.
  Source: Journal of Shoulder and Elbow Surgery / American Shoulder and Elbow Surgeons. [et Al.]. 1998 May-June; 7(3): 218-22.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=9658345

- **Full mouth restoration under general anesthesia in pedodontic practice.**
  Author(s): Allen GD, Sim J.
  Source: J Dent Child. 1967 November; 34(6): 488-92. No Abstract Available.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=4229229

- **Full-field electroretinograms during general anesthesia in normal children compared to examination with topical anesthesia.**
  Author(s): Andreasson S, Tornqvist K, Ehinger B.
  Source: Acta Ophthalmol (Copenh). 1993 August; 71(4): 491-5.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=8249580

- **Future caries susceptibility in children with early childhood caries following treatment under general anesthesia.**
  Author(s): Almeida AG, Roseman MM, Sheff M, Huntington N, Hughes CV.
  Source: Pediatr Dent. 2000 July-August; 22(4): 302-6.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=10969437

- **General anesthesia and simulator driving skills.**
  Author(s): Grant SA.
  Source: Canadian Journal of Anaesthesia = Journal Canadien D'anesthesie. 2003 November; 50(9): 964.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=14617603

- **General anesthesia does not impair simulator driving skills in volunteers in the immediate recovery period - a pilot study.**
  Author(s): Sinclair DR, Chung F, Smiley A.
  Source: Canadian Journal of Anaesthesia = Journal Canadien D'anesthesie. 2003 March; 50(3): 238-45.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=12620945

- **General anesthesia for cesarean delivery in a patient with paroxysmal nocturnal hemoglobinuria and thrombocytopenia.**
  Author(s): Kjaer K, Comerford M, Gadalla F.
  Source: Anesthesia and Analgesia. 2004 May; 98(5): 1471-2, Table of Contents.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=15105233

- **General anesthesia for developmentally disabled dental care patients: a comparison of reinforced laryngeal mask airway and endotracheal intubation anesthesia.**
  Author(s): Hung WT, Hsu SC, Kao CT.
  Source: Spec Care Dentist. 2003 July-August; 23(4): 135-8.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=14765892

- **General anesthesia for patient with homocystinuria--a case report.**
  Author(s): Teng YH, Sung CS, Liao WW, Kao SC, Huang YY, Tsou MY, Tsai SK.
  Source: Acta Anaesthesiol Sin. 2002 September; 40(3): 153-6.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=12434614

- **General anesthesia for patients with automatic implantable cardioverter defibrillator in place--a case report.**
  Author(s): Chan MH, Liu YC, Deng BS, Liu K.
  Source: Acta Anaesthesiol Sin. 2003 September; 41(3): 159-62.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=14601204

- **General anesthesia in a child with a dynamic, vascular anterior mediastinal mass.**
  Author(s): Furst SR, Burrows PE, Holzman RS.
  Source: Anesthesiology. 1996 April; 84(4): 976-9.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=8638853

- **General anesthesia in an office-based plastic surgical facility: a report on more than 23,000 consecutive office-based procedures under general anesthesia with no significant anesthetic complications.**
  Author(s): Johnson PJ.
  Source: Archives of Facial Plastic Surgery : Official Publication for the American Academy of Facial Plastic and Reconstructive Surgery, Inc. and the International Federation of Facial Plastic Surgery Societies. 2001 October-December; 3(4): 287.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=11710872

- **General anesthesia or phrenic nerve block for treatment of chronic hiccups?**
  Author(s): Schuepfer GK, Poelaert JI, Konrad C.
  Source: Anesthesia and Analgesia. 2003 March; 96(3): 911-2; Author Reply 912.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=12598292

- **General anesthesia or sedation in the intensive care unit: are we aware of the difference when we use propofol?**
  Author(s): Bloomfield EL, Murray MJ.
  Source: Critical Care Medicine. 2003 May; 31(5): 1603.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=12771655

- **General anesthesia research: aroused from a deep sleep?**
  Author(s): Harrison NL.
  Source: Nature Neuroscience. 2002 October; 5(10): 928-9.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=12352979

- **General anesthesia using the laryngeal mask airway during brief, laparoscopic inspection of the peritoneum in children.**
  Author(s): Tobias JD, Holcomb GW 3rd, Rasmussen GE, Lowe S, Morgan WM 3rd.
  Source: J Laparoendosc Surg. 1996 June; 6(3): 175-80.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=8807519

- **General anesthesia versus monitored anesthesia care with remifentanil for assisted reproductive technologies: effect on pregnancy rate.**
  Author(s): Wilhelm W, Hammadeh ME, White PF, Georg T, Fleser R, Biedler A.
  Source: Journal of Clinical Anesthesia. 2002 February; 14(1): 1-5.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=11880013

- **General anesthesia versus regional anesthesia.**
  Author(s): Breen P, Park KW.
  Source: International Anesthesiology Clinics. 2002 Winter; 40(1): 61-71. Review.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=11910250

- **General anesthesia with and without nitrous oxide (N2O) and the weight of middle ear effusion in children undergoing adenoidectomy and tympanostomy.**
  Author(s): Koivunen P, Alho OP, Uhari M, Partanen A, Luotonen J.
  Source: The Laryngoscope. 1996 June; 106(6): 724-6.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=8656957

- **General anesthesia with endotracheal intubation for cryotherapy for retinopathy of prematurity.**
  Author(s): Sullivan TJ, Clarke MP, Tuli R, Devenyi R, Harvey P.
  Source: Eur J Ophthalmol. 1995 July-September; 5(3): 187-91.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=8845688

- **General anesthesia with spontaneous ventilation without intubation for short-stay operations.**
  Author(s): Napoli V, Napoli E, Parino E.
  Source: Minerva Anestesiol. 2002 September; 68(9): 669-80. English, Italian.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=12370683

- **Glucose monitoring of patients with diabetes mellitus receiving general anesthesia: a study of the practices of anesthesia providers in a large community hospital.**
  Author(s): Maser RE, Ellers JM, DeCherney GS.
  Source: Aana Journal. 1996 August; 64(4): 357-61.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=9095709

- **Goal oriented general anesthesia for Cesarean section in a parturient with a large intracranial epidermoid cyst.**
  Author(s): Imarengiaye C, Littleford J, Davies S, Thapar K, Kingdom J.
  Source: Canadian Journal of Anaesthesia = Journal Canadien D'anesthesie. 2001 October; 48(9): 884-9.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=11606346

- **Halothane for supplementation of general anesthesia during cesarean section.**
  Author(s): Baraka A, Siddik S, Assaf B.
  Source: Canadian Journal of Anaesthesia = Journal Canadien D'anesthesie. 1999 January; 46(1): 95-6.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=10078415

- **Hearing loss after general anesthesia for cecectomy and small bowel resection.**
  Author(s): Velazquez FA.
  Source: Aana Journal. 1992 December; 60(6): 553-5. Review.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=1292320

- **Hearing loss after spinal and general anesthesia: A comparative study.**
  Author(s): Schaffartzik W, Hirsch J, Frickmann F, Kuhly P, Ernst A.
  Source: Anesthesia and Analgesia. 2000 December; 91(6): 1466-72.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=11094002

- **Heart-synchronized ventilation during general anesthesia for extracorporeal shock wave lithotripsy.**
  Author(s): Jansson L, Bengtsson M, Carlsson C.
  Source: Anesthesia and Analgesia. 1988 July; 67(7): 706-9.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=3254693

- **Heat flow and distribution during induction of general anesthesia.**
  Author(s): Matsukawa T, Sessler DI, Sessler AM, Schroeder M, Ozaki M, Kurz A, Cheng C.
  Source: Anesthesiology. 1995 March; 82(3): 662-73.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=7879935

- **Heavy sedation versus general anesthesia for pediatric invasive cardiology: a Grayer shade of blue versus a pinker shade of pale?**
  Author(s): Verghese ST, Martin GR.
  Source: Pediatric Cardiology. 2003 May-June; 24(3): 193-4. Epub 2003 March 14.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=12632218

- **Hemiballismus following general anesthesia. A case report.**
  Author(s): Pilarczyk M, Buraczynska K, Sagan M, Tynecka M, Stelmasiak Z.
  Source: Neurological Sciences : Official Journal of the Italian Neurological Society and of the Italian Society of Clinical Neurophysiology. 2003 November; 24(4): 299-300.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=14658056

- **Hemodynamic effects of epinephrine associated to an epidural clonidine-bupivacaine mixture during combined lumbar epidural and general anesthesia.**
  Author(s): Senard M, Ledoux D, Darmon PL, Hans P, Brichant JF, Bonnet F.
  Source: Acta Anaesthesiol Belg. 1998; 49(3): 167-73.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=9844703

- **Hemodynamic instability and delayed emergence from general anesthesia associated with inadvertent intrathecal baclofen overdose.**
  Author(s): Lyew MA, Mondy C, Eagle S, Chernich SE.
  Source: Anesthesiology. 2003 January; 98(1): 265-8.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=12503007

- **Hemodynamic responses to intravascular injection of epinephrine-containing epidural test doses in adults during general anesthesia.**
  Author(s): Liu SS, Carpenter RL.
  Source: Anesthesiology. 1996 January; 84(1): 81-7.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=8572358

- **Heterophoria as a measure of subjects' alertness during recovery from general anesthesia.**
  Author(s): Letourneau JE.
  Source: Percept Mot Skills. 1989 December; 69(3 Pt 1): 991-6.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=2608417

- **High frequency positive pressure ventilation during general anesthesia for extracorporeal shock wave lithotripsy.**
  Author(s): Perel A, Hoffman B, Podeh D, Davidson JT.
  Source: Anesthesia and Analgesia. 1986 November; 65(11): 1231-4.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=3094405

- **High thoracic epidural with general anesthesia for combined off-pump coronary artery and aortic aneurysm surgery.**
  Author(s): Vlachtsis H, Vohra A.
  Source: Journal of Cardiothoracic and Vascular Anesthesia. 2003 April; 17(2): 226-9.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=12698407

- **Hospital practice more than specialty influences the choice of regional or general anesthesia for Cesarean section.**
  Author(s): Johnson D, Truman C.
  Source: Canadian Journal of Anaesthesia = Journal Canadien D'anesthesie. 2002 November; 49(9): 954-8.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=12419724

- **Human auditory steady-state response during general anesthesia.**
  Author(s): Plourde G, Picton TW.
  Source: Anesthesia and Analgesia. 1990 November; 71(5): 460-8.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=2221405

- **Hydrostatic reduction of ileocolic intussusception: a second attempt in the operating room with general anesthesia.**
  Author(s): Collins DL, Pinckney LE, Miller KE, Bastian JF, Katzman DO, Canty TG Sr, Waldman J.
  Source: The Journal of Pediatrics. 1989 August; 115(2): 204-7.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=2754550

- **Hypercapnia due to rupture of the unidirectional valve in the inspiratory limb of the breathing system after induction of general anesthesia--a case report.**
  Author(s): Lin SL, Yeh CC, Lu CH, Ho ST, Wong CS.
  Source: Acta Anaesthesiol Sin. 2003 September; 41(3): 139-43.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=14601200

- **Hypoglossal nerve palsy as a complication of transoral intubation for general anesthesia.**
  Author(s): Streppel M, Bachmann G, Stennert E.
  Source: Anesthesiology. 1997 April; 86(4): 1007.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=9105249

- **Hypoxemia after general anesthesia in children.**
  Author(s): Motoyama EK, Glazener CH.
  Source: Anesthesia and Analgesia. 1986 March; 65(3): 267-72.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=3954092

- **Improved long-lasting postoperative analgesia, recovery function and patient satisfaction after inguinal hernia repair with inguinal field block compared with general anesthesia.**
  Author(s): Aasbo V, Thuen A, Raeder J.
  Source: Acta Anaesthesiologica Scandinavica. 2002 July; 46(6): 674-8.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=12059890

- **Incidence of nausea and vomiting in outpatients undergoing general anesthesia in relation to selection of intraoperative opioid.**
  Author(s): Cepeda MS, Gonzalez F, Granados V, Cuervo R, Carr DB.
  Source: Journal of Clinical Anesthesia. 1996 June; 8(4): 324-8.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=8695137

- **Incidence of oral tissue trauma after the administration of general anesthesia.**
  Author(s): Fung BK, Chan MY.
  Source: Acta Anaesthesiol Sin. 2001 December; 39(4): 163-7.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=11840582

- **Increasing circulation in the lower limb under general anesthesia using the A-V impulse system.**
  Author(s): Urayama H, Tanaka K, Fukui D, Kawasaki S.
  Source: Angiology. 2003 November-December; 54(6): 691-4.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=14666957

- **Indigo carmine-induced bradycardia in a patient during general anesthesia.**
  Author(s): Satoh K, Sakamoto N, Shinohe Y, Satoh M, Joh S.
  Source: Anesthesia and Analgesia. 2001 January; 92(1): 276-7.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=11133645

- **Information processing during general anesthesia: evidence for unconscious memory.**
  Author(s): Bonebakker AE, Bonke B, Klein J, Wolters G, Stijnen T, Passchier J, Merikle PM.
  Source: Memory & Cognition. 1996 November; 24(6): 766-76.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=8961821

- **Interaction between regional and general anesthesia.**
  Author(s): Rolf N, Van Aken H.
  Source: Acta Anaesthesiol Belg. 2001; 52(4): 409-12. Review. No Abstract Available.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=11799574

- **Interactions between mivacurium, rocuronium, and vecuronium during general anesthesia.**
  Author(s): Kim DW, Joshi GP, White PF, Johnson ER.
  Source: Anesthesia and Analgesia. 1996 October; 83(4): 818-22.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=8831328

- **Intraocular pressure changes during general anesthesia in children, comparing no mask, undermask and laryngeal mask airway.**
  Author(s): Tangwiwat S, Kumphong P, Surasaraneewong S, Audchaneeyasakul L, Surachatkumthornkul T, Naksarn M, Tongkumpan P, Napachoti T.
  Source: J Med Assoc Thai. 2002 September; 85 Suppl 3: S975-9.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=12452238

- **Intraoperative changes in arterial oxygenation during volume-controlled mechanical ventilation in modestly obese patients undergoing laparotomies with general anesthesia.**
  Author(s): Yoshino J, Akata T, Takahashi S.
  Source: Acta Anaesthesiologica Scandinavica. 2003 July; 47(6): 742-50.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=12803594

- **Intraoperative effects of combined versus general anesthesia during major liver surgery.**
  Author(s): Siniscalchi A, Begliomini B, Matteo G, De Pietri L, Pasetto A.
  Source: Minerva Anestesiol. 2003 December; 69(12): 885-95. English, Italian.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=14743120

- **Intravenous ketorolac tromethamine does not worsen platelet function during knee arthroscopy under general anesthesia.**
  Author(s): Thwaites BK, Nigus DB, Bouska GW, Mongan PD, Ayala EF, Merrill GA.
  Source: Anesthesia and Analgesia. 1995 July; 81(1): 119-24.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=7598238

- **Intravenous procedural sedation: an alternative to general anesthesia in the treatment of early childhood caries.**
  Author(s): Milnes AR.
  Source: Journal (Canadian Dental Association). 2003 May; 69(5): 298-302.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=12734023

- **Intravenous sedation and general anesthesia for a patient with Gilles de la Tourette's syndrome undergoing dental treatment.**
  Author(s): Yoshikawa F, Takagi T, Fukayama H, Miwa Z, Umino M.
  Source: Acta Anaesthesiologica Scandinavica. 2002 November; 46(10): 1279-80.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=12421203

- **Intravenous sedation vs general anesthesia for pediatric otolaryngology procedures.**
  Author(s): Shiley SG, Lalwani K, Milczuk HA.
  Source: Archives of Otolaryngology--Head & Neck Surgery. 2003 June; 129(6): 637-41.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=12810468

- **Intravenous trimethaphan during epidural plus general anesthesia decreases the direct radial artery pressure lower than the brachial artery pressure.**
  Author(s): Nagata N, Takasaki M, Ibusuki S, Taniguchi M, Kondo O.
  Source: Journal of Clinical Anesthesia. 1996 May; 8(3): 180-7.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=8703450

- **Is general anesthesia required?**
  Author(s): Pinsker MC, Sanborn GE.
  Source: Anesthesiology. 1996 June; 84(6): 1529-30.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=8669707

- **Is there postoperative evidence of implicit learning following aural stimuli at moderate hypnotic BIS levels during general anesthesia?**
  Author(s): Haas RE, Patterson D, Powell S, Eslick R, Cassingham R, Nesley T.
  Source: Aana Journal. 2002 June; 70(3): 205-11.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=12078468

- **Isolated bilateral paralysis of the hypoglossal nerve after transoral intubation for general anesthesia.**
  Author(s): Rubio-Nazabal E, Marey-Lopez J, Lopez-Facal S, Alvarez-Perez P, Martinez-Figueroa A, Rey del Corral P.
  Source: Anesthesiology. 2002 January; 96(1): 245-7.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=11753027

- **Jet ventilation for fiberoptic bronchoscopy under general anesthesia.**
  Author(s): Smith RB, Lindholm CE, Klain M.
  Source: Acta Anaesthesiologica Scandinavica. 1976; 20(2): 111-6.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=936967

- **Ketorolac tromethamine: a nonsteroidal anti-inflammatory analgesic used as an adjunct for general anesthesia.**
  Author(s): Schoneboom BA.
  Source: Aana Journal. 1992 June; 60(3): 304-7.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=1632159

- **Labyrinthine membrane rupture caused by elevated intratympanic pressure during general anesthesia.**
  Author(s): Segal S, Man A, Winerman I.
  Source: The American Journal of Otology. 1984 April; 5(4): 308-10.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=6609644

- **Lack of intravenous lidocaine effects on HRV changes of tracheal intubation during induction of general anesthesia.**
  Author(s): Lin PL, Wang YP, Chou YM, Chan HL, Huang HH.
  Source: Acta Anaesthesiol Sin. 2001 June; 39(2): 77-82.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=11475179

- **Laparoscopic gastrostomy and jejunostomy: safety and cost with local vs general anesthesia.**
  Author(s): Duh QY, Senokozlieff-Englehart AL, Choe YS, Siperstein AE, Rowland K, Way LW.
  Source: Archives of Surgery (Chicago, Ill. : 1960). 1999 February; 134(2): 151-6.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=10025454

- **Laparoscopic sterilization under local or general anesthesia? A randomized study.**
  Author(s): Bordahl PE, Raeder JC, Nordentoft J, Kirste U, Refsdal A.
  Source: Obstetrics and Gynecology. 1993 January; 81(1): 137-41.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=8416449

- **Laparoscopic tubal ligation in a minimally invasive surgical unit under local anesthesia compared to a conventional operating room approach under general anesthesia.**
  Author(s): Hatasaka HH, Sharp HT, Dowling DD, Teahon K, Peterson CM.
  Source: Journal of Laparoendoscopic & Advanced Surgical Techniques. Part A. 1997 October; 7(5): 295-9.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=9453874

- **Laryngeal microsurgery under general anesthesia using small-bore endotracheal tubes: blood gas analysis.**
  Author(s): Altissimi G, Gallucci L, Prattichizzo L, Arcamone D, Monacelli C.
  Source: The Laryngoscope. 1994 March; 104(3 Pt 1): 325-8.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=8127190

- **Learning and memory during general anesthesia: an update.**
  Author(s): Ghoneim MM, Block RI.
  Source: Anesthesiology. 1997 August; 87(2): 387-410. Review.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=9286904

- **Lidocaine with general anesthesia for laryngoscopy.**
  Author(s): Biancato LS, Peng AT.
  Source: Arch Otolaryngol. 1968 March; 87(3): 285-8. No Abstract Available.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=5644107

- **Lipolysis in human fat cells obtained under local and general anesthesia.**
  Author(s): Large V, Reynisdottir S, Eleborg L, van Harmelen V, Strommer L, Arner P.
  Source: International Journal of Obesity and Related Metabolic Disorders : Journal of the International Association for the Study of Obesity. 1997 January; 21(1): 78-82.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=9023606

- **Local and general anesthesia in the laparoscopic preperitoneal hernia repair.**
  Author(s): Frezza EE, Ferzli G.
  Source: Jsls. 2000 July-September; 4(3): 221-4.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=10987398

- **Local anesthesia infiltration as a cause of intraoperative tension pneumothorax in a young healthy woman undergoing breast augmentation with general anesthesia.**
  Author(s): Kaye AD, Eaton WM, Jahr JS, Nossaman BD, Youngberg JA.
  Source: Journal of Clinical Anesthesia. 1995 August; 7(5): 422-4.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=7576680

- **Local or general anesthesia for open hernia repair: a randomized trial.**
  Author(s): O'Dwyer PJ, Serpell MG, Millar K, Paterson C, Young D, Hair A, Courtney CA, Horgan P, Kumar S, Walker A, Ford I.
  Source: Annals of Surgery. 2003 April; 237(4): 574-9.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=12677155

- **Local versus general anesthesia for carotid endarterectomy: report of 329 cases.**
  Author(s): Gurer O, Yapici F, Enc Y, Cinar B, Ketenci B, Ozler A.
  Source: Vascular and Endovascular Surgery. 2003 May-June; 37(3): 171-7.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=12799725

- **Local versus general anesthesia for lumbar percutaneous discectomy.**
  Author(s): Bokesch PM, Huffnagle FT, Macauley C.
  Source: Journal of Neurosurgical Anesthesiology. 1993 April; 5(2): 81-5.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=8490315

- **Local versus general anesthesia for Shouldice repair of the inguinal hernia.**
  Author(s): Peiper C, Tons C, Schippers E, Busch F, Schumpelick V.
  Source: World Journal of Surgery. 1994 November-December; 18(6): 912-5; Discussion 915-6.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=7846918

- **Locoregional versus general anesthesia in carotid surgery: is there an impact on perioperative myocardial ischemia? Results of a prospective monocentric randomized trial.**
  Author(s): Sbarigia E, DarioVizza C, Antonini M, Speziale F, Maritti M, Fiorani B, Fedele F, Fiorani P.
  Source: Journal of Vascular Surgery : Official Publication, the Society for Vascular Surgery [and] International Society for Cardiovascular Surgery, North American Chapter. 1999 July; 30(1): 131-8.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=10394163

- **Long-latency auditory evoked potentials during general anesthesia: N1 and P3 components.**
  Author(s): Plourde G, Picton TW.
  Source: Anesthesia and Analgesia. 1991 March; 72(3): 342-50.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=1994763

- **Long-term registration of cutaneous microcirculation during general anesthesia.**
  Author(s): Ziege S, Schmid-Schonbein H, Grebe R, Martin E.
  Source: Int J Microcirc Clin Exp. 1997 November-December; 17(6): 385-94.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=9527530

- **Lumbar puncture in pediatric oncology: conscious sedation vs. general anesthesia.**
  Author(s): Ljungman G, Gordh T, Sorensen S, Kreuger A.
  Source: Medical and Pediatric Oncology. 2001 March; 36(3): 372-9.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=11241439

- **Measurement of a spinal reflex response (H-reflex) during general anesthesia in man. Association between reflex depression and muscular relaxation.**
  Author(s): De Jong RH, Hershey WN, Wagman IH.
  Source: Anesthesiology. 1967 March-April; 28(2): 382-9.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=6026057

- **Mechanical chin support during general anesthesia.**
  Author(s): Aranda M, Carden E.
  Source: Anesthesia and Analgesia. 1996 February; 82(2): 431.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=8561365

- **Medicaid costs associated with the hospitalization of young children for restorative dental treatment under general anesthesia.**
  Author(s): Kanellis MJ, Damiano PC, Momany ET.
  Source: J Public Health Dent. 2000 Winter; 60(1): 28-32.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=10734613

- **Memory formation during general anesthesia for emergency cesarean sections.**
  Author(s): Lubke GH, Kerssens C, Gershon RY, Sebel PS.
  Source: Anesthesiology. 2000 April; 92(4): 1029-34.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=10754622

- **Mentally handicapped institutionalized patients: a five-year review of gynecologic examinations performed under general anesthesia.**
  Author(s): Richman SM.
  Source: Conn Med. 2002 February; 66(2): 73-5.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=11908190

- **Midlatency auditory evoked potentials do not allow the prediction of recovery from general anesthesia with isoflurane.**
  Author(s): Rundshagen I, Schnabel K, Schulte am Esch J.
  Source: Canadian Journal of Anaesthesia = Journal Canadien D'anesthesie. 2002 April; 49(4): 361-8.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=11927474

- **Minimally invasive, endoscopically assisted colostomy can be performed without general anesthesia or laparotomy.**
  Author(s): Mattingly M, Wasvary H, Sacksner J, Deshmukh G, Kadro O.
  Source: Diseases of the Colon and Rectum. 2003 February; 46(2): 271-3.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=12576903

- **Mitochondrial perturbations and oxidant stress in lymphocytes from patients undergoing surgery and general anesthesia.**
  Author(s): Delogu G, Moretti S, Famularo G, Marcellini S, Santini G, Antonucci A, Marandola M, Signore L.
  Source: Archives of Surgery (Chicago, Ill. : 1960). 2001 October; 136(10): 1190-6.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=11585514

- **Modafinil improves recovery after general anesthesia.**
  Author(s): Larijani GE, Goldberg ME, Hojat M, Khaleghi B, Dunn JB, Marr AT.
  Source: Anesthesia and Analgesia. 2004 April; 98(4): 976-81, Table of Contents.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=15041583

- **Moderate hypothermia depresses arterial baroreflex control of heart rate during, and delays its recovery after, general anesthesia in humans.**
  Author(s): Tanaka M, Nagasaki G, Nishikawa T.
  Source: Anesthesiology. 2001 July; 95(1): 51-5.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=11465583

- **Monitoring approaches in general anesthesia: a survey.**
  Author(s): Senhadji L, Wodey E, Claude E.
  Source: Critical Reviews in Biomedical Engineering. 2002; 30(1-3): 85-97. Review.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=12650287

- **Mortality risks associated with pediatric dental care using general anesthesia in a hospital setting.**
  Author(s): Lee JY, Roberts MW.
  Source: J Clin Pediatr Dent. 2003 Summer; 27(4): 381-3.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=12924740

- **Multiple dental extractions using general anesthesia for a patient with Down and Eisenmenger syndromes and periodontal disease.**
  Author(s): Bozich JG, Albert TW.
  Source: Spec Care Dentist. 1990 March-April; 10(2): 51-4. Review.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=11100206

- **Nasolacrimal duct probing in infants and children: an easy technique for administering general anesthesia.**
  Author(s): Suresh S, Park J.
  Source: Anesthesia and Analgesia. 2003 December; 97(6): 1852-3.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=14633573

- **Neonatal outcome in cesarean section under general anesthesia, related to gestational age, induction-delivery and uterus-delivery intervals.**
  Author(s): Vatashsky E, Hochner-Celnikier D, Beller U, Ron M, Aronson HB.
  Source: Isr J Med Sci. 1983 December; 19(12): 1059-63.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=6662696

- **Neonatal pattern of breathing following cesarean section: epidural versus general anesthesia.**
  Author(s): Fisher JT, Mortola JP, Smith B, Fox GS, Weeks SK.
  Source: Anesthesiology. 1983 November; 59(5): 385-9.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=6638544

- **Neonatal regional anesthesia: alternative to general anesthesia for urologic surgery.**
  Author(s): Tobias JD, Flannagan J, Brock J, Brin E.
  Source: Urology. 1993 April; 41(4): 362-5.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=8470325

- **Neural synchrony, axonal path lengths, and general anesthesia: a hypothesis.**
  Author(s): Swindale NV.
  Source: The Neuroscientist : a Review Journal Bringing Neurobiology, Neurology and Psychiatry. 2003 December; 9(6): 440-5. Review.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=14678576

- **Neurological examination in patients recovering from general anesthesia.**
  Author(s): Fiacchino F, Gemma M, Bricchi M, Sghirlanzoni A.
  Source: Italian Journal of Neurological Sciences. 1992 December; 13(9): 749-53.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=1483857

- **New-onset neurologic deficits after general anesthesia for MRI.**
  Author(s): Weglinski MR, Berge KH, Davis DH.
  Source: Mayo Clinic Proceedings. 2002 January; 77(1): 101-3.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=11794451

- **Nicardipine intravenous bolus dosing for acutely decreasing arterial blood pressure during general anesthesia for cardiac operations: pharmacokinetics, pharmacodynamics, and associated effects on left ventricular function.**
  Author(s): Cheung AT, Guvakov DV, Weiss SJ, Savino JS, Salgo IS, Meng QC.
  Source: Anesthesia and Analgesia. 1999 November; 89(5): 1116-23.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=10553821

- **No effect of neuromuscular blockade on the temporomandibular joint position during general anesthesia.**
  Author(s): Zak MJ, Dolan EA, Angelillo JC, McGraw TA.
  Source: Anesthesia Progress. 1993; 39(6): 212-4.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=7902683

- **Nocturnal body movements and hypoxemia in middle-aged females after lower abdominal surgery under general anesthesia: a study with the static-charge-sensitive bed (SCSB).**
  Author(s): Tallila T, Polo O, Aantaa R, Lepisto M, Lahdenpera A, Scheinin H.
  Source: Journal of Clinical Monitoring and Computing. 1998 May; 14(4): 239-44.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=9754612

- **Ondansetron given before induction of anesthesia reduces shivering after general anesthesia.**
  Author(s): Powell RM, Buggy DJ.
  Source: Anesthesia and Analgesia. 2000 June; 90(6): 1423-7.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=10825334

- **One-shot percutaneous ethanol injection of liver tumors under general anesthesia: preliminary data on efficacy and complications.**
  Author(s): Giorgio A, Tarantino L, Francica G, Mariniello N, Nuzzo A, del Viscovo L, Rotondo A.
  Source: Cardiovascular and Interventional Radiology. 1996 January-February; 19(1): 27-31.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=8653742

- **Opioid "holiday" following antagonist supported detoxification during general anesthesia improves opioid agonist response in a cancer patient with opioid addiction.**
  Author(s): Breitfeld C, Eikermann M, Kienbaum P, Peters J.
  Source: Anesthesiology. 2003 February; 98(2): 571-3.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=12552218

- **Optical coherence tomography under general anesthesia in a child with nystagmus.**
  Author(s): Patel CK, Chen SD, Farmery AD.
  Source: American Journal of Ophthalmology. 2004 June; 137(6): 1127-9.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=15183803

- **Optimal oxygen concentration during induction of general anesthesia.**
  Author(s): Edmark L, Kostova-Aherdan K, Enlund M, Hedenstierna G.
  Source: Anesthesiology. 2003 January; 98(1): 28-33.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=12502975

- **Oral transmucosal fentanyl pretreatment for outpatient general anesthesia.**
  Author(s): Moore PA, Cuddy MA, Magera JA, Caputo AC, Chen AH, Wilkinson LA.
  Source: Anesthesia Progress. 2000 Spring; 47(2): 29-34.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=11881693

- **Outcomes assessment an intervention strategy to improve parental compliance to follow-up evaluations after treatment of early childhood caries using general anesthesia in a Medicaid population.**
  Author(s): Primosch RE, Balsewich CM, Thomas CW.
  Source: Asdc J Dent Child. 2001 March-April; 68(2): 102-8, 80.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=11475684

- **Outcomes of dental procedures performed on children under general anesthesia.**
  Author(s): Al-Eheideb AA, Herman NG.
  Source: J Clin Pediatr Dent. 2003 Winter; 27(2): 181-3.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=12597693

- **Oxygen in air (FiO2 0.4) improves gas exchange in young healthy patients during general anesthesia.**
  Author(s): Agarwal A, Singh PK, Dhiraj S, Pandey CM, Singh U.
  Source: Canadian Journal of Anaesthesia = Journal Canadien D'anesthesie. 2002 December; 49(10): 1040-3.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=12477674

- **Oxygen in nitrogen versus nitrous oxide during pediatric general anesthesia.**
  Author(s): Elwood T, Hutchinson E.
  Source: Acta Anaesthesiol Sin. 2001 June; 39(2): 59-64.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=11475176

- **Patient awareness during general anesthesia: a legal guide.**
  Author(s): Grinblat TS.
  Source: J Contemp Health Law Policy. 1996 Fall; 13(1): 137-67. No Abstract Available.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=9068240

- **Perioperative morbidity and mortality associated with vitreoretinal and ocular oncologic surgery performed under general anesthesia.**
  Author(s): McCannel CA, Nordlund JR, Bacon D, Robertson DM.
  Source: Trans Am Ophthalmol Soc. 2003; 101: 209-13; Discussion 213-5.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=14971579

- **Peroperative adenosine infusion reduces isoflurane concentrations during general anesthesia for shoulder surgery.**
  Author(s): Segerdahl M, Persson E, Ekblom A, Sollevi A.
  Source: Acta Anaesthesiologica Scandinavica. 1996 August; 40(7): 792-7.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=8874564

- **Practical cost-effective choices: ambulatory general anesthesia.**
  Author(s): Philip BK.
  Source: Journal of Clinical Anesthesia. 1995 November; 7(7): 606-13. Review.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=8652174

- **Premedication with famotidine augments core hypothermia during general anesthesia.**
  Author(s): Hirose M, Hara Y, Matsusaki M.
  Source: Anesthesiology. 1995 December; 83(6): 1179-83. Erratum In: Anesthesiology 1996 April; 84(4): 1014.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=8533910

- **Preoperative oral dextromethorphan attenuated tourniquet-induced arterial blood pressure and heart rate increases in knee cruciate ligament reconstruction patients under general anesthesia.**
  Author(s): Yamashita S, Yamaguchi H, Hisajima Y, Ijima K, Saito K, Chiba A, Yasunaga T.
  Source: Anesthesia and Analgesia. 2004 April; 98(4): 994-8, Table of Contents.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=15041587

- **Prevention of atelectasis formation during the induction of general anesthesia in morbidly obese patients.**
  Author(s): Coussa M, Proietti S, Schnyder P, Frascarolo P, Suter M, Spahn DR, Magnusson L.
  Source: Anesthesia and Analgesia. 2004 May; 98(5): 1491-5, Table of Contents.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=15105237

- **Prone positioning improves pulmonary function in obese patients during general anesthesia.**
  Author(s): Pelosi P, Croci M, Calappi E, Mulazzi D, Cerisara M, Vercesi P, Vicardi P, Gattinoni L.
  Source: Anesthesia and Analgesia. 1996 September; 83(3): 578-83.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=8780285

- **Psychogenic coma after use of general anesthesia for ethmoidectomy.**
  Author(s): Weber JG, Cunnien AJ, Hinni ML, Caviness JN.
  Source: Mayo Clinic Proceedings. 1996 August; 71(8): 797-800.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=8691902

- **QRS-activated ventilation during general anesthesia for extracorporeal shock wave lithotripsy.**
  Author(s): Perel A, Segal E, Pizov R, Lenkovskey Z, Mahler Y.
  Source: Journal of Clinical Anesthesia. 1989; 1(4): 268-71.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=2627400

- **Randomized trial of epidural versus general anesthesia: outcomes after primary total knee replacement.**
  Author(s): Williams-Russo P, Sharrock NE, Haas SB, Insall J, Windsor RE, Laskin RS, Ranawat CS, Go G, Ganz SB.
  Source: Clinical Orthopaedics and Related Research. 1996 October; (331): 199-208.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=8895639

- **Rapid heroin detoxification under general anesthesia.**
  Author(s): Laheij RJ, Krabbe PF, de Jong CA.
  Source: Jama : the Journal of the American Medical Association. 2000 March 1; 283(9): 1143.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=10703775

- **Rapid opioid detoxification during general anesthesia: a review of 20 patients.**
  Author(s): Gold CG, Cullen DJ, Gonzales S, Houtmeyers D, Dwyer MJ.
  Source: Anesthesiology. 1999 December; 91(6): 1639-47.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=10598605

- **Rapid opioid detoxification during general anesthesia: is death not a significant outcome?**
  Author(s): Whittington RA, Collins ED, Kleber HD.
  Source: Anesthesiology. 2000 November; 93(5): 1363-4.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=11046233

- **Re: Editorial--Where is the line between deep sedation and general anesthesia?**
  Author(s): Wengrower D, Goldin E, Gozal D.
  Source: The American Journal of Gastroenterology. 2003 July; 98(7): 1667.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=12873611

- **Reasons for repeat dental treatment under general anesthesia for the healthy child.**
  Author(s): Sheller B, Williams BJ, Hays K, Mancl L.
  Source: Pediatr Dent. 2003 November-December; 25(6): 546-52.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=14733468

- **Recovery advantages of regional anesthesia compared with general anesthesia: adult patients.**
  Author(s): Mingus ML.
  Source: Journal of Clinical Anesthesia. 1995 November; 7(7): 628-33. Review.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=8652177

- **Reduced length of stay following carotid endarterectomy under general anesthesia.**
  Author(s): Friedman SG, Tortolani AJ.
  Source: American Journal of Surgery. 1995 August; 170(2): 235-6.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=7631939

- **Regional anesthesia is a good alternative to general anesthesia in pediatric surgery: Experience in 1,554 children.**
  Author(s): Uguralp S, Mutus M, Koroglu A, Gurbuz N, Koltuksuz U, Demircan M.
  Source: Journal of Pediatric Surgery. 2002 April; 37(4): 610-3.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=11912520

- **Relationship between adrenomedullin and vasopressin-aquaporin system under general anesthesia.**
  Author(s): Ogura T, Morita K, Takeuchi M, Otsuka F, Iwasaki T, Oe K, Matsuura K, Tobe K, Mimura Y, Kishida M, Makino H, Hirakawa M.
  Source: Hormone Research. 2003; 59(1): 30-4.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=12566732

- **Seeing the light: protein theories of general anesthesia. 1984.**
  Author(s): Franks NP, Lieb WR.
  Source: Anesthesiology. 2004 July; 101(1): 235-7.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=15220795

- **Selection of neuromuscular blocking agents in patients undergoing renal transplantation under general anesthesia.**
  Author(s): Ma H, Zhuang X.
  Source: Chinese Medical Journal. 2002 November; 115(11): 1692-6.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=12609090

- **Selective versus non-selective neural stimulation in the monitoring of muscular relaxation during general anesthesia.**
  Author(s): Rodiera J, Calabuig R, Gual A.
  Source: Journal of Clinical Monitoring and Computing. 1999 August; 15(6): 341-5.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=12578029

- **Serum concentration of S-100 protein in assessment of cognitive dysfunction after general anesthesia in different types of surgery.**
  Author(s): Heyer EJ, Connolly ES.
  Source: Acta Anaesthesiologica Scandinavica. 2003 August; 47(7): 911-2; Author Reply 912-3.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=12859318

- **Serum concentration of S-100 protein in assessment of cognitive dysfunction after general anesthesia in different types of surgery.**
  Author(s): Linstedt U, Meyer O, Kropp P, Berkau A, Tapp E, Zenz M.
  Source: Acta Anaesthesiologica Scandinavica. 2002 April; 46(4): 384-9.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=11952437

- **Sevoflurane general anesthesia: an alternative technique in the pediatric oral and maxillofacial surgery patient.**
  Author(s): Lee M, Bennett HE, Gordon N.
  Source: Journal of Oral and Maxillofacial Surgery : Official Journal of the American Association of Oral and Maxillofacial Surgeons. 2003 November; 61(11): 1249-52.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=14613078

- **Should disclosure of the danger of awareness during general anesthesia be a part of preanesthesia consent?**
  Author(s): Gurman GM, Weksler N, Schily M.
  Source: Minerva Anestesiol. 2002 December; 68(12): 905-10. Review.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=12586990

- **Spinal and epidural versus general anesthesia for elective cesarean section at term: effect on the acid-base status of the mother and newborn.**
  Author(s): Petropoulos G, Siristatidis C, Salamalekis E, Creatsas G.
  Source: J Matern Fetal Neonatal Med. 2003 April;13(4):260-6.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=12854928

- **Supine hypertension during general anesthesia in a patient taking midodrine.**
  Author(s): Chaimberg KH, Travis KW.
  Source: Anesthesia and Analgesia. 2002 November; 95(5): 1196-7, Table of Contents.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=12401592

- **The effect of spinal versus general anesthesia on postoperative pain and analgesic requirements in patients undergoing lower abdominal surgery.**
  Author(s): Wang JJ, Ho ST, Liu HS, Tzeng JI, Tze TS, Liaw WJ.
  Source: Reg Anesth. 1996 July-August; 21(4): 281-6.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=8837183

- **The effects of pneumoperitoneum on respiratory mechanics during general anesthesia for bariatric surgery.**
  Author(s): El-Dawlatly AA, Al-Dohayan A, Abdel-Meguid ME, El-Bakry A, Manaa EM.
  Source: Obesity Surgery : the Official Journal of the American Society for Bariatric Surgery and of the Obesity Surgery Society of Australia and New Zealand. 2004 February; 14(2): 212-5.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=15018750

- **The incidence of arrhythmias during induction of general anesthesia.**
  Author(s): Kim Y, Hirota Y, Shibutani T, Niwa H, Hori T, Matsuura H.
  Source: J Osaka Univ Dent Sch. 1995 December; 35: 29-37.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=9206465

- **The laryngeal mask airway for general anesthesia: the case for its use.**
  Author(s): Todd D.
  Source: Journal of Oral and Maxillofacial Surgery : Official Journal of the American Association of Oral and Maxillofacial Surgeons. 2004 June; 62(6): 736-8.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=15170288

- **The Leg Drop Pendulum Test performed under general anesthesia in spastic cerebral palsy.**
  Author(s): Fee JW Jr, Miller F.
  Source: Developmental Medicine and Child Neurology. 2004 April; 46(4): 273-81.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=15077705

- **The modified recalcification time (MRT) test assesses suppressive effect of general anesthesia (GA) on monocyte function.**
  Author(s): Ponnudurai R, Ramasubramaniam H, Spillert CR, Bonthu S, Lazaro EJ.
  Source: Inflammation Research : Official Journal of the European Histamine Research Society. [et Al.]. 1995 August; 44 Suppl 2: S193.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=8548393

- **The pregnant patient with an intracranial arteriovenous malformation. Cesarean or vaginal delivery using regional or general anesthesia?**
  Author(s): Sharma SK, Herrera ER, Sidawi JE, Leveno KJ.
  Source: Reg Anesth. 1995 September-October; 20(5): 455-8.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=8519726

- **The use of general anesthesia to facilitate dental treatment.**
  Author(s): Nick D, Thompson L, Anderson D, Trapp L.
  Source: Gen Dent. 2003 September-October; 51(5): 464-8; Quiz 469.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=15055638

- **The use of intranasal nitroglycerin to prevent pressor responses during intubation in general anesthesia--a comparison of various doses.**
  Author(s): Hwang JJ, Ko YP, Jen RK, Hsu YW, Cheng CR, Wei TT, Yeh CY.
  Source: Acta Anaesthesiol Sin. 1995 December; 33(4): 205-10.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=8705152

- **Transcranial high-frequency repetitive electrical stimulation for recording myogenic motor evoked potentials with the patient under general anesthesia.**
  Author(s): Pechstein U, Cedzich C, Nadstawek J, Schramm J.
  Source: Neurosurgery. 1996 August; 39(2): 335-43; Discussion 343-4.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=8832671

- **Ultrasound-guided percutaneous ethanol injection under general anesthesia for the treatment of hepatocellular carcinoma on cirrhosis: long-term results in 268 patients.**
  Author(s): Giorgio A, Tarantino L, de Stefano G, Perrotta A, Aloisio V, del Viscovo L, Alaia A, Lettieri G.
  Source: European Journal of Ultrasound : Official Journal of the European Federation of Societies for Ultrasound in Medicine and Biology. 2000 December; 12(2): 145-54.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=11118922

- **Underestimation of mitral regurgitation under general anesthesia.**
  Author(s): James KB, Marwick T, Cosgrove DM.
  Source: The Journal of Thoracic and Cardiovascular Surgery. 1992 August; 104(2): 534-5.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=1495326

- **Unexpected tracheomalacia in Marfan syndrome during general anesthesia for correction of scoliosis.**
  Author(s): Oh AY, Kim YH, Kim BK, Kim HS, Kim CS.
  Source: Anesthesia and Analgesia. 2002 August; 95(2): 331-2, Table of Contents.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=12145047

- **Unilateral pulmonary edema during general anesthesia--report of two cases.**
  Author(s): Tsai YS, Wang SJ, Shih HC, Huang YC, Chi KP, Tseng CS, Ho WM.
  Source: Acta Anaesthesiol Sin. 1997 September; 35(3): 175-80.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=9407683

- **Unilateral reexpansion pulmonary edema during emergence from general anesthesia.**
  Author(s): Milne B, Spence D, Lynn RB, Sleeman D.
  Source: Anesthesiology. 1983 September; 59(3): 244-5.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=6349425

- **Upregulation of IFN-gamma and soluble interleukin-2 receptor release and altered serum cortisol and prolactin concentration during general anesthesia.**
  Author(s): Brand JM, Schmucker P, Breidthardt T, Kirchner H.
  Source: Journal of Interferon & Cytokine Research : the Official Journal of the International Society for Interferon and Cytokine Research. 2001 October; 21(10): 793-6.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=11710990

- **Use of esmolol to prevent hemodynamic changes during intubation in general anesthesia.**
  Author(s): Wang SC, Wu CC, Lin MS, Chang CF.
  Source: Acta Anaesthesiol Sin. 1994 September; 32(3): 141-6.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=7921857

- **Use of intracuff lidocaine during general anesthesia.**
  Author(s): Bahk JH, Lim YJ.
  Source: Anesthesia and Analgesia. 2001 April; 92(4): 1075.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=11273961

- **Use of magnetic internal ureteral stents in pediatric urology: retrieval without routine requirement for cystoscopy and general anesthesia.**
  Author(s): Mykulak DJ, Herskowitz M, Glassberg KI.
  Source: The Journal of Urology. 1994 September; 152(3): 976-7.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=8051775

- **Use of the laryngeal mask airway in combination with regional anesthesia facilitates induction and emergence from general anesthesia in patients undergoing colorectal surgery.**
  Author(s): Azma T, Kawai K, Okida M, Okada K, Tamura H.
  Source: Hiroshima J Med Sci. 2002 December; 51(4): 89-92.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=12587616

- **Vasopressin release following operation upon the vagina performed under general anesthesia or epidural analgesis.**
  Author(s): Punnonen R, Viinamaki O.
  Source: Surg Gynecol Obstet. 1983 June; 156(6): 781-4.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=6857458

- **Ventilation during general anesthesia for bronchoscopy. Evaluation of a new technique.**
  Author(s): Morales GA, Epstein BS, Cinco B, Adkins PC, Coakley CS.
  Source: The Journal of Thoracic and Cardiovascular Surgery. 1969 June; 57(6): 873-8.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=5770473

- **Ventilation with an oxygen injector for suspension laryngoscopy under general anesthesia.**
  Author(s): Albert SN, Shibuya J, Albert CA.
  Source: Anesthesia and Analgesia. 1972 November-December; 51(6): 866-70.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=4673928

- **Ventilatory requirements during general anesthesia: the determinants of an "appropriate" response.**
  Author(s): Ward SA.
  Source: Nurse Anesth. 1990 September; 1(3): 134-48. Review.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=2285723

- **Ventricular tachycardia during general anesthesia in a patient with congenital long QT syndrome.**
  Author(s): Katz RI, Quijano I, Barcelon N, Biancaniello T.
  Source: Canadian Journal of Anaesthesia = Journal Canadien D'anesthesie. 2003 April; 50(4): 398-403. English, French.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=12670819

- **Wakeful response to command indicates memory potential during emergence from general anesthesia.**
  Author(s): Dutton RC, Smith WD, Smith NT.
  Source: Journal of Clinical Monitoring. 1995 January; 11(1): 35-40.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=7745452

- **Wavelet transform of heart rate variability to assess autonomic nervous system activity does not predict arousal from general anesthesia.**
  Author(s): Pichot V, Buffiere S, Gaspoz JM, Costes F, Molliex S, Duverney D, Roche F, Barthelemy JC.
  Source: Canadian Journal of Anaesthesia = Journal Canadien D'anesthesie. 2001 October; 48(9): 859-63.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=11606341

- **What kind of anesthesia you will choose for yourself if you are a patient: regional anesthesia or general anesthesia?**
  Author(s): Eldor J.
  Source: Regional Anesthesia and Pain Medicine. 2001 May-June; 26(3): 287-8.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=11359234

- **Wheezing during induction of general anesthesia in patients with and without asthma. A randomized, blinded trial.**
  Author(s): Pizov R, Brown RH, Weiss YS, Baranov D, Hennes H, Baker S, Hirshman CA.
  Source: Anesthesiology. 1995 May; 82(5): 1111-6.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=7741285

- **Where is the line between deep sedation and general anesthesia?**
  Author(s): King KP.
  Source: The American Journal of Gastroenterology. 2002 October; 97(10): 2485-6.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=12385426

- **Who can be an expert in anesthesia malpractice suits? A case of general anesthesia, cardiopulmonary risk, and patient death.**
  Author(s): Liang BA, Walman AT.
  Source: Journal of Clinical Anesthesia. 2003 August; 15(5): 395-7.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=14507569

- **Who should determine the medical necessity of dental sedation and general anesthesia? A clinical commentary supported by Illinois patient and practitioner surveys.**
  Author(s): Flick WG, Clayhold S.
  Source: Anesthesia Progress. 1998 Spring; 45(2): 57-61.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=10356433

- **Why the phantom p-wave during general anesthesia?**
  Author(s): Martinson CJ, Marolt SR, Paradise NF.
  Source: Nurse Anesth. 1990 September; 1(3): 121-7.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=2126746

- **Will epidural with light general anesthesia increase the incidence of awareness with recall or dream postoperatively.**
  Author(s): Liou CM, Kang HM, Lai HC, Liu YC, Hung CJ, Wang SJ, Tso HS.
  Source: Acta Anaesthesiol Sin. 1994 December; 32(4): 229-36.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=7894918

- **Women emerge from general anesthesia with propofol/alfentanil/nitrous oxide faster than men.**
  Author(s): Gan TJ, Glass PS, Sigl J, Sebel P, Payne F, Rosow C, Embree P.
  Source: Anesthesiology. 1999 May; 90(5): 1283-7.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=10319774

CHAPTER 2. NUTRITION AND GENERAL ANESTHESIA

Overview

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

Finding Nutrition Studies on General Anesthesia

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.[7] 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 "general anesthesia" (or synonyms) into the search box, and click "Go." To narrow the search, you can also select the "Title" field.

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[7] 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 "general anesthesia" (or a synonym):

- **Caesarean section birth with general anesthesia increases dopamine-mediated behavior in the adult rat.**
  Author(s): Department of Psychiatry, McGill University, Douglas Hospital Research Center, Verdun, Quebec, Canada.
  Source: Vaillancourt, C Boksa, P Neuroreport. 1998 September 14; 9(13): 2953-9 0959-4965
- **Effect of general anesthesia on plasma ascorbic acid level.**
  Source: Akita, S Kawahara, M Takeshita, T Morio, M Fujii, K Hiroshima-J-Med-Sci. 1987 March; 36(1): 69-73 0018-2052
- **Postoperative pulmonary complications: general anesthesia with postoperative parenteral morphine compared with epidural analgesia.**
  Author(s): Department of Anesthesiology, Institut Gustave-Roussy, Villejuif, France.
  Source: Jayr, C Mollie, A Bourgain, J L Alarcon, J Masselot, J Lasser, P Denjean, A Truffa Bachi, J Henry AMarch, M Surgery. 1988 July; 104(1): 57-63 0039-6060
- **Prophylactic caffeine to prevent postoperative apnea following general anesthesia in preterm infants (Cochrane Review).**
  Author(s): NSW Centre for Perinatal Health Services Research, Queen Elizabeth II Institute for Mothers and Infants, Building DO2, University of Sydney, Sydney, NSW, AUSTRALIA, 2006. dhs@perinatal.usyd.edu.au
  Source: Henderson Smart, D J Steer, P Cochrane-Database-Syst-Revolume 2001; 4: CD000048 1469-493X

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 general anesthesia; 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:

- **Food and Diet**

  Pain
  Source: Healthnotes, Inc.; www.healthnotes.com

CHAPTER 3. ALTERNATIVE MEDICINE AND GENERAL ANESTHESIA

Overview

In this chapter, we will begin by introducing you to official information sources on complementary and alternative medicine (CAM) relating to general anesthesia. 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 general anesthesia 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 "general anesthesia" (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 general anesthesia:

- **Accidental hyperthermia as a complication of extracorporeal shock-wave lithotripsy under general anesthesia.**
  Author(s): Higgins TL, Miller EV, Roberts J.
  Source: Anesthesiology. 1987 March; 66(3): 389-91.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=3826698

- **Assessing pain responses during general anesthesia.**
  Author(s): Stomberg MW, Sjostrom B, Haljamae H.
  Source: Aana Journal. 2001 June; 69(3): 218-22.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=11759565

- **Auditory perception during general anesthesia: psychologic consequences.**
  Author(s): Jelicic M, Bonke B.

Source: Southern Medical Journal. 1989 October; 82(10): 1220-3. Review.
http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=2678496

- **Awareness during general anesthesia: new technology for an old problem.**
Author(s): Halliburton JR.
Source: Crna. 1998 May; 9(2): 39-43. Review.
http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=9726194

- **Changes in the electrical skin resistance on meridians during gastric surgery under general anesthesia.**
Author(s): Ogata H, Matsumoto T, Tsukahara H.
Source: The American Journal of Chinese Medicine. 1983; 11(1-4): 123-9.
http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=6660200

- **Clinical aspects of CRNA practice. General anesthesia.**
Author(s): Ouellette SM.
Source: Nurs Clin North Am. 1996 September; 31(3): 623-42. Review.
http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=8751793

- **Detection of ear acupuncture points by measuring the electrical skin resistance in patients before, during and after orthopedic surgery performed under general anesthesia.**
Author(s): Usichenko TI, Lysenyuk VP, Groth MH, Pavlovic D.
Source: Acupuncture & Electro-Therapeutics Research. 2003; 28(3-4): 167-73.
http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=14998054

- **Efficacy of therapeutic suggestions for improved postoperative recovery presented during general anesthesia.**
Author(s): Block RI, Ghoneim MM, Sum Ping ST, Ali MA.
Source: Anesthesiology. 1991 November; 75(5): 746-55.
http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=1952199

- **General anesthesia and exhaled breath hydrogen peroxide.**
Author(s): Wilson WC, Swetland JF, Benumof JL, Laborde P, Taylor R.
Source: Anesthesiology. 1992 May; 76(5): 703-10.
http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=1575337

- **General anesthesia and the ketogenic diet: clinical experience in nine patients.**
Author(s): Valencia I, Pfeifer H, Thiele EA.
Source: Epilepsia. 2002 May; 43(5): 525-9.
http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=12027914

- **Higher homocysteine concentrations in women undergoing caesarean section under general anesthesia.**
  Author(s): Zanardo V, Caroni G, Burlina A.
  Source: Thrombosis Research. 2003; 112(1-2): 33-6.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=15013270

- **Intraoperative electrically elicited stapedius reflex threshold is related to the dosage of hypnotic drugs in general anesthesia.**
  Author(s): Schultz A, Berger FA, Weber BP, Grouven U, Niclaus O, Lullwitz E, Schultz B.
  Source: The Annals of Otology, Rhinology, and Laryngology. 2003 December; 112(12): 1050-5.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=14703109

- **Learning and consciousness during general anesthesia.**
  Author(s): Ghoneim MM, Block RI.
  Source: Anesthesiology. 1992 February; 76(2): 279-305. Review. Erratum In: Anesthesiology 1992 July; 77(1): 222.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=1632877

- **Magnitude of skin vasomotor reflex represents the intensity of nociception under general anesthesia.**
  Author(s): Shimoda O, Ikuta Y, Nishi M, Uneda C.
  Source: Journal of the Autonomic Nervous System. 1998 July 15; 71(2-3): 183-9.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=9760055

- **Patient awareness during general anesthesia: a shocking outcome.**
  Author(s): Watkins-Pitchford M, Brull SJ, Rosenbaum SH.
  Source: Journal of Clinical Monitoring. 1997 January; 13(1): 51-2.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=9058253

- **Patient awareness under general anesthesia.**
  Author(s): Desiderio DP.
  Source: Cancer Investigation. 1993; 11(2): 185-9.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=8462019

- **Processing familiar and unfamiliar auditory stimuli during general anesthesia.**
  Author(s): Donker AG, Phaf RH, Porcelijn T, Bonke B.
  Source: Anesthesia and Analgesia. 1996 March; 82(3): 452-5.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=8623941

- **Stunning the neural nexus: mechanisms of general anesthesia.**
  Author(s): Villars PS, Kanusky JT, Dougherty TB.

Source: Aana Journal. 2004 June; 72(3): 197-205. Review.
http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=15208967

- **The recovery of cognitive function after general anesthesia in elderly patients: a comparison of desflurane and sevoflurane.**
Author(s): Chen X, Zhao M, White PF, Li S, Tang J, Wender RH, Sloninsky A, Naruse R, Kariger R, Webb T, Norel E.
Source: Anesthesia and Analgesia. 2001 December; 93(6): 1489-94, Table of Contents.
http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=11726429

- **The use of (a)symmetry of the rest position of the eyes under general anesthesia or sedation-hypnosis in the design of strabismus surgery: A favorable pilot study in 51 exotropia cases.**
Author(s): Castelbuono AC, White JE, Guyton DL.
Source: Binocul Vis Strabismus Q. 1999 Winter; 14(4): 285-90.
http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=10652379

- **Unexpected neurotoxicity of etoposide phosphate administered in combination with other chemotherapeutic agents after blood-brain barrier modification to enhance delivery, using propofol for general anesthesia, in a rat model.**
Author(s): Fortin D, McCormick CI, Remsen LG, Nixon R, Neuwelt EA.
Source: Neurosurgery. 2000 July; 47(1): 199-207.
http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=10917363

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 general anesthesia; 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**

  Cervical Dysplasia
  Source: Integrative Medicine Communications; www.drkoop.com

  Ear Infection
  Source: Integrative Medicine Communications; www.drkoop.com

  Insomnia
  Source: Prima Communications, Inc.www.personalhealthzone.com

  Otitis Media
  Source: Integrative Medicine Communications; www.drkoop.com

- **Herbs and Supplements**

  Benzodiazepines
  Source: Healthnotes, Inc.; www.healthnotes.com

  Fentanyl
  Source: Healthnotes, Inc.; www.healthnotes.com

  General Anesthetics
  Source: Healthnotes, Inc.; www.healthnotes.com

  Nitrous Oxide
  Source: Healthnotes, Inc.; www.healthnotes.com

  Valerian
  Source: Prima Communications, Inc.www.personalhealthzone.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. DISSERTATIONS ON GENERAL ANESTHESIA

Overview

In this chapter, we will give you a bibliography on recent dissertations relating to general anesthesia. We will also provide you with information on how to use the Internet to stay current on dissertations. **IMPORTANT NOTE:** When following the search strategy described below, you may discover non-medical dissertations that use the generic term "general anesthesia" (or a synonym) in their titles. To accurately reflect the results that you might find while conducting research on general anesthesia, we have not necessarily excluded non-medical dissertations in this bibliography.

Dissertations on General Anesthesia

ProQuest Digital Dissertations, the largest archive of academic dissertations available, is located at the following Web address: **http://wwwlib.umi.com/dissertations**. From this archive, we have compiled the following list covering dissertations devoted to general anesthesia. You will see that the information provided includes the dissertation's title, its author, and the institution with which the author is associated. The following covers recent dissertations found when using this search procedure:

- **Assessing the need and demand for sedation or general anesthesia in dentistry: A national survey of the Canadian population** by Chanpong, Brian, MSc from University of Toronto (Canada), 2003, 125 pages
  http://wwwlib.umi.com/dissertations/fullcit/MQ84234
- **On the mechanism of general anesthesia effected by beta-endorphin** by Lewis, Johnnye Lynn; PhD from The University of Manitoba (Canada), 1989
  http://wwwlib.umi.com/dissertations/fullcit/NL54844

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CHAPTER 5. PATENTS ON GENERAL ANESTHESIA

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.[8] 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 "general anesthesia" (or a synonym) in their titles. To accurately reflect the results that you might find while conducting research on general anesthesia, we have not necessarily excluded non-medical patents in this bibliography.

Patents on General Anesthesia

By performing a patent search focusing on general anesthesia, 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.

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

The following is an example of the type of information that you can expect to obtain from a patent search on general anesthesia:

- **Anesthesia rebreathing apparatus**

  Inventor(s): Henkin; Melvyn L. (19640 Greenbriar Drive, Tarzana, CA 91356)

  Assignee(s): none reported

  Patent Number: 3,938,551

  Date filed: March 7, 1974

  Abstract: A **general anesthesia** rebreathing system comprised of a disposable portion adapted to be easily coupled to and decoupled from a permanent portion. The system is designed so as to minimize the structural complexity and cost of the disposable portion while assuring that the disposable portion includes all elements which are likely to contaminate gases inhaled by a patient. The disposable portion includes conventional breathing tubing for coupling a source of fresh gas, as from an anesthesia machine, to a patient and in addition an overflow tube for coupling the patient end of the system to an overflow (pop-off) valve, preferably mounted on the machine and constituting part of the permanent portion. The overflow tube entrance is located close to the patient end of the system and in communication with the tubing which conveys expired gas to a reservoir, such as a conventional breathing bag, mounted at the machine end. The arrangement assures that the patient's initially expired dead space gas is conveyed by the tubing to the reservoir with subsequently expired alveolar gas being exhausted through the overflow tube and pop-off valve. By preferentially exhausting alveolar gas in this manner, the need for using CO.sub.2 absorber material within the system is minimized. The use of an overflow tube as described, to preferentially exhaust alveolar gases is applicable to both circle and single tube anesthesia rebreathing systems. The reservoir can be squeezed to assist the patient' s breathing, either manually by the attending anesthetist or mechanically by a machine commonly known as a ventilator. For optimum performance, the pop-off valve is operable in two different modes, i.e. (1) as a manually controlled variable orifice and (2) as an automatically controlled valve responding to a positive control pressure. The source of control pressure is selectable by the attending anesthetist dependent on the type of ventilation being employed, i.e. spontaneous, manually assisted, or mechanically controlled. In order to isolate the ventilator from the patient's gas, the reservoir preferably comprises a container formed by a flexible outer wall containing a flexible septum therein defining two isolated chambers. The ventilator communicates with one chamber and the other chamber communicates with the anesthesia system tubing. As the ventilator pressurizes the first chamber, the flexible septum between the chambers transmits the pressure to the other chamber and thereby to the patient's airway.

  Excerpt(s): The use of conventional **general anesthesia** administration apparatus inherently involves the danger of cross contamination between patients, sometimes with fatal results. Typically, such apparatus, for example an anesthesia circle, is comprised of one way valve controlled inspiratory and expiratory tubes communicating between an anesthesia machine providing fresh gases, and a patient. The inspiratory and expiratory tubes generally communicate with the patient's lungs via a tubular Y-piece and a mask or endotrachael tube. At the anesthesia machine end of the system, the expiratory tube normally communicates with the upper end of a canister of CO.sub.2 absorber material. The lower end of the canister is coupled to the machine end of the inspiratory tube and to a gas reservoir such as a breathing bag. The fresh gas input from the anesthesia

machine is usually coupled to the inspiratory tube close to the breathing bag. On expiration, the patient's gas is channeled through the one way valve in the expiratory tube to the CO.sub.2 absorber material. On inspiration, the patient's gases are pulled through the inspiratory tube via the one way inspiratory valve, from the breathing bag and fresh gas supply. A pop-off valve is normally located proximate to the CO.sub.2 absorber canister for exhausting expired gas. It will, of course, be readily appreciated that in the utilization of such anesthesia apparatus, various parts of the apparatus are exposed to gas expired by the patient, who, if infected, will transmit bacteria throughout these parts. It has been found that cultures taken from such patient exposed parts will grow bacteria after the apparatus has been subjected to such cleaning procedures as are considered practical for each particular part of the apparatus. In recognition of the foregoing contamination problem, recent attempts have been made to sufficiently reduce the cost of anesthesia apparatus so that most of the patient exposed parts can be discarded after a single use. Generally, these attempts have merely involved fabricating conventional apparatus in an inexpensive manner so that disposal is economically feasible. Such attempts have not, however, been too successful because cost reduction has not been sufficiently significant and because such cost reduction has necessitated the introduction of performance compromises which have often adversely affected the reliability and ease of use of various parts, such as the pop-off valve.

Web site: http://www.delphion.com/details?pn=US03938551__

- **Cuffed oro-pharyngeal airway**

  Inventor(s): Greenberg; Robert S. (Baltimore, MD)

  Assignee(s): The Johns Hopkins University (Baltimore, MD)

  Patent Number: 5,443,063

  Date filed: August 31, 1993

  Abstract: A new type of airway, the cuffed oro-pharyngeal airway (COPA), is described, which may be used as a less cumbersome alternative to face mask/oral airway technique for maintenance of **general anesthesia.** The airway includes an elongated tube having a length such that the proximal end is adapted to be disposed adjacent to but outside the oral cavity of the patient and the distal end is adapted to be disposed in the lower pharynx of the patient, above the epiglottis. An inelastic, inflatable cuff is mounted to the tube adjacent the distal end. On inflation, the inflatable cuff displaces the soft palate against the nasopharynx to seal-off the nasal passages and defines a seal between the tube and the pharyngeal wall. The inflatable cuff also displaces the base of the patient's tongue, thereby locking the tube in the pharynx and displacing the patient's epiglottis to a more open disposition for more effective anesthesia gas delivery to the lungs.

  Excerpt(s): The present invention relates to the establishment and maintenance of an airway, particularly during administration of anesthesia. The administration of anesthesia via face mask/oral airway technique requires continuous hands-on management in many cases, and can be quite cumbersome in various situations. Indeed, for example, it is difficult to administer intravenous medications while attempting to maintain an airway with this technique. Likewise, it is cumbersome to attempt to perform face mask anesthesia during ophthalmologic examination, ear examinations or similar procedures. This is because the mask, the anesthesiologist's hands, and the surgeon's hands are all in too small an area. Also, because of awkward hand positioning, a patent airway cannot be reasonably assured without repeated manipulation. This is

both dangerous to the patient and interrupting to the surgeon. Radiation therapy is another situation where an anesthesiologist needs to maintain a patent airway yet must be distant from the patient, and may be reluctant to instrument the trachea repeatedly. Solutions to this problem have taken form of (i) use of **general anesthesia** with endotracheal intubation, (ii) use of intravenous techniques without securing the airway with adjunctive devices, and (iii) use of the laryngeal mask. Endotracheal intubation will subject the patient to the risks of this procedure, including laryngoscopy, tracheal irritation, the need for deeper anesthetic, and the possible use of neuromuscular blocking agents. Intravenous techniques alone do not address the issue of a patent airway any more effectively. The laryngeal mask airway has gained some acceptance as a solution to these problems; however, it does require some technical facility, and at times, adjunctive equipment for application and is not itself without complications.

Web site: http://www.delphion.com/details?pn=US05443063__

- **Gaba.sub.a receptor epsilon subunit**

  Inventor(s): Kirkness; Ewen F. (Olney, MD), Li; Yi (Gaithersburg, MD)

  Assignee(s): Human Genome Sciences, Inc. (Rockville, MD)

  Patent Number: 5,654,172

  Date filed: June 2, 1995

  Abstract: Disclosed is a human GABA.sub.A epsilon subunit receptor and DNA (RNA) encoding such polypeptides (RNA). Also provided is a procedure for producing such polypeptides by recombinant techniques and agonists and antagonists for such polypeptides. Also provided are methods of using the agonists, for example, to treat anxiety, Huntington's Chorea, muscular spasms and rigidity, and sleep and seizure disorders. Antagonists may be used, for example, to diagnose and treat anxiety, Huntington's Chorea, sleep and seizure disorders, Alzheimer's disease, Parkinson's disease and overdoses with benzodiazepine and for enhancing cognition and reversing sedation after application of **general anesthesia** during surgery. Also disclosed are diagnostic methods for detecting mutations in the polynucleotides of the present invention and for detecting levels of the soluble polypeptides in samples derived from a host.

  Excerpt(s): This invention relates to newly identified polynucleotides, polypeptides encoded by such polynucleotides, the use of such polynucleotides and polypeptides, as well as the production of such polynucleotides and polypeptides. More particularly, the polypeptide of the present invention is a human GABA.sub.A receptor. The invention also relates to inhibiting the action of such polypeptides. Gamma-aminobutyric acid (GABA) is the major inhibitory neurotransmitter in the mammalian central nervous system. The major type of receptor for the inhibitory neurotransmitter GABA, called the GABA.sub.A receptor (GABA.sub.A), is a member of a gene superfamily of ligand-gated ion channels. GABA, the endogenous ligand for the GABA.sub.A complex, stimulates chloride ion conductance through the associated chloride ion channel. The predominant effect of GABA is the interaction with a specific receptor protein which results in an increase of the chloride ion conductance of the post-synaptic membrane to produce an inhibition of neuronal firing. GABA is found in many central neurons (e.g., basal ganglia, cerebellum). GABA is derived from glutamate, which is decarboxylated by glutamic acid decarboxylase. After interaction with receptors, GABA is actively "pumped" back into the prejunctional neurons. The GABA.sub.A receptor is a multi-subunit ligand-gated ion channel. This receptor is a heterooligomeric protein composed

of several distinct polypeptide types. Five different classes of subunit have been defined,.alpha.,.beta.,.gamma.sub.1,.delta.sub.lambda. and.rho. Molecular cloning of these polypeptides reveals that they show 20-40% identity with each other, and 10-20% identity with polypeptides of the nicotinic acetylcholine receptors and strychnine-sensitive glycine receptor. Each subunit class is also represented by a family of genes whose members have 60-80% amino acid sequence identity. Sequences of 6.alpha., 3.beta., 3.gamma., 1.delta. and 2.rho. subunits have been reported. Regions of conserved and variable amino acid sequence suggests structural and functional domains within each polypeptide. All of the polypeptides when expressed in heterologous cells produce GABA-activated chloride channels, and different subunit combinations express different pharmacological properties. The distributions of mRNAs for the different GABA.sub.A receptor polypeptides and their subtypes show significant brain regional variation consistent with pharmacological and biochemical evidence for receptor heterogeneity. Subpopulations of GABA.sub.A receptors with different cellular and regional locations show different sensitivity to GABA, to modulators like steroids, to physiological regulation, to disease processes and to pharmacological manipulation by drugs such as benzodiazepines. The properties of the different subpopulations of GABA.sub.A receptors are determined by which of the one or more different subunits are expressed in a given cell to produce a variety of different oligomeric protein structures.

Web site: http://www.delphion.com/details?pn=US05654172__

- **Method and apparatus for breathing during anesthesia**

  Inventor(s): Downs; John B. (86 Ladoga Ave., Tampa, FL 33606)

  Assignee(s): none reported

  Patent Number: 6,123,072

  Date filed: September 11, 1996

  Abstract: A method and apparatus are provided for ventilation of patients during **general anesthesia.** Breathing gas is supplied to the patient during anesthesia at a controlled volume above the functional residual capacity of the patient's lungs. The patient is allowed to spontaneously respire when the volume of breathing gas is above the functional residual capacity. The pressure of the breathing gas is periodically reduced to facilitate expulsion of carbon dioxide-containing gas from the patient. The system promotes alveolar ventilation, carbon dioxide excretion, oxygenation and respiratory monitoring in patients who receive **general anesthesia.**

  Excerpt(s): The present invention relates to ventilation of patients during anesthesia, and more particularly relates to a method and apparatus for maintaining and monitoring alveolar ventilation, carbon dioxide excretion and oxygenation in patients who receive **general anesthesia.** General anesthesia induces a state of respiratory insufficiency. Most **general anesthetic** agents cause a decrease in central drive for respiration, which unimpeded may cause a decrease in oxygenation and increase in arterial blood carbon dioxide tension (PaCO.sub.2). In addition, **general anesthetic** agents decrease respiratory muscle strength. This especially is true of paralytic agents, such as curare, which may remove any ability of the patient to breathe. In addition, **general anesthesia** has been shown to decrease compliance of the lung and thoracic cage. A decrease in the compliance of these structures requires an increase in muscle strength to produce adequate ventilation, in the absence of mechanical ventilatory assistance. Anesthetic agents are known to have several effects, which may impede the efficiency of oxygenation. **General anesthesia** is associated with a decrease in the functional residual

capacity (FRC) of the lung, the volume of gas remaining within the lung at the end of normal exhalation. Decrease in FRC will cause a regional decrease in ventilation (V.sub.A) relative to perfusion (Q), which may cause decrease in arterial blood oxygenation (PaO.sub.2). It has been shown that hypoxic pulmonary vasoconstriction (HPVC) is rendered less active by several anesthetic agents. Release of HPVC will cause an increase in perfusion to poorly ventilated lung units, causing PaO.sub.2 to decrease. In addition, it has been shown that the current methodology for delivering positive pressure ventilation will cause flow of gas to be directed to dependent lung regions to a greater extent than to non-dependent lung regions. Yet, gravity directs the flow of blood to more non-dependent lung regions. Therefore, less ventilation and more perfusion will be directed to dependent areas of the lung, causing decrease in V.sub.A /Q and relative arterial hypoxemia (decreased PaO.sub.2).

Web site: http://www.delphion.com/details?pn=US06123072__

- **Method for maintaining kidney function during surgery or severe trauma under general anesthesia**

  Inventor(s): Kapusta; Daniel R. (Slidell, LA)

  Assignee(s): Board of Supervisors of Louisiana State University and Agricultural and (Baton Rouge, LA)

  Patent Number: 5,859,043

  Date filed: March 6, 1997

  Abstract: Kappa-opioid agonists prevent the impairment of renal function otherwise caused by the combination of gaseous anesthesia and surgery or severe trauma. Not only do these agents preserve renal function and maintain urine output, they also maintain plasma electrolyte concentration and osmolality by reducing renal loss of sodium and potassium when compared to other diuretic agents. The preservation of urine flow as well as the ability to retain body sodium, potassium, calcium, and osmolality during surgery or severe trauma under gaseous anesthesia are novel and unique properties associated only with kappa opioid agonists. To date, no other clinically-used diuretic agent has been shown to provide constant urine flow, or to retain electrolytes during anesthesia and surgery. The kappa opioid agonists may be used in surgical patients with normal cardiovascular function, but are particularly useful in patients with compromised cardiovascular and/or renal function.

  Excerpt(s): The benefit of the Jun. 11, 1996 filing date of provisional application Ser. No. 60/040,272 is claimed under 35 U.S.C.sctn. 119(e). This invention pertains to diuretics, particularly to diuretics that are used during surgery or severe trauma under **general anesthesia.** During surgery or severe trauma, gaseous (volatile) general anesthetics such as isoflurane, enflurane, desflurane, nitrous oxide, halothane, ethylene, cyclopropane, sevoflurane and methoxyflurane cause an undesirable side effect on the kidneys: the use of gaseous general anesthetics during the stress of surgery or severe trauma causes acute renal failure and the nearly complete shutdown of urine production. There are profound and sustained reductions in urine output (antidiuresis), urinary sodium excretion (antinatriuresis), and urinary potassium excretion (antikaluresis). When renal function is thus impaired, the kidneys do not produce normal amounts of urine. Water then accumulates in the vascular and interstitial compartments of the body, leading to fluid overload and electrolyte imbalance. In a healthy surgical patient with normal cardiovascular function, the fluid retention and electrolyte imbalance do not necessarily present complications. But potentially life-threatening complications can develop if the

same amount of fluid is retained, or if the same electrolyte imbalance occurs in a surgical patient with a preexisting cardiovascular or renal condition, such as hypertension, angina, hepatic cirrhosis, congestive heart failure, renal failure, myocardial infarction, or arrhythmia. Potentially life-threatening conditions that can develop during or after surgery under **general anesthesia** include pulmonary edema, seizures, angina, myocardial infarction, cardiac arrhythmia, heart failure, renal failure, renal tubular necrosis, sepsis, gastrointestinal hemorrhage, and central nervous system edema or dysfunction.

Web site: http://www.delphion.com/details?pn=US05859043__

- **Method for transvenously accessing the pericardial space via the right auricle for medical procedures**

  Inventor(s): Verrier; Richard L. (Bethesda, MD)

  Assignee(s): Georgetown University (Washington, DC)

  Patent Number: 5,269,326

  Date filed: October 24, 1991

  Abstract: A method for placing various types of catheters into the pericardial space takes advantage of the fact that the right auricle is a thin-walled, low-pressure structure which can be readily penetrated without damaging the pericardium or the epicardium. The method avoids surgical trauma and the risks of **general anesthesia** and infection. A catheter is guided downstream through one of the venae cavae to the right atrium. Once inside the right atrium, the catheter is passed into the right auricle. The wall at the apex of the right auricle is then pierced to gain access to the pericardial space. The method can be used, for example, to provide electrical stimuli to the heart (e.g., for pacing, cardioversion, and defibrillation), to pick-up an ECG signal, to deliver pharmacologic agents to the heart, to improve vascularization, to remove pericardial fluid for analysis or pericardiocentesis, or to inject a radio-labelled or echo-sensitive dye into the pericardial space for precision fluid imaging.

  Excerpt(s): The invention relates to the field of cardiology. More specifically, the invention relates to a method for diagnosing and treating the heart by facilitating access to the pericardial space. An important problem in cardiology is the provision of a safe method for diagnosing and treating the heart selectively and without thoracotomy (open chest surgery). Diagnosis or treatment may be pharmacologic or electrophysiologic. For example, in order to deliver electrical stimuli directly to the heart for the purpose of cardioversion or defibrillation, patients often undergo a thoracotomy under **general anesthesia** for attachment of a "patch" electrode to the epicardial surface. This procedure requires an extensive incision of the pericardium. The "patch" electrode provides a large electrode surface area in contact with the heart so that a sufficient mass of cardiac tissue may be depolarized. Thoracotomy creates the additional complication of wound healing. It is desirable to provide a method for placing the defibrillation/cardioversion electrodes in contact with the heart muscle without thoracotomy. U.S. Pat. Nos. 4,181,123 and 4,319,562 to Crosby, and 5,033,477 to Chin et al. disclose methods for placing electrodes in contact with the heart muscles from within the pericardial space without the need for thoracotomy. Access to the pericardial space is gained via a sub-xiphoid route. This involves penetrating the chest wall below the xiphoid process.

  Web site: http://www.delphion.com/details?pn=US05269326__

- **Method of administering oxygen to a patient after general anesthesia using a particular adapter**

  Inventor(s): Gibson; William Patrick (446 N. Geyer Rd., Kirkwood, MO 63112)

  Assignee(s): none reported

  Patent Number: 5,787,879

  Date filed: March 12, 1996

  Abstract: A surgical procedure done under **general anesthesia** in which a patient is first operated on in an operating room and thereafter moved from the operating room to a recovery room is disclosed herein. During **general anesthesia** the patient is administered oxygen from a first oxygen source through a cooperating tube disengagably connected at a first end to the source and at a second opposite end to a mask or endotracheal tube attached to the patient in a way that allows the patient to receive oxygen from the source. After surgery, while being moved from the operating room to a recovery room, the patient is administered oxygen from a second, portable source using the very same cooperating tube. Specifically, after the patient has begun spontaneous ventilation, the first end of the cooperating tube is disconnected from the original oxygen source and reconnected to the portable source. At the same time, the mask or endotracheal tube remains attached to the patient and the patient is thereafter moved along with the portable oxygen source and the cooperating tube to the recovery room. In order to accommodate the switching of the cooperating tube from the original oxygen source to the portable source, a specifically designed adapter is utilized.

  Excerpt(s): The present invention relates generally to techniques for administering oxygen and more particularly to a method of administering oxygen to a patient after **general anesthesia** and to a specific adapter for use in carrying out the method. The procedure described above assumes of course that the patient requires oxygen immediately after **general anesthesia** and specifically as he or she is being transported from the operating room to the recovery room and thereafter at least for a short period of time. It is not suggested here that all patients require post-operative oxygen. However, when it is necessary, the above described procedure illustrates the typical way in which it has been carried out heretofore. Note specifically that this procedure may require three different masks or nasal prong devices and three different cooperating oxygen tubes. Not only it is wasteful using multiple masks or nasal tube devices and tubes both from a cost standpoint and from an environment standpoint, but it is also cumbersome and time consuming to have to change these components from one procedural step to the next. As will be seen hereinafter, the present invention overcomes these drawbacks in a very simple and economical manner. As will be described in more detail hereinafter, there is disclosed herein a surgical procedure in which a patient is first given **general anesthesia** in an operating room and thereafter moved from the operating room to a recovery room. During **general anesthesia** the patient is administered oxygen from a first oxygen source through a cooperating tube disengagably connected at a first end to the source and at a second opposite end to a mask or endotracheal tube attached to the patient in a way which allows the patient to receive oxygen from the source.

  Web site: http://www.delphion.com/details?pn=US05787879__

- **Nasal dilator**

  Inventor(s): Mehdizadeh; Hamid (14928 Diduca Way, Los Gatos, CA 95032)

  Assignee(s): none reported

  Patent Number: 5,895,409

  Date filed: September 16, 1997

  Abstract: A nasal dilator is disclosed which is provided in various sizes to fit and be retained within a person's nostril. The device functions to dilate the nasal passage and allow easier breathing during strenuous exercise, the administration of anesthetics to keep nasal airways open before, during and after **general anesthesia** which requires ventilation by bag or mouth, or in the presence of some breathing disorders in nasal airways. The dilator in its several embodiments is an open framework of non-toxic, non-abrasive, compliant elongate members which is inserted into the nostril and is retained in place by gentle pressure between the nasal walls and the dilator. Prevention of deep nasal insertion is provided by a larger external end of the dilator which contacts the narrowing nasal passage toward the inner end thereof and also serves as a contact for insertion and removal.

  Excerpt(s): An open framework is disclosed for positioning internally within and dilating a single nostril, and is constructed from a plurality of interconnected elongate members. The elongate members forming the framework have an interior end and an exterior end. The exterior end is at least as large in cross section as the interior end. The plurality of interconnected members includes at least one convex longitudinal member extending between the interior and the exterior ends. Further, a nasal dilator is disclosed for internal positioning within a single nostril including an open framework and a plurality of interconnected elongate members within the framework. The plurality of interconnected elongate members are individual continuous loops lying in angularly spaced and intersecting planes. In yet another aspect of the invention, a nasal dilator is disclosed for internal positioning within a single nostril including an open framework having an interior end and an exterior end and an unobstructed through passage. The through passage includes a smaller opening at the interior end of the framework and a larger opening at the exterior end of the framework. Longitudinal structure extends between the smaller and the larger ends.

  Web site: http://www.delphion.com/details?pn=US05895409__

- **Perilaryngeal oral airway**

  Inventor(s): Alfery; David D. (22 Wynstone, Nashville, TN 37215)

  Assignee(s): none reported

  Patent Number: 6,196,224

  Date filed: September 30, 1998

  Abstract: An oral airway which is inserted into the pharynx of a patient through the mouth while the patient is undergoing **general anesthesia** or is undergoing respiratory treatment such as is carried out with cardiopulmonary resuscitation. The oral airway includes a curved hollow, tubular longitudinally extending body member. The body member has a distal end portion for insertion into the patient's mouth and pharynx and a proximal end portion for location at the mouth of the patient. The distal end portion of the body member of the oral airway is extended and shaped so as to be operative to seat

deep in the patient's hypo-pharynx and surround the patient's epiglottis and glottis, thereby to hold the patient's soft tissue away from the air channel opening of the patient.

Excerpt(s): The present invention relates generally to a class of medical devices commonly referred to as oral airways which are inserted through a patient's mouth and into the patient's pharynx while the patient is undergoing **general anesthesia** or is undergoing respiratory treatment such as is carried out with cardiopulmonary resuscitation. More specifically, the present invention relates to a perilaryngeal oral airway having a distal end portion which is positioned directly around the patient's epiglottis and larynx thereby to maximize the airflow in the vicinity of the glottis and not obstruct airflow into the patient's glottis. Oral airways were introduced into the practice of anesthesia and cardiopulmonary resuscitation several decades ago for two basic purposes. First, they prevent the patient's biting down on and occlusion of a previously placed oral endotracheal tube. Second, and most important, oral airways help to provide a patient airway that allows mask ventilation to be carried out by the practitioner. For most patients, mask ventilation is carried out successfully by insertion of an oral airway and by a variety of physical adjustments, such as extension of the patient's neck and elevation of the patient's jaw. However, in some patients, no matter what physical adjustments are made or the particular oral airway which is inserted, mask ventilation cannot be successfully achieved. Such cases are literally life-threatening as hypoxemia and death can quickly ensue if the patient's blood is deprived of oxygen due to a lack of ventilation.

Web site: http://www.delphion.com/details?pn=US06196224__

Patent Applications on General Anesthesia

As of December 2000, U.S. patent applications are open to public viewing.[9] 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 general anesthesia:

- **Apparatus for removal of esophageal coins and similarly shaped objects**

  Inventor(s): DeCou, James M.; (Simpsonville, SC), Gauderer, Michael W. L.; (Greer, SC)

  Correspondence: Dority & Manning, P.A.; Post Office Box 1449; Greenville; SC; 29602-1449; US

  Patent Application Number: 20020099387

  Date filed: March 26, 2002

  Abstract: An apparatus developed for the safe, non-surgical removal of coin-like obstructing foreign objects from the esophagus is provided. The technique employs radiologic guidance. The apparatus has a pair of gripping jaws which are inserted through a mouth block and into a patient's esophagus. The apparatus provides a protective sheath surrounding the inserted jaws. A handle, remote from the jaws, is used to extend the jaws from the sheath which then grasp the end-on edge of the obstructing object. The apparatus and obstructing object may then be removed through the bite block as a unit. The technique requires no sedation or **general anesthesia** and minimizes the risk of collateral injury to the esophageal region.

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

Excerpt(s): This application is a continuation of U.S. application Ser. No. 09/544,427, filed on Apr. 6, 2000, and which is incorporated herein by reference. This invention is directed towards an apparatus and process for removing coins or similarly-shaped obstructing objects from the upper esophageal region. Esophageal obstructions by swallowed coins are a frequent occurrence in younger children. Although most ingested coins will pass spontaneously through the intestinal tract, if too large to clear the cricopharyngeal ring, they become impacted in that area. However, there is still much debate as to the best approaches for the removal of such objects. A variety of medical procedures and techniques have been developed for the removal of coins and similarly shaped objects from the upper esophagus.

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

- **Compositions and methods for improving recovery after general anesthesia**

  Inventor(s): Larijani, Ghassem E.; (St. Davids, PA)

  Correspondence: Jane Massey Licata; Licata & Tyrrell P.C.; 66 E. Main Street; Marlton; NJ; 08053; US

  Patent Application Number: 20040143021

  Date filed: October 2, 2003

  Abstract: Compositions and methods for improving recovery following **general anesthesia** are provided. The composition comprises an effective dose of modafinil. Modafinil has been shown to reduce the symptoms associated with post-operative **general anesthesia,** improving the recovery form anesthesia.

  Excerpt(s): This application claims the benefit of U.S. Provisional Application No. 60/441,453, filed Jan. 21, 2003 and U.S. Provisional Application No. 60/501,432 filed Sep. 9, 2003. With the goals of reducing health care costs and maximizing available health resources, there is an increasing trend towards providing surgical services through outpatient clinics, whenever possible. More than two thirds of patients receiving **general anesthesia** today are scheduled for same day discharge (Marshall, S. I. and F. Chung. 1999. Anesth. Analg. 88:508-517). Thus, there is significant emphasis placed on minimizing postoperative symptoms in order to facilitate early discharge. Basic criteria for discharge include stability of vital signs (including pain) within an acceptable range, ability to tolerate oral liquids, acceptable degree of nausea, and the ability to maintain an upright position without orthostasis (Marshall, S. I. and F. Chung. 1999. Anesth. Analg. 88:508-517). Further recovery is expected to take place at home after discharge. Recovery from anesthesia and surgery can be associated with residual sedation, pain, nausea, and vomiting (Marshall, S. I. and F. Chung. 1999. Anesth. Analg. 88:508-517; Myles, P. S. et al. 2000. Br. J. Anesth. 84:6-10). Relatively few studies have evaluated recovery after discharge. Further, the available studies have deficiencies (i.e., partial reporting, non-uniformity of data collection techniques) that affect the utility of the study for drawing conclusions about recovery and postoperative symptoms following surgery with **general anesthesia.** The overall incidence of post-discharge symptoms in outpatients is reported to be approximately 45% for pain, 42% for drowsiness, 21% for fatigue, 18% for dizziness, 17% for nausea, and 8% for vomiting (Wu, C. L. et al. 2002. Anesthesiology 96:994-1003). Approximately 14% of patients undergoing **general anesthesia** experience these symptoms for 3 or more days (Myles, P. S. et al. 2000. Br. J. Anesth. 84:6-10), with 62% of patients requiring an average of 3.2 postoperative days to resume activities of daily living because of persistence of symptoms (Wu, C. L. et al.

2002. Anesthesiology 96:994-1003). Such statistics, however, do not describe the severity of symptoms.

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

- **End tidal carbon dioxide sampling device**

  Inventor(s): O'Toole, James; (Knoxville, TN)

  Correspondence: Richard C. Litman; Litman Law Offices, LTD.; P. O. Box 15035; Arlington; VA; 22215; US

  Patent Application Number: 20010031929

  Date filed: December 27, 2000

  Abstract: An end tidal carbon dioxide addition device coupling to a nasal cannula used on patients under **general anesthesia** or sedated, to continuously measure the carbon dioxide content of the expired breath. A first embodiment device has a body a pair of nasal ducts with clips to attach to a nasal cannula. A pair of oral ducts collects exhaled oral gases which are combined with the nasal gasses to be analyzed for tidal carbon dioxide content. A pair of posts adjacent the oral ducts stabilize the device on a sedated patient. A second embodiment integrates a nasal cannula with the body to provide an economical disposable device and substitutes a flattened region with an array of apertures for the oral ducts.

  Excerpt(s): This application claims the benefit of U.S. Provisional patent application Ser. No. 60/173,294, filed Dec. 28, 1999. The present invention relates generally to respiratory gas measuring devices and, more specifically, to a disposable device which attaches to a conventional nasal cannulae that fits into the patient's mouth to collect and measure the carbon dioxide content of the expired breath from both expiration sources. In the alternative, the cannulae and the mouth expiration collector are combined as an integrated unit. The relevant art of interest describes various cannulae and end tidal sampler devices, but none discloses the present invention, which is a removable addition to a cannulae or a combination cannulae and mouth respiration collector for carbon dioxide analysis.

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

- **Intubating ventilatory face mask**

  Inventor(s): Johnson, Larry D.; (Red Wing, MN), Kumar, Matthew M.; (Oronoco, MN)

  Correspondence: Craig F. Taylor; Fredrikson & Byron , P.A.; 900 Second Avenue South; 1100 International Centre; Minneapolis; MN; 55402; US

  Patent Application Number: 20030047189

  Date filed: October 25, 2001

  Abstract: Apparatus and methods for providing simultaneous positive pressure ventilation to a patient together with introduction of medical device shafts into the trachea, esophagus, and/or nasal cavity of a patient. A face mask according to present invention can be used to provide positive pressure ventilation and delivery of **general anesthesia** gas while maintaining an airtight seal about the face, simultaneous with the introduction of a medical device shaft, for example, a fiber optic laryngoscope, into the trachea of a patient. The mask can include a standard breathing circuit port and a

second instrument port having a controllably variable or adjustable inside diameter for providing a tight seal about the inserted medical device shaft. One mask has an inflatable and deflatable cuff disposed within the inside tubular walls of the instrument port. The mask may be used in a difficult airway situation, to provide positive pressure ventilation and **general anesthesia** gas to a critically injured patient, allowing an anesthesiologist to identify the trachea with a fiber optic laryngoscope, and advance an endotracheal breathing tube over the fiber optic laryngoscope, while maintaining an airtight seal between the controllably variable inside diameter instrument port and the inserted medical device shafts. The instrument port may later be opened or dilated to allow the mask to be passed over the proximal end of the endotracheal tube, requiring only brief interruption in positive pressure ventilation.

Excerpt(s): This application claims priority to U.S. Provisional Application No. 60/317,258, filed Sep. 5, 2001,titled INTUBATING VENTILATORY FACE MASK, herein incorporated by reference. The present invention is related generally to medical devices. More specifically, the present invention relates to face masks which can find one use in delivery of anesthesia and respiratory gases. The present invention includes a standard breathing circuit port and a variable inside diameter port which can be used to form an airtight seal about fiberoptic laryngoscopes and endotracheal tubes. The use of endotracheal tubes or breathing tubes is the preferred and standard method for administering **general anesthesia** for major surgical procedures. The endotracheal tube typically has a distal end carrying an inflatable balloon disposed about the circumference. The balloon can be inflated to form an air tight seal within the trachea once the endotracheal tube distal end is in place. The proximal end of the endotracheal tube typically has a standard connector, having nominally 3/8.sup.th inch inside diameter and 5/8.sup.th inch outside diameter. The endotracheal tube may be put into position by an anesthesiologist, the distal balloon inflated, and the oxygen and anesthesia gases delivered to the patient. The endotracheal tube is typically put into position after the patient has been put under, to avoid patient gagging on the inserted endotracheal tube.

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

- **Method and apparatus for the estimation of anesthetic depth using wavelet analysis of the electroencephalogram**

  Inventor(s): Ahmadi, Hossain Cyrus; (Vancouver, CA), Bibian, Stephane; (Vancouver, CA), Dumont, Guy Albert; (Vancouver, CA), Huzmezan, Mihai; (Vancouver, CA), Macleod, Bernard Ansell; (Vancouver, CA), Puil, Ernest; (Vancouver, CA), Ries, Craig Robert; (Vancouver, CA), Zikov, Tatjana; (Shaker Heights, OH)

  Correspondence: Oyen, Wiggs, Green & Mutala; 480 - The Station; 601 West Cordova Street; Vancouver; BC; V6b 1g1; CA

  Patent Application Number: 20040010203

  Date filed: July 11, 2003

  Abstract: A method and apparatus to monitor the neurologic state of a patient undergoing **general anesthesia** is provided. Previous automated systems to monitor the neurologic state of a patient undergoing **general anesthesia** involve a significant time delay between the patient's true hypnotic state and the computed indices. The present invention reduces this time delay by using a different analysis technique applied to spontaneous EEG. A wavelet decomposition and statistical analysis of the observed EEG is conducted and compared to reference data to provide a numerical indicator. In

addition, this indicator is more consistent with the patient's loss of consciousness indicated by the loss of count event than previous systems.

Excerpt(s): This application claims priority from U.S. provisional application No. 60/395313 filed Jul. 12, 2002. The present invention relates to the field of clinical anesthesia, in particular to the intraoperative and postoperative monitoring of patients' hypnotic and cognitive states. The state of anesthesia is achieved by administering a combination of various anesthetic agents that render patients unconscious and insensitive to the trauma of surgery, while providing surgeons with a quiet surgical field. The concept of anesthesia, in the context of modern practice of balanced anesthesia, is a multi-component entity comprising hypnosis, analgesia and muscle relaxation. Thus the term "depth of anesthesia", or "anesthetic depth", is relevant for each of these components measured separately.

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

- **Method and system for improving cardiovascular parameters of a patient**

  Inventor(s): Kushnir, Igal; (Pardes Hana, IL), Nesher, Nachum; (Zichron Yaakov, IL)

  Correspondence: Ladas & Parry; 26 West 61st Street; New York; NY; 10023; US

  Patent Application Number: 20020032473

  Date filed: June 20, 2001

  Abstract: Cardiovascular parameters of a patient undergoing a procedure involving **general anesthesia** are maintained by controlling the patient's body temperature. Such control involves the use of a garment enveloping substantial portions of the patient's body and utilizing a heating/cooling regime taking into consideration the heat transfer dynamics of the body.

  Excerpt(s): The present invention relates to methods and systems for improving cardiovascular parameters and cardiac markers of patients undergoing medical procedures involving **general anesthesia.** In particular, the present invention relates to methods and systems for improving cardiovascular parameters, in particular cardiac index (CI), systemic vascular resistance (SVR), and the circulating level of the cardiac protein Troponin I (cTnI) of patients during or after open heart surgery. There are many surgical procedures that are performed under **general anesthesia.** One major undesired consequence of **general anesthesia** is hypothermia, which is a reduction of the body's core temperature. Hypothermia causes physiologic diseration of all major body functions including that of cardiovascular and respiratory systems, nerve conduction, mental acuity, neuromuscular reaction time and metabolic rate. Countering these side effects is a major challenge both during the operation and particularly in the postoperative procedures and in intensive care units. In open-heart surgeries, the treated patient is connected to a heart-lung machine during the open-heart phase of the surgery. However, during the period preceding this phase, it is important that the various physiological functions of the body will be in as best as possible condition prior to connection to the heart-lung machine. However, typically the cardiac index of the patient deteriorates during this period to levels below desired. That has an effect on the eventual recovery of the patient after the surgical procedure.

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

- **Multi-functional nasogastric tubular device for use with patients undergoing general anesthesia**

  Inventor(s): Dua, Rup K.; (Pittsburgh, PA), Georgiades, Alexander H.; (Pittsburgh, PA), Peters, George J.; (Pittsburgh, PA), Swartz, Michael R.; (Pittsburgh, PA)

  Correspondence: Michael R. Swartz, ESQ.; 205 Royal Oak Avenue; Pittsburgh; PA; 15235; US

  Patent Application Number: 20030060764

  Date filed: August 28, 2002

  Abstract: A multi-functional nasogastric tubular device for insertion into a patient includes an elongated flexible body having a pair of spaced apart opposite proximal and distal ends, a plurality of spaced apart lumens formed in the body so as to extend side-by-side with respect to one another between the proximal and distal ends of the body and being open at least at the proximal end of the body, and a temperature sensor disposed on the body, such as in one of the lumens of the body, and running from the proximal end of the body to the distal end thereof such that the temperature sensor is adapted to monitor internal core temperature of a patient and also to serve as a radiopaque element for marking the position of the elongated body in the patient.

  Excerpt(s): This utility patent application claims the benefit of provisional application No. 60/316,432 filed Aug. 30, 2001. The present invention generally relates to medical devices used in providing medical care to a patient undergoing **general anesthesia** or ICU (Intensive Care Unit) and, more particularly, is concerned with a multi-functional nasogastric tubular device for removing gastric contents from a patient's stomach, monitoring core body temperature of the patient, and providing a radiopaque marker of the position of the tubular device in the patient. When a patient undergoes **general anesthesia** in conjunction with medical procedures, such as laparoscopic and open abdominal surgery, to treat various medical problems, for example surgical peptic ulcers or intestinal obstruction, the standard of care in monitoring that patient involves the placement of a nasogastric (NG) tube for the removal of gastric contents in order to prevent aspiration and the placement of a temperature sensor (TS) tube which carries a thermistor in order to monitor the core body temperature of the patient. Heretofore, each of these tubes, being made of flexible plastic material, has been inserted by a physician, or his appointee, separately through one of the two nostrils of the patient and then extended similarly through the oropharynx and esophagus to the stomach of the patient. The NG tube, generally from 36 to 48 inches in length, may extend into the stomach or further into the gastrointestinal tract. The TS tube, being typically shorter in length than the NG tube, typically terminates above the stomach.

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

- **Pharmaceuticals compositions**

  Inventor(s): Jones, Christopher Buchan; (Prestbury, GB), Platt, John Henry; (Congleton, GB)

  Correspondence: Pillsbury Winthrop, Llp; P.O. Box 10500; Mclean; VA; 22102; US

  Patent Application Number: 20020173547

  Date filed: October 26, 2001

Abstract: Pharmaceutical compositions containing 2,6-diisopropylphenol (propofol) are described for use as anesthetics.A method for their preparation is described, as their use in producing anesthesia including induction and maintenance of **general anesthesia** and sedation.

Excerpt(s): The present invention relates to 2,6-diisopropylphenol, known as propofol, and in particular to new pharmaceutical compositions containing propofol. Propofol is an injectable anaesthetic which has hypnotic properties and can be used to induce and maintain general anaesthesia and for sedation for example in Intensive Care Units. Propofol is a highly successful anaesthetic and is marketed under the trademark `Diprivan` for use in treating humans and under the trademark `Rapinovet` for veterinary use. Injectable anaesthetics, such as propofol, are administered directly into the blood stream. This gives rise to a rapid onset of anaesthesia influenced almost entirely by the rate at which the anaesthetic agent crosses the blood-brain barrier. It is therefore necessary for the anaesthetic agent to have sufficient lipid solubility to be able to cross this barrier and depress the relevant mechanisms of the brain. However highly lipid soluble molecules are generally poorly soluble in water and thus are difficult to formulate for intravenous injection. In some cases it may be possible to obtain a water soluble salt of the anaesthetic agent which releases a lipid soluble free base in vivo. This is not possible in many cases and, despite considerable research, it did not prove to be feasible with propofol. Thus it was necessary to conduct very substantial research and development into the formulation of propofol in order to obtain pharmaceutical compositions for administration to warm-blooded animals including humans.

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

- **Short-acting sedative hypnotic agents for anesthesia and sedation**

Inventor(s): Axt, Sabine; (Sunnyvale, CA), Bolton, Jennifer; (San Francisco, CA), Jenkins, Thomas E.; (La Honda, CA)

Correspondence: Theravance, INC.; 901 Gateway Boulevard; South San Francisco; CA; 94080; US

Patent Application Number: 20030153554

Date filed: January 24, 2003

Abstract: The invention provides compounds compositions and methods useful for inducing or maintaining **general anesthesia** or sedation in mammals.

Excerpt(s): This application claims the benefit of U.S. Provisional Application Nos. 60/351,385, filed Jan. 25, 2002, and 60/372,919, filed May 9, 2002, the disclosures of which are incorporated herein by reference. This invention is directed to novel substituted phenylacetic acid ester compounds which are useful as short-acting sedative hypnotic agents for anesthesia and sedation. This invention is also directed to pharmaceutical compositions comprising such compounds; methods for using such compounds for inducing or maintaining anesthesia or sedation; and intermediates for preparing such compounds. Propofol, 2,6-diisopropylphenol, (Diprivan.RTM. Injectable Emulsion, AstraZeneca) is an injectable anesthetic that has hypnotic properties. It can be used to induce and maintain **general anesthesia** and for sedation. Although propofol is a widely-used anesthetic, its usefulness is somewhat limited due to its long and unpredictable post infusion duration of action. This unpredictable duration of action leads to irregular and often long patient recovery times that are undesirable.

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 general anesthesia, 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 "general anesthesia" (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 general anesthesia.

You can also use this procedure to view pending patent applications concerning general anesthesia. 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 6. BOOKS ON GENERAL ANESTHESIA

Overview

This chapter provides bibliographic book references relating to general anesthesia. In addition to online booksellers such as **www.amazon.com** and **www.bn.com**, excellent sources for book titles on general anesthesia 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 "general anesthesia" (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 general anesthesia:

- **Child Taming: How to Manage Children in Dental Practice**

  Source: Carol Stream, IL: Quintessence Publishing Co, Inc. 2003. 121 p.

  Contact: Available from Quintessence Publishing Co, Inc. 551 Kimberly Drive, Carol Stream, IL 60188-1881. (630) 682-3223. Fax: (630) 682-3288. Website: www.quintpub.com. Email: contact@quintbook.com. PRICE: $46.00. ISBN: 850970629.

  Summary: Dentistry can provoke great apprehension in children. Successfully managing younger patients presents both the greatest challenge and the greatest reward for the dentist. This book helps the dental team learn how to work with parents and patients to ensure that a child's visit to the dentist is a positive experience. The book, written from a British point of view, offers 11 chapters: child growth and development; the child's perspective of dental care; the roles of the dental team; parent training; behavioral management techniques; sequential treatment planning; conscious sedation; preparing

the parent and child for the use of conscious sedation; preparing the dental team and facilities for conscious sedation; the indications for conscious sedation; and the use of **general anesthesia.** The book also includes a list of references and two appendices: the pre-appointment letter and a patient information sheet for inhalation sedation; a subject index concludes the book. The book is illustrated with full-color photographs and graphics. 5 references.

- **Complete Guide to Dental Health: How to Avoid Being Overcharged and Overtreated**

  Source: Yonkers, NY: Consumer Reports Books. 1991. 315 p.

  Contact: Available from Consumer Reports Books. 101 Truman Avenue, Yonkers, NY 10703. (914) 378-2000. PRICE: $22.95 plus shipping and handling. ISBN: 0890434360.

  Summary: This cost-conscious guide provides information that consumers can use to assess their dental needs and those of their children. The author, a practicing dentist for over 20 years, discusses guidelines and costs for common dental procedures. Topics covered include proper home care and prevention of dental problems; gold, silver amalgam, and porcelain fillings; frequency of X rays; diagnosing gum disease; local and **general anesthesia;** special precautions for children; and bleaching and veneering. The author outlines the costs, benefits, and risks of alternative treatments, suggesting ways to save time and money on such procedures as orthodontics, extractions, and bridges. Each chapter includes questions for readers to ask their own dentists. Charts provide information on a range of fees for common procedures and explain how unnecessary add-ons increase the bill. An appendix provides Consumer Reports recommendations on toothbrushes, dental flosses, and other products. A glossary and subject index conclude the volume. (AA-M).

- **Clinician's Manual of Oral and Maxillofacial Surgery**

  Source: Chicago, IL: Quintessence Publishing Co, Inc. 2001. 476 p.

  Contact: Available from Quintessence Publishing Co, Inc. 551 Kimberly Drive, Carol Stream, IL 60188-9981. (800) 621-0387 or (630) 682-3223. Fax (630) 682-3288. E-mail: quintpub@aol.com. Website: www.quintpub.com. PRICE: $58.00 plus shipping and handling. ISBN: 0867153962.

  Summary: This spiral-bound handbook offers quick reference information to the oral and maxillofacial surgeon. The outline and chart-based format is designed to offer quick access to information that may be needed in situations that do not allow time for a leisurely perusal of textbooks and journals. The handbook includes 24 chapters: history and physical examination; hospital protocol; laboratory tests; diagnostic imaging; ECG (electrocardiograph) interpretation; fluids and electrolytes; surgical nutrition; blood and blood products; commonly used medications; managing medical emergencies; management of the medically compromised patient; postoperative problems; basic patient management problems; sutures and suturing techniques; outpatient sedation, **general anesthesia,** and management of anesthetic emergencies; complications of dentoalveolar surgery; treatment planning for implant surgery; the differential diagnosis of cysts and tumors; infections; trauma; the diagnosis and treatment of salivary gland disease; temporomandibular joint disorders (TMD); recognition and management of dentofacial and craniofacial abnormalities; and the evaluation of facial esthetics. Appendices include: cardiac conditions considered for prophylaxis; antibiotic prophylactic regimens for certain dental procedures; summary recommendations for antibiotic prophylaxis; dental procedures considered for antibiotic prophylaxis in susceptible patients; FDA (Food and Drug Administration) pregnancy categories; and

DEA (Drug Enforcement Agency) schedule of controlled substances. A subject index concludes the handbook.

- **Dentistry for the Child and Adolescent. 7th ed**

  Source: St. Louis, MO: Mosby, Inc. 2000. 848 p.

  Contact: Available from Harcourt Health Sciences. 11830 Westline Industrial Drive, St. Louis, MO 63146. (800) 325-4177. Fax (800) 874-6418. Website: www.harcourthealth.com. PRICE: $72.00 plus shipping and handling. ISBN: 0815190174.

  Summary: This textbook on dentistry for the child and adolescent is designed to help undergraduate dental students and postdoctoral pediatric dentistry students provide comprehensive oral health care for infants, children, teenagers, and individuals with various disabilities. The text also offers the experienced dentist reference information on new developments and techniques. The text includes 30 chapters, each written by experts in the field. Topics cover examination of the mouth; identification of child abuse and neglect; the psychological management of children's behaviors; development and morphology of the primary teeth; radiographic (x-ray) techniques; clinical genetics for the dental practitioner; acquired and developmental disturbances of the teeth and associated oral structures; tumors of the oral soft tissues and cysts and tumors of the bone; local, systemic, and congenital factors that influence eruption of the teeth; dental caries in the child and adolescent; mechanical and chemotherapeutic home oral hygiene; nutritional considerations for the pediatric dental patient; local anesthesia for the child and adolescent; pharmacologic management of patient behavior; hospital dental services for children and the use of **general anesthesia;** dental materials; pit and fissure sealants; restorative dentistry; treatment of deep caries, vital pulp exposure, and pulpless teeth; gingivitis and periodontal disease; management of trauma to the teeth and supporting tissues; prosthodontic treatment of the adolescent patient; dental problems of children with disabilities; management of medically compromised patients, including those with blood diseases, cancer, liver disease, and AIDS; growth of the face and dental arches; cephalometrics and facial esthetics as the key to complete treatment planning; managing the developing occlusion; the multidisciplinary team approach to cleft lip and palate management; practice management; and community oral health. Each chapter includes black and white photographs and extensive references; a subject index concludes the text.

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 "general anesthesia" at online booksellers' Web sites, you may discover non-medical books that use the generic term "general anesthesia" (or a synonym) in their titles. The following is indicative of the results you might find when searching for "general anesthesia" (sorted alphabetically by title; follow the hyperlink to view more details at Amazon.com):

- **Monheim's General anesthesia in dental practice** by Leonard M Monheim; ISBN: 080160608X; http://www.amazon.com/exec/obidos/ASIN/080160608X/icongroupinterna
- **Principles of sedation, local, and general anesthesia in dentistry** by Sylvan Myron Elliot Shane; ISBN: 0398033870; http://www.amazon.com/exec/obidos/ASIN/0398033870/icongroupinterna
- **Sedation, local and general anesthesia in dentistry** by Niels Bjorn Jorgensen; ISBN: 0812103432; http://www.amazon.com/exec/obidos/ASIN/0812103432/icongroupinterna
- **Sedation, Local and General Anesthesia in Dentistry** by Niels B. Jorgense; ISBN: 0812106849; http://www.amazon.com/exec/obidos/ASIN/0812106849/icongroupinterna

Chapters on General Anesthesia

In order to find chapters that specifically relate to general anesthesia, an excellent source of abstracts is the Combined Health Information Database. You will need to limit your search to book chapters and general anesthesia 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 "general anesthesia" (or synonyms) into the "For these words:" box. The following is a typical result when searching for book chapters on general anesthesia:

- **Reactions to Drugs and Materials, and Drug Interactions**

  Source: in Scully, C. and Cawson, R.A. Medical Problems in Dentistry. 4th ed. Woburn, MA: Butterworth-Heinemann. 1998. p. 506-528.

  Contact: Available from Butterworth-Heinemann. 225 Wildwood Avenue, Woburn, MA 01801-2041. (800) 366-2665 or (781) 904-2500. Fax (800) 446-6520 or (781) 933-6333. E-mail: orders@bhusa.com. Website: www.bh.com. PRICE: $110.00. ISBN: 0723610568.

  Summary: Drugs used routinely in dentistry rarely cause significant adverse effects unless used recklessly. The chief dangers are those of **general anesthesia,** particularly with intravenous agents, and occasionally of allergic reactions. This chapter on reactions to drugs and materials, and drug interactions, is from a text that covers the general medical and surgical conditions relevant to the oral health care sciences. Topics include hypersensitivity to drugs used in dentistry, reactions to penicillin, the management of anaphylaxis, cephalosporins, reactions to intravenous anesthetic agents, halothane hepatitis, allergic reactions to muscle relaxants and related compounds, reactions to materials used in dentistry (including resins, latex, and other materials), adverse effects of drugs used in dentistry in the medically compromised patient, and the oral side effects of drugs (notably, xerostomia, or dry mouth). In each section, the authors focus on dental aspects and patient care strategies. The chapter includes a summary of the points covered. Appendices offer extensive charts of drugs and drug reactions. 4 appendices. 2 tables. 33 references.

- **Interstitial Cystitis**

  Source: in Graham, S.D., Jr., et al., eds. Glenn's Urologic Surgery. 5th ed. Philadelphia, PA: Lippincott Williams and Wilkins. 1998. p. 243-251.

  Contact: Available from Lippincott Williams and Wilkins. P.O. Box 1600, Hagerstown, MD 21741. (800) 638-3030 or (301) 714-2300. Fax (301) 824-7390. Website: lww.com. PRICE: $199.00 plus shipping and handling. ISBN: 0397587376.

  Summary: Interstitial cystitis (IC) is a symptom complex comprised of chronic irritative voiding symptoms, sterile and cytologically negative urine (no infection present), and bladder pain that is exacerbated by bladder filling but relieved, in many instances, by bladder emptying. This chapter on IC is from an exhaustive textbook on urologic surgery. More than 90 percent of all patients diagnosed with this disease are women. Cystoscopic examination at the time of hydrodistension is mandatory in confirming a diagnosis of IC, as well as in ruling out other possible etiologies that could be responsible for bladder pain and irritative voiding symptoms. Hydrodistention entails distending the bladder with either sterile water or normal saline irrigant, then emptying it after 5 minutes; the procedure is performed under regional or **general anesthesia.** Other than hydrodistention and the intravesical instillation of certain agents, the primary treatment for IC is usually not surgical in nature. The author emphasizes the surgical treatment is appropriate only for a small and select group of patients with incapacitating and debilitating symptoms resistant to conventional medical and behavioral therapy. The author reviews the surgical techniques used for endoscopic resection or fulguration, cystolysis (bladder denervation procedures), urinary diversion, augmentation cystoplasty (augmenting the bladder, without excision of the diseased bladder), partial cystectomy (bladder removal) and substitution cystoplasty, and total cystectomy with urinary diversion. The most serious complication of hydrodistention is bladder rupture, but fortunately, this is very uncommon. Bladder perforation is more likely to occur following fulguration or excision of IC lesions because the bladder wall is normally quite thin. In addition, bowel injury can occur following aggressive loop resection or injudicious use of laser energy. The author reiterates that, in those few patients who continue to have significant symptoms after hydrodistention and instillation therapy, and who are interested in further surgical intervention, a thorough discussion of treatment options between physician and patient is critical to ensure a satisfactory outcome. 5 figures. 4 tables. 9 references.

- **Pediatric Sedation**

  Source: in Dionne, R.A.; Phero, J.C.; Becker, D.E. Management of Pain and Anxiety in the Dental Office. Philadelphia, PA: W.B. Saunders Company. 2002. p. 296-314.

  Contact: Available from W.B. Saunders Company. Book Orders Fulfillment Department, Harcourt Health Sciences, 11830 Westline Industrial Drive, Saint Louis, MO 63146-9988. (800) 545-2522. Website: www.wbsaunders.com. PRICE: $122.00 plus shipping and handling. ISBN: 072167287.

  Summary: Pain has always been a barrier to dentistry, serving as the inspiration for pioneering efforts by dentists to control pain. This chapter on pediatric sedation is from a text that addresses the management of acute and chronic pain and dental patient apprehension based on accepted pharmacologic (drug) therapies and special applications for dental outpatients. The authors review pediatric anatomy and physiology, the routes and doses of administration for sedation, sedation methods for pediatric dentistry (inhalation sedation, oral sedation, and intramuscular sedation), alternative routes of administration, deep sedation (with ketamine or with propofol),

and strategies to balance therapeutic success and patient safety. The authors conclude with a discussion of the different perspectives of the parties involved (the child patient, his or her parents, professional organizations, insurance companies, state boards of review) and note that the practitioner's preferences are the primary deciding factor regarding which methods of sedation are used. One lengthy sidebar offers guidelines for the elective use of conscious sedation, deep sedation, and **general anesthesia** in pediatric dental patients, as established by the American Academy of Pediatric Dentistry. 7 references.

- **Respiratory Disorders**

  Source: in Scully, C. and Cawson, R.A. Medical Problems in Dentistry. 4th ed. Woburn, MA: Butterworth-Heinemann. 1998. p. 154-172.

  Contact: Available from Butterworth-Heinemann. 225 Wildwood Avenue, Woburn, MA 01801-2041. (800) 366-2665 or (781) 904-2500. Fax (800) 446-6520 or (781) 933-6333. E-mail: orders@bhusa.com. Website: www.bh.com. PRICE: $110.00. ISBN: 0723610568.

  Summary: Respiratory disorders are common and may significantly affect dental treatment, especially **general anesthesia.** Respiratory diseases are often also a contraindication to opioids, benzodiazepines and other respiratory depressants. This chapter on respiratory disorders is from a text that covers the general medical and surgical conditions relevant to the oral health care sciences. Topics include upper respiratory tract viral infections, sinusitis, lower respiratory tract infections, pulmonary tuberculosis, Legionnaire's disease (legionellosis), lung abscess, bronchiectasis, cystic fibrosis, chronic obstructive airways diseases, asthma, bronchogenic carcinoma (lung cancer), occupational lung disease, sarcoidosis, postoperative respiratory complications (including aspiration of gastric contents), obstructive sleep apnea syndrome, and respiratory distress syndromes (RDS). For each disease, the authors discuss general aspects, diagnosis and management issues, dental aspects, and patient care strategies. The chapter includes a summary of the points covered. 1 figure. 5 tables. 51 references.

- **Use of Sedation**

  Source: in Fenton, S.J.; Perlman, S.; Turner, H., eds. Oral Healthcare for People with Special Needs: Guidelines for Comprehensive Care. River Edge, NJ: Exceptional Parent, Psy-Ed Corp. 2003. p. 24-26.

  Contact: Available as part of a monograph from Exceptional Parent, Psy-Ed Corp. 65 East Route 4, River Edge, NJ 07661. (800) EPARENT or (800) 372-7368. E-mail: epedit@aol.com. Website: www.eparent.com. PRICE: Contact publisher.

  Summary: There are various indications for the use of sedation in dental patients with disabilities. These can include: patients who are unable to cooperate because of extreme anxiety or phobia concerning dental treatment; individuals who exhibit involuntary movement caused by neuromuscular disorders; and patients who, due to mental retardation, are unable to understand the need for dental care and are unable to cooperate in a way that allows the dental professional to provide optimal care. This article on the use of sedation is from a monograph that offers guidelines for the comprehensive oral health care for people with special needs. The monograph is designed to help oral health care providers embrace more fully all the members of their communities, while being respectful of a variety of special needs. In this article, the authors consider the different types of sedation, professional training, hospital dentistry, legal considerations, and preoperative care and tests. The authors conclude that oral rehabilitation under **general anesthesia** is an important and sometimes the only viable

option to deliver safe, quality, and comprehensive dental care for the exceptional patient with special needs.

- **Genitourinary and Renal Disease**

  Source: in Scully, C. and Cawson, R.A. Medical Problems in Dentistry. 4th ed. Woburn, MA: Butterworth-Heinemann. 1998. p. 255-262.

  Contact: Available from Butterworth-Heinemann. 225 Wildwood Avenue, Woburn, MA 01801-2041. (800) 366-2665 or (781) 904-2500. Fax (800) 446-6520 or (781) 933-6333. E-mail: orders@bhusa.com. Website: www.bh.com. PRICE: $110.00. ISBN: 0723610568.

  Summary: This chapter on genitourinary and renal disease is from a text that covers the general medical and surgical conditions relevant to the oral health care sciences. Topics include genitourinary infections, cancer, renal disease, chronic renal failure and renal transplantation, renal transplantation, the nephrotic syndrome, and renal stones. For each condition, the authors discuss general aspects, diagnosis and management issues, dental aspects, and patient care strategies. The authors caution that renal patients may have a bleeding tendency, usually due to platelet dysfunction. They may also have impaired drug excretion, a problem that must be taken into consideration when **general anesthesia** is contemplated. The chapter includes a summary of the points covered. 1 figure. 2 tables. 35 references.

- **Pain and Anxiety Control (Part I: Pain Perception Control)**

  Source: in Pinkham, J.R., et al., eds. Pediatric Dentistry: Infancy Through Adolescence. 3rd ed. Philadelphia, PA: W.B. Saunders Company. 1999. p. 85-91.

  Contact: Available from W.B. Saunders Company. Book Orders Fulfillment Department, Harcourt Health Sciences, 11830 Westline Industrial Drive, Saint Louis, MO 63146-9988. (800) 545-2522. Website: www.wbsaunders.com. PRICE: $69.00 plus shipping and handling. ISBN: 0721682383.

  Summary: This chapter on pain and anxiety control is from a textbook on pediatric dentistry. The overwhelming majority of pharmacologic agents used in dentistry are used to control anxiety and pain. Topics include **general anesthesia;** local anesthesia, including mechanisms of action, local anesthetic agents (esters and amides), local anesthetic properties (potency, onset time, duration, and regional technique), and toxicity (central nervous system reactions and cardiovascular system reactions); and analgesics (painkillers), including non-narcotic analgesics and narcotic analgesics. The authors stress that there is no single best technique for control of anxiety and pain; the dentist should have a working knowledge of several techniques and select the one that appears to be the most appropriate for a particular patient. 1 table. 6 references.

- **Pain Management in Dental Care**

  Source: in Sutton, A.L. Dental Care and Oral Health Sourcebook. 2nd ed. Detroit, MI: Omnigraphics. 2003. p. 213-226.

  Contact: Available from Omnigraphics. 615 Griswold Street, Detroit, MI 48226. (313) 961-1340. Fax: (313) 961-1383. E-mail: progers@omnigraphics.com. www.omnigraphics.com. PRICE: $78.00; plus shipping and handling. ISBN: 780806344.

  Summary: This chapter on pain management in dental care is from a book that provides information about dental care and oral health at all stages of life. The chapter offers four sections: conscious sedation; anesthesia; safety suggestions regarding anesthesia in the

dental office; and painless drilling. Conscious sedation is a management technique that uses medications to assist the patient to cope with fear and anxiety and cooperate with dental treatment; this technique is often used with children. The chapter discusses the use of analgesics (pain killers), local or topical anesthesia, and sedation and **general anesthesia.** The author emphasizes that understanding the range of choices that are available to relieve anxiety and discomfort helps patients to be well-informed dental consumers. The final section on painless drilling reviews how dental decay occurs and is treated, choices of fillings, and prevention of decay.

- **Surgical Management of Otitis Media with Effusion**

  Source: in Roberts, J.E.; Wallace, I.F.; Henderson, F.W. Otitis Media in Young Children: Medical, Developmental, and Educational Considerations. Baltimore, MD: Paul H. Brookes Publishing Company. 1997. p. 245-264.

  Contact: Available from Paul H. Brookes Publishing Company. P.O. Box 10624, Baltimore, MD 21285-0624. (800) 638-3775 or (410) 337-9580. Fax (410) 337-8539. E-mail: custserv@brookes.com. Website: www.brookespublishing.com. PRICE: $48.95 plus shipping and handling. ISBN: 1557662789.

  Summary: This chapter on the surgical management of otitis media with effusion (OME) is from a textbook on the medical, developmental, and educational impact of otitis media on young children. The authors note that the surgical treatment of middle ear effusion is the most frequent reason for administering **general anesthesia** to children in the United States. This chapter discusses the various procedures currently used for the surgical treatment of middle ear fluid. First, middle ear anatomy and physiology are discussed. Next, the different surgical procedures for treatment of OME are described, followed by a review of the effectiveness of these procedures. Procedures covered include tympanocentesis (needle aspiration of the middle ear space), myringotomy, myringotomy with tympanostomy tube insertion, exploratory tympanotomy, middle ear reconstruction, mastoidectomy, and adenoidectomy and tonsillectomy. 7 figures. 2 tables. 29 references. (AA-M).

- **Transurethral Thermotherapy**

  Source: in Narayan, P. Benign Prostatic Hyperplasia. London, England: Churchill Livingstone. 2000. p. 281-295.

  Contact: Available from Harcourt Publishers. Foots Cray High Street, Sidcup, Kent DA14 5HP UK. 02083085700. Fax 02083085702. E-mail: cservice@harcourt.com. Website: www.harcourt-international.com. PRICE: $149.00 plus shipping and handling. ISBN: 0443056374.

  Summary: This chapter on transurethral thermotherapy in the clinical management of BPH is from a textbook that compiles data and commentary from the world's leading experts in this field. Thermotherapy recently received Food and Drug Administration (FDA) approval and is appealing to many urologists primarily because of its ease of use, minimal morbidity (associated illness or complications), and improved safety profile, compared with transurethral resection of the prostate (TURP). The object of microwave hyperthermia has been to produce heat induced tissue damage in neoplasms (tumors) that cannot augment their blood supply in response to heat induced stress. Transurethral thermotherapy (TUMT) is more effective than transrectal thermotherapy. Results from several studies using transurethral thermotherapy indicate that 62 percent of patients have improvement in symptoms scores and 74 percent have improvement in urinary flow. The authors cover the scientific foundation of this technique, its

mechanism of action, thermotherapy versus transurethral resection, high energy versus low energy thermotherapy, equipment choices, and the complications of microwave use. The author concludes that the goal of TUMT is not to debulk the prostatic tissue, which is reserved for invasive surgical procedures like TURP, but to reduce BPH symptoms, with the convenience of outpatient therapy, without the need for **general anesthesia,** and without the high morbidity that is associated with TURP. 4 figures. 7 tables. 23 references.

- **History and Development of Phonomicrosurgery**

  Source: in Sataloff, R.T., ed. Professional Voice: The Science and Art of Clinical Care. 2nd ed. San Diego, CA: Singular Publishing Group, Inc. 1997. p. 581-602.

  Contact: Available from Singular Publishing Group, Inc. 401 West 'A' Street, Suite 325, San Diego, CA 92101-7904. (800) 521-8545 or (619) 238-6777. Fax (800) 774-8398 or (619) 238-6789. E-mail: singpub@singpub.com. Website: www.singpub.com. PRICE: $325.00 plus shipping and handling. ISBN: 1565937287.

  Summary: This chapter, from a book on the clinical care of the professional voice, reviews the history and development of phonomicrosurgery. In the 20th century, a variety of technological developments improved direct examination of the larynx, such as improved laryngoscopes, hand instruments, and lighting, as well as the surgical microscope, the carbon dioxide laser, and **general anesthesia.** Through the last two decades, there has been a greater understanding of the physiology underlying vocal fold oscillation. These principles have been joined with the technological developments of microlaryngeal surgery and have led to current concepts of phonomicrosurgery. Topics covered in this chapter include the prelaryngology era of indirect mirror laryngoscopy, the origin of laryngology, transoral management of larynx cancer and Crown Prince Frederick, the era of direct surgical laryngoscopy, microlaryngoscopy, the body cover theory of voice production, and current concepts in phonomicrosurgery. 22 figures. 127 references.

- **Rectal Foreign Bodies**

  Source: in Snape, W.J., ed. Consultations in Gastroenterology. Philadelphia, PA: W.B. Saunders Company. 1996. p. 36-41.

  Contact: Available from W.B. Saunders Company. Order Fulfillment, 6277 Sea Harbor Drive, Orlando, FL 32887. (800) 545-2522. Fax (800) 874-6418 or (407) 352-3445. PRICE: $125.00. ISBN: 0721646700.

  Summary: This chapter, from a gastroenterology text, covers rectal foreign bodies. The authors note that rectal foreign bodies may present difficult therapeutic problems and occasionally have life threatening consequences. The authors first outline the circumstance under which foreign bodies may be introduced into the rectum, i.e., diagnostic or therapeutic mishap, criminal sexual assault, intentional insertion for illicit purposes (drug smuggling), anal eroticism, and accidental or intentional oral ingestion. The authors continue by discussing the typical presentation and symptoms, the initial approach to management, removal of low lying versus high lying objects, colorectal perforations, and removal of foreign bodies located above the rectum (usually those ingested by the patient). The authors stress that most foreign bodies will be found in the rectum, accessible to removal manually or through an anoscope or proctosigmoidoscope. Patients with high lying objects or low lying objects that cannot be readily removed in the emergency room setting warrant inpatient management. The majority of these foreign bodies can be removed manually or with proctosigmoidoscopy

under spinal or **general anesthesia.** Laparotomy is reserved for those situations where all other attempts have failed. In cases involving the ingestion of sharp objects that have lodged in the colon, the initial approach should be a period of observation. If the object does not progress through the colon, colonoscopic removal is indicated. 1 table. 15 references.

- **Pharmacologic Management of Patient Behavior**

  Source: in McDonald, R.E. and Avery, D.A., eds. Dentistry for the Child and Adolescent. 7th ed. St. Louis, MO: Mosby, Inc. 2000. p. 297-324.

  Contact: Available from Harcourt Health Sciences. 11830 Westline Industrial Drive, St. Louis, MO 63146. (800) 325-4177. Fax (800) 874-6418. Website: www.harcourthealth.com. PRICE: $72.00 plus shipping and handling. ISBN: 0815190174.

  Summary: To perform the highest quality dental service for the pediatric patient, one may need to use pharmacologic (drug) means to obtain a quiescent, cooperative patient. This chapter on the pharmacologic management of patient behavior is from a textbook on dentistry for the child and adolescent that is designed to help undergraduate dental students and postdoctoral pediatric dentistry students provide comprehensive oral health care for infants, children, teenagers, and individuals with various disabilities. The goals of conscious sedation for the pediatric patient are to provide the most comfortable, most efficient, and highest quality dental service for the patient; to control inappropriate behavior; to produce in the patient a positive attitude toward future care; to promote patient welfare and safety; and to return the patient to a physiologic state in which safe discharge is possible. Topics covered include the differences between conscious sedation and deep sedation or **general anesthesia;** patient selection and preparation, including informed consent and instructions to parents; documentation; sedation techniques, including inhalation, oral, intramuscular, submucosal, and intravenous; combinations of methods and agents; facilities and equipment; common agents employed, including gases, antihistamines, benzodiazepines, benzodiazepine antagonists, sedative hypnotics, narcotics, and narcotic antagonists; monitoring; and risk management. 14 figures. 3 tables. 26 references.

CHAPTER 7. MULTIMEDIA ON GENERAL ANESTHESIA

Overview

In this chapter, we show you how to keep current on multimedia sources of information on general anesthesia. 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 general anesthesia is the Combined Health Information Database. You will need to limit your search to "Videorecording" and "general anesthesia" 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 "general anesthesia" (or synonyms) into the "For these words:" box. The following is a typical result when searching for video recordings on general anesthesia:

- **Eyes, Ears, Nose, and Throat: Your Passageway to Your Senses**

  Source: Calhoun, KY: NIMCO. 199x. (videocassette).

  Contact: Available NIMCO. P.O. Box 9, 102 Highway 81 North, Calhoun, KY 42327-0009. (800) 962-6662 or (502) 273-5050; Fax (502) 273-5844; E-mail: support@nimcoinc.com; http://www.nimcoinc.com. PRICE: $89.95 plus shipping and handling. Item Number NIM-SM-EENT-V.

  Summary: This program, one in a consumer health series, covers the senses of hearing, smell, and taste, and the organs that serve each sense. The program first discusses the anatomy of the ear (outer, middle, and inner); for each part discussed, an anatomical model or illustration is employed for clarity. The narrator describes the role of the ear, nose, and throat specialist (otolaryngologist), their typical patients and symptoms, and the indications for referral from a family care or general practitioner to a specialist. The program next discusses ventilation tubes (myringotomy) including its outpatient nature,

the procedure itself, the types of tubes used, recovery time (from the use of **general anesthesia**), short-term versus long-term tubes, and the use of tubes in adults. Additional topics covered include otitis externa (swimmer's ear) and its prevention, infected tonsils and adenoids, indications for removal of tonsils and adenoids, the role of the inner ear in balance and hearing, how the hearing process works, conductive hearing loss and the types of surgery used to correct it, vertigo and its assessment, and sinus problems, including the surgical treatment for sinus obstructions. The program includes interviews with patients in each category of illness, as well as interviews with otolaryngologists and surgeons who treat these patients. The program includes medical terminology, most of which is defined as part of the narration.

CHAPTER 8. PERIODICALS AND NEWS ON GENERAL ANESTHESIA

Overview

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

News Services and Press Releases

One of the simplest ways of tracking press releases on general anesthesia 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 "general anesthesia" (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 general anesthesia. 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 "general anesthesia" (or synonyms). The following was recently listed in this archive for general anesthesia:

- **Long-term stress disorder can develop when general anesthesia fails**
  Source: Reuters Medical News
  Date: September 10, 2001

- **Rapid Narcotic Detox Under General Anesthesia Called Safe, Effective**
  Source: Reuters Medical News
  Date: April 24, 1998
- **Cognitive Effects Of Epidural And General Anesthesia Similar In Older Patients**
  Source: Reuters Medical News
  Date: July 07, 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 "general anesthesia" (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 "general anesthesia" (or synonyms). If you know the name of a company that is relevant to general anesthesia, 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 "general anesthesia" (or synonyms).

Academic Periodicals covering General Anesthesia

Numerous periodicals are currently indexed within the National Library of Medicine's PubMed database that are known to publish articles relating to general anesthesia. In addition to these sources, you can search for articles covering general anesthesia 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."

CHAPTER 9. RESEARCHING MEDICATIONS

Overview

While a number of hard copy or CD-ROM resources are available for researching medications, a more flexible method is to use Internet-based databases. Broadly speaking, there are two sources of information on approved medications: public sources and private sources. We will emphasize free-to-use public sources.

U.S. Pharmacopeia

Because of historical investments by various organizations and the emergence of the Internet, it has become rather simple to learn about the medications recommended for general anesthesia. One such source is the United States Pharmacopeia. In 1820, eleven physicians met in Washington, D.C. to establish the first compendium of standard drugs for the United States. They called this compendium the U.S. Pharmacopeia (USP). Today, the USP is a non-profit organization consisting of 800 volunteer scientists, eleven elected officials, and 400 representatives of state associations and colleges of medicine and pharmacy. The USP is located in Rockville, Maryland, and its home page is located at **http://www.usp.org/**. The USP currently provides standards for over 3,700 medications. The resulting USP DI® Advice for the Patient® can be accessed through the National Library of Medicine of the National Institutes of Health. The database is partially derived from lists of federally approved medications in the Food and Drug Administration's (FDA) Drug Approvals database, located at **http://www.fda.gov/cder/da/da.htm**.

While the FDA database is rather large and difficult to navigate, the Phamacopeia is both user-friendly and free to use. It covers more than 9,000 prescription and over-the-counter medications. To access this database, simply type the following hyperlink into your Web browser: **http://www.nlm.nih.gov/medlineplus/druginformation.html**. To view examples of a given medication (brand names, category, description, preparation, proper use, precautions, side effects, etc.), simply follow the hyperlinks indicated within the United States Pharmacopeia (USP).

Below, we have compiled a list of medications associated with general anesthesia. If you would like more information on a particular medication, the provided hyperlinks will direct you to ample documentation (e.g. typical dosage, side effects, drug-interaction risks, etc.).

The following drugs have been mentioned in the Pharmacopeia and other sources as being potentially applicable to general anesthesia:

Anesthetics

- **Topical - U.S. Brands:** Almay Anti-itch Lotion; Americaine Topical Anesthetic First Aid Ointment; Americaine Topical Anesthetic Spray; Butesin Picrate; DermaFlex; Dermoplast; Lagol; Nupercainal Cream; Nupercainal Ointment; Pontocaine Cream; Pontocaine Ointment; Pramegel; Prax; Tronothane; Xylocaine http://www.nlm.nih.gov/medlineplus/druginfo/uspdi/202042.html

Anesthetics, General

- **Systemic - U.S. Brands:** Amidate; Brevital; Diprivan; EÂ¯thrane; Fluothane; Forane; Ketalar; Penthrane; Pentothal http://www.nlm.nih.gov/medlineplus/druginfo/uspdi/203043.html

Chymopapain

- **Parenteral-Local - U.S. Brands:** Chymodiactin http://www.nlm.nih.gov/medlineplus/druginfo/uspdi/202139.html

Desflurane

- **Inhalation-Systemic - U.S. Brands:** Suprane http://www.nlm.nih.gov/medlineplus/druginfo/uspdi/202685.html

Lidocaine and Prilocaine

- **Topical - U.S. Brands:** EMLA http://www.nlm.nih.gov/medlineplus/druginfo/uspdi/203679.html

Narcotic Analgesics For Surgery and Obstetrics

- **Systemic - U.S. Brands:** Alfenta; Astramorph; Astramorph PF; Buprenex; Demerol; Duramorph; Nubain; Stadol; Sublimaze; Sufenta; Ultiva http://www.nlm.nih.gov/medlineplus/druginfo/uspdi/202391.html

Sevoflurane

- **Inhalation-Systemic - U.S. Brands:** Ultane http://www.nlm.nih.gov/medlineplus/druginfo/uspdi/202793.html

Commercial Databases

In addition to the medications listed in the USP above, a number of commercial sites are available by subscription to physicians and their institutions. Or, you may be able to access these sources from your local medical library.

Mosby's Drug Consult™

Mosby's Drug Consult™ database (also available on CD-ROM and book format) covers 45,000 drug products including generics and international brands. It provides prescribing information, drug interactions, and patient information. Subscription information is available at the following hyperlink: **http://www.mosbysdrugconsult.com/**.

PDR*health*

The PDR*health* database is a free-to-use, drug information search engine that has been written for the public in layman's terms. It contains FDA-approved drug information adapted from the Physicians' Desk Reference (PDR) database. PDR*health* can be searched by brand name, generic name, or indication. It features multiple drug interactions reports. Search PDR*health* at **http://www.pdrhealth.com/drug_info/index.html**.

Other Web Sites

Drugs.com (**www.drugs.com**) reproduces the information in the Pharmacopeia as well as commercial information. You may also want to consider the Web site of the Medical Letter, Inc. (**http://www.medletter.com/**) which allows users to download articles on various drugs and therapeutics for a nominal fee.

If you have any questions about a medical treatment, the FDA may have an office near you. Look for their number in the blue pages of the phone book. You can also contact the FDA through its toll-free number, 1-888-INFO-FDA (1-888-463-6332), or on the World Wide Web at **www.fda.gov**.

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[10]:

- 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/**

[10] 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.[11] 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:[12]

- **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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[11] 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**).

[12] 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 NLM Gateway[13]

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.[14] To use the NLM Gateway, simply go to the search site at **http://gateway.nlm.nih.gov/gw/Cmd**. Type "general anesthesia" (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	48712
Books / Periodicals / Audio Visual	400
Consumer Health	430
Meeting Abstracts	22
Other Collections	89
Total	49653

HSTAT[15]

HSTAT is a free, Web-based resource that provides access to full-text documents used in healthcare decision-making.[16] 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.[17] Simply search by "general anesthesia" (or synonyms) at the following Web site: **http://text.nlm.nih.gov**.

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

[14] 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).

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

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

[17] 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.

Coffee Break: Tutorials for Biologists[18]

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.[19] 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.[20] This site has new articles every few weeks, so it can be considered an online magazine of sorts. It is intended for 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/**.

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

[19] 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.

[20] 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.

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 general anesthesia 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 general anesthesia. 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 general anesthesia. 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 "general anesthesia":

Anesthesia
http://www.nlm.nih.gov/medlineplus/anesthesia.html

Child Dental Health
http://www.nlm.nih.gov/medlineplus/childdentalhealth.html

General Anesthesia
http://www.nlm.nih.gov/medlineplus/tutorials/generalanesthesialoader.html

Hip Injuries and Disorders
http://www.nlm.nih.gov/medlineplus/hipinjuriesanddisorders.html

Knee Injuries and Disorders
http://www.nlm.nih.gov/medlineplus/kneeinjuriesanddisorders.html

Plastic and Cosmetic Surgery
http://www.nlm.nih.gov/medlineplus/plasticandcosmeticsurgery.html

Tooth Disorders
http://www.nlm.nih.gov/medlineplus/toothdisorders.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 general anesthesia. 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:

- **Ask Your Pediatric Dentist About General Anesthesia**

  Source: Chicago, IL: American Academy of Pediatric Dentistry. 199x. [2 p.].

  Contact: Available from American Academy of Pediatric Dentistry. 211 East Chicago Avenue, Suite 700, Chicago, IL 60611-2616. (312) 337-2169; Fax (312) 337-6329; http://aapd.org. PRICE: Single copy free; bulk rates available.

  Summary: This brochure, one in a series from the American Academy of Pediatric Dentistry, answers questions parents commonly have about the use of **general anesthesia** for children's dental care. Written in a question-and-answer format, the brochure defines **general anesthesia** and discusses who should be anesthetized, the safety of **general anesthesia,** and special instructions that may be necessary before an appointment at which **general anesthesia** will be used. The brochure emphasizes that pediatric dentists are trained to discuss the benefits and risks involved in **general anesthesia** and to explain why this anesthesia is being recommended for the child's

treatment. The brochure concludes with a brief description of the American Academy of Pediatric Dentistry.

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 general anesthesia. 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 general anesthesia. By consulting all of associations listed in this chapter, you will have nearly exhausted all sources for patient associations concerned with general anesthesia.

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 general anesthesia. 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 "general anesthesia" (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 "general anesthesia". 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 "general anesthesia" (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 "general anesthesia" (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.[21]

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

[21] 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)[22]:

- **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/**

[22] 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**).

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**

GENERAL ANESTHESIA DICTIONARY

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

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]

Abscess: A localized, circumscribed collection of pus. [NIH]

Acetylcholine: A neurotransmitter. Acetylcholine in vertebrates is the major transmitter at neuromuscular junctions, autonomic ganglia, parasympathetic effector junctions, a subset of sympathetic effector junctions, and at many sites in the central nervous system. It is generally not used as an administered drug because it is broken down very rapidly by cholinesterases, but it is useful in some ophthalmological applications. [NIH]

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

Acremonium: A mitosporic fungal genus with many reported ascomycetous teleomorphs. Cephalosporin antibiotics are derived from this genus. [NIH]

Action Potentials: The electric response of a nerve or muscle to its stimulation. [NIH]

Activities of Daily Living: The performance of the basic activities of self care, such as dressing, ambulation, eating, etc., in rehabilitation. [NIH]

Acuity: Clarity or clearness, especially of the vision. [EU]

Acupuncture Points: Designated locations along nerves or organ meridians for inserting acupuncture needles. [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]

Adaptation: 1. The adjustment of an organism to its environment, or the process by which it enhances such fitness. 2. The normal ability of the eye to adjust itself to variations in the intensity of light; the adjustment to such variations. 3. The decline in the frequency of firing of a neuron, particularly of a receptor, under conditions of constant stimulation. 4. In dentistry, (a) the proper fitting of a denture, (b) the degree of proximity and interlocking of restorative material to a tooth preparation, (c) the exact adjustment of bands to teeth. 5. In microbiology, the adjustment of bacterial physiology to a new environment. [EU]

Adenine: A purine base and a fundamental unit of adenine nucleotides. [NIH]

Adenocarcinoma: A malignant epithelial tumor with a glandular organization. [NIH]

Adenosine: A nucleoside that is composed of adenine and d-ribose. Adenosine or adenosine derivatives play many important biological roles in addition to being components of DNA and RNA. Adenosine itself is a neurotransmitter. [NIH]

Adrenal Cortex: The outer layer of the adrenal gland. It secretes mineralocorticoids, androgens, and glucocorticoids. [NIH]

Adrenal Medulla: The inner part of the adrenal gland; it synthesizes, stores and releases catecholamines. [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]

Afferent: Concerned with the transmission of neural impulse toward the central part of the nervous system. [NIH]

Affinity: 1. Inherent likeness or relationship. 2. A special attraction for a specific element, organ, or structure. 3. Chemical affinity; the force that binds atoms in molecules; the tendency of substances to combine by chemical reaction. 4. The strength of noncovalent chemical binding between two substances as measured by the dissociation constant of the complex. 5. In immunology, a thermodynamic expression of the strength of interaction between a single antigen-binding site and a single antigenic determinant (and thus of the stereochemical compatibility between them), most accurately applied to interactions among simple, uniform antigenic determinants such as haptens. Expressed as the association constant (K litres mole -1), which, owing to the heterogeneity of affinities in a population of antibody molecules of a given specificity, actually represents an average value (mean intrinsic association constant). 6. The reciprocal of the dissociation constant. [EU]

Agonist: In anatomy, a prime mover. In pharmacology, a drug that has affinity for and stimulates physiologic activity at cell receptors normally stimulated by naturally occurring substances. [EU]

Agoraphobia: Obsessive, persistent, intense fear of open places. [NIH]

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

Albumin: 1. Any protein that is soluble in water and moderately concentrated salt solutions and is coagulable by heat. 2. Serum albumin; the major plasma protein (approximately 60 per cent of the total), which is responsible for much of the plasma colloidal osmotic pressure and serves as a transport protein carrying large organic anions, such as fatty acids, bilirubin, and many drugs, and also carrying certain hormones, such as cortisol and thyroxine, when their specific binding globulins are saturated. Albumin is synthesized in the liver. Low serum levels occur in protein malnutrition, active inflammation and serious hepatic and renal disease. [EU]

Alertness: A state of readiness to detect and respond to certain specified small changes occurring at random intervals in the environment. [NIH]

Alfentanil: A short-acting opioid anesthetic and analgesic derivative of fentanyl. It produces an early peak analgesic effect and fast recovery of consciousness. Alfentanil is effective as an anesthetic during surgery, for supplementation of analgesia during surgical procedures, and as an analgesic for critically ill patients. [NIH]

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

Alimentary: Pertaining to food or nutritive material, or to the organs of digestion. [EU]

Alkaline: Having the reactions of an alkali. [EU]

Alkaloid: A member of a large group of chemicals that are made by plants and have nitrogen in them. Some alkaloids have been shown to work against cancer. [NIH]

Allergen: An antigenic substance capable of producing immediate-type hypersensitivity (allergy). [EU]

Allogeneic: Taken from different individuals of the same species. [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]

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

Amino Acid Sequence: The order of amino acids as they occur in a polypeptide chain. This is referred to as the primary structure of proteins. It is of fundamental importance in determining protein conformation. [NIH]

Amnesia: Lack or loss of memory; inability to remember past experiences. [EU]

Amnestic: Nominal aphasia; a difficulty in finding the right name for an object. [NIH]

Amnion: The extraembryonic membrane which contains the embryo and amniotic fluid. [NIH]

Amniotic Fluid: Amniotic cavity fluid which is produced by the amnion and fetal lungs and kidneys. [NIH]

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]

Amygdala: Almond-shaped group of basal nuclei anterior to the inferior horn of the lateral ventricle of the brain, within the temporal lobe. The amygdala is part of the limbic system. [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]

Anaesthetic: 1. Pertaining to, characterized by, or producing anaesthesia. 2. A drug or agent that is used to abolish the sensation of pain. [EU]

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

Analeptic: A drug which acts as a restorative, such as caffeine, amphetamine, pentylenetetrazol, etc. [EU]

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]

Analogous: Resembling or similar in some respects, as in function or appearance, but not in

origin or development;. [EU]

Anaphylaxis: An acute hypersensitivity reaction due to exposure to a previously encountered antigen. The reaction may include rapidly progressing urticaria, respiratory distress, vascular collapse, systemic shock, and death. [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]

Anesthesia, Local: A blocking of nerve conduction to a specific area by an injection of an anesthetic agent. [NIH]

Anesthesiology: A specialty concerned with the study of anesthetics and anesthesia. [NIH]

Anesthetics: Agents that are capable of inducing a total or partial loss of sensation, especially tactile sensation and pain. They may act to induce general anesthesia, in which an unconscious state is achieved, or may act locally to induce numbness or lack of sensation at a targeted site. [NIH]

Angina: Chest pain that originates in the heart. [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]

Anions: Negatively charged atoms, radicals or groups of atoms which travel to the anode or positive pole during electrolysis. [NIH]

Anomalies: Birth defects; abnormalities. [NIH]

Antagonism: Interference with, or inhibition of, the growth of a living organism by another living organism, due either to creation of unfavorable conditions (e. g. exhaustion of food supplies) or to production of a specific antibiotic substance (e. g. penicillin). [NIH]

Anti-Anxiety Agents: Agents that alleviate anxiety, tension, and neurotic symptoms, promote sedation, and have a calming effect without affecting clarity of consciousness or neurologic conditions. Some are also effective as anticonvulsants, muscle relaxants, or anesthesia adjuvants. Adrenergic beta-antagonists are commonly used in the symptomatic treatment of anxiety but are not included here. [NIH]

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

Antibiotic Prophylaxis: Use of antibiotics before, during, or after a diagnostic, therapeutic, or surgical procedure to prevent infectious complications. [NIH]

Antibodies: Immunoglobulin molecules having a specific amino acid sequence by virtue of which they interact only with the antigen that induced their synthesis in cells of the lymphoid series (especially plasma cells), or with an antigen closely related to it. [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]

Anticoagulant: A drug that helps prevent blood clots from forming. Also called a blood thinner. [NIH]

Anticonvulsant: An agent that prevents or relieves convulsions. [EU]

Antidote: A remedy for counteracting a poison. [EU]

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-infective: An agent that so acts. [EU]

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

Anti-Inflammatory Agents: Substances that reduce or suppress 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]

Antioxidant: A substance that prevents damage caused by free radicals. Free radicals are highly reactive chemicals that often contain oxygen. They are produced when molecules are split to give products that have unpaired electrons. This process is called oxidation. [NIH]

Antitussive: An agent that relieves or prevents cough. [EU]

Antiviral: Destroying viruses or suppressing their replication. [EU]

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

Anxiety: Persistent feeling of dread, apprehension, and impending disaster. [NIH]

Anxiolytic: An anxiolytic or antianxiety agent. [EU]

Aorta: The main trunk of the systemic arteries. [NIH]

Aortic Aneurysm: Aneurysm of the aorta. [NIH]

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

Apoptosis: One of the two mechanisms by which cell death occurs (the other being the pathological process of necrosis). Apoptosis is the mechanism responsible for the physiological deletion of cells and appears to be intrinsically programmed. It is characterized by distinctive morphologic changes in the nucleus and cytoplasm, chromatin cleavage at regularly spaced sites, and the endonucleolytic cleavage of genomic DNA (DNA fragmentation) at internucleosomal sites. This mode of cell death serves as a balance to mitosis in regulating the size of animal tissues and in mediating pathologic processes associated with tumor growth. [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]

Arrhythmia: Any variation from the normal rhythm or rate of the heart beat. [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]

Arteriovenous: Both arterial and venous; pertaining to or affecting an artery and a vein. [EU]

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

Arthroplasty: Surgical reconstruction of a joint to relieve pain or restore motion. [NIH]

Arthroscopy: Endoscopic examination, therapy and surgery of the joint. [NIH]

Ascorbic Acid: A six carbon compound related to glucose. It is found naturally in citrus fruits and many vegetables. Ascorbic acid is an essential nutrient in human diets, and necessary to maintain connective tissue and bone. Its biologically active form, vitamin C, functions as a reducing agent and coenzyme in several metabolic pathways. Vitamin C is considered an antioxidant. [NIH]

Aspartate: A synthetic amino acid. [NIH]

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

Aspiration: The act of inhaling. [NIH]

Assay: Determination of the amount of a particular constituent of a mixture, or of the biological or pharmacological potency of a drug. [EU]

Asymptomatic: Having no signs or symptoms of disease. [NIH]

Atelectasis: Incomplete expansion of the lung. [NIH]

Atherectomy: Endovascular procedure in which atheromatous plaque is excised by a cutting or rotating catheter. It differs from balloon and laser angioplasty procedures which enlarge vessels by dilation but frequently do not remove much plaque. If the plaque is removed by surgical excision under general anesthesia rather than by an endovascular procedure through a catheter, it is called endarterectomy. [NIH]

Atracurium: A non-depolarizing neuromuscular blocking agent with short duration of action. Its lack of significant cardiovascular effects and its lack of dependence on good kidney function for elimination provide clinical advantage over alternate non-depolarizing neuromuscular blocking agents. [NIH]

Atrial: Pertaining to an atrium. [EU]

Atrial Fibrillation: Disorder of cardiac rhythm characterized by rapid, irregular atrial impulses and ineffective atrial contractions. [NIH]

Atrium: A chamber; used in anatomical nomenclature to designate a chamber affording entrance to another structure or organ. Usually used alone to designate an atrium of the heart. [EU]

Attenuated: Strain with weakened or reduced virulence. [NIH]

Auditory: Pertaining to the sense of hearing. [EU]

Auditory Cortex: Area of the temporal lobe concerned with hearing. [NIH]

Aural: Pertaining to or perceived by the ear, as an aural stimulus. [EU]

Auscultation: Act of listening for sounds within the body. [NIH]

Autonomic: Self-controlling; functionally independent. [EU]

Autonomic Nervous System: The enteric, parasympathetic, and sympathetic nervous systems taken together. Generally speaking, the autonomic nervous system regulates the internal environment during both peaceful activity and physical or emotional stress. Autonomic activity is controlled and integrated by the central nervous system, especially the hypothalamus and the solitary nucleus, which receive information relayed from visceral afferents; these and related central and sensory structures are sometimes (but not here) considered to be part of the autonomic nervous system itself. [NIH]

Autosuggestion: Suggestion coming from the subject himself. [NIH]

Avoidance Learning: A response to a cue that is instrumental in avoiding a noxious experience. [NIH]

Axillary: Pertaining to the armpit area, including the lymph nodes that are located there. [NIH]

Axillary Artery: The continuation of the subclavian artery; it distributes over the upper limb, axilla, chest and shoulder. [NIH]

Axonal: Condition associated with metabolic derangement of the entire neuron and is manifest by degeneration of the distal portion of the nerve fiber. [NIH]

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

Baclofen: A GABA derivative that is a specific agonist at GABA-B receptors. It is used in the treatment of spasticity, especially that due to spinal cord damage. Its therapeutic effects result from actions at spinal and supraspinal sites, generally the reduction of excitatory transmission. [NIH]

Bacteremia: The presence of viable bacteria circulating in the blood. Fever, chills, tachycardia, and tachypnea are common acute manifestations of bacteremia. The majority of cases are seen in already hospitalized patients, most of whom have underlying diseases or procedures which render their bloodstreams susceptible to invasion. [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]

Bactericidal: Substance lethal to bacteria; substance capable of killing bacteria. [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]

Barbiturate: A drug with sedative and hypnotic effects. Barbiturates have been used as sedatives and anesthetics, and they have been used to treat the convulsions associated with epilepsy. [NIH]

Baroreflex: A negative feedback system which buffers short-term changes in blood pressure. Increased pressure stretches blood vessels which activates pressoreceptors (baroreceptors) in the vessel walls. The net response of the central nervous system is a reduction of central sympathetic outflow. This reduces blood pressure both by decreasing peripheral vascular resistance and by lowering cardiac output. Because the baroreceptors are tonically active, the baroreflex can compensate rapidly for both increases and decreases in blood pressure. [NIH]

Basal Ganglia: Large subcortical nuclear masses derived from the telencephalon and located in the basal regions of the cerebral hemispheres. [NIH]

Basalis: Chiasmatic cistern. [NIH]

Basement Membrane: Ubiquitous supportive tissue adjacent to epithelium and around smooth and striated muscle cells. This tissue contains intrinsic macromolecular components such as collagen, laminin, and sulfated proteoglycans. As seen by light microscopy one of its subdivisions is the basal (basement) lamina. [NIH]

Basophil: A type of white blood cell. Basophils are granulocytes. [NIH]

Baths: The immersion or washing of the body or any of its parts in water or other medium for cleansing or medical treatment. It includes bathing for personal hygiene as well as for medical purposes with the addition of therapeutic agents, such as alkalines, antiseptics, oil, etc. [NIH]

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

[NIH]

Benzene: Toxic, volatile, flammable liquid hydrocarbon biproduct of coal distillation. It is used as an industrial solvent in paints, varnishes, lacquer thinners, gasoline, etc. Benzene causes central nervous system damage acutely and bone marrow damage chronically and is carcinogenic. It was formerly used as parasiticide. [NIH]

Benzodiazepines: A two-ring heterocyclic compound consisting of a benzene ring fused to a diazepine ring. Permitted is any degree of hydrogenation, any substituents and any H-isomer. [NIH]

Beta-Endorphin: A peptide consisting of amino acid sequence 61-91 of the endogenous pituitary hormone beta-lipotropin. The first four amino acids show a common tetrapeptide sequence with methionine- and leucine enkephalin. The compound shows opiate-like activity. Injection of beta-endorphin induces a profound analgesia of the whole body for several hours. This action is reversed after administration of naloxone. [NIH]

Bewilderment: Impairment or loss of will power. [NIH]

Bicuculline: Isoquinoline alkaloid from Dicentra cucullaria and other plants that is a competitive antagonist at GABA-A receptors and thus causes convulsions. [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]

Bile duct: A tube through which bile passes in and out of the liver. [NIH]

Bilirubin: A bile pigment that is a degradation product of heme. [NIH]

Binding Sites: The reactive parts of a macromolecule that directly participate in its specific combination with another molecule. [NIH]

Biochemical: Relating to biochemistry; characterized by, produced by, or involving chemical reactions in living organisms. [EU]

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

Biopsy specimen: Tissue removed from the body and examined under a microscope to determine whether disease is present. [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]

Bladder: The organ that stores urine. [NIH]

Blood Coagulation: The process of the interaction of blood coagulation factors that results in an insoluble fibrin clot. [NIH]

Blood Gas Analysis: Measurement of oxygen and carbon dioxide in the blood. [NIH]

Blood Platelets: Non-nucleated disk-shaped cells formed in the megakaryocyte and found in the blood of all mammals. They are mainly involved in blood coagulation. [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]

Blood-Brain Barrier: Specialized non-fenestrated tightly-joined endothelial cells (tight junctions) that form a transport barrier for certain substances between the cerebral capillaries and the brain tissue. [NIH]

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

Bolus: A single dose of drug usually injected into a blood vessel over a short period of time. Also called bolus infusion. [NIH]

Bolus infusion: A single dose of drug usually injected into a blood vessel over a short period of time. Also called bolus. [NIH]

Bottle Feeding: Use of nursing bottles for feeding. Applies to humans and animals. [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]

Brachial: All the nerves from the arm are ripped from the spinal cord. [NIH]

Brachial Artery: The continuation of the axillary artery; it branches into the radial and ulnar arteries. [NIH]

Brachial Plexus: The large network of nerve fibers which distributes the innervation of the upper extremity. The brachial plexus extends from the neck into the axilla. In humans, the nerves of the plexus usually originate from the lower cervical and the first thoracic spinal cord segments (C5-C8 and T1), but variations are not uncommon. [NIH]

Bradycardia: Excessive slowness in the action of the heart, usually with a heart rate below 60 beats per minute. [NIH]

Brain Stem: The part of the brain that connects the cerebral hemispheres with the spinal cord. It consists of the mesencephalon, pons, and medulla oblongata. [NIH]

Broad-spectrum: Effective against a wide range of microorganisms; said of an antibiotic. [EU]

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]

Bronchiectasis: Persistent abnormal dilatation of the bronchi. [NIH]

Bronchoconstriction: Diminution of the caliber of a bronchus physiologically or as a result of pharmacological intervention. [NIH]

Bronchoscopy: Endoscopic examination, therapy or surgery of the bronchi. [NIH]

Bronchospasm: Spasmodic contraction of the smooth muscle of the bronchi, as occurs in asthma. [EU]

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

Buffers: A chemical system that functions to control the levels of specific ions in solution. When the level of hydrogen ion in solution is controlled the system is called a pH buffer. [NIH]

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

Buprenorphine: A derivative of the opioid alkaloid thebaine that is a more potent and longer lasting analgesic than morphine. It appears to act as a partial agonist at mu and kappa opioid receptors and as an antagonist at delta receptors. The lack of delta-agonist activity has been suggested to account for the observation that buprenorphine tolerance may not develop with chronic use. [NIH]

Butyric Acid: A four carbon acid, CH3CH2CH2COOH, with an unpleasant odor that occurs in butter and animal fat as the glycerol ester. [NIH]

Bypass: A surgical procedure in which the doctor creates a new pathway for the flow of body fluids. [NIH]

Caesarean section: A surgical incision through the abdominal and uterine walls in order to deliver a baby. [NIH]

Caffeine: A methylxanthine naturally occurring in some beverages and also used as a pharmacological agent. Caffeine's most notable pharmacological effect is as a central nervous system stimulant, increasing alertness and producing agitation. It also relaxes smooth muscle, stimulates cardiac muscle, stimulates diuresis, and appears to be useful in the treatment of some types of headache. Several cellular actions of caffeine have been observed, but it is not entirely clear how each contributes to its pharmacological profile. Among the most important are inhibition of cyclic nucleotide phosphodiesterases, antagonism of adenosine receptors, and modulation of intracellular calcium handling. [NIH]

Calcium: A basic element found in nearly all organized tissues. It is a member of the alkaline earth family of metals with the atomic symbol Ca, atomic number 20, and atomic weight 40. Calcium is the most abundant mineral in the body and combines with phosphorus to form calcium phosphate in the bones and teeth. It is essential for the normal functioning of nerves and muscles and plays a role in blood coagulation (as factor IV) and in many enzymatic processes. [NIH]

Cannula: A tube for insertion into a duct or cavity; during insertion its lumen is usually occupied by a trocar. [EU]

Capital Financing: Institutional funding for facilities and for equipment which becomes a part of the assets of the institution. [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]

Carcinogenic: Producing carcinoma. [EU]

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]

Cardiac Output: The volume of blood passing through the heart per unit of time. It is usually expressed as liters (volume) per minute so as not to be confused with stroke volume (volume per beat). [NIH]

Cardiogenic: Originating in the heart; caused by abnormal function of the heart. [EU]

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

Cardiopulmonary: Having to do with the heart and lungs. [NIH]

Cardiopulmonary Bypass: Diversion of the flow of blood from the entrance of the right atrium directly to the aorta (or femoral artery) via an oxygenator thus bypassing both the heart and lungs. [NIH]

Cardiopulmonary Resuscitation: The artificial substitution of heart and lung action as

indicated for heart arrest resulting from electric shock, drowning, respiratory arrest, or other causes. The two major components of cardiopulmonary resuscitation are artificial ventilation and closed-chest cardiac massage. [NIH]

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Cardiorespiratory: Relating to the heart and lungs and their function. [EU]

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]

Cardioversion: Electrical reversion of cardiac arrhythmias to normal sinus rhythm, formerly using alternatic current, but now employing direct current. [NIH]

Carmine: Coloring matter from the insect Coccus cacti L. It is used in foods, pharmaceuticals, toiletries, etc., as a dye, and also has use as a microscopic stain and biological marker. [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]

Catecholamine: A group of chemical substances manufactured by the adrenal medulla and secreted during physiological stress. [NIH]

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]

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 Cycle: The complex series of phenomena, occurring between the end of one cell division and the end of the next, by which cellular material is divided between daughter cells. [NIH]

Cell Death: The termination of the cell's ability to carry out vital functions such as metabolism, growth, reproduction, responsiveness, and adaptability. [NIH]

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

Cell membrane: Cell membrane = plasma membrane. The structure enveloping a cell,

enclosing the cytoplasm, and forming a selective permeability barrier; it consists of lipids, proteins, and some carbohydrates, the lipids thought to form a bilayer in which integral proteins are embedded to varying degrees. [EU]

Cell Respiration: The metabolic process of all living cells (animal and plant) in which oxygen is used to provide a source of energy for the cell. [NIH]

Cellular Structures: Components of a cell. [NIH]

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

Centrifugation: A method of separating organelles or large molecules that relies upon differential sedimentation through a preformed density gradient under the influence of a gravitational field generated in a centrifuge. [NIH]

Cephalosporins: A group of broad-spectrum antibiotics first isolated from the Mediterranean fungus Acremonium (Cephalosporium acremonium). They contain the beta-lactam moiety thia-azabicyclo-octenecarboxylic acid also called 7-aminocephalosporanic acid. [NIH]

Cerebellum: Part of the metencephalon that lies in the posterior cranial fossa behind the brain stem. It is concerned with the coordination of movement. [NIH]

Cerebral: Of or pertaining of the cerebrum or the brain. [EU]

Cerebral Cortex: The thin layer of gray matter on the surface of the cerebral hemisphere that develops from the telencephalon and folds into gyri. It reaches its highest development in man and is responsible for intellectual faculties and higher mental functions. [NIH]

Cerebral Palsy: Refers to a motor disability caused by a brain dysfunction. [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 Plexus: A network of nerve fibers originating in the upper four cervical spinal cord segments. The cervical plexus distributes cutaneous nerves to parts of the neck, shoulders, and back of the head, and motor fibers to muscles of the cervical spinal column, infrahyoid muscles, and the diaphragm. [NIH]

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

Cesarean Section: Extraction of the fetus by means of abdominal hysterotomy. [NIH]

Chemotherapeutic agent: A drug used to treat cancer. [NIH]

Chemotherapy: Treatment with anticancer drugs. [NIH]

Chest wall: The ribs and muscles, bones, and joints that make up the area of the body between the neck and the abdomen. [NIH]

Chimeras: Organism that contains a mixture of genetically different cells. [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]

Chloride Channels: Cell membrane glycoproteins selective for chloride ions. [NIH]

Cholecystectomy: Surgical removal of the gallbladder. [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]

Cholinergic: Resembling acetylcholine in pharmacological action; stimulated by or releasing acetylcholine or a related compound. [EU]

Chromatin: The material of chromosomes. It is a complex of DNA, histones, and nonhistone proteins (chromosomal proteins, non-histone) found within the nucleus of a cell. [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]

Cirrhosis: A type of chronic, progressive liver disease. [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]

Cleft Lip: Congenital defect in the upper lip where the maxillary prominence fails to merge with the merged medial nasal prominences. It is thought to be caused by faulty migration of the mesoderm in the head region. [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]

Clonic: Pertaining to or of the nature of clonus. [EU]

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]

Cochlea: The part of the internal ear that is concerned with hearing. It forms the anterior part of the labyrinth, is conical, and is placed almost horizontally anterior to the vestibule. [NIH]

Codeine: An opioid analgesic related to morphine but with less potent analgesic properties and mild sedative effects. It also acts centrally to suppress cough. [NIH]

Coenzyme: An organic nonprotein molecule, frequently a phosphorylated derivative of a water-soluble vitamin, that binds with the protein molecule (apoenzyme) to form the active enzyme (holoenzyme). [EU]

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

Cognition: Intellectual or mental process whereby an organism becomes aware of or obtains

knowledge. [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]

Colloidal: Of the nature of a colloid. [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]

Colorectal: Having to do with the colon or the rectum. [NIH]

Colorectal Surgery: A surgical specialty concerned with the diagnosis and treatment of disorders and abnormalities of the colon, rectum, and anal canal. [NIH]

Colostomy: An opening into the colon from the outside of the body. A colostomy provides a new path for waste material to leave the body after part of the colon has been removed. [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]

Compliance: Distensibility measure of a chamber such as the lungs (lung compliance) or bladder. Compliance is expressed as a change in volume per unit change in pressure. [NIH]

Comprehensive Dental Care: Providing for the full range of dental health services for diagnosis, treatment, follow-up, and rehabilitation of patients. [NIH]

Compress: A plug used to occludate an orifice in the control of bleeding, or to mop up secretions; an absorbent pad. [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]

Computerized axial tomography: 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 CAT scan, computed tomography (CT scan), or computerized tomography. [NIH]

Computerized tomography: 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 axial tomography (CAT) scan and computed tomography (CT scan). [NIH]

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

Confounding: Extraneous variables resulting in outcome effects that obscure or exaggerate the "true" effect of an intervention. [NIH]

Confusion: A mental state characterized by bewilderment, emotional disturbance, lack of clear thinking, and perceptual disorientation. [NIH]

Congestive heart failure: Weakness of the heart muscle that leads to a buildup of fluid in body tissues. [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]

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Conscious Sedation: An alternative to general anesthesia in patients for whom general anesthesia is refused or considered inadvisable. It involves the administering of an antianxiety drug (minor tranquilizer) and an analgesic or local anesthetic. This renders the patient free of anxiety and pain while allowing the patient to remain in verbal contact with the physician or dentist. [NIH]

Consciousness: Sense of awareness of self and of the environment. [NIH]

Constitutional: 1. Affecting the whole constitution of the body; not local. 2. Pertaining to the constitution. [EU]

Constriction: The act of constricting. [NIH]

Constriction, Pathologic: The condition of an anatomical structure's being constricted beyond normal dimensions. [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]

Control group: In a clinical trial, the group that does not receive the new treatment being studied. This group is compared to the group that receives the new treatment, to see if the new treatment works. [NIH]

Convulsants: Substances that act in the brain stem or spinal cord to produce tonic or clonic convulsions, often by removing normal inhibitory tone. They were formerly used to stimulate respiration or as antidotes to barbiturate overdose. They are now most commonly used as experimental tools. [NIH]

Convulsions: A general term referring to sudden and often violent motor activity of cerebral or brainstem origin. Convulsions may also occur in the absence of an electrical cerebral discharge (e.g., in response to hypotension). [NIH]

Convulsive: Relating or referring to spasm; affected with spasm; characterized by a spasm or spasms. [NIH]

Coordination: Muscular or motor regulation or the harmonious cooperation of muscles or groups of muscles, in a complex action or series of actions. [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 Arteriosclerosis: Thickening and loss of elasticity of the coronary arteries. [NIH]

Coronary Disease: Disorder of cardiac function due to an imbalance between myocardial function and the capacity of the coronary vessels to supply sufficient flow for normal function. It is a form of myocardial ischemia (insufficient blood supply to the heart muscle) caused by a decreased capacity of the coronary vessels. [NIH]

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]

Coronary Vessels: The veins and arteries of the heart. [NIH]

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

Cortical: Pertaining to or of the nature of a cortex or bark. [EU]

Cortices: The outer layer of an organ; used especially of the cerebrum and cerebellum. [NIH]

Cortisol: A steroid hormone secreted by the adrenal cortex as part of the body's response to stress. [NIH]

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

Craniofacial Abnormalities: Congenital structural deformities, malformations, or other abnormalities of the cranium and facial bones. [NIH]

Crowns: A prosthetic restoration that reproduces the entire surface anatomy of the visible natural crown of a tooth. It may be partial (covering three or more surfaces of a tooth) or complete (covering all surfaces). It is made of gold or other metal, porcelain, or resin. [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]

Cyclic: Pertaining to or occurring in a cycle or cycles; the term is applied to chemical compounds that contain a ring of atoms in the nucleus. [EU]

Cyst: A sac or capsule filled with fluid. [NIH]

Cystectomy: Used for excision of the urinary bladder. [NIH]

Cystitis: Inflammation of the urinary bladder. [EU]

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

Cytokines: Non-antibody proteins secreted by inflammatory leukocytes and some non-leukocytic cells, that act as intercellular mediators. They differ from classical hormones in that they are produced by a number of tissue or cell types rather than by specialized glands. They generally act locally in a paracrine or autocrine rather than endocrine manner. [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]

Data Collection: Systematic gathering of data for a particular purpose from various sources, including questionnaires, interviews, observation, existing records, and electronic devices. The process is usually preliminary to statistical analysis of the data. [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]

Defibrillation: The act to arrest the fibrillation of (heart muscle) by applying electric shock across the chest, thus depolarizing the heart cells and allowing normal rhythm to return. [EU]

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

Deletion: A genetic rearrangement through loss of segments of DNA (chromosomes), bringing sequences, which are normally separated, into close proximity. [NIH]

Delirium: (DSM III-R) an acute, reversible organic mental disorder characterized by reduced ability to maintain attention to external stimuli and disorganized thinking as manifested by

rambling, irrelevant, or incoherent speech; there are also a reduced level of consciousness, sensory misperceptions, disturbance of the sleep-wakefulness cycle and level of psychomotor activity, disorientation to time, place, or person, and memory impairment. Delirium may be caused by a large number of conditions resulting in derangement of cerebral metabolism, including systemic infection, poisoning, drug intoxication or withdrawal, seizures or head trauma, and metabolic disturbances such as hypoxia, hypoglycaemia, fluid, electrolyte, or acid-base imbalances, or hepatic or renal failure. Called also acute confusional state and acute brain syndrome. [EU]

Delivery of Health Care: The concept concerned with all aspects of providing and distributing health services to a patient population. [NIH]

Delusions: A false belief regarding the self or persons or objects outside the self that persists despite the facts, and is not considered tenable by one's associates. [NIH]

Dendrites: Extensions of the nerve cell body. They are short and branched and receive stimuli from other neurons. [NIH]

Dendritic: 1. Branched like a tree. 2. Pertaining to or possessing dendrites. [EU]

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

Dental Care: The total of dental diagnostic, preventive, and restorative services provided to meet the needs of a patient (from Illustrated Dictionary of Dentistry, 1982). [NIH]

Dental Caries: Localized destruction of the tooth surface initiated by decalcification of the enamel followed by enzymatic lysis of organic structures and leading to cavity formation. If left unchecked, the cavity may penetrate the enamel and dentin and reach the pulp. The three most prominent theories used to explain the etiology of the disase are that acids produced by bacteria lead to decalcification; that micro-organisms destroy the enamel protein; or that keratolytic micro-organisms produce chelates that lead to decalcification. [NIH]

Dental Health Services: Services designed to promote, maintain, or restore dental health. [NIH]

Dental Materials: Materials used in the production of dental bases, restorations, impressions, prostheses, etc. [NIH]

Dental Records: Data collected during dental examination for the purpose of study, diagnosis, or treatment planning. [NIH]

Dentate Gyrus: Gray matter situated above the gyrus hippocampi. It is composed of three layers. The molecular layer is continuous with the hippocampus in the hippocampal fissure. The granular layer consists of closely arranged spherical or oval neurons, called granule cells, whose axons pass through the polymorphic layer ending on the dendrites of pyramidal cells in the hippocampus. [NIH]

Dentists: Individuals licensed to practice dentistry. [NIH]

Dentition: The teeth in the dental arch; ordinarily used to designate the natural teeth in position in their alveoli. [EU]

Deoxyglucose: 2-Deoxy-D-arabino-hexose. An antimetabolite of glucose with antiviral activity. [NIH]

Depolarization: The process or act of neutralizing polarity. In neurophysiology, the reversal of the resting potential in excitable cell membranes when stimulated, i.e., the tendency of the cell membrane potential to become positive with respect to the potential outside the cell. [EU]

Desensitization: The prevention or reduction of immediate hypersensitivity reactions by administration of graded doses of allergen; called also hyposensitization and immunotherapy. [EU]

Detoxification: Treatment designed to free an addict from his drug habit. [EU]

Deuterium: Deuterium. The stable isotope of hydrogen. It has one neutron and one proton in the nucleus. [NIH]

Dextromethorphan: The d-isomer of the codeine analog of levorphanol. Dextromethorphan shows high affinity binding to several regions of the brain, including the medullary cough center. This compound is a NMDA receptor antagonist (receptors, N-methyl-D-aspartate) and acts as a non-competitive channel blocker. It is used widely as an antitussive agent, and is also used to study the involvement of glutamate receptors in neurotoxicity. [NIH]

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

Diagnostic Errors: Incorrect diagnoses after clinical examination or technical diagnostic procedures. [NIH]

Diagnostic Imaging: Any visual display of structural or functional patterns of organs or tissues for diagnostic evaluation. It includes measuring physiologic and metabolic responses to physical and chemical stimuli, as well as ultramicroscopy. [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]

Diastole: Period of relaxation of the heart, especially the ventricles. [NIH]

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

Diencephalon: The paired caudal parts of the prosencephalon from which the thalamus, hypothalamus, epithalamus, and subthalamus are derived. [NIH]

Diffusion: The tendency of a gas or solute to pass from a point of higher pressure or concentration to a point of lower pressure or concentration and to distribute itself throughout the available space; a major mechanism of biological transport. [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]

Dilate: Relax; expand. [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]

Dilation and curettage: D&C. A minor operation in which the cervix is expanded enough (dilation) to permit the cervical canal and uterine lining to be scraped with a spoon-shaped instrument called a curette (curettage). [NIH]

Dilator: A device used to stretch or enlarge an opening. [NIH]

Dilution: A diluted or attenuated medicine; in homeopathy, the diffusion of a given quantity of a medicinal agent in ten or one hundred times the same quantity of water. [NIH]

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

Discrete: Made up of separate parts or characterized by lesions which do not become blended; not running together; separate. [NIH]

Discrimination: The act of qualitative and/or quantitative differentiation between two or

more stimuli. [NIH]

Disinfectant: An agent that disinfects; applied particularly to agents used on inanimate objects. [EU]

Disorientation: The loss of proper bearings, or a state of mental confusion as to time, place, or identity. [EU]

Disposition: A tendency either physical or mental toward certain diseases. [EU]

Dissociation: 1. The act of separating or state of being separated. 2. The separation of a molecule into two or more fragments (atoms, molecules, ions, or free radicals) produced by the absorption of light or thermal energy or by solvation. 3. In psychology, a defense mechanism in which a group of mental processes are segregated from the rest of a person's mental activity in order to avoid emotional distress, as in the dissociative disorders (q.v.), or in which an idea or object is segregated from its emotional significance; in the first sense it is roughly equivalent to splitting, in the second, to isolation. 4. A defect of mental integration in which one or more groups of mental processes become separated off from normal consciousness and, thus separated, function as a unitary whole. [EU]

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]

Diuresis: Increased excretion of urine. [EU]

Diuretic: A drug that increases the production of urine. [NIH]

Dizziness: An imprecise term which may refer to a sense of spatial disorientation, motion of the environment, or lightheadedness. [NIH]

Dominance: In genetics, the full phenotypic expression of a gene in both heterozygotes and homozygotes. [EU]

Dopamine: An endogenous catecholamine and prominent neurotransmitter in several systems of the brain. In the synthesis of catecholamines from tyrosine, it is the immediate precursor to norepinephrine and epinephrine. Dopamine is a major transmitter in the extrapyramidal system of the brain, and important in regulating movement. A family of dopaminergic receptor subtypes mediate its action. Dopamine is used pharmacologically for its direct (beta adrenergic agonist) and indirect (adrenergic releasing) sympathomimetic effects including its actions as an inotropic agent and as a renal vasodilator. [NIH]

Dose-dependent: Refers to the effects of treatment with a drug. If the effects change when the dose of the drug is changed, the effects are said to be dose dependent. [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]

Dyes: Chemical substances that are used to stain and color other materials. The coloring may or may not be permanent. Dyes can also be used as therapeutic agents and test reagents in medicine and scientific research. [NIH]

Dystrophic: Pertaining to toxic habitats low in nutrients. [NIH]

Echocardiography: Ultrasonic recording of the size, motion, and composition of the heart and surrounding tissues. The standard approach is transthoracic. [NIH]

Edema: Excessive amount of watery fluid accumulated in the intercellular spaces, most

commonly present in subcutaneous tissue. [NIH]

Effector: It is often an enzyme that converts an inactive precursor molecule into an active second messenger. [NIH]

Efferent: Nerve fibers which conduct impulses from the central nervous system to muscles and glands. [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]

Elastic: Susceptible of resisting and recovering from stretching, compression or distortion applied by a force. [EU]

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]

Electric shock: A dangerous patho-physiological effect resulting from an electric current passing through the body of a human or animal. [NIH]

Electrocardiogram: Measurement of electrical activity during heartbeats. [NIH]

Electrocardiograph: Apparatus which, by means of currents produced by contractions of the cardiac muscle, records heart movements as electro-cardiograms. [NIH]

Electroconvulsive Therapy: Electrically induced convulsions primarily used in the treatment of severe affective disorders and schizophrenia. [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]

Electrolyte: A substance that dissociates into ions when fused or in solution, and thus becomes capable of conducting electricity; an ionic solute. [EU]

Electromyography: Recording of the changes in electric potential of muscle by means of surface or needle electrodes. [NIH]

Electrons: Stable elementary particles having the smallest known negative charge, present in all elements; also called negatrons. Positively charged electrons are called positrons. The numbers, energies and arrangement of electrons around atomic nuclei determine the chemical identities of elements. Beams of electrons are called cathode rays or beta rays, the latter being a high-energy biproduct of nuclear decay. [NIH]

Electrophoresis: An electrochemical process in which macromolecules or colloidal particles with a net electric charge migrate in a solution under the influence of an electric current. [NIH]

Electrophysiological: Pertaining to electrophysiology, that is a branch of physiology that is concerned with the electric phenomena associated with living bodies and involved in their functional activity. [EU]

Electroshock: Induction of a stress reaction in experimental subjects by means of an electrical shock; applies to either convulsive or non-convulsive states. [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]

Embolus: Bit of foreign matter which enters the blood stream at one point and is carried until it is lodged or impacted in an artery and obstructs it. It may be a blood clot, an air bubble, fat or other tissue, or clumps of bacteria. [NIH]

Embryo: The prenatal stage of mammalian development characterized by rapid morphological changes and the differentiation of basic structures. [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]

Enamel: A very hard whitish substance which covers the dentine of the anatomical crown of a tooth. [NIH]

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]

Endocrine System: The system of glands that release their secretions (hormones) directly into the circulatory system. In addition to the endocrine glands, included are the chromaffin system and the neurosecretory systems. [NIH]

Endocytosis: Cellular uptake of extracellular materials within membrane-limited vacuoles or microvesicles. Endosomes play a central role in endocytosis. [NIH]

Endogenous: Produced inside an organism or cell. The opposite is external (exogenous) production. [NIH]

Endorphins: One of the three major groups of endogenous opioid peptides. They are large peptides derived from the pro-opiomelanocortin precursor. The known members of this group are alpha-, beta-, and gamma-endorphin. The term endorphin is also sometimes used to refer to all opioid peptides, but the narrower sense is used here; opioid peptides is used for the broader group. [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]

Endoscopic retrograde cholangiopancreatography: ERCP. A procedure to x-ray the pancreatic duct, hepatic duct, common bile duct, duodenal papilla, and gallbladder. In this procedure, a thin, lighted tube (endoscope) is passed through the mouth and down into the first part of the small intestine (duodenum). A smaller tube (catheter) is then inserted through the endoscope into the bile and pancreatic ducts. A dye is injected through the catheter into the ducts, and an x-ray is taken. [NIH]

Endoscopy: Endoscopic examination, therapy or surgery performed on interior parts of the body. [NIH]

Endothelial cell: The main type of cell found in the inside lining of blood vessels, lymph vessels, and the heart. [NIH]

Endothelium: A layer of epithelium that lines the heart, blood vessels (endothelium, vascular), lymph vessels (endothelium, lymphatic), and the serous cavities of the body. [NIH]

Endothelium, Lymphatic: Unbroken cellular lining (intima) of the lymph vessels (e.g., the high endothelial lymphatic venules). It is more permeable than vascular endothelium, lacking selective absorption and functioning mainly to remove plasma proteins that have filtered through the capillaries into the tissue spaces. [NIH]

Endothelium, Vascular: Single pavement layer of cells which line the luminal surface of the

entire vascular system and regulate the transport of macromolecules and blood components from interstitium to lumen; this function has been most intensively studied in the blood capillaries. [NIH]

Endothelium-derived: Small molecule that diffuses to the adjacent muscle layer and relaxes it. [NIH]

Endotracheal intubation: Insertion of an airtube into the windpipe. [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]

Enflurane: An extremely stable inhalation anesthetic that allows rapid adjustments of anesthesia depth with little change in pulse or respiratory rate. [NIH]

Enkephalin: A natural opiate painkiller, in the hypothalamus. [NIH]

Entorhinal Cortex: Cortex where the signals are combined with those from other sensory systems. [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]

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]

Epidermolysis Bullosa: Group of genetically determined disorders characterized by the blistering of skin and mucosae. There are four major forms: acquired, simple, junctional, and dystrophic. Each of the latter three has several varieties. [NIH]

Epidural: The space between the wall of the spinal canal and the covering of the spinal cord. An epidural injection is given into this space. [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]

Epilepticus: Repeated and prolonged epileptic seizures without recovery of consciousness between attacks. [NIH]

Epinephrine: The active sympathomimetic hormone from the adrenal medulla in most species. It stimulates both the alpha- and beta- adrenergic systems, causes systemic vasoconstriction and gastrointestinal relaxation, stimulates the heart, and dilates bronchi and cerebral vessels. It is used in asthma and cardiac failure and to delay absorption of local anesthetics. [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]

Erectile: The inability to get or maintain an erection for satisfactory sexual intercourse. Also called impotence. [NIH]

Esophageal: Having to do with the esophagus, the muscular tube through which food passes from the throat to the stomach. [NIH]

Esophagus: The muscular tube through which food passes from the throat to the stomach. [NIH]

Esotropia: A form of ocular misalignment characterized by an excessive convergence of the visual axes, resulting in a "cross-eye" appearance. An example of this condition occurs when paralysis of the lateral rectus muscle causes an abnormal inward deviation of one eye on attempted gaze. [NIH]

Estrogen: One of the two female sex hormones. [NIH]

Ethanol: A clear, colorless liquid rapidly absorbed from the gastrointestinal tract and distributed throughout the body. It has bactericidal activity and is used often as a topical disinfectant. It is widely used as a solvent and preservative in pharmaceutical preparations as well as serving as the primary ingredient in alcoholic beverages. [NIH]

Ethanolamine: A viscous, hygroscopic amino alcohol with an ammoniacal odor. It is widely distributed in biological tissue and is a component of lecithin. It is used as a surfactant, fluorimetric reagent, and to remove CO2 and H2S from natural gas and other gases. [NIH]

Ether: One of a class of organic compounds in which any two organic radicals are attached directly to a single oxygen atom. [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]

Etoposide: A semisynthetic derivative of podophyllotoxin that exhibits antitumor activity. Etoposide inhibits DNA synthesis by forming a complex with topoisomerase II and DNA. This complex induces breaks in double stranded DNA and prevents repair by topoisomerase II binding. Accumulated breaks in DNA prevent entry into the mitotic phase of cell division, and lead to cell death. Etoposide acts primarily in the G2 and S phases of the cell cycle. [NIH]

Eukaryotic Cells: Cells of the higher organisms, containing a true nucleus bounded by a nuclear membrane. [NIH]

Evoke: The electric response recorded from the cerebral cortex after stimulation of a peripheral sense organ. [NIH]

Evoked Potentials: The electric response evoked in the central nervous system by stimulation of sensory receptors or some point on the sensory pathway leading from the receptor to the cortex. The evoked stimulus can be auditory, somatosensory, or visual, although other modalities have been reported. Event-related potentials is sometimes used synonymously with evoked potentials but is often associated with the execution of a motor, cognitive, or psychophysiological task, as well as with the response to a stimulus. [NIH]

Excitability: Property of a cardiac cell whereby, when the cell is depolarized to a critical level (called threshold), the membrane becomes permeable and a regenerative inward current causes an action potential. [NIH]

Excitation: An act of irritation or stimulation or of responding to a stimulus; the addition of energy, as the excitation of a molecule by absorption of photons. [EU]

Excitatory: When cortical neurons are excited, their output increases and each new input they receive while they are still excited raises their output markedly. [NIH]

Excrete: To get rid of waste from the body. [NIH]

Exhaustion: The feeling of weariness of mind and body. [NIH]

Exogenous: Developed or originating outside the organism, as exogenous disease. [EU]

Exotropia: A form of ocular misalignment where the visual axes diverge inappropriately. For example, medial rectus muscle weakness may produce this condition as the affected eye will deviate laterally upon attempted forward gaze. An exotropia occurs due to the relatively unopposed force exerted on the eye by the lateral rectus muscle, which pulls the eye in an outward direction. [NIH]

Expert Systems: Computer programs based on knowledge developed from consultation with experts on a problem, and the processing and/or formalizing of this knowledge using these programs in such a manner that the problems may be solved. [NIH]

Expiration: The act of breathing out, or expelling air from the lungs. [EU]

Expiratory: The volume of air which leaves the breathing organs in each expiration. [NIH]

Expiratory Reserve Volume: The extra volume of air that can be expired with maximum effort beyond the level reached at the end of a normal, quiet expiration. Common abbreviation is ERV. [NIH]

Extracellular: Outside a cell or cells. [EU]

Extracorporeal: Situated or occurring outside the body. [EU]

Extraction: The process or act of pulling or drawing out. [EU]

Extrapyramidal: Outside of the pyramidal tracts. [EU]

Extravasation: A discharge or escape, as of blood, from a vessel into the tissues. [EU]

Extremity: A limb; an arm or leg (membrum); sometimes applied specifically to a hand or foot. [EU]

Facial: Of or pertaining to the face. [EU]

Facial Nerve: The 7th cranial nerve. The facial nerve has two parts, the larger motor root which may be called the facial nerve proper, and the smaller intermediate or sensory root. Together they provide efferent innervation to the muscles of facial expression and to the lacrimal and salivary glands, and convey afferent information for taste from the anterior two-thirds of the tongue and for touch from the external ear. [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]

Famotidine: A competitive histamine H2-receptor antagonist. Its main pharmacodynamic effect is the inhibition of gastric secretion. [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]

Femoral: Pertaining to the femur, or to the thigh. [EU]

Femoral Artery: The main artery of the thigh, a continuation of the external iliac artery. [NIH]

Fentanyl: A narcotic opioid drug that is used in the treatment of pain. [NIH]

Fetal Distress: Adverse or threatening condition of the fetus identified by fetal bradycardia or tachycardia and passage of meconium in vertex presentation. [NIH]

Fetus: The developing offspring from 7 to 8 weeks after conception until birth. [NIH]

Fibrillation: A small, local, involuntary contraction of muscle, invisible under the skin, resulting from spontaneous activation of single muscle cells or muscle fibres. [EU]

Fibronectin: An adhesive glycoprotein. One form circulates in plasma, acting as an opsonin; another is a cell-surface protein which mediates cellular adhesive interactions. [NIH]

Fibrosis: Any pathological condition where fibrous connective tissue invades any organ, usually as a consequence of inflammation or other injury. [NIH]

Fissure: Any cleft or groove, normal or otherwise; especially a deep fold in the cerebral cortex which involves the entire thickness of the brain wall. [EU]

Fistula: Abnormal communication most commonly seen between two internal organs, or between an internal organ and the surface of the body. [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]

Flexor: Muscles which flex a joint. [NIH]

Flumazenil: A potent benzodiazepine receptor antagonist. Since it reverses the sedative and other actions of benzodiazepines, it has been suggested as an antidote to benzodiazepine overdoses. [NIH]

Fluorescence: The property of emitting radiation while being irradiated. The radiation emitted is usually of longer wavelength than that incident or absorbed, e.g., a substance can be irradiated with invisible radiation and emit visible light. X-ray fluorescence is used in diagnosis. [NIH]

Fluorescent Dyes: Dyes that emit light when exposed to light. The wave length of the emitted light is usually longer than that of the incident light. Fluorochromes are substances that cause fluorescence in other substances, i.e., dyes used to mark or label other compounds with fluorescent tags. They are used as markers in biochemistry and immunology. [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]

Fossa: A cavity, depression, or pit. [NIH]

Fovea: The central part of the macula that provides the sharpest vision. [NIH]

Fractionation: Dividing the total dose of radiation therapy into several smaller, equal doses delivered over a period of several days. [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]

Fulguration: Destroying tissue using an electric current. [NIH]

Functional magnetic resonance imaging: A noninvasive tool used to observe functioning in the brain or other organs by detecting changes in chemical composition, blood flow, or both. [NIH]

Functional Residual Capacity: The volume of air remaining in the lungs at the end of a normal, quiet expiration. It is the sum of the residual volume and the expiratory reserve volume. Common abbreviation is FRC. [NIH]

Fungus: A general term used to denote a group of eukaryotic protists, including mushrooms, yeasts, rusts, moulds, smuts, etc., which are characterized by the absence of chlorophyll and by the presence of a rigid cell wall composed of chitin, mannans, and sometimes cellulose. They are usually of simple morphological form or show some reversible cellular specialization, such as the formation of pseudoparenchymatous tissue in the fruiting body of a mushroom. The dimorphic fungi grow, according to environmental conditions, as moulds or yeasts. [EU]

Fuzzy Logic: Approximate, quantitative reasoning that is concerned with the linguistic ambiguity which exists in natural or synthetic language. At its core are variables such as good, bad, and young as well as modifiers such as more, less, and very. These ordinary terms represent fuzzy sets in a particular problem. Fuzzy logic plays a key role in many medical expert systems. [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]

Gap Junctions: Connections between cells which allow passage of small molecules and electric current. Gap junctions were first described anatomically as regions of close apposition between cells with a narrow (1-2 nm) gap between cell membranes. The variety in the properties of gap junctions is reflected in the number of connexins, the family of proteins which form the junctions. [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]

Gastric Juices: Liquids produced in the stomach to help break down food and kill bacteria. [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]

Gastrointestinal Hemorrhage: Bleeding in the gastrointestinal tract. [NIH]

Gastrointestinal tract: The stomach and intestines. [NIH]

Gastrostomy: Creation of an artificial external opening into the stomach for nutritional support or gastrointestinal compression. [NIH]

Gelatin: A product formed from skin, white connective tissue, or bone collagen. It is used as a protein food adjuvant, plasma substitute, hemostatic, suspending agent in pharmaceutical

preparations, and in the manufacturing of capsules and suppositories. [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]

General practitioner: A medical practitioner who does not specialize in a particular branch of medicine or limit his practice to a specific class of diseases. [NIH]

Genetic Engineering: Directed modification of the gene complement of a living organism by such techniques as altering the DNA, substituting genetic material by means of a virus, transplanting whole nuclei, transplanting cell hybrids, etc. [NIH]

Genetics: The biological science that deals with the phenomena and mechanisms of heredity. [NIH]

Genital: Pertaining to the genitalia. [EU]

Geriatric: Pertaining to the treatment of the aged. [EU]

Gestation: The period of development of the young in viviparous animals, from the time of fertilization of the ovum until birth. [EU]

Gestational: Psychosis attributable to or occurring during pregnancy. [NIH]

Gestational Age: Age of the conceptus. In humans, this may be assessed by medical history, physical examination, early immunologic pregnancy tests, radiography, ultrasonography, and amniotic fluid analysis. [NIH]

Giant Cells: Multinucleated masses produced by the fusion of many cells; often associated with viral infections. In AIDS, they are induced when the envelope glycoprotein of the HIV virus binds to the CD4 antigen of uninfected neighboring T4 cells. The resulting syncytium leads to cell death and thus may account for the cytopathic effect of the virus. [NIH]

Gingivitis: Inflammation of the gingivae. Gingivitis associated with bony changes is referred to as periodontitis. Called also oulitis and ulitis. [EU]

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]

Glomerular: Pertaining to or of the nature of a glomerulus, especially a renal glomerulus. [EU]

Glomerular Filtration Rate: The volume of water filtered out of plasma through glomerular capillary walls into Bowman's capsules per unit of time. It is considered to be equivalent to inulin clearance. [NIH]

Glottis: The vocal apparatus of the larynx, consisting of the true vocal cords (plica vocalis) and the opening between them (rima glottidis). [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]

Glucose Intolerance: A pathological state in which the fasting plasma glucose level is less than 140 mg per deciliter and the 30-, 60-, or 90-minute plasma glucose concentration following a glucose tolerance test exceeds 200 mg per deciliter. This condition is seen frequently in diabetes mellitus but also occurs with other diseases. [NIH]

Glutamate: Excitatory neurotransmitter of the brain. [NIH]

Glutamic Acid: A non-essential amino acid naturally occurring in the L-form. Glutamic acid (glutamate) is the most common excitatory neurotransmitter in the central nervous system. [NIH]

Glycerol: A trihydroxy sugar alcohol that is an intermediate in carbohydrate and lipid metabolism. It is used as a solvent, emollient, pharmaceutical agent, and sweetening agent. [NIH]

Glycine: A non-essential amino acid. It is found primarily in gelatin and silk fibroin and used therapeutically as a nutrient. It is also a fast inhibitory neurotransmitter. [NIH]

Glycoprotein: A protein that has sugar molecules attached to it. [NIH]

Gonadal: Pertaining to a gonad. [EU]

Governing Board: The group in which legal authority is vested for the control of health-related institutions and organizations. [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]

Grafting: The operation of transfer of tissue from one site to another. [NIH]

Gramicidin: Antibiotic mixture that is one of the two principle components of tyrothricin from Bacillus brevis. Gramicidin C or S is a cyclic, ten-amino acid polypeptide and gramicidins A, B, D, etc., seem to be linear polypeptides. The mixture is used topically for gram-positive organisms. It is toxic to blood, liver, kidneys, meninges, and the olfactory apparatus. [NIH]

Gram-positive: Retaining the stain or resisting decolorization by alcohol in Gram's method of staining, a primary characteristic of bacteria whose cell wall is composed of a thick layer of peptidologlycan with attached teichoic acids. [EU]

Gravis: Eruption of watery blisters on the skin among those handling animals and animal products. [NIH]

Groin: The external junctural region between the lower part of the abdomen and the thigh. [NIH]

Haptens: Small antigenic determinants capable of eliciting an immune response only when coupled to a carrier. Haptens bind to antibodies but by themselves cannot elicit an antibody response. [NIH]

Headache: Pain in the cranial region that may occur as an isolated and benign symptom or as a manifestation of a wide variety of conditions including subarachnoid hemorrhage; craniocerebral trauma; central nervous system infections; intracranial hypertension; and other disorders. In general, recurrent headaches that are not associated with a primary disease process are referred to as headache disorders (e.g., migraine). [NIH]

Health Behavior: Behaviors expressed by individuals to protect, maintain or promote their health status. For example, proper diet, and appropriate exercise are activities perceived to influence health status. Life style is closely associated with health behavior and factors influencing life style are socioeconomic, educational, and cultural. [NIH]

Health Care Costs: The actual costs of providing services related to the delivery of health care, including the costs of procedures, therapies, and medications. It is differentiated from health expenditures, which refers to the amount of money paid for the services, and from fees, which refers to the amount charged, regardless of cost. [NIH]

Health Expenditures: The amounts spent by individuals, groups, nations, or private or public organizations for total health care and/or its various components. These amounts may or may not be equivalent to the actual costs (health care costs) and may or may not be shared among the patient, insurers, and/or employers. [NIH]

Health Resources: Available manpower, facilities, revenue, equipment, and supplies to produce requisite health care and services. [NIH]

Health Services: Services for the diagnosis and treatment of disease and the maintenance of

health. [NIH]

Health Status: The level of health of the individual, group, or population as subjectively assessed by the individual or by more objective measures. [NIH]

Heart Arrest: Sudden and usually momentary cessation of the heart beat. This sudden cessation may, but not usually, lead to death, sudden, cardiac. [NIH]

Heart attack: A seizure of weak or abnormal functioning of the heart. [NIH]

Heart failure: Loss of pumping ability by the heart, often accompanied by fatigue, breathlessness, and excess fluid accumulation in body tissues. [NIH]

Heart-Lung Machine: A mechanical device that temporarily takes over the functions of the heart and lungs; called also a pump-oxygenator. It is used as an aid to surgery. [NIH]

Hematoma: An extravasation of blood localized in an organ, space, or tissue. [NIH]

Hemoglobin: One of the fractions of glycosylated hemoglobin A1c. Glycosylated hemoglobin is formed when linkages of glucose and related monosaccharides bind to hemoglobin A and its concentration represents the average blood glucose level over the previous several weeks. HbA1c levels are used as a measure of long-term control of plasma glucose (normal, 4 to 6 percent). In controlled diabetes mellitus, the concentration of glycosylated hemoglobin A is within the normal range, but in uncontrolled cases the level may be 3 to 4 times the normal conentration. Generally, complications are substantially lower among patients with Hb levels of 7 percent or less than in patients with HbA1c levels of 9 percent or more. [NIH]

Hemoglobinuria: The presence of free hemoglobin in the urine. [NIH]

Hemorrhage: Bleeding or escape of blood from a vessel. [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]

Hepatic: Refers to the liver. [NIH]

Hepatic Duct, Common: Predominantly extrahepatic bile duct which is formed by the junction of the right and left hepatic ducts, which are predominantly intrahepatic, and, in turn, joins the cystic duct to form the common bile duct. [NIH]

Hepatitis: Inflammation of the liver and liver disease involving degenerative or necrotic alterations of hepatocytes. [NIH]

Hepatocellular: Pertaining to or affecting liver cells. [EU]

Hepatocellular carcinoma: A type of adenocarcinoma, the most common type of liver tumor. [NIH]

Hepatocytes: The main structural component of the liver. They are specialized epithelial cells that are organized into interconnected plates called lobules. [NIH]

Heredity: 1. The genetic transmission of a particular quality or trait from parent to offspring. 2. The genetic constitution of an individual. [EU]

Hernia: Protrusion of a loop or knuckle of an organ or tissue through an abnormal opening. [NIH]

Heroin Dependence: Strong dependence, both physiological and emotional, upon heroin. [NIH]

Heterogeneity: The property of one or more samples or populations which implies that they are not identical in respect of some or all of their parameters, e. g. heterogeneity of variance. [NIH]

Heterotropia: One in which the angle of squint remains relatively unaltered on conjugate movement of the eyes. [NIH]

Heterozygotes: Having unlike alleles at one or more corresponding loci on homologous chromosomes. [NIH]

Hippocampus: A curved elevation of gray matter extending the entire length of the floor of the temporal horn of the lateral ventricle (Dorland, 28th ed). The hippocampus, subiculum, and dentate gyrus constitute the hippocampal formation. Sometimes authors include the entorhinal cortex in the hippocampal formation. [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]

Histamine Release: The secretion of histamine from mast cell and basophil granules by exocytosis. This can be initiated by a number of factors, all of which involve binding of IgE, cross-linked by antigen, to the mast cell or basophil's Fc receptors. Once released, histamine binds to a number of different target cell receptors and exerts a wide variety of effects. [NIH]

Histidine: An essential amino acid important in a number of metabolic processes. It is required for the production of histamine. [NIH]

Histology: The study of tissues and cells under a microscope. [NIH]

Hoarseness: An unnaturally deep or rough quality of voice. [NIH]

Homologous: Corresponding in structure, position, origin, etc., as (a) the feathers of a bird and the scales of a fish, (b) antigen and its specific antibody, (c) allelic chromosomes. [EU]

Homozygotes: An individual having a homozygous gene pair. [NIH]

Hormonal: Pertaining to or of the nature of a hormone. [EU]

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]

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]

Hydrogen Bonding: A low-energy attractive force between hydrogen and another element. It plays a major role in determining the properties of water, proteins, and other compounds. [NIH]

Hydrogen Peroxide: A strong oxidizing agent used in aqueous solution as a ripening agent, bleach, and topical anti-infective. It is relatively unstable and solutions deteriorate over time unless stabilized by the addition of acetanilide or similar organic materials. [NIH]

Hydrogenation: Specific method of reduction in which hydrogen is added to a substance by the direct use of gaseous hydrogen. [NIH]

Hydrolysis: The process of cleaving a chemical compound by the addition of a molecule of water. [NIH]

Hydrophobic: Not readily absorbing water, or being adversely affected by water, as a hydrophobic colloid. [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]

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]

Hypnotic: A drug that acts to induce sleep. [EU]

Hypoglossal Nerve: The 12th cranial nerve. The hypoglossal nerve originates in the hypoglossal nucleus of the medulla and supplies motor innervation to all of the muscles of the tongue except the palatoglossus (which is supplied by the vagus). This nerve also contains proprioceptive afferents from the tongue muscles. [NIH]

Hypoglycaemia: An abnormally diminished concentration of glucose in the blood, which may lead to tremulousness, cold sweat, piloerection, hypothermia, and headache, accompanied by irritability, confusion, hallucinations, bizarre behaviour, and ultimately, convulsions and coma. [EU]

Hypotension: Abnormally low blood pressure. [NIH]

Hypothalamic: Of or involving the hypothalamus. [EU]

Hypothalamus: Ventral part of the diencephalon extending from the region of the optic chiasm to the caudal border of the mammillary bodies and forming the inferior and lateral walls of the third ventricle. [NIH]

Hypothermia: Lower than normal body temperature, especially in warm-blooded animals; in man usually accidental or unintentional. [NIH]

Hypothyroidism: Deficiency of thyroid activity. In adults, it is most common in women and is characterized by decrease in basal metabolic rate, tiredness and lethargy, sensitivity to cold, and menstrual disturbances. If untreated, it progresses to full-blown myxoedema. In infants, severe hypothyroidism leads to cretinism. In juveniles, the manifestations are intermediate, with less severe mental and developmental retardation and only mild symptoms of the adult form. When due to pituitary deficiency of thyrotropin secretion it is called secondary hypothyroidism. [EU]

Hypoxemia: Deficient oxygenation of the blood; hypoxia. [EU]

Hypoxia: Reduction of oxygen supply to tissue below physiological levels despite adequate perfusion of the tissue by blood. [EU]

Hypoxic: Having too little oxygen. [NIH]

Hysterectomy: Excision of the uterus. [NIH]

Hysterotomy: An incision in the uterus, performed through either the abdomen or the vagina. [NIH]

Iatrogenic: Resulting from the activity of physicians. Originally applied to disorders induced in the patient by autosuggestion based on the physician's examination, manner, or discussion, the term is now applied to any adverse condition in a patient occurring as the result of treatment by a physician or surgeon, especially to infections acquired by the patient during the course of treatment. [EU]

Ibotenic Acid: Neurotoxic isoxazole substance found in Amanita muscaria and A. pantherina. It causes motor depression, ataxia, and changes in mood, perceptions and feelings, and is a potent excitatory amino acid agonist. [NIH]

Idiopathic: Describes a disease of unknown cause. [NIH]

Ileum: The lower end of the small intestine. [NIH]

Illusion: A false interpretation of a genuine percept. [NIH]

Imaging procedures: Methods of producing pictures of areas inside the body. [NIH]

Immersion: The placing of a body or a part thereof into a liquid. [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]

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]

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]

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 Situ Hybridization: A technique that localizes specific nucleic acid sequences within intact chromosomes, eukaryotic cells, or bacterial cells through the use of specific nucleic acid-labeled probes. [NIH]

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]

Indomethacin: A non-steroidal anti-inflammatory agent (NSAID) that inhibits the enzyme cyclooxygenase necessary for the formation of prostaglandins and other autacoids. It also inhibits the motility of polymorphonuclear leukocytes. [NIH]

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]

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]

Informed Consent: Voluntary authorization, given to the physician by the patient, with full comprehension of the risks involved, for diagnostic or investigative procedures and medical and surgical treatment. [NIH]

Infusion: A method of putting fluids, including drugs, into the bloodstream. Also called intravenous infusion. [NIH]

Ingestion: Taking into the body by mouth [NIH]

Inguinal: Pertaining to the inguen, or groin. [EU]

Inguinal Hernia: A small part of the large or small intestine or bladder that pushes into the groin. May cause pain and feelings of pressure or burning in the groin. Often requires surgery. [NIH]

Inhalation: The drawing of air or other substances into the lungs. [EU]

Initiation: Mutation induced by a chemical reactive substance causing cell changes; being a step in a carcinogenic process. [NIH]

Inner ear: The labyrinth, comprising the vestibule, cochlea, and semicircular canals. [NIH]

Innervation: 1. The distribution or supply of nerves to a part. 2. The supply of nervous energy or of nerve stimulus sent to a part. [EU]

Inorganic: Pertaining to substances not of organic origin. [EU]

Inositol: An isomer of glucose that has traditionally been considered to be a B vitamin although it has an uncertain status as a vitamin and a deficiency syndrome has not been identified in man. (From Martindale, The Extra Pharmacopoeia, 30th ed, p1379) Inositol phospholipids are important in signal transduction. [NIH]

Inotropic: Affecting the force or energy of muscular contractions. [EU]

Insight: The capacity to understand one's own motives, to be aware of one's own psychodynamics, to appreciate the meaning of symbolic behavior. [NIH]

Instillation: . [EU]

Intensive Care: Advanced and highly specialized care provided to medical or surgical patients whose conditions are life-threatening and require comprehensive care and constant monitoring. It is usually administered in specially equipped units of a health care facility. [NIH]

Intensive Care Units: Hospital units providing continuous surveillance and care to acutely ill patients. [NIH]

Interleukin-2: Chemical mediator produced by activated T lymphocytes and which regulates the proliferation of T cells, as well as playing a role in the regulation of NK cell activity. [NIH]

Interneurons: Most generally any neurons which are not motor or sensory. Interneurons may also refer to neurons whose axons remain within a particular brain region as contrasted with projection neurons which have axons projecting to other brain regions. [NIH]

Interstitial: Pertaining to or situated between parts or in the interspaces of a tissue. [EU]

Intestinal: Having to do with the intestines. [NIH]

Intestinal Obstruction: Any impairment, arrest, or reversal of the normal flow of intestinal contents toward the anus. [NIH]

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

Intoxication: Poisoning, the state of being poisoned. [EU]

Intracellular: Inside a cell. [NIH]

Intracellular Membranes: Membranes of subcellular structures. [NIH]

Intramuscular: IM. Within or into muscle. [NIH]

Intraoperative Complications: Complications that affect patients during surgery. They may or may not be associated with the disease for which the surgery is done, or within the same surgical procedure. [NIH]

Intrathecal: Describes the fluid-filled space between the thin layers of tissue that cover the brain and spinal cord. Drugs can be injected into the fluid or a sample of the fluid can be removed for testing. [NIH]

Intravascular: Within a vessel or vessels. [EU]

Intravenous: IV. Into a vein. [NIH]

Intravenous Anesthetics: The systemic administration of an anesthetic drug via an injection into the vein. [NIH]

Intravesical: Within the bladder. [NIH]

Intrinsic: Situated entirely within or pertaining exclusively to a part. [EU]

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]

Intussusception: A rare disorder. A part of the intestines folds into another part of the intestines, causing blockage. Most common in infants. Can be treated with an operation. [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]

Ion Channels: Gated, ion-selective glycoproteins that traverse membranes. The stimulus for channel gating can be a membrane potential, drug, transmitter, cytoplasmic messenger, or a mechanical deformation. Ion channels which are integral parts of ionotropic neurotransmitter receptors are not included. [NIH]

Ion Transport: The movement of ions across energy-transducing cell membranes. Transport can be active or passive. Passive ion transport (facilitated diffusion) derives its energy from the concentration gradient of the ion itself and allows the transport of a single solute in one direction (uniport). Active ion transport is usually coupled to an energy-yielding chemical or photochemical reaction such as ATP hydrolysis. This form of primary active transport is called an ion pump. Secondary active transport utilizes the voltage and ion gradients produced by the primary transport to drive the cotransport of other ions or molecules. These may be transported in the same (symport) or opposite (antiport) direction. [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]

Isoflurane: A stable, non-explosive inhalation anesthetic, relatively free from significant side effects. [NIH]

Jejunostomy: Surgical formation of an opening through the abdominal wall into the jejunum, usually for enteral hyperalimentation. [NIH]

Jejunum: That portion of the small intestine which extends from the duodenum to the ileum; called also intestinum jejunum. [EU]

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]

Keratolytic: An agent that promotes keratolysis. [EU]

Ketamine: A cyclohexanone derivative used for induction of anesthesia. Its mechanism of action is not well understood, but ketamine can block NMDA receptors (receptors, N-Methyl-D-Aspartate) and may interact with sigma receptors. [NIH]

Ketorolac: A drug that belongs to a family of drugs called nonsteroidal anti-inflammatory agents. It is being studied in cancer prevention. [NIH]

Ketorolac Tromethamine: A pyrrolizine carboxylic acid derivative structurally related to indomethacin. It is a non-steroidal anti-inflammatory agent used for analgesia for postoperative pain and inhibits cyclooxygenase activity. [NIH]

Kidney Failure: The inability of a kidney to excrete metabolites at normal plasma levels under conditions of normal loading, or the inability to retain electrolytes under conditions of normal intake. In the acute form (kidney failure, acute), it is marked by uremia and usually by oliguria or anuria, with hyperkalemia and pulmonary edema. The chronic form (kidney failure, chronic) is irreversible and requires hemodialysis. [NIH]

Kinetic: Pertaining to or producing motion. [EU]

Labyrinth: The internal ear; the essential part of the organ of hearing. It consists of an osseous and a membranous portion. [NIH]

Lactation: The period of the secretion of milk. [EU]

Laminin: Large, noncollagenous glycoprotein with antigenic properties. It is localized in the basement membrane lamina lucida and functions to bind epithelial cells to the basement membrane. Evidence suggests that the protein plays a role in tumor invasion. [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]

Laryngitis: Inflammation of the larynx. This condition presents itself with dryness and soreness of the throat, difficulty in swallowing, cough, and hoarseness. [NIH]

Laryngoscope: A thin, lighted tube used to examine the larynx (voice box). [NIH]

Laryngoscopy: Examination, therapy, or surgery of the interior of the larynx performed with a specially designed endoscope. [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]

Latency: The period of apparent inactivity between the time when a stimulus is presented and the moment a response occurs. [NIH]

Legionellosis: Infections with bacteria of the genus Legionella. [NIH]

Length of Stay: The period of confinement of a patient to a hospital or other health facility. [NIH]

Lesion: An area of abnormal tissue change. [NIH]

Lethargy: Abnormal drowsiness or stupor; a condition of indifference. [EU]

Leucine: An essential branched-chain amino acid important for hemoglobin formation. [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]

Leukocytes: White blood cells. These include granular leukocytes (basophils, eosinophils, and neutrophils) as well as non-granular leukocytes (lymphocytes and monocytes). [NIH]

Levorphanol: A narcotic analgesic that may be habit-forming. It is nearly as effective orally as by injection. [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]

Light microscope: A microscope (device to magnify small objects) in which objects are lit directly by white light. [NIH]

Limbic: Pertaining to a limbus, or margin; forming a border around. [EU]

Limbic System: A set of forebrain structures common to all mammals that is defined functionally and anatomically. It is implicated in the higher integration of visceral, olfactory, and somatic information as well as homeostatic responses including fundamental survival behaviors (feeding, mating, emotion). For most authors, it includes the amygdala, epithalamus, gyrus cinguli, hippocampal formation (see hippocampus), hypothalamus, parahippocampal gyrus, septal nuclei, anterior nuclear group of thalamus, and portions of the basal ganglia. (Parent, Carpenter's Human Neuroanatomy, 9th ed, p744; NeuroNames, http://rprcsgi.rprc.washington.edu/neuronames/index.html (September 2, 1998)). [NIH]

Lip: Either of the two fleshy, full-blooded margins of the mouth. [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]

Lobe: A portion of an organ such as the liver, lung, breast, or brain. [NIH]

Lobectomy: The removal of a lobe. [NIH]

Localization: The process of determining or marking the location or site of a lesion or disease. May also refer to the process of keeping a lesion or disease in a specific location or site. [NIH]

Localized: Cancer which has not metastasized yet. [NIH]

Loop: A wire usually of platinum bent at one end into a small loop (usually 4 mm inside diameter) and used in transferring microorganisms. [NIH]

Lubricants: Oily or slippery substances. [NIH]

Lubrication: The application of a substance to diminish friction between two surfaces. It may refer to oils, greases, and similar substances for the lubrication of medical equipment but it can be used for the application of substances to tissue to reduce friction, such as lotions for skin and vaginal lubricants. [NIH]

Luciferase: Any one of several enzymes that catalyze the bioluminescent reaction in certain marine crustaceans, fish, bacteria, and insects. The enzyme is a flavoprotein; it oxidizes luciferins to an electronically excited compound that emits energy in the form of light. The color of light emitted varies with the organism. The firefly enzyme is a valuable reagent for measurement of ATP concentration. (Dorland, 27th ed) EC 1.13.12.-. [NIH]

Lumbar: Pertaining to the loins, the part of the back between the thorax and the pelvis. [EU]

Lutein Cells: The cells of the corpus luteum which are derived from the granulosa cells and the theca cells of the Graafian follicle. [NIH]

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]

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]

Malignant Hyperthermia: Rapid and excessive rise of temperature accompanied by muscular rigidity following general anesthesia. [NIH]

Malnutrition: A condition caused by not eating enough food or not eating a balanced diet. [NIH]

Mandible: The largest and strongest bone of the face constituting the lower jaw. It supports the lower teeth. [NIH]

Manifest: Being the part or aspect of a phenomenon that is directly observable : concretely expressed in behaviour. [EU]

Mannitol: A diuretic and renal diagnostic aid related to sorbitol. It has little significant energy value as it is largely eliminated from the body before any metabolism can take place. It can be used to treat oliguria associated with kidney failure or other manifestations of inadequate renal function and has been used for determination of glomerular filtration rate. Mannitol is also commonly used as a research tool in cell biological studies, usually to control osmolarity. [NIH]

Mastectomy: Surgery to remove the breast (or as much of the breast tissue as possible). [NIH]

Maxillary: Pertaining to the maxilla : the irregularly shaped bone that with its fellow forms the upper jaw. [EU]

Maxillary Sinus: One of the paired paranasal sinuses, located in the body of the maxilla, communicating with the middle meatus of the nasal cavity. [NIH]

Meatus: A canal running from the internal auditory foramen through the petrous portion of the temporal bone. It gives passage to the facial and auditory nerves together with the auditory branch of the basilar artery and the internal auditory veins. [NIH]

Mechanical ventilation: Use of a machine called a ventilator or respirator to improve the exchange of air between the lungs and the atmosphere. [NIH]

Mechanoreceptors: Cells specialized to transduce mechanical stimuli and relay that information centrally in the nervous system. Mechanoreceptors include hair cells, which mediate hearing and balance, and the various somatosensory receptors, often with non-neural accessory structures. [NIH]

Meconium: The thick green-to-black mucilaginous material found in the intestines of a full-term fetus. It consists of secretions of the intestinal glands, bile pigments, fatty acids, amniotic fluid, and intrauterine debris. It constitutes the first stools passed by a newborn. [NIH]

Medial: Lying near the midsaggital plane of the body; opposed to lateral. [NIH]

Median Nerve: A major nerve of the upper extremity. In humans, the fibers of the median nerve originate in the lower cervical and upper thoracic spinal cord (usually C6 to T1), travel via the brachial plexus, and supply sensory and motor innervation to parts of the forearm and hand. [NIH]

Mediastinoscopy: Endoscopic examination, therapy or surgery of the anterior superior mediastinum of the thorax. [NIH]

Mediastinum: The area between the lungs. The organs in this area include the heart and its large blood vessels, the trachea, the esophagus, the bronchi, and lymph nodes. [NIH]

Mediate: Indirect; accomplished by the aid of an intervening medium. [EU]

Mediator: An object or substance by which something is mediated, such as (1) a structure of the nervous system that transmits impulses eliciting a specific response; (2) a chemical substance (transmitter substance) that induces activity in an excitable tissue, such as nerve or muscle; or (3) a substance released from cells as the result of the interaction of antigen with antibody or by the action of antigen with a sensitized lymphocyte. [EU]

Medical Errors: Errors or mistakes committed by health professionals which result in harm to the patient. They include errors in diagnosis (diagnostic errors), errors in the administration of drugs and other medications (medication errors), errors in the performance of surgical procedures, in the use of other types of therapy, in the use of equipment, and in the interpretation of laboratory findings. Medical errors are differentiated from malpractice in that the former are regarded as honest mistakes or accidents while the latter is the result of negligence, reprehensible ignorance, or criminal intent. [NIH]

Medical Records: Recording of pertinent information concerning patient's illness or illnesses. [NIH]

Medication Errors: Errors in prescribing, dispensing, or administering medication with the result that the patient fails to receive the correct drug or the indicated proper drug dosage. [NIH]

MEDLINE: An online database of MEDLARS, the computerized bibliographic Medical Literature Analysis and Retrieval System of the National Library of Medicine. [NIH]

Medullary: Pertaining to the marrow or to any medulla; resembling marrow. [EU]

Meiosis: A special method of cell division, occurring in maturation of the germ cells, by means of which each daughter nucleus receives half the number of chromosomes characteristic of the somatic cells of the species. [NIH]

Melanin: The substance that gives the skin its color. [NIH]

Membrane: A very thin layer of tissue that covers a surface. [NIH]

Membrane Lipids: Lipids, predominantly phospholipids, cholesterol and small amounts of glycolipids found in membranes including cellular and intracellular membranes. These lipids may be arranged in bilayers in the membranes with integral proteins between the layers and peripheral proteins attached to the outside. Membrane lipids are required for active transport, several enzymatic activities and membrane formation. [NIH]

Memory: Complex mental function having four distinct phases: (1) memorizing or learning, (2) retention, (3) recall, and (4) recognition. Clinically, it is usually subdivided into immediate, recent, and remote memory. [NIH]

Meninges: The three membranes that cover and protect the brain and spinal cord. [NIH]

Mental: Pertaining to the mind; psychic. 2. (L. mentum chin) pertaining to the chin. [EU]

Mental Health: The state wherein the person is well adjusted. [NIH]

Mental Processes: Conceptual functions or thinking in all its forms. [NIH]

Mental Retardation: Refers to sub-average general intellectual functioning which originated during the developmental period and is associated with impairment in adaptive behavior. [NIH]

Mesentery: A layer of the peritoneum which attaches the abdominal viscera to the abdominal wall and conveys their blood vessels and nerves. [NIH]

Mesoderm: The middle germ layer of the embryo. [NIH]

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]

Microcirculation: The vascular network lying between the arterioles and venules; includes capillaries, metarterioles and arteriovenous anastomoses. Also, the flow of blood through this network. [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]

Micro-organism: An organism which cannot be observed with the naked eye; e. g. unicellular animals, lower algae, lower fungi, bacteria. [NIH]

Microsurgery: Surgical procedures on the cellular level; a light microscope and miniaturized instruments are used. [NIH]

Midazolam: A short-acting compound, water-soluble at pH less than 4 and lipid-soluble at physiological pH. It is a hypnotic-sedative drug with anxiolytic and amnestic properties. It is used for sedation in dentistry, cardiac surgery, endoscopic procedures, as preanesthetic medication, and as an adjunct to local anesthesia. Because of its short duration and cardiorespiratory stability, it is particularly useful in poor-risk, elderly, and cardiac patients. [NIH]

Midodrine: An ethanolamine derivative that is an adrenergic alpha agonist. It is used as a vasoconstrictor agent in the treatment of hypotension. [NIH]

Migration: The systematic movement of genes between populations of the same species, geographic race, or variety. [NIH]

Mitochondrial Swelling: Increase in volume of mitochondria due to an influx of fluid; it occurs in hypotonic solutions due to osmotic pressure and in isotonic solutions as a result of altered permeability of the membranes of respiring mitochondria. [NIH]

Mitosis: A method of indirect cell division by means of which the two daughter nuclei normally receive identical complements of the number of chromosomes of the somatic cells of the species. [NIH]

Mitotic: Cell resulting from mitosis. [NIH]

Mobility: Capability of movement, of being moved, or of flowing freely. [EU]

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 Probes: A group of atoms or molecules attached to other molecules or cellular structures and used in studying the properties of these molecules and structures. Radioactive DNA or RNA sequences are used in molecular genetics to detect the presence of a complementary sequence by molecular hybridization. [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]

Monocular: Diplopia identified with one eye only; it may be induced with a double prism, or it may occur either as a result of double imagery due to an optical defect in the eye, or as a result of simultaneous use of normal and anomalous retinal correspondence. [NIH]

Monocyte: A type of white blood cell. [NIH]

Morphine: The principal alkaloid in opium and the prototype opiate analgesic and narcotic. Morphine has widespread effects in the central nervous system and on smooth muscle. [NIH]

Morphology: The science of the form and structure of organisms (plants, animals, and other forms of life). [NIH]

Motility: The ability to move spontaneously. [EU]

Motion Sickness: Sickness caused by motion, as sea sickness, train sickness, car sickness, and air sickness. [NIH]

Motor nerve: An efferent nerve conveying an impulse that excites muscular contraction. [NIH]

Mucociliary: Pertaining to or affecting the mucus membrane and hairs (including eyelashes, nose hair, .): mucociliary clearing: the clearance of mucus by ciliary movement (particularly in the respiratory system). [EU]

Mucosa: A mucous membrane, or tunica mucosa. [EU]

Mucus: The viscous secretion of mucous membranes. It contains mucin, white blood cells, water, inorganic salts, and exfoliated cells. [NIH]

Muscimol: Neurotoxic isoxazole isolated from Amanita muscaria and A. phalloides and also obtained by decarboxylation of ibotenic acid. It is a potent agonist at GABA-A receptors and is used mainly as an experimental tool in animal and tissue studies. [NIH]

Muscle Contraction: A process leading to shortening and/or development of tension in muscle tissue. Muscle contraction occurs by a sliding filament mechanism whereby actin filaments slide inward among the myosin filaments. [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 Relaxation: That phase of a muscle twitch during which a muscle returns to a resting position. [NIH]

Muscle Spindles: Mechanoreceptors found between skeletal muscle fibers. Muscle spindles are arranged in parallel with muscle fibers and respond to the passive stretch of the muscle, but cease to discharge if the muscle contracts isotonically, thus signaling muscle length. The muscle spindles are the receptors responsible for the stretch or myotactic reflex. [NIH]

Muscle tension: A force in a material tending to produce extension; the state of being stretched. [NIH]

Mutagenesis: Process of generating genetic mutations. It may occur spontaneously or be induced by mutagens. [NIH]

Mutagens: Chemical agents that increase the rate of genetic mutation by interfering with the function of nucleic acids. A clastogen is a specific mutagen that causes breaks in chromosomes. [NIH]

Myasthenia: Muscular debility; any constitutional anomaly of muscle. [EU]

Mydriatic: 1. Dilating the pupil. 2. Any drug that dilates the pupil. [EU]

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]

Myocardial Ischemia: A disorder of cardiac function caused by insufficient blood flow to the muscle tissue of the heart. The decreased blood flow may be due to narrowing of the coronary arteries (coronary arteriosclerosis), to obstruction by a thrombus (coronary thrombosis), or less commonly, to diffuse narrowing of arterioles and other small vessels within the heart. Severe interruption of the blood supply to the myocardial tissue may result in necrosis of cardiac muscle (myocardial infarction). [NIH]

Myocardium: The muscle tissue of the heart composed of striated, involuntary muscle known as cardiac muscle. [NIH]

Naltrexone: Derivative of noroxymorphone that is the N-cyclopropylmethyl congener of naloxone. It is a narcotic antagonist that is effective orally, longer lasting and more potent than naloxone, and has been proposed for the treatment of heroin addiction. The FDA has approved naltrexone for the treatment of alcohol dependence. [NIH]

Narcosis: A general and nonspecific reversible depression of neuronal excitability, produced by a number of physical and chemical aspects, usually resulting in stupor. [NIH]

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]

Narcotic Antagonists: Agents inhibiting the effect of narcotics on the central nervous system. [NIH]

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 Septum: The partition separating the two nasal cavities in the midplane, composed of cartilaginous, membranous and bony parts. [NIH]

Nasogastric: The process of passing a small, flexible plastic tube through the nose or mouth into the stomach or small intestine. [NIH]

Nasopharynx: The nasal part of the pharynx, lying above the level of the soft palate. [NIH]

Nausea: An unpleasant sensation in the stomach usually accompanied by the urge to vomit. Common causes are early pregnancy, sea and motion sickness, emotional stress, intense pain, food poisoning, and various enteroviruses. [NIH]

NCI: National Cancer Institute. NCI, part of the National Institutes of Health of the United States Department of Health and Human Services, is the federal government's principal agency for cancer research. NCI conducts, coordinates, and funds cancer research, training, health information dissemination, and other programs with respect to the cause, diagnosis, prevention, and treatment of cancer. Access the NCI Web site at http://cancer.gov. [NIH]

Necrosis: A pathological process caused by the progressive degradative action of enzymes that is generally associated with severe cellular trauma. It is characterized by mitochondrial swelling, nuclear flocculation, uncontrolled cell lysis, and ultimately cell death. [NIH]

Neonatal: Pertaining to the first four weeks after birth. [EU]

Neoplasms: New abnormal growth of tissue. Malignant neoplasms show a greater degree of anaplasia and have the properties of invasion and metastasis, compared to benign neoplasms. [NIH]

Nephrosis: Descriptive histopathologic term for renal disease without an inflammatory component. [NIH]

Nephrotic: Pertaining to, resembling, or caused by nephrosis. [EU]

Nephrotic Syndrome: Clinical association of heavy proteinuria, hypoalbuminemia, and generalized edema. [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]

Nerve Endings: Specialized terminations of peripheral neurons. Nerve endings include neuroeffector junction(s) by which neurons activate target organs and sensory receptors which transduce information from the various sensory modalities and send it centrally in the nervous system. Presynaptic nerve endings are presynaptic terminals. [NIH]

Nerve Growth Factor: Nerve growth factor is the first of a series of neurotrophic factors that were found to influence the growth and differentiation of sympathetic and sensory neurons. It is comprised of alpha, beta, and gamma subunits. The beta subunit is responsible for its growth stimulating activity. [NIH]

Nervous System: The entire nerve apparatus composed of the brain, spinal cord, nerves and ganglia. [NIH]

Networks: Pertaining to a nerve or to the nerves, a meshlike structure of interlocking fibers or strands. [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]

Neuroendocrine: Having to do with the interactions between the nervous system and the endocrine system. Describes certain cells that release hormones into the blood in response to stimulation of the nervous system. [NIH]

Neurologic: Having to do with nerves or the nervous system. [NIH]

Neuromuscular: Pertaining to muscles and nerves. [EU]

Neuromuscular Blockade: The intentional interruption of transmission at the neuromuscular junction by external agents, usually neuromuscular blocking agents. It is distinguished from nerve block in which nerve conduction is interrupted rather than neuromuscular transmission. Neuromuscular blockade is commonly used to produce muscle relaxation as an adjunct to anesthesia during surgery and other medical procedures. It is also often used as an experimental manipulation in basic research. It is not strictly speaking anesthesia but is grouped here with anesthetic techniques. The failure of neuromuscular transmission as a result of pathological processes is not included here. [NIH]

Neuromuscular Blocking Agents: Drugs that interrupt transmission of nerve impulses at the skeletal neuromuscular junction. They can be of two types, competitive, stabilizing blockers (neuromuscular nondepolarizing agents) or noncompetitive, depolarizing agents (neuromuscular depolarizing agents). Both prevent acetylcholine from triggering the muscle contraction and they are used as anesthesia adjuvants, as relaxants during electroshock, in convulsive states, etc. [NIH]

Neuromuscular Depolarizing Agents: Drugs that interrupt transmission at the skeletal neuromuscular junction by causing sustained depolarization of the motor end plate. These agents are primarily used as adjuvants in surgical anesthesia to cause skeletal muscle relaxation. [NIH]

Neuromuscular Junction: The synapse between a neuron and a muscle. [NIH]

Neuromuscular Nondepolarizing Agents: Drugs that interrupt transmission at the skeletal neuromuscular junction without causing depolarization of the motor end plate. They prevent acetylcholine from triggering muscle contraction and are used as muscle relaxants during electroshock treatments, in convulsive states, and as anesthesia adjuvants. [NIH]

Neuronal: Pertaining to a neuron or neurons (= conducting cells of the nervous system). [EU]

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]

Neuropathy: A problem in any part of the nervous system except the brain and spinal cord. Neuropathies can be caused by infection, toxic substances, or disease. [NIH]

Neurophysiology: The scientific discipline concerned with the physiology of the nervous system. [NIH]

Neuropsychological Tests: Tests designed to assess neurological function associated with certain behaviors. They are used in diagnosing brain dysfunction or damage and central nervous system disorders or injury. [NIH]

Neurosis: Functional derangement due to disorders of the nervous system which does not affect the psychic personality of the patient. [NIH]

Neurotensin: A biologically active tridecapeptide isolated from the hypothalamus. It has been shown to induce hypotension in the rat, to stimulate contraction of guinea pig ileum and rat uterus, and to cause relaxation of rat duodenum. There is also evidence that it acts as both a peripheral and a central nervous system neurotransmitter. [NIH]

Neurotoxic: Poisonous or destructive to nerve tissue. [EU]

Neurotoxicity: The tendency of some treatments to cause damage to the 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]

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]

Nitroglycerin: A highly volatile organic nitrate that acts as a dilator of arterial and venous smooth muscle and is used in the treatment of angina. It provides relief through improvement of the balance between myocardial oxygen supply and demand. Although total coronary blood flow is not increased, there is redistribution of blood flow in the heart when partial occlusion of coronary circulation is effected. [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]

Nonverbal Communication: Transmission of emotions, ideas, and attitudes between individuals in ways other than the spoken language. [NIH]

Norepinephrine: Precursor of epinephrine that is secreted by the adrenal medulla and is a widespread central and autonomic neurotransmitter. Norepinephrine is the principal transmitter of most postganglionic sympathetic fibers and of the diffuse projection system in the brain arising from the locus ceruleus. It is also found in plants and is used pharmacologically as a sympathomimetic. [NIH]

Nuclear: A test of the structure, blood flow, and function of the kidneys. The doctor injects a mildly radioactive solution into an arm vein and uses x-rays to monitor its progress through

the kidneys. [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]

Nucleus: A body of specialized protoplasm found in nearly all cells and containing the chromosomes. [NIH]

Nutritional Support: The administration of nutrients for assimilation and utilization by a patient by means other than normal eating. It does not include fluid therapy which normalizes body fluids to restore water-electrolyte balance. [NIH]

Nystagmus: An involuntary, rapid, rhythmic movement of the eyeball, which may be horizontal, vertical, rotatory, or mixed, i.e., of two varieties. [EU]

Occipital Lobe: Posterior part of the cerebral hemisphere. [NIH]

Occupational Health: The promotion and maintenance of physical and mental health in the work environment. [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]

Oncotic: Pertaining to, caused by, or marked by swelling. [EU]

Opacity: Degree of density (area most dense taken for reading). [NIH]

Ophthalmologic: Pertaining to ophthalmology (= the branch of medicine dealing with the eye). [EU]

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]

Opiate: A remedy containing or derived from opium; also any drug that induces sleep. [EU]

Opium: The air-dried exudate from the unripe seed capsule of the opium poppy, Papaver somniferum, or its variant, P. album. It contains a number of alkaloids, but only a few - morphine, codeine, and papaverine - have clinical significance. Opium has been used as an analgesic, antitussive, antidiarrheal, and antispasmodic. [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]

Oral Health: The optimal state of the mouth and normal functioning of the organs of the mouth without evidence of disease. [NIH]

Oral Hygiene: The practice of personal hygiene of the mouth. It includes the maintenance of oral cleanliness, tissue tone, and general preservation of oral health. [NIH]

Oropharynx: Oral part of the pharynx. [NIH]

Orthodontics: A dental specialty concerned with the prevention and correction of dental and oral anomalies (malocclusion). [NIH]

Osmolality: The concentration of osmotically active particles in solution expressed in terms

of osmoles of solute per kilogram of solvent. The osmolality is directly proportional to the colligative properties of solutions; osmotic pressure, boiling point elevation, freezing point depression, and vapour pressure lowering. [EU]

Osmolarity: The concentration of osmotically active particles expressed in terms of osmoles of solute per litre of solution. [EU]

Osmoles: The standard unit of osmotic pressure. [NIH]

Osmosis: Tendency of fluids (e.g., water) to move from the less concentrated to the more concentrated side of a semipermeable membrane. [NIH]

Osmotic: Pertaining to or of the nature of osmosis (= the passage of pure solvent from a solution of lesser to one of greater solute concentration when the two solutions are separated by a membrane which selectively prevents the passage of solute molecules, but is permeable to the solvent). [EU]

Otitis: Inflammation of the ear, which may be marked by pain, fever, abnormalities of hearing, hearing loss, tinnitus, and vertigo. [EU]

Otitis Media: Inflammation of the middle ear. [NIH]

Otitis Media with Effusion: Inflammation of the middle ear with a clear pale yellow-colored transudate. [NIH]

Otolaryngology: A surgical specialty concerned with the study and treatment of disorders of the ear, nose, and throat. [NIH]

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]

Overdose: An accidental or deliberate dose of a medication or street drug that is in excess of what is normally used. [NIH]

Ovum: A female germ cell extruded from the ovary at ovulation. [NIH]

Oximetry: The determination of oxygen-hemoglobin saturation of blood either by withdrawing a sample and passing it through a classical photoelectric oximeter or by electrodes attached to some translucent part of the body like finger, earlobe, or skin fold. It includes non-invasive oxygen monitoring by pulse oximetry. [NIH]

Oxygen Consumption: The oxygen consumption is determined by calculating the difference between the amount of oxygen inhaled and exhaled. [NIH]

Oxygenation: The process of supplying, treating, or mixing with oxygen. No:1245 - oxygenation the process of supplying, treating, or mixing with oxygen. [EU]

Oxygenator: An apparatus by which oxygen is introduced into the blood during circulation outside the body, as during open heart surgery. [NIH]

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]

Palsy: Disease of the peripheral nervous system occurring usually after many years of increased lead absorption. [NIH]

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]

Pancreatic: Having to do with the pancreas. [NIH]

Pancreatic Ducts: Ducts that collect pancreatic juice from the pancreas and supply it to the duodenum. [NIH]

Papilla: A small nipple-shaped elevation. [NIH]

Paralysis: Loss of ability to move all or part of the body. [NIH]

Parenteral: Not through the alimentary canal but rather by injection through some other route, as subcutaneous, intramuscular, intraorbital, intracapsular, intraspinal, intrasternal, intravenous, etc. [EU]

Paresthesia: Subjective cutaneous sensations (e.g., cold, warmth, tingling, pressure, etc.) that are experienced spontaneously in the absence of stimulation. [NIH]

Parietal: 1. Of or pertaining to the walls of a cavity. 2. Pertaining to or located near the parietal bone, as the parietal lobe. [EU]

Parietal Lobe: Upper central part of the cerebral hemisphere. [NIH]

Parotid: The space that contains the parotid gland, the facial nerve, the external carotid artery, and the retromandibular vein. [NIH]

Paroxysmal: Recurring in paroxysms (= spasms or seizures). [EU]

Particle: A tiny mass of material. [EU]

Parturition: The act or process of given birth to a child. [EU]

Patch: A piece of material used to cover or protect a wound, an injured part, etc.: a patch over the eye. [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]

Pathologic Processes: The abnormal mechanisms and forms involved in the dysfunctions of tissues and organs. [NIH]

Pathophysiology: Altered functions in an individual or an organ due to disease. [NIH]

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]

Patient Selection: Criteria and standards used for the determination of the appropriateness of the inclusion of patients with specific conditions in proposed treatment plans and the criteria used for the inclusion of subjects in various clinical trials and other research protocols. [NIH]

Pediatric Dentistry: The practice of dentistry concerned with the dental problems of children, proper maintenance, and treatment. The dental care may include the services provided by dental specialists. [NIH]

Pediatric Gastroenterologist: A doctor who treats children with digestive diseases. [NIH]

Pelvic: Pertaining to the pelvis. [EU]

Pelvis: The lower part of the abdomen, located between the hip bones. [NIH]

Penicillin: An antibiotic drug used to treat infection. [NIH]

Penile Erection: The state of the penis when the erectile tissue becomes filled with blood and causes the penis to become rigid and elevated. [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]

Pepsin: An enzyme made in the stomach that breaks down proteins. [NIH]

Peptic: Pertaining to pepsin or to digestion; related to the action of gastric juices. [EU]

Peptic Ulcer: An ulceration of the mucous membrane of the esophagus, stomach or duodenum, caused by the action of the acid gastric juice. [NIH]

Peptide: Any compound consisting of two or more amino acids, the building blocks of proteins. Peptides are combined to make proteins. [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]

Perforation: 1. The act of boring or piercing through a part. 2. A hole made through a part or substance. [EU]

Perfusion: Bathing an organ or tissue with a fluid. In regional perfusion, a specific area of the body (usually an arm or a leg) receives high doses of anticancer drugs through a blood vessel. Such a procedure is performed to treat cancer that has not spread. [NIH]

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]

Periodontal disease: Disease involving the supporting structures of the teeth (as the gums and periodontal membranes). [NIH]

Periodontal disease: Disease involving the supporting structures of the teeth (as the gums and periodontal membranes). [NIH]

Periodontitis: Inflammation of the periodontal membrane; also called periodontitis simplex. [NIH]

Perioperative: Around the time of surgery; usually lasts from the time of going into the hospital or doctor's office for surgery until the time the patient goes home. [NIH]

Peripheral Nervous System: The nervous system outside of the brain and spinal cord. The peripheral nervous system has autonomic and somatic divisions. The autonomic nervous system includes the enteric, parasympathetic, and sympathetic subdivisions. The somatic nervous system includes the cranial and spinal nerves and their ganglia and the peripheral sensory receptors. [NIH]

Peritoneal: Having to do with the peritoneum (the tissue that lines the abdominal wall and covers most of the organs in the abdomen). [NIH]

Peritoneum: Endothelial lining of the abdominal cavity, the parietal peritoneum covering the inside of the abdominal wall and the visceral peritoneum covering the bowel, the mesentery, and certain of the organs. The portion that covers the bowel becomes the serosal layer of the bowel wall. [NIH]

Phallic: Pertaining to the phallus, or penis. [EU]

Phantom: Used to absorb and/or scatter radiation equivalently to a patient, and hence to estimate radiation doses and test imaging systems without actually exposing a patient. It

may be an anthropomorphic or a physical test object. [NIH]

Pharmacodynamic: Is concerned with the response of living tissues to chemical stimuli, that is, the action of drugs on the living organism in the absence of disease. [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]

Phenylalanine: An aromatic amino acid that is essential in the animal diet. It is a precursor of melanin, dopamine, noradrenalin, and thyroxine. [NIH]

Phenytoin: An anticonvulsant that is used in a wide variety of seizures. It is also an anti-arrhythmic and a muscle relaxant. The mechanism of therapeutic action is not clear, although several cellular actions have been described including effects on ion channels, active transport, and general membrane stabilization. The mechanism of its muscle relaxant effect appears to involve a reduction in the sensitivity of muscle spindles to stretch. Phenytoin has been proposed for several other therapeutic uses, but its use has been limited by its many adverse effects and interactions with other drugs. [NIH]

Phobia: A persistent, irrational, intense fear of a specific object, activity, or situation (the phobic stimulus), fear that is recognized as being excessive or unreasonable by the individual himself. When a phobia is a significant source of distress or interferes with social functioning, it is considered a mental disorder; phobic disorder (or neurosis). In DSM III phobic disorders are subclassified as agoraphobia, social phobias, and simple phobias. Used as a word termination denoting irrational fear of or aversion to the subject indicated by the stem to which it is affixed. [EU]

Phobic Disorders: Anxiety disorders in which the essential feature is persistent and irrational fear of a specific object, activity, or situation that the individual feels compelled to avoid. The individual recognizes the fear as excessive or unreasonable. [NIH]

Phorbol: Class of chemicals that promotes the development of tumors. [NIH]

Phospholipids: Lipids containing one or more phosphate groups, particularly those derived from either glycerol (phosphoglycerides; glycerophospholipids) or sphingosine (sphingolipids). They are polar lipids that are of great importance for the structure and function of cell membranes and are the most abundant of membrane lipids, although not stored in large amounts in the system. [NIH]

Phosphorus: A non-metallic element that is found in the blood, muscles, nevers, bones, and teeth, and is a component of adenosine triphosphate (ATP; the primary energy source for the body's cells.) [NIH]

Phosphorylation: The introduction of a phosphoryl group into a compound through the formation of an ester bond between the compound and a phosphorus moiety. [NIH]

Phrenic Nerve: The motor nerve of the diaphragm. The phrenic nerve fibers originate in the cervical spinal column (mostly C4) and travel through the cervical plexus to the diaphragm. [NIH]

Physical Examination: Systematic and thorough inspection of the patient for physical signs of disease or abnormality. [NIH]

Physicochemical: Pertaining to physics and chemistry. [EU]

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]

Picrotoxin: A noncompetitive antagonist at GABA-A receptors and thus a convulsant. Picrotoxin blocks the GABA-activated chloride ionophore. Although it is most often used as a research tool, it has been used as a CNS stimulant and an antidote in poisoning by CNS depressants, especially the barbiturates. [NIH]

Pigmentation: Coloration or discoloration of a part by a pigment. [NIH]

Pilot study: The initial study examining a new method or treatment. [NIH]

Pit and Fissure Sealants: Agents used to occlude dental enamel pits and fissures in the prevention of dental caries. [NIH]

Placenta: A highly vascular fetal organ through which the fetus absorbs oxygen and other nutrients and excretes carbon dioxide and other wastes. It begins to form about the eighth day of gestation when the blastocyst adheres to the decidua. [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]

Plasma: The clear, yellowish, fluid part of the blood that carries the blood cells. The proteins that form blood clots are in plasma. [NIH]

Plasma protein: One of the hundreds of different proteins present in blood plasma, including carrier proteins (such albumin, transferrin, and haptoglobin), fibrinogen and other coagulation factors, complement components, immunoglobulins, enzyme inhibitors, precursors of substances such as angiotension and bradykinin, and many other types of proteins. [EU]

Plasticity: In an individual or a population, the capacity for adaptation: a) through gene changes (genetic plasticity) or b) through internal physiological modifications in response to changes of environment (physiological plasticity). [NIH]

Platinum: Platinum. A heavy, soft, whitish metal, resembling tin, atomic number 78, atomic weight 195.09, symbol Pt. (From Dorland, 28th ed) It is used in manufacturing equipment for laboratory and industrial use. It occurs as a black powder (platinum black) and as a spongy substance (spongy platinum) and may have been known in Pliny's time as "alutiae". [NIH]

Pleural: A circumscribed area of hyaline whorled fibrous tissue which appears on the surface of the parietal pleura, on the fibrous part of the diaphragm or on the pleura in the interlobar fissures. [NIH]

Pleural cavity: A space enclosed by the pleura (thin tissue covering the lungs and lining the interior wall of the chest cavity). It is bound by thin membranes. [NIH]

Plexus: A network or tangle; a general term for a network of lymphatic vessels, nerves, or veins. [EU]

Pneumonia: Inflammation of the lungs. [NIH]

Pneumothorax: Accumulation of air or gas in the space between the lung and chest wall, resulting in partial or complete collapse of the lung. [NIH]

Podophyllotoxin: The main active constituent of the resin from the roots of may apple or mandrake (Podophyllum peltatum and P. emodi). It is a potent spindle poison, toxic if taken internally, and has been used as a cathartic. It is very irritating to skin and mucous membranes, has keratolytic actions, has been used to treat warts and keratoses, and may

have antineoplastic properties, as do some of its congeners and derivatives. [NIH]

Point Mutation: A mutation caused by the substitution of one nucleotide for another. This results in the DNA molecule having a change in a single base pair. [NIH]

Poisoning: A condition or physical state produced by the ingestion, injection or inhalation of, or exposure to a deleterious agent. [NIH]

Polypeptide: A peptide which on hydrolysis yields more than two amino acids; called tripeptides, tetrapeptides, etc. according to the number of amino acids contained. [EU]

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]

Positive pressure ventilation: Provision of oxygen under pressure by a mechanical respirator. [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]

Postnatal: Occurring after birth, with reference to the newborn. [EU]

Postoperative: After surgery. [NIH]

Postoperative Complications: Pathologic processes that affect patients after a surgical procedure. They may or may not be related to the disease for which the surgery was done, and they may or may not be direct results of the surgery. [NIH]

Postsynaptic: Nerve potential generated by an inhibitory hyperpolarizing stimulation. [NIH]

Post-synaptic: Nerve potential generated by an inhibitory hyperpolarizing stimulation. [NIH]

Potassium: An element that is in the alkali group of metals. It has an atomic symbol K, atomic number 19, and atomic weight 39.10. It is the chief cation in the intracellular fluid of muscle and other cells. Potassium ion is a strong electrolyte and it plays a significant role in the regulation of fluid volume and maintenance of the water-electrolyte balance. [NIH]

Potentiate: A degree of synergism which causes the exposure of the organism to a harmful substance to worsen a disease already contracted. [NIH]

Potentiating: A degree of synergism which causes the exposure of the organism to a harmful substance to worsen a disease already contracted. [NIH]

Potentiation: An overall effect of two drugs taken together which is greater than the sum of the effects of each drug taken alone. [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]

Practice Management: Business management of medical and dental practices that may include capital financing, utilization management, and arrangement of capitation agreements with other parties. [NIH]

Precursor: Something that precedes. In biological processes, a substance from which another, usually more active or mature substance is formed. In clinical medicine, a sign or symptom that heralds another. [EU]

Pregnancy Tests: Tests to determine whether or not an individual is pregnant. [NIH]

Premedication: Preliminary administration of a drug preceding a diagnostic, therapeutic, or surgical procedure. The commonest types of premedication are antibiotics (antibiotic prophylaxis) and anti-anxiety agents. It does not include preanesthetic medication. [NIH]

Preoperative: Preceding an operation. [EU]

Pressoreceptors: Receptors in the vascular system, particularly the aorta and carotid sinus, which are sensitive to stretch of the vessel walls. [NIH]

Presynaptic: Situated proximal to a synapse, or occurring before the synapse is crossed. [EU]

Presynaptic Terminals: The distal terminations of axons which are specialized for the release of neurotransmitters. Also included are varicosities along the course of axons which have similar specializations and also release transmitters. Presynaptic terminals in both the central and peripheral nervous systems are included. [NIH]

Prevalence: The total number of cases of a given disease in a specified population at a designated time. It is differentiated from incidence, which refers to the number of new cases in the population at a given time. [NIH]

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]

Proctosigmoidoscopy: An examination of the rectum and the lower part of the colon using a thin, lighted tube called a sigmoidoscope. [NIH]

Progesterone: Pregn-4-ene-3,20-dione. The principal progestational hormone of the body, secreted by the corpus luteum, adrenal cortex, and placenta. Its chief function is to prepare the uterus for the reception and development of the fertilized ovum. It acts as an antiovulatory agent when administered on days 5-25 of the menstrual cycle. [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]

Prolactin: Pituitary lactogenic hormone. A polypeptide hormone with a molecular weight of about 23,000. It is essential in the induction of lactation in mammals at parturition and is synergistic with estrogen. The hormone also brings about the release of progesterone from lutein cells, which renders the uterine mucosa suited for the embedding of the ovum should fertilization occur. [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]

Prophase: The first phase of cell division, in which the chromosomes become visible, the nucleus starts to lose its identity, the spindle appears, and the centrioles migrate toward opposite poles. [NIH]

Prophylaxis: An attempt to prevent disease. [NIH]

Propofol: A widely used anesthetic. [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]

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]

Protein Binding: The process in which substances, either endogenous or exogenous, bind to proteins, peptides, enzymes, protein precursors, or allied compounds. Specific protein-binding measures are often used as assays in diagnostic assessments. [NIH]

Protein C: A vitamin-K dependent zymogen present in the blood, which, upon activation by thrombin and thrombomodulin exerts anticoagulant properties by inactivating factors Va and VIIIa at the rate-limiting steps of thrombin formation. [NIH]

Protein Conformation: The characteristic 3-dimensional shape of a protein, including the secondary, supersecondary (motifs), tertiary (domains) and quaternary structure of the peptide chain. Quaternary protein structure describes the conformation assumed by multimeric proteins (aggregates of more than one polypeptide chain). [NIH]

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]

Proteinuria: The presence of protein in the urine, indicating that the kidneys are not working properly. [NIH]

Proteoglycans: Glycoproteins which have a very high polysaccharide content. [NIH]

Proteolytic: 1. Pertaining to, characterized by, or promoting proteolysis. 2. An enzyme that promotes proteolysis (= the splitting of proteins by hydrolysis of the peptide bonds with formation of smaller polypeptides). [EU]

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]

Psychiatry: The medical science that deals with the origin, diagnosis, prevention, and treatment of mental disorders. [NIH]

Psychic: Pertaining to the psyche or to the mind; mental. [EU]

Psychoactive: Those drugs which alter sensation, mood, consciousness or other psychological or behavioral functions. [NIH]

Psychology: The science dealing with the study of mental processes and behavior in man and animals. [NIH]

Psychometric testing: Psychological and mental testing and quantitative analysis of an individual's psychological traits or attitudes or mental processes. [NIH]

Psychomotor: Pertaining to motor effects of cerebral or psychic activity. [EU]

Psychotherapy: A generic term for the treatment of mental illness or emotional disturbances primarily by verbal or nonverbal communication. [NIH]

Public Health: Branch of medicine concerned with the prevention and control of disease and disability, and the promotion of physical and mental health of the population on the

international, national, state, or municipal level. [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]

Publishing: "The business or profession of the commercial production and issuance of literature" (Webster's 3d). It includes the publisher, publication processes, editing and editors. Production may be by conventional printing methods or by electronic publishing. [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]

Pulmonary Edema: An accumulation of an excessive amount of watery fluid in the lungs, may be caused by acute exposure to dangerous concentrations of irritant gasses. [NIH]

Pulmonary Veins: The veins that return the oxygenated blood from the lungs to the left atrium of the heart. [NIH]

Pulmonary Ventilation: The total volume of gas per minute inspired or expired measured in liters per minute. [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]

Pyramidal Cells: Projection neurons in the cerebral cortex and the hippocampus. Pyramidal cells have a pyramid-shaped soma with the apex and an apical dendrite pointed toward the pial surface and other dendrites and an axon emerging from the base. The axons may have local collaterals but also project outside their cortical region. [NIH]

Quiescent: Marked by a state of inactivity or repose. [EU]

Radial Artery: The direct continuation of the brachial trunk, originating at the bifurcation of the brachial artery opposite the neck of the radius. Its branches may be divided into three groups corresponding to the three regions in which the vessel is situated, the forearm, wrist, and hand. [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]

Radical prostatectomy: Surgery to remove the entire prostate. The two types of radical prostatectomy are retropubic prostatectomy and perineal prostatectomy. [NIH]

Radioactive: Giving off radiation. [NIH]

Radiography: Examination of any part of the body for diagnostic purposes by means of roentgen rays, recording the image on a sensitized surface (such as photographic film). [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]

Radioisotope: An unstable element that releases radiation as it breaks down. Radioisotopes can be used in imaging tests or as a treatment for cancer. [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]

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]

Reaction Time: The time from the onset of a stimulus until the organism responds. [NIH]

Reagent: A substance employed to produce a chemical reaction so as to detect, measure, produce, etc., other substances. [EU]

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]

Receptors, Serotonin: Cell-surface proteins that bind serotonin and trigger intracellular changes which influence the behavior of cells. Several types of serotonin receptors have been recognized which differ in their pharmacology, molecular biology, and mode of action. [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]

Recombinant Proteins: Proteins prepared by recombinant DNA technology. [NIH]

Recovery Room: Hospital unit providing continuous monitoring of the patient following anesthesia. [NIH]

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]

Refer: To send or direct for treatment, aid, information, de decision. [NIH]

Reflex: An involuntary movement or exercise of function in a part, excited in response to a stimulus applied to the periphery and transmitted to the brain or spinal cord. [NIH]

Refractory: Not readily yielding to treatment. [EU]

Regeneration: The natural renewal of a structure, as of a lost tissue or part. [EU]

Regimen: A treatment plan that specifies the dosage, the schedule, and the duration of treatment. [NIH]

Regurgitation: A backward flowing, as the casting up of undigested food, or the backward flowing of blood into the heart, or between the chambers of the heart when a valve is incompetent. [EU]

Relapse: The return of signs and symptoms of cancer after a period of improvement. [NIH]

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]

Renal failure: Progressive renal insufficiency and uremia, due to irreversible and progressive renal glomerular tubular or interstitial disease. [NIH]

Renal tubular: A defect in the kidneys that hinders their normal excretion of acids. Failure to excrete acids can lead to weak bones, kidney stones, and poor growth in children. [NIH]

Resection: Removal of tissue or part or all of an organ by surgery. [NIH]

Residual Volume: The volume of air remaining in the lungs at the end of a maximal expiration. Common abbreviation is RV. [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]

Respirator: A mechanical device that helps a patient breathe; a mechanical ventilator. [NIH]

Respiratory distress syndrome: A lung disease that occurs primarily in premature infants; the newborn must struggle for each breath and blueing of its skin reflects the baby's inability to get enough oxygen. [NIH]

Respiratory Mechanics: The physical or mechanical action of the lungs, diaphragm, ribs, and chest wall during respiration. It includes airflow, lung volume, neural and reflex controls, mechanoreceptors, breathing patterns, etc. [NIH]

Respiratory Physiology: Functions and activities of the respiratory tract as a whole or of any of its parts. [NIH]

Respiratory System: The tubular and cavernous organs and structures, by means of which pulmonary ventilation and gas exchange between ambient air and the blood are brought about. [NIH]

Resuscitation: The restoration to life or consciousness of one apparently dead; it includes such measures as artificial respiration and cardiac massage. [EU]

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]

Retinopathy: 1. Retinitis (= inflammation of the retina). 2. Retinosis (= degenerative, noninflammatory condition of the retina). [EU]

Retreatment: The therapy of the same disease in a patient, with the same agent or procedure repeated after initial treatment, or with an additional or alternate measure or follow-up. It does not include therapy which requires more than one administration of a therapeutic agent or regimen. Retreatment is often used with reference to a different modality when the original one was inadequate, harmful, or unsuccessful. [NIH]

Retrograde: 1. Moving backward or against the usual direction of flow. 2. Degenerating,

deteriorating, or catabolic. [EU]

Retropubic: A potential space between the urinary bladder and the symphisis and body of the pubis. [NIH]

Retropubic prostatectomy: Surgery to remove the prostate through an incision made in the abdominal wall. [NIH]

Retrospective: Looking back at events that have already taken place. [NIH]

Retrospective study: A study that looks backward in time, usually using medical records and interviews with patients who already have or had a disease. [NIH]

Reversion: A return to the original condition, e. g. the reappearance of the normal or wild type in previously mutated cells, tissues, or organisms. [NIH]

Ribose: A pentose active in biological systems usually in its D-form. [NIH]

Ribosome: A granule of protein and RNA, synthesized in the nucleolus and found in the cytoplasm of cells. Ribosomes are the main sites of protein synthesis. Messenger RNA attaches to them and there receives molecules of transfer RNA bearing amino acids. [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]

Saline: A solution of salt and water. [NIH]

Saliva: The clear, viscous fluid secreted by the salivary glands and mucous glands of the mouth. It contains mucins, water, organic salts, and ptylin. [NIH]

Salivary: The duct that convey saliva to the mouth. [NIH]

Saponins: Sapogenin glycosides. A type of glycoside widely distributed in plants. Each consists of a sapogenin as the aglycon moiety, and a sugar. The sapogenin may be a steroid or a triterpene and the sugar may be glucose, galactose, a pentose, or a methylpentose. Sapogenins are poisonous towards the lower forms of life and are powerful hemolytics when injected into the blood stream able to dissolve red blood cells at even extreme dilutions. [NIH]

Sarcoidosis: An idiopathic systemic inflammatory granulomatous disorder comprised of epithelioid and multinucleated giant cells with little necrosis. It usually invades the lungs with fibrosis and may also involve lymph nodes, skin, liver, spleen, eyes, phalangeal bones, and parotid glands. [NIH]

Scatter: The extent to which relative success and failure are divergently manifested in qualitatively different tests. [NIH]

Schizoid: Having qualities resembling those found in greater degree in schizophrenics; a person of schizoid personality. [NIH]

Schizophrenia: A mental disorder characterized by a special type of disintegration of the personality. [NIH]

Schizotypal Personality Disorder: A personality disorder in which there are oddities of thought (magical thinking, paranoid ideation, suspiciousness), perception (illusions, depersonalization), speech (digressive, vague, overelaborate), and behavior (inappropriate affect in social interactions, frequently social isolation) that are not severe enough to characterize schizophrenia. [NIH]

Scoliosis: A lateral curvature of the spine. [NIH]

Screening: Checking for disease when there are no symptoms. [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]

Secretory: Secreting; relating to or influencing secretion or the secretions. [NIH]

Sedative: 1. Allaying activity and excitement. 2. An agent that allays excitement. [EU]

Sedatives, Barbiturate: Those derivatives of barbituric or thiobarbituric acid that are used as hypnotics or sedatives. The structural class of all such derivatives, regardless of use, is barbiturates. [NIH]

Seizures: Clinical or subclinical disturbances of cortical function due to a sudden, abnormal, excessive, and disorganized discharge of brain cells. Clinical manifestations include abnormal motor, sensory and psychic phenomena. Recurrent seizures are usually referred to as epilepsy or "seizure disorder." [NIH]

Self Care: Performance of activities or tasks traditionally performed by professional health care providers. The concept includes care of oneself or one's family and friends. [NIH]

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]

Semicircular canal: Three long canals of the bony labyrinth of the ear, forming loops and opening into the vestibule by five openings. [NIH]

Semisynthetic: Produced by chemical manipulation of naturally occurring substances. [EU]

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]

Sensor: A device designed to respond to physical stimuli such as temperature, light, magnetism or movement and transmit resulting impulses for interpretation, recording, movement, or operating control. [NIH]

Sepsis: The presence of bacteria in the bloodstream. [NIH]

Septal: An abscess occurring at the root of the tooth on the proximal surface. [NIH]

Septic: Produced by or due to decomposition by microorganisms; putrefactive. [EU]

Septum: A dividing wall or partition; a general term for such a structure. The term is often used alone to refer to the septal area or to the septum pellucidum. [EU]

Septum Pellucidum: A triangular double membrane separating the anterior horns of the lateral ventricles of the brain. It is situated in the median plane and bounded by the corpus callosum and the body and columns of the fornix. [NIH]

Sequencing: The determination of the order of nucleotides in a DNA or RNA chain. [NIH]

Sequential treatment: One treatment after the other. [NIH]

Serotonin: A biochemical messenger and regulator, synthesized from the essential amino acid L-tryptophan. In humans it is found primarily in the central nervous system, gastrointestinal tract, and blood platelets. Serotonin mediates several important physiological functions including neurotransmission, gastrointestinal motility, hemostasis, and cardiovascular integrity. Multiple receptor families (receptors, serotonin) explain the broad physiological actions and distribution of this biochemical mediator. [NIH]

Serous: Having to do with serum, the clear liquid part of blood. [NIH]

Serum: The clear liquid part of the blood that remains after blood cells and clotting proteins have been removed. [NIH]

Shivering: Involuntary contraction or twitching of the muscles. It is a physiologic method of

heat production in man and other mammals. [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]

Sigmoidoscope: A thin, lighted tube used to view the inside of the colon. [NIH]

Signs and Symptoms: Clinical manifestations that can be either objective when observed by a physician, or subjective when perceived by the patient. [NIH]

Sinusitis: An inflammatory process of the mucous membranes of the paranasal sinuses that occurs in three stages: acute, subacute, and chronic. Sinusitis results from any condition causing ostial obstruction or from pathophysiologic changes in the mucociliary transport mechanism. [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]

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]

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]

Solitary Nucleus: Gray matter located in the dorsomedial part of the medulla oblongata associated with the solitary tract. The solitary nucleus receives inputs from most organ systems including the terminations of the facial, glossopharyngeal, and vagus nerves. It is a major coordinator of autonomic nervous system regulation of cardiovascular, respiratory, gustatory, gastrointestinal, and chemoreceptive aspects of homeostasis. The solitary nucleus is also notable for the large number of neurotransmitters which are found therein. [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]

Soma: The body as distinct from the mind; all the body tissue except the germ cells; all the axial body. [NIH]

Sorbitol: A polyhydric alcohol with about half the sweetness of sucrose. Sorbitol occurs naturally and is also produced synthetically from glucose. It was formerly used as a diuretic and may still be used as a laxative and in irrigating solutions for some surgical procedures. It is also used in many manufacturing processes, as a pharmaceutical aid, and in several research applications. [NIH]

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]

Spastic: 1. Of the nature of or characterized by spasms. 2. Hypertonic, so that the muscles are stiff and the movements awkward. 3. A person exhibiting spasticity, such as occurs in spastic paralysis or in cerebral palsy. [EU]

Spatial disorientation: Loss of orientation in space where person does not know which way is up. [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]

Specificity: Degree of selectivity shown by an antibody with respect to the number and types of antigens with which the antibody combines, as well as with respect to the rates and the extents of these reactions. [NIH]

Sphincter: A ringlike band of muscle fibres that constricts a passage or closes a natural orifice; called also musculus sphincter. [EU]

Spike: The activation of synapses causes changes in the permeability of the dendritic membrane leading to changes in the membrane potential. This difference of the potential travels along the axon of the neuron and is called spike. [NIH]

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]

Stabilization: The creation of a stable state. [EU]

Stabilizer: A device for maintaining constant X-ray tube voltage or current. [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]

Stapedius: The stapedius muscle arises from the wall of the middle ear and is inserted into the neck of the stapes. Its action is to pull the head of the stapes backward. [NIH]

Stapes: One of the three ossicles of the middle ear. It transmits sound vibrations from the incus to the internal ear. [NIH]

Status Epilepticus: Repeated and prolonged epileptic seizures without recovery of consciousness between attacks. [NIH]

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]

Stem Cells: Relatively undifferentiated cells of the same lineage (family type) that retain the ability to divide and cycle throughout postnatal life to provide cells that can become specialized and take the place of those that die or are lost. [NIH]

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]

Sterilization: The destroying of all forms of life, especially microorganisms, by heat, chemical, or other means. [NIH]

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]

Strabismus: Deviation of the eye which the patient cannot overcome. The visual axes assume a position relative to each other different from that required by the physiological conditions. The various forms of strabismus are spoken of as tropias, their direction being indicated by the appropriate prefix, as cyclo tropia, esotropia, exotropia, hypertropia, and hypotropia. Called also cast, heterotropia, manifest deviation, and squint. [EU]

Stress: Forcibly exerted influence; pressure. Any condition or situation that causes strain or tension. Stress may be either physical or psychologic, or both. [NIH]

Stria: 1. A streak, or line. 2. A narrow bandlike structure; a general term for such longitudinal collections of nerve fibres in the brain. [EU]

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]

Strychnine: An alkaloid found in the seeds of nux vomica. It is a competitive antagonist at glycine receptors and thus a convulsant. It has been used as an analeptic, in the treatment of nonketotic hyperglycinemia and sleep apnea, and as a rat poison. [NIH]

Stupor: Partial or nearly complete unconsciousness, manifested by the subject's responding only to vigorous stimulation. Also, in psychiatry, a disorder marked by reduced responsiveness. [EU]

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]

Subiculum: A region of the hippocampus that projects to other areas of the brain. [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]

Supplementation: Adding nutrients to the diet. [NIH]

Suppression: A conscious exclusion of disapproved desire contrary with repression, in which the process of exclusion is not conscious. [NIH]

Suppressive: Tending to suppress : effecting suppression; specifically : serving to suppress activity, function, symptoms. [EU]

Supraspinal: Above the spinal column or any spine. [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]

Sympathomimetic: 1. Mimicking the effects of impulses conveyed by adrenergic postganglionic fibres of the sympathetic nervous system. 2. An agent that produces effects similar to those of impulses conveyed by adrenergic postganglionic fibres of the sympathetic nervous system. Called also adrenergic. [EU]

Symphysis: A secondary cartilaginous joint. [NIH]

Synapse: The region where the processes of two neurons come into close contiguity, and the nervous impulse passes from one to the other; the fibers of the two are intermeshed, but, according to the general view, there is no direct contiguity. [NIH]

Synaptic: Pertaining to or affecting a synapse (= site of functional apposition between neurons, at which an impulse is transmitted from one neuron to another by electrical or chemical means); pertaining to synapsis (= pairing off in point-for-point association of homologous chromosomes from the male and female pronuclei during the early prophase of meiosis). [EU]

Synaptic Transmission: The communication from a neuron to a target (neuron, muscle, or secretory cell) across a synapse. In chemical synaptic transmission, the presynaptic neuron releases a neurotransmitter that diffuses across the synaptic cleft and binds to specific synaptic receptors. These activated receptors modulate ion channels and/or second-messenger systems to influence the postsynaptic cell. Electrical transmission is less common in the nervous system, and, as in other tissues, is mediated by gap junctions. [NIH]

Synaptosomes: Pinched-off nerve endings and their contents of vesicles and cytoplasm together with the attached subsynaptic area of the membrane of the post-synaptic cell. They are largely artificial structures produced by fractionation after selective centrifugation of nervous tissue homogenates. [NIH]

Synchrony: The normal physiologic sequencing of atrial and ventricular activation and contraction. [NIH]

Synergistic: Acting together; enhancing the effect of another force or agent. [EU]

Systemic: Affecting the entire body. [NIH]

Systolic: Indicating the maximum arterial pressure during contraction of the left ventricle of the heart. [EU]

Tachycardia: Excessive rapidity in the action of the heart, usually with a heart rate above 100 beats per minute. [NIH]

Tachypnea: Rapid breathing. [NIH]

Telencephalon: Paired anteriolateral evaginations of the prosencephalon plus the lamina terminalis. The cerebral hemispheres are derived from it. Many authors consider cerebrum a synonymous term to telencephalon, though a minority include diencephalon as part of the cerebrum (Anthoney, 1994). [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]

Temporal Lobe: Lower lateral part of the cerebral hemisphere. [NIH]

Tendon: A discrete band of connective tissue mainly composed of parallel bundles of collagenous fibers by which muscles are attached, or two muscles bellies joined. [NIH]

Terminalis: A groove on the lateral surface of the right atrium. [NIH]

Tetrodotoxin: Octahydro-12-(hydroxymethyl)-2-imino-5,9:7,10a-dimethano- 10aH-(1,3)dioxocino(6,5-a)pyrimidine-4,7,10,11,12-pentol. An aminoperhydroquinazoline poison found mainly in the liver and ovaries of fishes in the order Tetradontiformes (pufferfish, globefish, toadfish), which are eaten. The toxin causes paresthesia and paralysis through interference with neuromuscular conduction. [NIH]

Therapeutics: The branch of medicine which is concerned with the treatment of diseases, palliative or curative. [NIH]

Thermoregulation: Heat regulation. [EU]

Thoracic: Having to do with the chest. [NIH]

Thoracoscopy: Endoscopic examination, therapy or surgery of the pleural cavity. [NIH]

Thoracotomy: Surgical incision into the chest wall. [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]

Thrombin: An enzyme formed from prothrombin that converts fibrinogen to fibrin. (Dorland, 27th ed) EC 3.4.21.5. [NIH]

Thrombocytopenia: A decrease in the number of blood platelets. [NIH]

Thrombomodulin: A cell surface glycoprotein of endothelial cells that binds thrombin and serves as a cofactor in the activation of protein C and its regulation of blood coagulation. [NIH]

Thrombosis: The formation or presence of a blood clot inside a blood vessel. [NIH]

Thrombus: An aggregation of blood factors, primarily platelets and fibrin with entrapment of cellular elements, frequently causing vascular obstruction at the point of its formation. Some authorities thus differentiate thrombus formation from simple coagulation or clot formation. [EU]

Thyroid: A gland located near the windpipe (trachea) that produces thyroid hormone, which helps regulate growth and metabolism. [NIH]

Thyrotropin: A peptide hormone secreted by the anterior pituitary. It promotes the growth of the thyroid gland and stimulates the synthesis of thyroid hormones and the release of

thyroxine by the thyroid gland. [NIH]

Thyroxine: An amino acid of the thyroid gland which exerts a stimulating effect on thyroid metabolism. [NIH]

Tinnitus: Sounds that are perceived in the absence of any external noise source which may take the form of buzzing, ringing, clicking, pulsations, and other noises. Objective tinnitus refers to noises generated from within the ear or adjacent structures that can be heard by other individuals. The term subjective tinnitus is used when the sound is audible only to the affected individual. Tinnitus may occur as a manifestation of cochlear diseases; vestibulocochlear nerve diseases; intracranial hypertension; craniocerebral trauma; and other conditions. [NIH]

Tissue: A group or layer of cells that are alike in type and work together to perform a specific function. [NIH]

Tissue Distribution: Accumulation of a drug or chemical substance in various organs (including those not relevant to its pharmacologic or therapeutic action). This distribution depends on the blood flow or perfusion rate of the organ, the ability of the drug to penetrate organ membranes, tissue specificity, protein binding. The distribution is usually expressed as tissue to plasma ratios. [NIH]

Tolerance: 1. The ability to endure unusually large doses of a drug or toxin. 2. Acquired drug tolerance; a decreasing response to repeated constant doses of a drug or the need for increasing doses to maintain a constant response. [EU]

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]

Tonic: 1. Producing and restoring the normal tone. 2. Characterized by continuous tension. 3. A term formerly used for a class of medicinal preparations believed to have the power of restoring normal tone to tissue. [EU]

Tonsils: Small masses of lymphoid tissue on either side of the throat. [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]

Torsion: A twisting or rotation of a bodily part or member on its axis. [NIH]

Tourniquet: A device, band or elastic tube applied temporarily to press upon an artery to stop bleeding; a device to compress a blood vessel in order to stop bleeding. [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]

Toxin: A poison; frequently used to refer specifically to a protein produced by some higher

plants, certain animals, and pathogenic bacteria, which is highly toxic for other living organisms. Such substances are differentiated from the simple chemical poisons and the vegetable alkaloids by their high molecular weight and antigenicity. [EU]

Tracer: A substance (such as a radioisotope) used in imaging procedures. [NIH]

Trachea: The cartilaginous and membranous tube descending from the larynx and branching into the right and left main bronchi. [NIH]

Traction: The act of pulling. [NIH]

Tractus: A part of some structure, usually that part along which something passes. [NIH]

Transduction: The transfer of genes from one cell to another by means of a viral (in the case of bacteria, a bacteriophage) vector or a vector which is similar to a virus particle (pseudovirion). [NIH]

Transfection: The uptake of naked or purified DNA into cells, usually eukaryotic. It is analogous to bacterial transformation. [NIH]

Translation: The process whereby the genetic information present in the linear sequence of ribonucleotides in mRNA is converted into a corresponding sequence of amino acids in a protein. It occurs on the ribosome and is unidirectional. [NIH]

Transmitter: A chemical substance which effects the passage of nerve impulses from one cell to the other at the synapse. [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]

Trauma: Any injury, wound, or shock, must frequently physical or structural shock, producing a disturbance. [NIH]

Trimethaphan: A nicotinic antagonist that has been used as a ganglionic blocker in hypertension, as an adjunct to anesthesia, and to induce hypotension during surgery. [NIH]

Trophic: Of or pertaining to nutrition. [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]

Tubal ligation: An operation to tie the fallopian tubes closed. This procedure prevents pregnancy by blocking the passage of eggs from the ovaries to the uterus. [NIH]

Tuberculosis: Any of the infectious diseases of man and other animals caused by species of Mycobacterium. [NIH]

Tunica: A rather vague term to denote the lining coat of hollow organs, tubes, or cavities. [NIH]

Tunica Intima: The innermost coat of blood vessels, consisting of a thin lining of endothelial cells longitudinally oriented and continuous with the endothelium of capillaries on the one hand and the endocardium of the heart on the other. [NIH]

Tyrosine: A non-essential amino acid. In animals it is synthesized from phenylalanine. It is also the precursor of epinephrine, thyroid hormones, and melanin. [NIH]

Tyrothricin: A polypeptide antibiotic mixture obtained from Bacillus brevis. It consists of a mixture of three tyrocidines (60%) and several gramicidins (20%) and is very toxic to blood, liver, kidneys, meninges, and the olfactory apparatus. It is used topically. [NIH]

Ulceration: 1. The formation or development of an ulcer. 2. An ulcer. [EU]

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]

Umbilical Arteries: Either of a pair of arteries originating from the internal iliac artery and passing through the umbilical cord to carry blood from the fetus to the placenta. [NIH]

Umbilical Cord: The flexible structure, giving passage to the umbilical arteries and vein, which connects the embryo or fetus to the placenta. [NIH]

Unconscious: Experience which was once conscious, but was subsequently rejected, as the "personal unconscious". [NIH]

Uremia: The illness associated with the buildup of urea in the blood because the kidneys are not working effectively. Symptoms include nausea, vomiting, loss of appetite, weakness, and mental confusion. [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]

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]

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]

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]

Urticaria: A vascular reaction of the skin characterized by erythema and wheal formation due to localized increase of vascular permeability. The causative mechanism may be allergy, infection, or stress. [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]

Vacuoles: Any spaces or cavities within a cell. They may function in digestion, storage, secretion, or excretion. [NIH]

Vagal: Pertaining to the vagus nerve. [EU]

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]

Vagus Nerve: The 10th cranial nerve. The vagus is a mixed nerve which contains somatic afferents (from skin in back of the ear and the external auditory meatus), visceral afferents (from the pharynx, larynx, thorax, and abdomen), parasympathetic efferents (to the thorax and abdomen), and efferents to striated muscle (of the larynx and pharynx). [NIH]

Vascular: Pertaining to blood vessels or indicative of a copious blood supply. [EU]

Vascular Resistance: An expression of the resistance offered by the systemic arterioles, and to a lesser extent by the capillaries, to the flow of blood. [NIH]

Vasoconstriction: Narrowing of the blood vessels without anatomic change, for which constriction, pathologic is used. [NIH]

Vasodilator: An agent that widens blood vessels. [NIH]

Vasomotor: 1. Affecting the calibre of a vessel, especially of a blood vessel. 2. Any element or agent that effects the calibre of a blood vessel. [EU]

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]

Venae Cavae: The inferior and superior venae cavae. [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]

Ventricular Function: The hemodynamic and electrophysiological action of the ventricles. [NIH]

Venules: The minute vessels that collect blood from the capillary plexuses and join together to form veins. [NIH]

Vertigo: An illusion of movement; a sensation as if the external world were revolving around the patient (objective vertigo) or as if he himself were revolving in space (subjective vertigo). The term is sometimes erroneously used to mean any form of dizziness. [EU]

Vestibule: A small, oval, bony chamber of the labyrinth. The vestibule contains the utricle and saccule, organs which are part of the balancing apparatus of the ear. [NIH]

Veterinary Medicine: The medical science concerned with the prevention, diagnosis, and treatment of diseases in animals. [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]

Visceral: , from viscus a viscus) pertaining to a viscus. [EU]

Visceral Afferents: The sensory fibers innervating the viscera. [NIH]

Visual Cortex: Area of the occipital lobe concerned with vision. [NIH]

Vitamin A: A substance used in cancer prevention; it belongs to the family of drugs called retinoids. [NIH]

Vitreoretinal: A rare familial condition characterized by a clear vitreous, except for preretinal filaments and veils which have been loosened from the retina, a dense hyaloid

membrane which is perforated and detached, and masses of peripheral retinal pigmentation inters. [NIH]

Vitreous: Glasslike or hyaline; often used alone to designate the vitreous body of the eye (corpus vitreum). [EU]

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]

Volition: Voluntary activity without external compulsion. [NIH]

Voltage-gated: It is opened by the altered charge distribution across the cell membrane. [NIH]

Vomica: The profuse and sudden expectoration of pus and putrescent matter. An abnormal cavity in an organ especially in the lung, caused by suppuration and the breaking down of tissue. [NIH]

Wakefulness: A state in which there is an enhanced potential for sensitivity and an efficient responsiveness to external stimuli. [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]

Withdrawal: 1. A pathological retreat from interpersonal contact and social involvement, as may occur in schizophrenia, depression, or schizoid avoidant and schizotypal personality disorders. 2. (DSM III-R) A substance-specific organic brain syndrome that follows the cessation of use or reduction in intake of a psychoactive substance that had been regularly used to induce a state of intoxication. [EU]

Womb: A hollow, thick-walled, muscular organ in which the impregnated ovum is developed into a child. [NIH]

Wound Healing: Restoration of integrity to traumatized tissue. [NIH]

Xenograft: The cells of one species transplanted to another species. [NIH]

Xerostomia: Decreased salivary flow. [NIH]

X-ray: High-energy radiation used in low doses to diagnose diseases and in high doses to treat cancer. [NIH]

Zymogen: Inactive form of an enzyme which can then be converted to the active form, usually by excision of a polypeptide, e. g. trypsinogen is the zymogen of trypsin. [NIH]

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