Publisher's Note

This second edition of *Salem Health: Cancer* includes 911 essays in 4 volumes on all aspects of cancer for all non-specialist interest groups—from those who have been diagnosed, to caregivers, family members, students, and readers with a general interest in health. The essays in this 4-volume set address diseases, conditions, symptoms, cancer-related syndromes, chemotherapy and other drugs, cancer centers, genetics, the biology of cancer, medical specialties, tests, procedures, complementary and alternative therapies, lifestyles, healthy and preventive strategies, and the many social and personal issues surrounding cancer, from cancer's impact on minority populations, finances, insurance, relationships, and emotional coping.

This comprehensive reference publication builds on the strength of the first, 2009 edition, with hundreds of updates and new topics. It will be of interest not only to public library patrons but also to premedical students and those building collections for the patient population.

Essays vary in length from 400 to 2,000 words, ranging from one to five pages. The material in this edition is arranged in ten categories:

- Cancer Biology
- Carcinogens & Suspected Carcinogens
- Chemotherapy & Other Drugs
- Complementary & Alternative Therapies
- Diseases, Symptoms & Conditions
- Lifestyle & Prevention
- Medical Specialties
- Organizations
- Procedures
- Social & Personal Issues

Each essay is written in one of six standard formats, all of which present a capsule definition of the topic, and all but the briefest essays list sources of further information from both print and online resources.

Specific formats are designed for readers for whom the information is compelling or urgent, fostering quick identification and retrieval of essential facts. For example, essays on diseases and conditions list "also known as" names and describe related conditions, risk factors, the disease process, incidence, symptoms, screening and diagnosis, treatment, and prognosis. Essays on carcinogens list "also known as" names for the chemical or substance, date it was identified by the government's report on carcinogens (RoC), cancers related to the carcinogen, exposure routes, principal places where the substance is found, populations at risk, symptoms to watch for, and a brief history of how we came to identify the substance as a carcinogen.

Essays on drugs list the Anatomical Therapeutic Chemical (ATC) classification system code if one exists; the types of cancer, or other condition for which the drug is indicated; the delivery routes (such as pill form or injection); the way the drug works; and side effects. Essays on procedures discuss why the procedure is performed, how to prepare, aftercare, risks, and the range of results. Essays on medical specialties identify not only the names of the specializations but also related subspecialists, the cancers they treat, how they are trained and certified, and the range of services and procedures they perform. Finally, a group of topics addressing social and personal issues, lifestyle choices, nutritional supplements, and complementary or alternative therapies are similarly formatted into subsections that call out key areas of interest for readers.

Special features of the set include tables throughout identifying the most important chemotherapeutic and other drugs and the symptoms and conditions they address, population statistics, survival rates, and other core information. Essays include "See also" cross-references to other essays in the set that are relevant to the topic. A fully cross-referenced "Complete List of Contents" at the beginning of every volume also assists readers in locating related topics of interest. Photographs identify typical instances of lesions, tumors, procedures, and anatomical cross-sections to locate areas of the body affected.

In addition, the following appendixes at the end of volume 4 provide information on the following:

- Drugs by Trade Name
- Associations and Agencies
- Cancer Centers and Hospitals
- Cancer Support Groups
- Carcinogens
- Glossary
- Bibliography

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▶ Achlorhydria

Category: Diseases, Symptoms, and Conditions
Also known as: Profound hypochlorhydria

Related conditions: *Helicobacter pylori* infection, chronic atrophic gastritis, gastric adenocarcinoma, gastric carcinoid

Definition: Achlorhydria is the absence of acid secretion by the stomach caused by either atrophy of the acid-producing parietal cells or direct inactivation of the proton-pumping enzyme in parietal cells responsible for acid secretion.

Risk factors: The risk of achlorhydria increases with age and with long-term, untreated infection with the bacteria *Helicobacter pylori*. Patients with autoimmune conditions are also at increased risk. The condition has no predilection for sex or race.

Etiology and the disease process: Chronic inflammation of the stomach in response to untreated *H. pylori* infection lasting many years leads to the atrophy of stomach cells and a corresponding loss of acid-secreting capacity. Some patients may be more predisposed to achlorhydria in the presence of *H. pylori* because they respond to the infection by producing a specific inflammatory agent that is also a potent proton pump inhibitor. Autoimmune disease can also produce achlorhydria if the body makes antibodies that inactivate parietal cell proteins.

Achlorhydria is associated with the development of malignant cancer of the stomach. Over 60 percent of patients with gastric cancer have achlorhydria compared with 20 percent of healthy individuals. Acid normally acts as a disinfectant to prevent overgrowth of harmful bacteria; achlorhydria contributes to cancer development because the bacteria synthesize carcinogenic chemicals from nitrates present in food.

Achlorhydria is also associated with the formation of gastric carcinoid tumors. If acid output by the stomach is disrupted, the body overproduces the hormone gastrin, which stimulates overgrowth of enterochromaffin-like (ECL) cells in the stomach. This overgrowth may progress to carcinoid formation.

Incidence: Gastric carcinoids constitute 0.5 percent of gastric cancers. They are typically associated with autoimmune conditions and have a low risk of malignancy.

Symptoms: Achlorhydria itself causes no symptoms; rather, symptoms are secondary to the absence of acid. Lack of acid can cause vitamin B_{12} or calcium deficiency. Diarrhea may occur because of the overgrowth of bacteria.

Screening and diagnosis: Diagnosis is made by measuring the acidity of a stomach fluid sample after an intravenous injection of pentagastrin, which stimulates acid secretion in normal patients. Acidity will not increase in the stomach fluid of achlorhydric patients.

Treatment and therapy: Treatment focuses on addressing the underlying condition causing achlorhydria. Because vitamin B_{12} and calcium absorption are decreased, supplementation or injections of B_{12} may be necessary.

Prognosis, prevention, and outcomes: Restoration of normal acid production depends on prognosis and treatment for the underlying condition responsible for achlorhydria.

Pamela S. Cooper, Ph.D.

See also: Adenocarcinomas; Bacteria as causes of cancer; Gastric polyps; Gastrointestinal cancers; *Helicobacter pylori*; Hereditary diffuse gastric cancer; Premalignancies; Stomach cancers

▶ Acoustic neuromas

Category: Diseases, Symptoms, and Conditions
Also known as: Vestibular schwannomas

Related conditions: Neurofibromatosis type 2

Definition: Acoustic neuromas are benign (or nonmalignant) tumors that originate from Schwann cells surrounding the vestibular nerve (eighth cranial nerve) in the internal auditory canal. The term "neuroma" is somewhat misleading, as the tumors are not neuromas, nor do they arise from the acoustic or cochlear nerve. Acoustic neuroma typically occurs as unilateral (one-sided) sporadic tumors in 95 percent of all cases, but in rare cases tumors can be bilateral (two-sided) and are associated with an inherited syndrome called neurofibromatosis type 2 (NF2). Approximately 2 to 4 percent of patients diagnosed with acoustic neuromas have NF2 type, a prevalence of 1 in 50,000 in the general population.

Risk factors: Although high-dose ionizing radiation is a known risk factor of acoustic neuroma, environmental factors including noise exposure, radio frequency electromagnetic fields, and allergens have been reported as

potential sources that may contribute to the formation of acoustic neuroma. One publication has reported the findings from an international multicenter case-control study that investigated the effects of these environmental factors in ninety-seven patients with acoustic neuroma and in age-matched control subjects. The study reported that increased risks were found for exposure to persistent noise and hay fever, but not for ionizing radiation or for regular mobile phone use.

Etiology and the disease process: Currently, the etiology of acoustic neuroma is not known. However, as an anomaly, it is rarely inherited. Nonetheless, neurofibromatosis type 2 should be suspected in young patients and those with family history. Neurofibromatosis is an autosomal dominant disease; thus patients who inherit a defective copy of the *NF2* tumor-suppressor gene have a 95 percent chance of developing bilateral tumors; however, half of the cases have no family history of NF2, which could indicate mutations in the germline that were not inherited.

Incidence: Sporadic acoustic tumors, the most common form of manifestation, occur in approximately 10 per 1 million persons per year—in other words the chance of an average person developing an acoustic neuroma in his or her lifetime is about 1 in 100,000. Neurofibromatosis is rarer, with only several thousand affected persons in the entire United States, corresponding to 1 in 40,000 individuals. However, a study has highlighted that the true incidence of acoustic neuroma may be higher than what has been envisaged, as 7 unsuspected schwannomas per 10,000 brain magnetic resonance imaging studies were identified, an equivalent of 0.07 percent. Acoustic neuromas, or schwannomas, occur largely in adults, typically in the fourth and fifth decades, with a mean presentation age of fifty years. They are uncommon in children; only thirty-nine cases had been reported as of 2007.

Symptoms: Acoustic neuromas are histologically benign; however, if large, they can cause hydrocephalus, brainstem compression, herniation, and eventually death. Hearing loss is the most prevalent symptom, occurring in more than 95 percent of patients, and the duration of hearing loss may extend to three or four years before clinical diagnosis is made—a majority of the patients experience one-sided, slowly progressing hearing impairment associated with high-frequency sounds. Alternative complaints or accompanying symptoms include tinnitus, dizziness, vertigo, and a sensation of fullness in the ear. With the progression of the tumor, patients may experience facial numbness, headaches, loss of coordination, and difficulty in swallowing. Vertigo is prevalent with smaller tumors, while unsteadiness, headache, and facial sensory disturbance are associated with large tumors.

Screening and diagnosis: Acoustic neuroma can be diagnosed by a number of screening methods. These include conventional audiometry, auditory brainstem response (ABR), and gadolinium-enhanced magnetic resonance imaging (MRI). Among these, gadolinium-enhanced MRI is the optimal diagnostic test. Typically, on MRI scans acoustic neuromas appear as dense and uniformly enhanced. Acoustic neuromas are staged according to their location and size. Small tumors are less than 1.5 centimeters (cm), moderate tumors between 1.5 and 3 cm, and large tumors greater than 3 cm in size. Based on the location, they are staged as intracanalicular (located in the internal auditory canal), cisternal (extending outside the internal auditory canal), compressive (having progressed to touch the cerebellum or brainstem), and hydrocephalus (having progressed to obstruct the drainage of cerebrospinal fluid in the fourth ventricle).

Treatment and therapy: The treatment options for acoustic neuroma include observation, microsurgery, stereotactic radiosurgery, and radiotherapy. Patients with advanced age or those deemed unfit for surgical intervention with small tumors at diagnosis are observed; treatment is withheld while tumor progression is monitored in serial imaging studies. However, treatment by observation has its own risks, as there is a greater risk of losing useful hearing.

If microsurgery is the choice for treatment, many factors need to be assessed when evaluating its primary and secondary outcomes. First, there are three standard surgical approaches, each with its own advantages and disadvantages: suboccipital, middle fossa, and translabyrinthine. In the suboccipital approach, the tumor is reached through the skull behind the ear. As the procedure involves the retraction of the cerebellum, the approach is intrinsically dangerous and prone to complications. Although the middle fossa method can preserve hearing in theory, this approach is also dangerous as it too requires the retraction of part of the brain. In the translabyrinthine approach, the tumor is accessed through the inner ear, and thus hearing loss is expected and inevitable. However, this method is unsuitable for large tumors. Second, microsurgery is technically challenging; therefore the rate of success is lower with a less experienced surgeon. Third, large tumors (greater than 3 cm) are difficult to resect without concomitant morbidity, such as facial palsy. Some of the

complications that may arise from microsurgery are cerebrospinal fluid leak (12 percent of all cases), meningitis (5 percent), intracranial hemorrhage (2 percent), facial weakness with complete paralysis (31 percent), and delayed or partial paresis (50 percent).

Radiosurgery refers to the administration of a single fraction of radiotherapy using stereotactic techniques to localize the tumor and align the fields. Radiosurgery may be performed either with a Gamma Knife or a linear accelerator (linac) based system. Gamma Knife is an emerging treatment option for those who are at high risk during microsurgery. High-dose Gamma Knife procedures are less favored due to the possibility of radiation complications; thus low-dose radiation (for example, 13 gray, or Gy) therapies are advised because of safety and lower risk of facial weakness.

Radiotherapy refers to the administration of fractionated radiotherapy and includes stereotactic radiotherapy (radiation with other than gamma rays) and conventional radiotherapy techniques.

Complications of Gamma Knife radiosurgery include injury to facial and trigeminal nerves. However, with the current dosing regimen of 12.5 Gy, the risk of trigeminal or facial nerve injury has decreased significantly. Although the potential for complications is higher with microsurgical procedures than with radiotherapy or radiosurgery, an important issue that should be considered with irradiation therapies is the low risk of inducing malignancies within the radiation area. Current recommendations are to offer microsurgery and radiosurgery options for patients with definite treatment indications. While microsurgery is the treatment of choice for large tumors because of the low risk of radiation-induced malignancies, microsurgery is also considered for younger patients.

Prognosis, prevention, and outcomes: The microsurgical techniques for acoustic neuroma have improved the anatomical and functional preservation of the facial and cochlear nerves. These techniques, accompanied by continuous electrophysiological monitoring, have resulted in marked changes in the primary goals of management. In the past, the primary goal of acoustic neuroma management was to preserve the patient's life, whereas the objective today is to preserve the neurological function. Long-term follow-ups show negligible recurrence rates, suggesting that the preservation of neurological function does not restrict the tumor removal. Despite these advances, loss of nerve function and even deafness may occur postoperatively in some cases.

Bagirathy Ravishankar, Ph.D.

For Further Information

Battaglia, A., et al. "Comparisons of Growth Patterns of Acoustic Neuromas with and Without Radiosurgery." *Otology and Neurotology* 27 (2006): 705-712.

Mendenhall, W., et al. "Management of Acoustic Schwannoma." *American Journal of Otolaryngology* 25 (2004): 38-47.

Neff, B., et al. "The Molecular Biology of Vestibular Schwannomas: Dissecting the Pathogenic Process at the Molecular Level." *Otology and Neurotology* 27 (2006): 197-208.

Schlehofer, B., et al. "Environmental Risk Factors for Sporadic Acoustic Neuroma." *European Journal of Cancer* 43 (2007): 1741-1747.

Yohay, K. "Neurofibromatosis Types 1 and 2." *The Neurologist* 12 (2006): 86-93.

Other Resources

Acoustic Neuroma Association
http://anausa.org

American Cancer Society
http://www.cancer.org

See also: Ependymomas; Neurofibromatosis type 1 (NF1); Schwannoma tumors; Stereotactic Radiosurgery (SRS)

▶ Acute Lymphocytic Leukemia (ALL)

Category: Diseases, Symptoms, and Conditions
Also known as: Acute childhood leukemia, acute lymphoblastic leukemia, acute lymphoid leukemia

Related conditions: Acute myeloid leukemia, chronic lymphocytic leukemia, chronic myeloid leukemia

Definition: Acute lymphocytic leukemia (ALL) is a cancer of the white blood cells. A lymphocyte is a type of white blood cell made in the bone marrow that helps fight infection. In this fast-growing type of cancer, for unknown reasons, the bone marrow begins to make lymphocytes that develop abnormally. "Acute" means that the disease affects lymphocytes before they are fully formed and that it progresses rapidly if not treated.

Risk factors: Few risk factors exist for ALL. Receiving high doses of radiation, usually as treatment for another

type of cancer, is one risk factor. Exposure to benzene may also be a factor. Risk increases in people with certain other diseases, such as Down syndrome, Fanconi anemia, Bloom syndrome, and some other genetic diseases. In about 25 percent of ALL cases, the patient has a chromosome mutation in which parts of chromosome 9 and chromosome 22 have changed places. Having a sibling, especially a twin, with ALL also increases the risk for this disease. Researchers are exploring lifestyle or environmental relationships, but it appears that many factors, including a combination of genetic and environmental factors, may be involved in developing ALL.

Etiology and the disease process: Through a genetic process that is not completely understood, cells in bone marrow begin to form abnormally. ALL can begin in two different types of lymphocytes, either B cells or T cells. As the abnormal lymphocytes quickly grow, they crowd out the red and white blood cells and platelets that the body needs and that are also created in the bone marrow. The symptoms of ALL come from the crowding out of these normal, healthy cells. These cells may then spread into the lining of the spine and brain.

Incidence: About 5,200 people in the United States were diagnosed with ALL in 2007. It is slightly more common in men than in women and slightly more common in white children than in children of other races. ALL occurs in people of all ages but has a peak incidence in children between the ages of two and five. After age five, risk decreases, then increases again in people over age fifty. It is the most common type of leukemia in children under the age of fifteen, accounting for about 80 percent of childhood leukemias. It occurs more often in developed countries and in people with higher socioeconomic status.

Symptoms: Symptoms of ALL include anemia, body aches, bone pain, bruises without any injury, enlarged lymph nodes, an enlarged spleen, excessive bleeding from minor injuries, fever with no illness or lasting low-grade fever, frequent infections, headaches, joint pain, nosebleeds, paleness, shortness of breath during activity, tiredness, vomiting, and unexplained weight loss.

Screening and diagnosis: There is no screening test for ALL. Blood and bone marrow tests are necessary to diagnose ALL. These tests look for abnormal lymphocyte cells. A bone marrow aspirate test (using a long needle to take marrow out of the bone) and a bone marrow biopsy (surgical removal of some bone marrow) are two possible tests. The bone marrow aspirate test looks for abnormal cells in the bone marrow and can also be used for other types of analysis. A bone marrow biopsy can show how much disease is already in the bone marrow. The results of these tests help determine which type of drug therapy to use and how long treatment should last.

If a patient has been diagnosed with ALL, a lumbar puncture may be performed to see if the abnormal cells have moved into the fluid surrounding the spine and brain. Chest X rays, ultrasounds, or additional blood tests may also be used to determine the spread of the disease.

Depending on where the cancer started and the results of testing, ALL may be categorized into early pre-B-cell ALL, common ALL, pre-B-cell ALL, mature B-cell ALL, pre-T-cell ALL, or mature T-cell ALL. The type of ALL helps determine which therapy to use and how long treatment should last. About 85 percent of ALL cases begin in B cells, and these cases are generally classified as lower risk.

ALL may also be classified or staged using the French-American-British (FAB) classification system. In this older system, ALL is classified according to the type of abnormal cells as follows:

- ALL-11: small, uniform abnormal cells
- ALL-12: large, varied abnormal cells
- ALL-13: large, varied, bubble-like cells

Age at Death for Acute Lymphocytic Leukemia, 2001-2005

Age Group	*Deaths (%)*
Under 20	21.4
20-34	15.9
35-44	9.7
45-54	11.2
55-64	11.7
65-74	12.7
75-84	11.5
85 and older	5.8

Source: Data from National Cancer Institute, Surveillance Epidemiology and End Results, Cancer Stat Fact Sheets, 2008

Note: The median age of death from 2001 to 2005 was forty-seven, with an age-adjusted death rate of 0.5 per 100,000 men and women.

Treatment and therapy: Patients diagnosed with ALL should start treatment immediately. The course and length of treatment chosen depend on the results of the patient's bone marrow tests, the patient's age, the number of ALL cells in the blood, whether certain chromosomal changes have already happened, whether ALL cells began in the B cells or the T cells, and whether ALL has spread to the brain covering or spinal cord. During therapy, bone marrow tests may be done again to make sure the treatment is destroying the cancer cells.

The first part of treatment for ALL is called induction therapy. This therapy helps kill ALL cells and get a patient's blood counts back to normal (remission). Some of the drugs used in induction therapy are given by mouth. Others are given in a vein, usually through the patient's chest. Most often, this chemotherapy for ALL involves combining drugs to improve the effects of the drugs. Often, ALL spreads into the lining of the spinal cord and the brain. To kill these ALL cells, drugs are injected directly into the spinal fluid. Radiation therapy may be used on the spine and brain either with or without the injected drugs.

Post-induction therapy, the second part of treatment for ALL, begins when a patient has reached remission. This type of therapy is needed because usually some ALL cells that cannot be detected by tests remain in the body. Post-induction therapy usually happens in two- or three-year cycles. The drugs used in post-induction therapy are usually different from those used in induction therapy, and the type of drugs used depends on how the patient responded to induction therapy and whether the patient has certain chromosome abnormalities. A patient may also need maintenance therapy after post-induction therapy to prevent the cells from regrowing.

T-cell ALL, infant ALL, and adult ALL are all forms of high-risk ALL. These types of ALL are usually treated with higher doses of drugs during both induction and post-induction therapy. Some patients with high-risk types of ALL may respond well to bone marrow or cord blood transplant therapy.

A bone marrow or cord blood transplant may be used when high doses of drugs are given to kill the ALL cells. These high doses of drugs may also kill healthy cells in the bone marrow. This transplant gives a patient healthy cells to replace the killed bone marrow cells. A transplant is a high-risk procedure and will probably not be used unless a patient does not have a good possibility of long-term remission with chemotherapy. High-risk ALL patients are more likely to have a transplant. The timing of a transplant is important; a patient has a better chance of a successful transplant when he or she is in remission at the time of transplant.

Prognosis, prevention, and outcomes: There is no known way to prevent ALL. Most children with ALL can be cured of this disease with proper treatment. The overall survival rate for children after chemotherapy is nearly 80 percent. Children with low-risk ALL have even higher survival rates.

Most adults also improve with treatment; the number of adults who have remissions has increased, and the length of adult remissions has improved. The overall survival rate for adults after chemotherapy is about 40 percent, and adults with low-risk ALL have even higher survival rates.

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For Further Information

Abeloff, M. D., et al. *Clinical Oncology*. 3d ed. Orlando, Fla.: Churchill Livingstone, 2004.

Hoffman, R., et al. *Hematology: Basic Principles and Practice*. 4th ed. Orlando, Fla.: Churchill Livingstone, 2005.

Lichtman, M. A., et al., eds. *William's Hematology*. 7th ed. New York: McGraw-Hill, 2006.

Pui, C-H, ed. *Childhood Leukemias*. 2d ed. New York: Cambridge University Press, 2006.

Other Resources

Association of Cancer Online Resources
http://www.acor.org

CureSearch: National Childhood Cancer Foundation, Children's Oncology Group
http://www.curesearch.org

Leukemia and Lymphoma Society
http://www.leukemia-lymphoma.org

National Cancer Institute
http://www.cancer.gov/cancertopics/treatment/

See also: Acute Myelocytic Leukemia (AML); Aleukemia; Blood cancers; Childhood cancers; Chronic Lymphocytic Leukemia (CLL); Chronic Myeloid Leukemia (CML); Hemolytic anemia; Leukemias; Myelodysplastic syndromes; Myelofibrosis; Myeloproliferative disorders; Topoisomerase inhibitors

2. Anticoagulants

Trade Name	*Generic Name*	*Indicated For*
Athrombin-K	Warfarin	Pulmonary embolism and thromboembolic disorders, treatment and prophylaxis; venous thrombosis, prophylaxis and treatment
Clexane	Enoxaparin	Deep vein thrombosis, prophylaxis; ischemic complications in unstable angina and non-Q wave myocardial infarction, prophylaxis
Co-Rax, Compound-42, Coumadin	Warfarin	Pulmonary embolism and thromboembolic disorders, treatment and prophylaxis; venous thrombosis, prophylaxis and treatment
Eliquis	Apixaban	Stroke prophylaxis with atrial fibrillation; postoperative prophylaxis of deep vein thrombosis and pulmonary embolism and treatment
Fragmin	Dalteparin (Low molecular weight heparin)	Deep vein thrombosis, prophylaxis; ischemic complications in unstable angina and non-Q wave myocardial infarction, prophylaxis
Innohep	Tinzaparin sodium (Low molecular weight heparin)	Treatment of acute symptomatic deep venous thrombosis (DVT) with or without a pulmonary embolism (PE), in conjunction with warfarin
Lovenox	Enoxaparin (Low molecular weight heparin)	Deep vein thrombosis, prophylaxis; ischemic complications in unstable angina and non-Q wave myocardial infarction, prophylaxis
Panwarfarin, Rodex, WARF Compound 42	Warfarin	Pulmonary embolism and thromboembolic disorders, treatment and prophylaxis; venous thrombosis, prophylaxis and treatment
Pradaxa	Dabigatran	Stroke prophylaxis in those with atrial fibrillation
Savaysa	Edoxaban	Deep vein thrombosis; pulmonary embolism
Xarelto	Rivaroxaban	Nonvalvular atrial fibrillation; deep vein thrombosis and pulmonary embolism treatment
Xaparin	Enoxaparin	Deep vein thrombosis, prophylaxis; ischemic complications in unstable angina and non-Q wave myocardial infarction, prophylaxis

Cancer Support Groups

4th Angel Mentoring Program
http://www.4thangel.org/
Support group that pairs cancer patients with cancer patients and cancer survivors and who serve as mentors for the patient during their treatment and convalescence.

Adenoid Cystic Carcinoma Organization International
http://www.accoi.org
Provides information about adenoid cystic carcinoma. Offers support services in several different languages. Web site provides information on treatment options, research, clinical trials, the ACC tumor registry, and financial resources.

American Cancer Society
http://www.cancer.org
Educates the public about cancer, raises funds for cancer research, and runs support groups across the country. Web site provides links to a variety of support groups.

American Hospice Foundation
http://www.americanhospice.org
Professional palliative care organization that aids terminally ill with the process of dying, and also provides physical and emotional support for the patient's families.

Association of Cancer Online Resources
http://www.acor.org
Provides links to more than one hundred mailing lists and support resources.

BC Cancer Agency
http://www.bccancer.bc.ca
Educates people of British Columbia and the Yukon about cancer, including prevention, screening, early detection, and treatment options, as well as alternative therapies. Offers one-on-one support services and support groups.

The Brain Tumor Society
http://www.tbts.org
Provides educational material and support services, including a newsletter called *Heads Up,* a monthly e-newsletter called *Head Lines,* and a comprehensive resource guide called *Color Me Hope*. Its COPE (Connection of Personal Experiences) program provides sharing of mutual experiences via e-mail and telephone conversations.

Breast Cancer Network of Strength
http://www.networkofstrength.org
Provides support services and resources for people affected by breast cancer and offers a twenty-four-hour breast cancer hotline with interpreters in 150 languages.

CANCER101
http://cancer101.org/
Provides professional medical advice, emotion support, and advocacy for cancer patients. It also gives financial and legal advice for patients. CANCER101 partners with healthcare providers to empower patients and help them own their own health care decisions.

Cancer.Net
www.cancer.net
A repository of high-quality, medical information for a wide variety of cancers and brings cancer expertise to patients to help them make informed medical decisions. This site is also linked to several high-ranking oncology journals and provides professional counseling for biopsy interpretation through the College of American Pathologists,

Cancer Hope Network
http://www.cancerhopenetwork.org
Provides free, confidential one-on-one support to those affected by cancer by specially trained cancer survivor volunteers.

Cancer Support Community
http://www.cancersupportcommunity.org
Professionally led, nonprofit network of cancer support affiliates that offer emotional and social support for cancer suffers worldwide. Their Research and Training Institute conducts psychosocial, behavioral and emotional, and survivorships research, and their Cancer Policy Institute participates in cancer advocacy.

CancerCare
http://www.cancercare.org
Provides free counseling and support, online and by telephone, in English and Spanish, by trained oncology social workers. Also provides financial assistance to those in need and affected by cancer.

The Carcinoid Cancer Foundation
http://www.carcinoid.org
Provides information on carcinoid cancer, treatment options, and clinical trials. Web site offers a list of doctors

Carcinogens

The following list of carcinogens is based on the National Toxicology Program's *Report on Carcinogens* (RoC, 11th ed.). Human carcinogens that are both "known" and "reasonably anticipated" are listed here, with a summary of each carcinogen along with its status (K for "known" or RA for "reasonably anticipated") according to the *ROC*. The *ROC* can be fully accessed as a PDF file for more in-depth technical description from the home page of the National Toxicology Program, http://ntp.niehs.nih.gov.

acetaldehyde: RA. Primarily used in the production of a variety of chemicals. Also found in tobacco, ripe fruit, wine, and other alcoholic beverages. Produced by plants as part of their normal life cycle. Main source of human exposure is through the metabolism of alcohol. Other sources include food, beverages, and, to a lesser extent, the air. Studies indicate an increased incidence of squamous cell carcinomas and adenocarcinomas in exposed laboratory animals; inadequate evidence to evaluate the carcinogenicity in humans.

2-acetylaminofluorene: RA. Used as a positive control by toxicologists. Potential human exposure includes inhalation and skin contact. Resulting cancers in laboratory animals include carcinomas of the urinary bladder and the liver and subcutaneous carcinomas on the face; no adequate data are available to evaluate the carcinogenicity in humans.

acrylamide: RA. Used in treating municipal drinking water and wastewater. Also found in home appliances, building materials, automotive parts, cosmetics, soaps, and lotions. Can be absorbed through unbroken skin, mucous membranes, lungs, and the gastrointestinal tract. Resulting cancers in laboratory animals; no adequate data are available to evaluate the carcinogenicity in humans.

acrylonitrile: RA. Used extensively in the manufacture of synthetic fibers, resins, plastics, elastomers, and rubber for consumer goods such as textiles, dinnerware, food containers, toys, luggage, automotive parts, small appliances, and telephones. A variety of cancers have developed in laboratory animals. Studies have indicated an increased risk of lung cancer in textile plant workers exposed to acrylonitrile.

Adriamycin (doxorubicin hydrochloride): RA. An antibiotic used in antimitotic chemotherapy to treat various neoplastic diseases; human exposure routes include injection, skin contact, and inhalation. Cancers that developed in laboratory animals include mammary tumors, bladder papillomas, urinary bladder tumors, and local sarcomas near injection sites. Although no adequate data are available to evaluate the carcinogenicity in humans, in a study of cancer patients receiving Adriamycin in combination with alkylating agents and radiotherapy, patients developed leukemia and bone cancer.

aflatoxins: K. Toxins produced by *Aspergillus* fungi that grow naturally on grains and other agricultural crops. Exposure occurs by eating contaminated foods or by inhalation of dust containing aflatoxins. Studies have confirmed carcinogenicity in humans resulting in liver cancer (hepatocellular carcinoma and primary liver-cell cancer).

alcoholic beverage consumption: K. Known or suspected as human carcinogens, include acetaldehyde, nitrosamines, aflatoxins, ethyl carbamate (urethane), asbestos, and arsenic compounds. Studies have indicated an increased risk of cancers of the mouth, pharynx, larynx, and esophagus with increased alcoholic beverage consumption, especially when combined with smoking.

2-aminoanthraquinone: RA. Used in the production of anthraquinone dyes, which are used in automotive paints, high-quality paints and enamels, textile dyes, plastics, rubber, and printing inks. Hepatocellular carcinomas, neoplastic nodules, and lymphomas have resulted in laboratory animals that have ingested 2-aminoanthraquinone; however, potential human exposure is through skin contact, and no adequate data are available to evaluate the carcinogenicity in humans.

***o*-aminoazotoluene: RA.** Used in coloring oils, fats, waxes, and medicine, and in the production of the dyes Solvent Red 24 and Acid Red 115. Cancers of the liver, lungs, and urinary bladder have resulted in laboratory animals that have ingested *o*-aminoazotoluene; potential human exposure is through skin contact and inhalation and no adequate data are available to evaluate the carcinogenicity in humans.

4-aminobiphenyl: K. Previously used commercially as a rubber antioxidant, as a dye intermediate, and in the detection of sulfates; later used only in laboratory research because of sufficient evidence for carcinogenicity in humans.

ABCD rating: A system used to describe the stages of prostate cancer, with "A" and "B" describing cancer that is confined to the prostate, "C" for cancer that has grown out of the prostate but has not metastasized or spread to lymph nodes, and "D" for cancer that has metastasized or spread to lymph nodes.

ablation: The removal, destruction, or severing of diseased or damaged tissue, body part, or its functionality through surgery, drugs, heat, hormones, radiofrequency, or other means.

abscess: A pus-filled cavity that is usually swollen and inflamed and is a result of bacterial infection.

acquired immunodeficiency syndrome (AIDS): A disease of the immune system, caused by the human immunodeficiency virus (HIV), that causes a substantially increased risk for developing certain cancers and infections.

acromegaly: A rare disorder of adults in which an overproduction of growth hormones causes an enlargement of the bones of the hands, feet, nose, jaw, and head, as well as various other signs and symptoms.

actinic keratosis: Precancerous patches of skin that are thick and scaly. (Also called solar keratosis and senile keratosis.)

acute: That which begins and worsens quickly.

adeno-: Referring to a gland.

adenoma: A tumor of glandular origin or of a glandular structure that is not cancerous.

adenopathy: Swollen or large lymph glands.

adenosine triphosphate (ATP): The chemical compound in all living cells that provides the energy needed for metabolic processes.

adenosquamous carcinoma: A malignant tumor that contains both glandular cells and squamous cells.

adjunct therapy: Another treatment used in addition to a primary treatment to aid the primary treatment and increase the chance for a cure, such as chemotherapy used in addition to surgery.

adnexal mass: A growth of tissue in the uterine adnexa, usually in the ovary or Fallopian tube; it includes ovarian cysts, benign or malignant tumors, and ectopic (tubal) pregnancies.

adrenal glands: Small endocrine glands located on top of both kidneys that make and secrete adrenaline and noradrenaline, the steroid hormones that help control heart rate, blood pressure, and other body functions. (Also called suprarenal glands.)

adrenalectomy: Surgical removal of one or both adrenal glands.

adrenocortical: Pertaining to the outer layer of the adrenal gland.

adult T-cell leukemia/lymphoma (ATLL): A fast-growing T-cell non-Hodgkin lymphoma, which is a cancer of the immune system's T cells; it is believed to be caused by the human T-cell leukemia/lymphotropic virus type 1 (HTLV-1).

aggravating factor: Something that makes a medical condition worse, more serious, or more severe.

aggressive: That which grows, develops, or spreads quickly. agnogenic myeloid metaplasia (AMM): A slow-developing, long-term disease that occurs when bone marrow is replaced by fibrous tissue, making the bone marrow unable to manufacture blood cells properly and creating a condition in which blood is then made in organs such as the liver and the spleen; this may lead to the enlargement of these organs and progressive anemia.

AIDS: *See* aquired immunodeficiency syndrome.

AJCC staging system: Developed by the American Joint Committee on Cancer, this system describes the extent of cancer in a patient's body using T to describe the size of the tumor and if it has invaded nearby tissue, N to describe any nearby lymph nodes that are involved, and M to describe distant metastasis (spread of the cancer to another part of the body).

alanine aminopeptidase (AAP): An enzyme that is used as a biomarker to detect kidney damage and that can be used to help diagnose certain kidney disorders; high levels occur in the urine when there are problems with the kidney.

alanine transferase: An enzyme found in the liver and various bodily tissues and which, when present in abnormally high levels in the blood, may be a sign of liver damage, cancer, or other diseases.

allogeneic bone marrow transplantation: A procedure in which stem cells derived from the bone marrow are transferred to the cancer patient from a genetically similar but not identical donor, such as a brother or sister.

allogeneic stem cell transplantation: A procedure in which blood-forming stem cells are transferred to the cancer patient from a genetically similar but not identical donor, such as a brother or sister.