

# The CANCER Dictionary

An A-to-Z guide to over  
2,500 terms that include:

cancer symptoms  
surgical procedures  
anticancer drugs  
 side effects  
risk factors  
diagnostic tests  
prevention  
and more

**Roberta Altman**  
**Michael J. Sarg, M.D.**

# THE CANCER DICTIONARY

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**Facts On File**  
*New York • Oxford*

## **The Cancer Dictionary**

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# **THE CANCER DICTIONARY**

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**This  
book is dedicated to  
all cancer patients, the courageous cancer survivors, their  
friends and loved ones, and the dedicated researchers, nurses,  
and physicians who work with them.**

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# Introduction

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## CANCER!

Few other words in our common experience are so feared, dreaded, and charged with emotion. Growing up in the late forties, I can recall my family whispering about the disease, to avoid using the word. They referred to “it” in hushed tones with looks of dismay. To me, those afflicted with it seemed doomed, the ultimate unfortunate ones. Their illness was itself unspeakable, treatment was “mysterious” and thought to be ineffective, and their future was to confront unspeakable horror until they finally died. If they didn’t die, they would be disfigured—unable to live any kind of normal life. They were “better off dead.”

For many, the cause of such monumental misfortunes, such as cancer, was based on religious beliefs. “Bad” people got cancer. And of course if you “got” cancer, your morality was questioned. Although there are still some people who believe this, the number (fortunately) is dwindling.

Many of the old cancer myths—cancer is a death sentence; cancer is contagious; cancer only happens to “bad” people—have been dispelled in the face of tremendous advances in communication and technology. Those advances have affected medical care in ways hardly even imagined, and nowhere more so than in the field of cancer. Fifty years ago, there was no hope for a child diagnosed with leukemia. Virtually no children diagnosed with leukemia survived. Today, more than half the children survive and are free of disease five years after their initial diagnosis. That is a dramatic, but not unique, example. Today, as a society, we are more interested than ever before in good health in general and in cancer in particular. There is still fear; there is still dread; and there is still a great amount of emotion surrounding cancer. But there is also encouragement, hope, and optimism.

Cancer has come out of the closet. Hardly a day goes by that there isn’t some report on television, on the radio, and in all the newspapers on the progress that is being made—the newest drug for cancer treatment; the newest way to detect it; what one can do to prevent it; and the newest way to “cure” cancer. The media are full of articles; talk show hosts openly discuss with their guests the battle they fought with

cancer. While much of this may be attributed to our obsession with “news,” there is no doubt that there is an ever-increasing abundance of information on cancer that is truly newsworthy.

The mass media exposure of cancer has resulted in a more informed public and has played a role in dispelling some of the cancer myths. In the past, many people would wait before consulting a doctor. Their thinking was, “If I’ve got ‘it,’ there’s nothing that can be done anyway; I’m just going to die.” And they would die, because the more advanced any cancer is when it’s diagnosed, the less likely it is that it can be cured. The importance of early detection and treatment is now more widely known and understood—and that is resulting in more cures. It has also resulted in a greater quest for information. There is less hesitation to ask questions, and there is less fear of the answers.

The media have also focused a tremendous amount of attention on prevention—the role that environmental factors (radon and radiation exposure, hazardous-waste sites, asbestos, the diminishing ozone layer, etc.) and life-style factors (smoking, diet, sun “tanning,” etc.) play in the development of cancer. Cities and states have passed laws prohibiting smoking, a known carcinogen, in public places; a major fast-food chain has decreased the amount of fat in its burgers; and sunscreen lotion is a big seller. People have become more health conscious. They want to protect themselves and their loved ones and will change long-ingrained habits to accomplish that. There is an unprecedented demand for accurate, helpful, and understandable information.

Practicing medicine at a major hospital in a large urban area, I find that many of my patients are fairly sophisticated and well educated. But when cancer strikes, they are suddenly “illiterate.” Many are frightened and feel out of control. They come into my office with lists of questions. They want to know what their options are; just how successful a particular treatment has been for their cancer; what the “state-of-the-art” treatment is. They do not hesitate to ask questions.

The most difficult question I am asked by patients is, “What would you do if it were you?” The answer

is not simple. But I believe any decision I would make would be based on having accurate, understandable information.

The question that follows is obvious. "Where can I find information? I want to, have to, become as well informed as possible." Today, hundreds of books on cancer are available—ranging from personal life stories, to self-help techniques, to books with textbook-like explanations. There are several books I would suggest to patients, but I was never really satisfied with any of them. One would be good in one area, another in another area. But there was not one "comprehensive" book on cancer that I could recommend, a basic book that covered the topic from A to Z.

Some years ago, I was talking with one of my patients, a journalist who suddenly became very "cancer educated" when she was diagnosed with recurrent breast cancer. She was telling me about the hard time she had tracking down the information she needed for her battle against the disease. "You know," she said, "you ought to write a book that is easy to use and that anyone can understand."

Much of medical science is admittedly "mysterious" and difficult to understand. In *The Cancer Dictionary*, I and my co-author (journalist and patient) Roberta Altman have attempted to demystify it as much as possible. On the other hand, as mystifying as modern medicine and cancer may be, at no time has society been as ready and eager to seek accurate information for personal and family health (as well as for the health of the nation).

Our premise is that knowledge *does* make a difference in the course of one's life, that ignorance is not bliss. For a newly diagnosed cancer patient, the terror can be enormous. Emotions run the gamut from fear to denial to guilt to depression to anger. After the

initial shock of discovering that one has cancer, most people come to the resolution that they have to "do something." For most people, understanding what's going on, what is going to happen or is likely to happen, can alleviate a lot of the fear. Learning about the disease can help the patient make informed choices. It can also enable the patient to feel a little more in control in a situation that very often seems totally out of his or her control.

*The Cancer Dictionary* is meant to provide the cancer patient and general public with easy access to areas of information that are often hard to locate, or when found are hard to understand. In writing it our goal was twofold: to include *every* word that the average person might come across in the course of his or her illness; and to define each word in layperson's language, so that it would be understandable to the person without a medical background while at the same time providing enough information to be truly helpful. I believe we have accomplished that. (My patients will let me know!)

*The Cancer Dictionary* contains the latest information available at the time of publication. However, from the moment this book appears in bookstores and libraries, new discoveries will continue to be made. But how exciting and encouraging that concept really is! The ever-quicken pace of progress in cancer research is apparent to all of us. But, despite that, the basic information in this dictionary will stand up to the storms of change. (On the other hand, I shall be delighted when that ultimate obsolescence occurs, the discovery of a cure that banishes *The Cancer Dictionary* to the archives.) In the meantime, *The Cancer Dictionary* will, I hope, be of help and possibly some comfort to cancer patients, family members, their friends, and the general public.

Michael Sarg, M.D.



# How to Use This Book

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*The Cancer Dictionary* is designed to be “user friendly.” It is for the layperson. Words in small caps in a definition are defined elsewhere in the book. Pronunciations are included for any word that we thought might be unfamiliar. Alphabetization follows the letter-by-letter system; word spaces and punctuation are ignored. Entry words preceded by numbers are alphabetized according to how the numbers appear spelled out. Where numbers follow identical entry words, terms are listed in numerical sequence. Acronyms are alphabetized letter for letter.

Everything is cross-referenced. Because so many drugs, treatments, tests, sites, etc. in cancer go by multiple names, we tried to define the word that we believed to be the most common and most well known. For example, drugs usually have more than one name. If you were to look up the drug Adriamycin (a very widely used chemotherapy drug), you would find the definition as well as the information that it is also known as “DOX” and “doxorubicin.” (Multiple names are given in brackets.) Doxorubicin is not capitalized because it is the chemical and not the brand name. If you looked up “doxorubicin,” you would be directed to “see Adriamycin.” In breast cancer treatment, removal of just the malignant tumor is called a “lumpectomy” as well as “breast conservation,” “excisional biopsy,” “wedge excision,” “local wide excision,” “partial mastectomy,” “quadrantectomy,” “quadrant excision,” “hemimastectomy,” and “tylectomy.” We defined lumpectomy. If you look up any of the other names, you will be referred to lumpectomy. A little confusing? Yes . . . but we have organized the book, we hope, to eliminate as much confusion as possible!

When we questioned whether we should include a word, we usually stuck it in. There are many words (we gave up counting early on!), and probably you will have no need to look up many of them. But we wanted to be as thorough as possible. We gave every word as much space as we felt it warranted. We hope each definition gives all the essential information that is needed (and perhaps even more than is needed but is useful). In some instances there will no doubt

be more than you’re interested in. We felt it was better to have a little too much information than not enough.

*The Cancer Dictionary* contains virtually any word you may hear in connection with cancer. It defines:

- the individual cancers—causes, incidence, symptoms, diagnosis, stages, and treatment
- diagnostic tests
- surgical procedures
- anticancer drugs
- types of radiation therapy
- biological therapy
- side effects
- risk factors
- carcinogens
- prevention
- supportive services and medical support staff
- organizations
- and MORE.

In an effort to be as complete and comprehensive as possible, we have listed symptoms that may be present for a particular cancer and many side effects that may accompany treatments. It is important to note that many signs or symptoms can occur with *many other disorders* besides cancer and usually people *do not have all* the side effects of a particular anticancer drug or radiation therapy.

The subject index in the back of the book can help you locate a word that you’re not sure of and is also a quick way to find out how a term is listed in the book. In addition, because drugs can go by so many names, there are lists that indicate the generic or chemical name, the brand name, and the short name (which is another way a doctor may refer to the drug) of every drug in the book.

The bibliography is broken down by topic. In it you’ll find books that can give you further information you may need or desire.

Finally, the appendixes of organizations include those that can provide additional information and support. Many have toll-free 800 numbers. To make them easy to spot, toll-free numbers are italicized.

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# A

**AA** a combination of the anticancer drugs ARA-C and ADRIAMYCIN sometimes used in the treatment of ANLL. See individual drug listings for usage and side effects. See also COMBINATION CHEMOTHERAPY.

**ABCD** an acronym for the warning signs of MELANOMA. The following changes in a mole may signal a transformation to cancer:

- Asymmetry—the shape of one half does not match the other
- Border—edges that are ragged, notched, or blurred
- Color—uneven with shades of black, brown, or tan; areas of red, white, or blue may be seen.
- Diameter—a change in size.

**abdomen** the part of the body below the diaphragm between the thorax (chest) and the pelvis. The organs of the digestive and urinary systems—bladder, kidneys, liver, colon, which is part of the large intestine, stomach, and small intestine—are located in the abdomen. The abdomen is lined by the peritoneum, a smooth, transparent membrane. See entries for each organ for incidence of cancer.

**abdominal cancer** (ab-dom'i-nal) a general term for a number of different cancers that occur in the area of the body between the diaphragm and pelvic bones, including COLON/RECTAL CANCER, BLADDER CANCER, KIDNEY CANCER, STOMACH CANCER, LIVER CANCER, and PANCREATIC CANCER and SMALL INTESTINE CANCER.

**abdominoperineal resection (APR)** (ab-dom'i-no-per'i-ne'al) the surgical removal of the anus (outlet of the bowel) and the lower part of the rectum. This operation is performed as a cure for RECTAL CANCER. It is done by cutting into the abdomen and the perineum (the space between the anus and the scrotum (in men) or vulva (in women)). Then a stoma (opening on the outside of the body) is made through which waste can leave the body (usually on the left side). This is known as a COLOSTOMY and requires a special bag to be worn to collect body wastes. For many years this was the only surgical treatment for rectal cancer. However, in recent years the develop-

ment of other surgical procedures has resulted in a substantial reduction in the number of patients requiring a permanent colostomy, and every effort is made to avoid it whenever possible. By the early 1990s a permanent colostomy could be avoided in most patients.

**ABMT** see AUTOLOGOUS BONE MARROW TRANSPLANT.

**ABVD** a combination of the anticancer drugs ADRIAMYCIN, BLEOMYCIN, VINBLASTINE, and DTIC used primarily in the curative treatment of HODGKIN'S DISEASE as well as some other cancers. This combination of drugs was developed in the 1970s as a "salvage" therapy for patients with Hodgkin's disease who relapsed and were not responding to MOPP therapy. It is now the first treatment chosen by many doctors. ABVD is also being used in combination with MOPP, thus exposing the Hodgkin's tumor to eight active agents. See individual drug listings for side effects. See also COMBINATION CHEMOTHERAPY.

**AC** a combination of the anticancer drugs ADRIAMYCIN and carmustine (BCNU) sometimes used in the treatment of myeloma and bone cancer. See individual drug listings for side effects. See also COMBINATION CHEMOTHERAPY.

**Accutane** [isotretinoin] an artificial form of vitamin A widely used for the treatment of acne. Accutane is under investigation for its role as possible ADJUVANT THERAPY to suppress second primary tumors in people with SQUAMOUS CELL CARCINOMA of the head and neck. Accutane has been investigated as a chemopreventive agent. In one study, people who were at risk of developing cancer of the lung, throat, or mouth as a result of having had larynx, pharynx, or mouth cancer were given high doses of Accutane or a placebo. The patients treated with Accutane had a lower incidence of secondary tumors. Thus, Accutane was a form of CHEMOPREVENTION in this group of people. Other studies to confirm this are ongoing.

Side effects associated with high doses of Accutane may include dry skin, chapped lips, and eye inflammation.

**acetaminophen** (as-ĕt'ĕ-min'o-fen) The generic name for an analgesic (pain killer), antipyretic (fever reducer), and anti-inflammatory (redness, swelling reducer) nonprescription drug for pain that may be used instead of aspirin. Examples include Tylenol or Datril. It is the weakest of the analgesics but may be effective when the pain is mild or moderate. Because acetaminophens do not contain aspirin, which can exacerbate bleeding problems, they can be used more safely by people experiencing a decrease in their platelets (cells needed by the blood for clotting). A decrease in the blood platelet level is a not uncommon side effect of treatment with anticancer drugs. Acetaminophens are also less likely to irritate the stomach. They have few side effects, although prolonged daily use may cause liver or kidney damage.

Acetaminophens can be taken in pill, capsule, or liquid form. For patients receiving chemotherapy (anticancer drugs) whose platelet level may be compromised, most physicians would recommend acetaminophens over aspirin as a safety measure. See also ANALGESIC.

**acetazolamide** (as'et-ah-zol'ah-mĭd) a DIURETIC that may be used to reduce pressure within the eye. Possible side effects may include loss of appetite, weight loss, nausea, vomiting, diarrhea, weakness, depression, and dizziness.

**achlorhydria** (ah'klor-hi'dre-ah) the absence of hydrochloric acid in the stomach. This can cause a nutritional deficiency and puts a person at a higher risk of stomach cancer than the general population.

**acid phosphatase test** (fos'fah-tas) one of a number of diagnostic tests that may be used in relation to PROSTATE CANCER. It is a blood test for the presence of the enzyme, acid phosphatase, that is produced mainly by prostatic tissue. Since cancer cells from the prostate secrete excess amounts of acid phosphatase, an elevated level in the blood may be an indication of prostate cancer. However, this is not a definitive test. There are times when acid phosphatase is not detected in a man with prostate cancer. It is also important to note that it is not that unusual for a person who does not have cancer to have some level of acid phosphatase detected in his blood. The acid phosphatase test is now of limited usefulness because of recently developed techniques to detect the PROSTATE SPECIFIC ANTIGEN, which is a far more

reliable indicator of the presence and recurrence of prostate cancer.

**acinar cell carcinoma** (as'i-nar kar'sin-o'mah) a rare form of exocrine pancreatic cancer. See PANCREATIC CANCER.

**ACOPP** a combination of the anticancer drugs ADRIAMYCIN, CYTOXAN, Oncovin (VINCRIStINE), PROCARBAZINE, and PREDNISONE sometimes used in the treatment of childhood HODGKIN'S DISEASE. See individual drug listings for side effects. See also COMBINATION CHEMOTHERAPY.

**acoustic neuroma** (ah-kūs'tik ner-o'mah) [Schwannoma, neurinoma] a benign (noncancerous) brain tumor of the hearing nerve. It is the most common neuroma to occur in the brain, most frequently affecting middle-aged adults. Symptoms may include a loss of hearing in the ear, buzzing or ringing in the ear, and occasionally some dizziness. If the tumor has spread, there may be some facial paralysis, difficulty in swallowing, loss of sensation in the face, impaired eye movement, and unsteadiness. This tumor can usually be completely removed by surgery. See also NEUROMA and BRAIN CANCER.

**Acquired Immune Deficiency Syndrome** see AIDS.

**acral-lentiginous melanoma** (ak'ral len-tij'i-nus) one of four types of MELANOMA. It appears as a dark mark on the palms of the hand, soles of the feet, or around the nails.

**ACTA scan** (automatic computerized transverse axial) see CT SCAN.

**actinic keratosis** (ak-tin'ik ker'ah-to'sis) [solar keratosis] a premalignant (precancerous) stage of SQUAMOUS CELL CARCINOMA OF THE SKIN. It looks like rough, red raised spots on the skin. It usually occurs on skin that has been exposed to the sun, but it can appear elsewhere. It occurs most often in older whites but may also develop in younger people exposed to ULTRAVIOLET RADIATION over a long period of time (e.g., people who work outdoors). Most affected are people with fair complexions. It is very rare for blacks to develop actinic keratosis. If actinic keratosis is not treated, about 5% of its victims may develop squa-

mous cell carcinoma of the skin, a very common condition.

**actinomycin D** see COSMEGEN.

**acupressure** a noninvasive treatment based on the same principles as ACUPUNCTURE, but using fingertips rather than needles. The tip of the thumb or forefinger is used to apply pressure to trigger points in the body to reduce or eliminate pain. The pressure is exerted until a sharp twinge is felt. Then the spot is massaged for as long as four minutes. The procedure is repeated at the same location on the opposite side of the body.

**acupuncture** an ancient Chinese form of therapy used to treat pain and other conditions with needles inserted into the body. It is based on the philosophy that a cycle of energy flowing through the body in meridians, or channels, controls health, and that a disturbance in the flow results in pain and disease.

Acupuncturists insert long, thin needles into the body at specific points along those meridians (there are as many as 1,000). Each point controls a different part of the body. Once the needles are in place, they are rotated gently back and forth; they may also be charged with a small electric current for a short period of time. Acupuncture is usually administered as a series of treatments. Acupuncture is also used as a method of anesthesia.

Considered an alternative treatment, acupuncture is gaining acceptance but remains controversial.

**acute** a term used to describe an illness that appears suddenly, has a short course, and may have severe symptoms. There are a number of cancers that are described as acute. Some cancers can be either acute or CHRONIC. For example, leukemia is classified as both acute (acute lymphocytic leukemia and acute nonlymphocytic leukemia) and chronic (chronic lymphocytic leukemia and chronic myelogenous leukemia). The term acute can also be used to describe pain that is sharp and relatively short-lived.

**acute erythroleukemia** (e-rith"ro-lu-ke'me-ah) a rare form of acute myelogenous leukemia (AML). The predominant malignant (cancerous) cell in this illness is an early red blood cell precursor (erythroblast). See also ANLL and LEUKEMIA.

**acute granulocytic leukemia** (gran"u-lo-sit'ik) see ANLL and LEUKEMIA.

**acute lymphatic leukemia** (lim-fat'ik) see ALL and LEUKEMIA.

**acute lymphoblastic leukemia** (lim"fo-blas'tik) see ALL and LEUKEMIA.

**acute lymphocytic leukemia** (lim"fo-sit'ik) see ALL and LEUKEMIA.

**acute monocytic leukemia** (mon"o-sit'ik) see ANLL.

**acute myelocytic leukemia** (mi"ě-lo-sit'ik) see ANLL and LEUKEMIA.

**acute myelogenous leukemia (AML)** (mi"ě-loj'e-nus) see ANLL and LEUKEMIA.

**acute myelomonocytic leukemia** (mi"ě-lo-mon"o-sit'ik) see ANLL and LEUKEMIA.

**acute nonlymphocytic leukemia** see ANLL.

**acute promyelocytic leukemia** (pro-mi"ě-lo-sit'ik) see ANLL and LEUKEMIA.

**adamantinoma** (ad"ah-man"tī-no'mah) cancer of the long bones in the body, usually the shinbones. It is a rare cancer. See BONE CANCER.

**ADCC** see ANTIBODY DEPENDENT CELL MEDIATED CYTOTOXICITY.

**additives** see FOOD ADDITIVES.

**adenocarcinoma** (ad"en-o-kar"sī-no'mah) a cancer made up of abnormal gland (adeno means "gland") cells on the lining or inner surface of an organ. It can develop in virtually any part of the body. Adenocarcinomas may develop in the lung, pancreas, breast, prostate, esophagus, stomach, vagina, urethra, and small intestine, among others.

**adenocarcinoma of the lung** (ad"en-o-kar"sī-no'mah) one type of NONSMALL CELL LUNG CANCER that often develops along the outer edges of the lung and under the membranes lining the bronchi. A

subtype is bronchioloalveolar carcinoma or alveolar lung cancer. See LUNG CANCER.

**adenoid cystic carcinoma** (ad'ě-noid sis'tik kar'sī-no'mah) an uncommon cancer arising in one of the minor salivary glands. Generally the treatment is surgical removal. This cancer may recur in the local area or in a distant site. It is not unusual for the recurrence to occur after many years. It is because of the long latency that medical cancer specialists, who are controlling the spread of the disease with chemotherapy, are particularly interested in it.

**adenoma** (ad'ě-no'mah) a benign (noncancerous) tumor or growth arising in the lining or inner surface of an organ. It can grow to be several inches in size. Because cancer cells may eventually grow in adenomas, they should be removed when they are found. They are most commonly formed in the large bowel or large intestine (the colon and rectum). It is believed that COLON CANCER and RECTAL CANCER develop from adenomas. Occasionally tumors in the lung are found to be adenomas, but that is very rare. Adenomas may also occur in many other parts of the body such as the breast, adrenal gland, etc.

**adenomatous hyperplasia** (ad'ě-nom'ah-tus hi'per-pla'ze-ah) a type of endometrial hyperplasia, abnormal or heavy bleeding during menopause caused by an overgrowth of the uterine lining. Adenomatous hyperplasia may precede ENDOMETRIAL CANCER.

**adenomatous polyps** (ad'ě-nom'ah-tus pol'ips) small, spontaneous (not inherited), noncancerous growths in the intestines. They occur in up to 15% of the adult population in the United States. They usually do not cause symptoms, but if they are large and obstruct the passage of waste material, they can cause intermittent bleeding. Invasive cancer develops in roughly 5% of adenomatous polyps.

**adjuvant therapy** (ad'ju-vant) treatment (chemotherapy, radiation, or biological therapy) used in addition to and following the primary treatment (generally surgery) to cure, reduce, control, or palliate the cancer. This is usually prescribed when there is any indication that there are still cancer cells in the body. However, it is not uncommon for there to be microscopic cancer cells remaining in the body at the

time of diagnosis and follow-up tests that are simply too small to be seen.

Although it may seem obvious that additional treatment would be beneficial, it is only in recent years that strong evidence of the benefits of adjuvant therapy has emerged. Clinical trials using adjuvant therapy in the treatment of many common cancers have shown that in some patients adjuvant therapy will prevent the recurrence of cancer; or, to put it another way, adjuvant therapy will cure some patients.

In the late 1980s and early 1990s the most widely known example of adjuvant therapy was its use in the treatment of early breast cancer. In the past, it was common for a woman who had a mastectomy (surgical removal of the breast) to be treated with chemotherapy (anticancer drugs) only if breast cancer cells were found in nearby lymph nodes. Since finding cancer cells in the lymph nodes is a good indication that other cancer cells may be circulating in the body, chemotherapy was administered to fight the remaining cancer. However, the women whose nodes were negative (no cancer cells found) were not advised to have adjuvant chemotherapy, a potentially toxic treatment. Today, many of those same women *would be advised* to have adjuvant chemotherapy because of the studies that show a reduced risk of a recurrence (the return of the cancer locally or to a distant site) when adjuvant chemotherapy is administered.

Although many studies have established the benefits of adjuvant therapy, in some instances it remains a controversial issue. For example, in breast cancer, many women with negative nodes do not have a recurrence after primary treatment; therefore, of the relatively large number of women who undergo adjuvant chemotherapy, a relatively small number will actually benefit from it. There are some doctors who think the reduced risk of a recurrence after adjuvant therapy is so small that the adjuvant therapy is not really warranted. Other doctors feel just as strongly that the adjuvant therapy may be curative and should be administered. The consensus, overall, is that the benefit does outweigh the risk in properly chosen women who receive adjuvant chemotherapy. Ultimately, the decision whether to undergo adjuvant chemotherapy rests with the patient, who must decide whether the often unpleasant, and at times debilitating, side effects—immediate as well as short- and long-term—are outweighed by the possible benefits. In an effort to make that clearer, investigations



are focusing on finding tests that would identify those women at a greater risk of breast cancer recurrence after primary treatment.

Another example of adjuvant therapy in breast cancer is the use of radiation therapy to the breast following a lumpectomy (surgical removal of only the cancer tumor in the breast). This adjuvant therapy is not controversial and is accepted as standard treatment. See also NEOADJUVANT THERAPY and PROPHYLACTIC THERAPY.

**adoptive immunotherapy** (ĩ-mu"no-ther'-ah-pe) a procedure under investigation for use in boosting a cancer patient's immune system so it can more effectively fight cancer cells. The essential concept is to transfer to the host (patient) cells that have "antitumor" activity. Large doses of IL-2 (INTERLEUKIN-2), which stimulate the production of lymphocytes (white blood cells that fight foreign substances), are injected into the patient's bloodstream. Then lymphocytes are removed from the body, bathed in more IL-2, and returned to the body as LAK cells (lymphokine activated killer cells), which have the potential to destroy cancer cells. As of the early 1990s, adoptive immunotherapy appeared to be most useful in the treatment of kidney cancer and melanoma. The use of this technique in humans is relatively new and is being actively investigated as cancer therapy. This treatment has been pioneered by physicians at the National Cancer Institute.

**adrenal cancer** (ah-dre'nal) cancer of the small ADRENAL GLANDS located above the kidneys. Most abnormal growths in the adrenal glands are benign (noncancerous). There are two types of malignant (cancerous) growths, both of which are very rare: ADRENOCORTICAL CANCER, which arises in the cortex (the outer shell of the gland), and PHEOCHROMOCYTOMA, which arises on the medulla (the inner core of the gland).

**adrenal glands** (ah-dre'nal) [suprarenal glands] a pair of small organs located above the kidneys. The adrenal glands produce hormones known as corticosteroids, which help control the metabolism of protein, fat, and carbohydrates; they also regulate the amount of sodium and potassium in body fluids. In addition, corticosteroids affect secondary sex characteristics such as facial hair. The adrenal glands also secrete the hormones epinephrine and norepineph-

rine, which help regulate the part of the nervous system that controls the heart muscles, and the digestive and respiratory systems.

**adrenal medullary tumors** (ah-dre'nal med'u-lar'e) tumors that may arise with, before, or after development of FAMILIAL MEDULLARY CANCER, one type of THYROID CANCER. They may produce an excess of adrenalin-like substances in the blood, causing a rise in blood pressure.

**adrenalectomy** (ah-dre'nal'ek'to-me) surgical removal of the ADRENAL GLANDS (located above the kidneys), which produce a wide variety of corticosteroid hormones, including androstenedione, a male hormone. Many years ago it was observed that removal of the adrenal glands slowed the spread of recurrent breast cancer in older women. This occurred because the hormone-producing gland that stimulated cancer growth was removed.

Surgical removal of the adrenal glands is rarely performed today. In the contemporary treatment of breast cancer a medication known as AMINOGLUTETHIMIDE, which blocks hormone production by the adrenal glands, may be administered to postmenopausal women who have breast cancer that is estrogen dependent. This is a form of "medical" adrenalectomy, which has served to eliminate the need for an adrenalectomy in most instances.

**adrenocortical cancer** (ad-re'no-kor'te-kal) cancer of the adrenal cortex, the outer layer of the ADRENAL GLANDS, located above each kidney. It is a rare tumor and usually appears in adults, generally between the ages of 40 and 50. Between 75 and 115 new cases a year are diagnosed in the United States.

Symptoms of adrenocortical cancer may include abdominal pain, weakness, weight loss, high blood pressure because of retention of salt, and a variety of hormone-related symptoms. In men there may be loss of sex drive, impotence, or enlargement of the breasts resulting from an overproduction of hormones caused by the cancer. It may be more common in men who developed sexually at an early age. In women, the overproduction of hormones can cause a deepening of the voice, unusually oily skin, excessive hairiness, or enlargement of the clitoris. Other possible symptoms include Cushing's syndrome (fat deposits forming along the center of the upper back and the face), mild diabetes, and softening of the bones. Many adrenocortical tumors do not produce



extra hormones and are called nonfunctioning tumors.

Procedures used in the diagnosis and evaluation of adrenocortical cancer may include blood and urine tests to check hormone levels, endocrine studies, CT SCANS, MRI, ANGIOGRAPHY, and adrenal venography (contrast X ray of the veins).

Following is the National Cancer Institute's (NCI) staging of adrenocortical carcinoma:

- Stage I—tumor is less than 5 CENTIMETERS (cm), with negative lymph nodes, no local invasion, no metastases
- Stage II—tumor is more than 5 cm, with negative lymph nodes, no local invasion, no metastases
- Stage III—there is local invasion and/or positive lymph nodes, no metastases
- Stage IV—there are distant metastases
- Recurrent—the cancer has returned to the same area or to a different part of the body after treatment.

Treatment depends on the stage of the disease, the general state of health of the patient, and other factors. It usually includes surgical removal of the adrenal glands along with any tissue around the glands (such as kidney, liver) that contains cancer. Lymph nodes may also be removed. Chemotherapy and/or radiation may also be used. Treatment may also be given to prevent or modify symptoms caused by the extra hormones produced by the cancer. For information on the current state-of-the-art treatment, by stage of the disease, call NCI's Cancer Information Service at 1-800-4-CANCER.

**adrenocorticoids** (ad-re"no-kor'tē-coids) [adrenocortical hormone] a class of hormonal agents produced naturally by the adrenal cortex, the outer layer of the ADRENAL GLANDS. It also refers to a synthetic substance modeled after the secretion of the adrenal cortex, hydrocortisone, first synthesized in 1950.

Adrenocorticoids may be used in the treatment of some cancers, including lymphomas, leukemias, Hodgkin's disease, and multiple myeloma (in addition to noncancerous conditions such as arthritis and autoimmune disorders). Some agents may be used to prevent and treat GRAFT VERSUS HOST DISEASE. Several are used as ANTIEMETICS in cancer treatment, and adrenocorticoids are used to reduce swelling in the brain or around the nerves.

Among the adrenocorticoids used in the treatment of cancer are cortisone, hydrocortisone, PREDNISONE, prednisolone, methylprednisolone, MEDROL, triamcinolone, paramethasone, fluprednisole, dexamethasone, betamethasone, fludrocortisone, and DECADRON. They are usually taken by mouth and occasionally by IV (injected into a vein).

Common side effects may include an increased appetite, weight gain, fluid retention, mood changes, acne, increased blood pressure, elevated blood sugar, intestinal ulcers, lowered resistance to infection, and gastrointestinal upset.

Adrenocorticoids have become very important agents in the treatment of cancer.

**Adriamycin** (a"dre-ah-mi'sin) [DOX, doxorubicin] a major ANTIBIOTIC anticancer drug used frequently in the treatment of many cancers, including cancer of the breast, bladder, thyroid, lung, and ovary and WILMS' TUMOR, NEUROBLASTOMA, RHABDOMYOSARCOMA, EWING'S SARCOMA, RETINOBLASTOMA, and KAPOSI'S SARCOMA. It is given by IV (injected into a vein). Its administration must be done with great care since the drug can cause severe skin damage if it leaks out of the vein. Patients receiving Adriamycin should drink a lot of fluids. Producing more urine can prevent bladder and kidney problems.

The most common side effects of Adriamycin may include nausea, vomiting, fever (short term), red urine (which can stain clothing), hair loss (usually reversible), and temporary bone marrow depression. Side effects that are rare but require immediate medical attention include unusually fast or irregular heartbeat, shortness of breath, wheezing, pain at the injection site, and swelling of the feet and lower legs. Other rare side effects in which medical attention should be sought include fever, chills, sore throat, sores in the mouth and on the lips, side or stomach pain, joint pain, unusual bleeding or bruising, and skin rash or itching.

After use of the drug is discontinued, side effects needing immediate medical attention include irregular heartbeat, shortness of breath, and swelling of the feet and lower legs. A fairly rare but very serious side effect related to the cumulative dose can be damage to the heart muscle. Because of that possible side effect, there is a dose limit on how much Adriamycin an individual can receive.

Adriamycin is one of the mainstays of modern chemotherapy. It is, for example, the most active