

CANCER

Normal body cells reproduce in a regular pattern by new cells replacing old cells. This is done by restoring worn-out tissues, repairing injuries, and helping the body grow at a normal pace. Sometimes during the repair and replacement process, certain cells begin to develop abnormally. Cells that grow uncontrolled and unregulated normally are called cancer cells. The ability of renewing cells to obey signals to stop growing is the difference between normal cells and the uncontrolled growth of cancer cells. Cancer occurs in various cell types in the body, eg, static (differentiated) cells, expanding cells, and renewing cells (stem cells). When the conversions from controlled to uncontrolled changes occur, the cancer cells live longer than normal cells, divide more often, and use more oxygen. This occurs until the normal cells are displaced or destroyed.

Cancer cells start growing in one body location. As time goes on, cancer cells may spread (metastasize), invading and destroying and replacing normal tissues and organs. This spread may be by direct growth to nearby areas or by cancer cells detaching and being carried through the lymph or blood systems to other parts of the body. If left untreated, cancer can spread throughout the body and cause death.

TRIGGERING CANCER

DNA (deoxyribonucleic acid) makes genes that are part of the larger genetic molecules. They are the chemical “blueprints” and the basis of heredity. These genes are unique to each person. Oncogenes are genes that may cause cells to divide abnormally. A proto gene can change the oncogene in cases of aging or other cancer-causing stimuli. Current cancer research is approaching the prevention and treatment of cancer by manipulation of genes.

TYPES OF CANCER

Generally, cancers are described by the part of the body in which they originate (eg, breast cancer) or by the way cancer cells look under the microscope (eg, histolytic lymphoma). The International Classification of Disease for Oncology, a World Health Organization, identifies 46 body sites that can be affected by cancer and the number of types depends on the system of classification that is used. Each site can develop several different types of cancers in two broad categories — carcinoma and sarcoma — where there are at least 112 types of cancer. Within each subtype, there are further subdivisions that behave clinically different. Cancer of the lung, for example, has four major types: oat cell, epidermoid, large cell, and adenocarcinoma. Because of the ongoing research and new knowledge, the classification schemes and terminology are constantly changing and will not be discussed in this chapter.

Benign tumors (noncancerous) are also not included. Following the outline, the most common cancers will be discussed. For questions regarding less common cancers, a consultation with a Hematologist/Oncologist (a specialist in cancer) is advised.

The most deadly cancers (low rates of survival) are:

Male	Female
1. Lung	1. Lung
2. Prostate	2. Breast
3. Colon and Rectum	3. Colon and Rectum
4. Pancreas	4. Pancreas
5. Leukemia	5. Ovary

LIFESTYLE TIPS FOR PREVENTION

Although some cancers are not preventable, there are ways to avoid risks for some cancers. Some of the most important ones are:



DO NOT SMOKE

Lung cancer death rates among women smokers soared sixfold from the 1960s to the 1980s, from 26 to 155 per 100,000 as reported in the American Journal of Public Health, September 1995. The rate nearly doubled (from 187 to 341) in men who smoke; it did not change in nonsmokers. Lung cancer has surpassed heart disease as the leading cause of smoking-related deaths among white middle-class smokers.



LIMIT SUN EXPOSURE

Avoid or limit direct exposure to sunlight as much as possible. Stay covered when in the sun, and use sun block when exposed. The skin tans when exposed to the sun because it is trying to protect the body against genetic damage from ultraviolet radiation. When sun exposure is intense without preparatory tanning, the resulting repair process can go wrong and lead to cancer.



IMPROVE YOUR NUTRITION

What you eat may have an effect on your cancer risk. Diets high in fats, salt-cured foods, smoked or nitrite-cured foods may be potentially hazardous. On the other hand, foods rich in vitamins A, C, and E, or high in fiber, may help lower your risk for certain cancers.

Lung, colon, breast, uterine, prostate, oral, and skin cancer account for more than one half of the deaths from cancer. As a defense, you can lessen your risk of developing them through dietary and lifestyle changes:

- ◆ Reduce your consumption of saturated and polyunsaturated fats, which are in vegetable and animal oils. Use monounsaturated fats which are found in olive oil.
- ◆ Eat fiber-rich foods. Try to include daily servings of whole grains and brown rice.
- ◆ Eat several servings per day of fruits and vegetables that are rich in beta-carotene and vitamins E and C. Beta-carotene, vitamins E and C have antioxidant actions, which absorb and eliminate the waste products that are left in the blood by oxygenation.

- ◆ Eat cruciferous vegetables, such as broccoli and spinach. They are the best sources of all three antioxidants. Other sources are carrots, tomatoes, and sweet potatoes.
- ◆ Drink low-fat or skim milk, rather than whole milk — it is an excellent source of vitamin E and calcium. Researchers have linked consumption of at least one cup of low-fat milk daily to a lower incidence of mouth, rectal, and stomach cancer.
- ◆ If your diet is limited, antioxidants can be purchased in vitamin C and E supplements. Vitamin C (in doses of 1,000 mg), and vitamin E (in 800 international units) have not shown to be harmful. Beta carotene (25,000 international units, 15 mg, per day) has also been recommended. Simply taking a supplement, however, is not sufficient, and eating a diet rich in fruits and vegetables is very important. A diet high in beta carotene is associated with a reduced risk of cancer and heart disease. A beta carotene supplement taken alone, without a balanced nutritional program, has not proven to lower the risk of heart disease or cancer, and may harm smokers and others at high risk for lung cancer. It is unwise to substitute nutritional supplements without the value of a balanced diet.
- ◆ Avoid salt-cured, smoked, or nitrate-cured foods (eg, ham, smoked salmon, and sausage). Research has linked these foods to an increase of liver, stomach, and esophagus cancer.



LIMIT ALCOHOL CONSUMPTION

Limit alcohol consumption to two drinks a day (24 ounces of beer, 16 ounces of table wine, or 2.5 ounces of 80 proof distilled spirits). The value of small amounts of alcohol is lost with heavy alcohol use. Heavy drinkers are at increased risk of oral cancer and cancers of the larynx, throat, esophagus, or liver. Heavy and chronic alcohol use is also associated with heart disease. (See Heart and Blood Vessels, Cardiomegaly).

CANCER RISKS

MENOPAUSAL TREATMENT

The use of estrogen for treating symptoms of menopause poses certain risks for endometrial cancer. Weigh the benefits and risks of estrogen replacement therapy with your physician. The value of preventing heart disease and osteoporosis should be weighed against the risk of developing endometrial cancer. (See Heart and Blood Vessels chapter, Coronary Artery Disease).

RADIATION EXPOSURE

Excessive exposure to ionizing (x-ray) radiation poses an increased risk of cancer. There may be a potential risk with radon in the home. If there is any question, the State Health Department has inspectors available to measure questionable environments for radiation hazards. Most medical x-rays are adjusted to deliver the lowest dose possible without sacrificing the quality of the test results. Routine screening chest x-rays, however, do not justify the irradiation risk and have been virtually eliminated as a part of an annual health examination. Discuss with your physician the value, risk, and expense of a routine chest x-ray.

INDUSTRIAL EXPOSURE

Exposure to nickel, chromates, asbestos, vinyl chloride, and certain other industrial agents increase the risk of certain cancers. If any of these toxic materials are found, the disposal requires special requirements. Call the State or Local Health Department for environmental regulations for disposal of these agents.

AGING

Americans are living longer today than ever before. As we get older, the risk of cancer increases with the loss of immunity.

SCREENING (SEARCHING FOR DISEASE)

Cancer screening must be practical. This means that the screening test should be able to detect the presence of cancer early enough for successful treatment and full recovery. Most cancer screening has been evaluated for effectiveness at a reasonable cost and are called “epidemiological” studies.

Safety is also important. The screening test should not pose any health hazard. If an invasive procedure is recommended, ask for the safety profile of the procedure.

Periodic screening tests for cancer do not have the same value for all types of cancer. For example, a yearly chest x-ray for cancer of the lung (especially a smoker), will not detect cancer early enough to assure survival with treatment.

EARLY DETECTION

About one in every four people will get cancer at some time in their lives. The National Institute of Cancer emphasizes the importance of early diagnosis and treatment as the best strategy for curing cancer. The best diagnosis of cancer is an early diagnosis. The sooner the cancer is detected, the greater the chances it can be treated before it spreads to other tissues or organs in the body.

Cancer Warning Signs

Change in bowel or bladder habits	Unusual bleeding or discharge
A sore that does not heal	Nagging cough or hoarseness
Indigestion or swallowing with difficulty	Thickening or lump

CANCERS MOST OFTEN FOUND THROUGH SCREENING

■ BREAST CANCER

WARNING SIGNS

Any lump or thickening in the breast; bleeding or discharge from the nipple.

CANCER RISK FACTORS

Over 50 years of age; women who have never had children; had first child after 30 years of age; have never breast-fed; are more than 40% over their ideal weight; do not exercise regularly; late maturation or menopause; and from families with a history of premenopausal breast cancer in mothers or sisters.

CHECKUP GUIDELINES

The American Cancer Society suggests that women be screened every one to two years from 40 to 50 years of age (depending on risk), and annually thereafter. Breast self examination or a mammogram does not always protect women from cancer, but rather allows an opportunity to find the cancer early. A combination of breast self examination, examination by a physician, and mammography are the ideal tools to diagnose cancer as early as possible so that treatment may be more successful.

■ TESTICULAR CANCER

WARNING SIGNS

Any lump on the testicle; a testicle that changes in size.

CANCER RISK FACTORS

The cancer strikes younger men more often than older (uncommon over the age of forty). An undescended testis increases the risk of cancer of the testicle.

CHECKUP GUIDELINES

Men of all ages, starting the late teens, should examine their testes monthly.

■ COLORECTAL CANCER

WARNING SIGNS	Any rectal bleeding and/or long term change in bowel habits.
CANCER RISK FACTORS	Family history of colon/rectal polyps, or colon/rectal cancer in a family member. A history of ulcerative colitis.
CHECKUP GUIDELINES	Men and women over age 40 should have a digital rectal examination annually. Men and women over age 50 should have a sigmoidoscopic examination at least every other year and a stool test for blood (hemocult) each year. Hemocult is the most widely used test (for fecal occult blood) but the value of the test is lost if it is not performed every year after age 50. There is a 10 percent chance of positive results that are actually false readings. Newer tests for occult blood are in the developmental stages that hold promise of reducing false readings. This screening reduces mortality from colon cancer, especially in combination with a sigmoidoscopy (examination of the rectum and sigmoid colon).

■ LUNG CANCER

WARNING SIGNS	Nagging coughs, coughing up blood, and persistent attacks of pneumonia or bronchitis with chest pain.
CANCER RISK FACTORS	Heavy smoking and exposure to environmental pollutants, particularly asbestos and radiation (as radium).
CHECKUP GUIDELINES	Every person over age 40, at risk, should have a baseline chest x-ray. Subsequent chest x-rays should be for medical indications at the discretion of your physician, but should not be relied on to detect early cancer. See screening guidelines.

■ CERVICAL CANCER

WARNING SIGNS	Abnormal vaginal bleeding.
CANCER RISK FACTORS	Diagnosed genital herpes or genital wart infections; beginning sexual intercourse shortly after reaching puberty; or having many sexual partners.
CHECKUP GUIDELINES	Women who have reached age 18 or who are sexually active should have a pap test and pelvic examination annually. After three or more consecutive normal examinations, your physician may decide the pap test can be performed less frequently.

■ ENDOMETRIAL CANCER

WARNING SIGNS	Abnormal vaginal bleeding in women over age 40.
CANCER RISK FACTORS	History of infertility or failure to ovulate; a late onset of menopause or prolonged use of estrogen therapy after menopause; obesity; heavy smoking.
CHECKUP GUIDELINES	Following menopause, women who are treated with estrogen should undergo episodic ultrasound and/or endometrial biopsy to monitor the endometrium. Early reporting of any sign or symptom of genital bleeding (from the vagina) should have immediate evaluation.

■ URINARY TRACT AND BLADDER CANCER

WARNING SIGNS	Blood in the urine; back pain; loss of weight and appetite; persistent fever; anemia.
CANCER RISK FACTORS	Most common in men over age 45; heavy smokers; history of chronic urinary tract infections.
CHECKUP GUIDELINES	The routine urine analysis performed during your complete physical examination may detect an early cancer if there is any blood in your urine (hematuria). If hematuria is found, your physician may do a cystoscopic examination, with a biopsy, if abnormal tissue is found. Your physician also may obtain an x-ray and/or ultrasound of your kidney.

■ ORAL CANCER

WARNING SIGNS	Any change of color in your mouth; a sore that fails to heal in your mouth.
CANCER RISK FACTORS	Most common in men over age 45; heavy smokers; users of smokeless (chewing) tobacco, especially with heavy use of alcohol.
CHECKUP GUIDELINES	If you have a sore that does not heal, see your physician or dentist.

■ THROAT CANCER

WARNING SIGNS	Hoarseness.
CANCER RISK FACTORS	Heavy smoking, particularly with a substantial use of alcohol.
CHECKUP GUIDELINES	Examination by a throat specialist if there is change in the character of your speech lasting more than a few weeks; examination annually if you are a heavy smoker.

■ PROSTATE CANCER

WARNING SIGNS

Difficulty in urination; incessant pain in the lower back, pelvis or upper thighs; blood in the urine.

CANCER RISK FACTORS

Most common among men over 70 years of age; family history of prostate cancer.

CHECKUP GUIDELINES

Rectal examination at periodic medical examinations should be performed after 40 years of age. After age 50, the Prostate Specific Antigen (PSA) is recommended but remains controversial. A new screening test to enhance the effectiveness of the PSA is forthcoming.

■ SKIN CANCER

WARNING SIGNS

A small lesion with irregular borders; red, white, blue or blue-black spots on the trunk or limbs; shiny, firm bumps or lesions from pearly to black; dark lesions on palms, soles, tips of fingers and toes; large brownish spot with darker speckles; reddish purple spots; purple-brown or dark blue nodules on toes or legs; pearly appearing or shiny bumps on face, ear, or neck; a flat flesh-colored or brown lesion on chest or back; a firm, red nodule or flat lesion with a scaly surface on face, ears, neck, hands, or arms; change in a mole or any sore that fails to heal.

CANCER RISK FACTORS

Fair skin, blue eyes, or red hair; severe sunburn in childhood; family history of birthmarks or moles (dysplastic nevus syndrome).

CHECKUP GUIDELINES

For any skin lesions that are similar to any of the warning signs listed here, see your physician.

■ BONE CANCER/MULTIPLE MYELOMA

This is a cancer that produces uncontrolled multiplication of a type of white blood cell in the bone marrow (plasma cell). As these cells grow and take up more space in the marrow, the bones may weaken and cause pain, particularly in the back and ribs. As the bones become more fragile, they break more easily.

WARNING SIGNS

Fatigue (resulting from anemia); bone pain (often in the back); unexplained bone fractures; bleeding problems, such as nosebleeds or bleeding gums.

CANCER RISK FACTORS

Occurs most often after 50 years of age and occurs most often in men and is almost twice as common among blacks. The disease does not appear to be inherited. No cure has been found for this type of cancer.

CHECKUP GUIDELINES

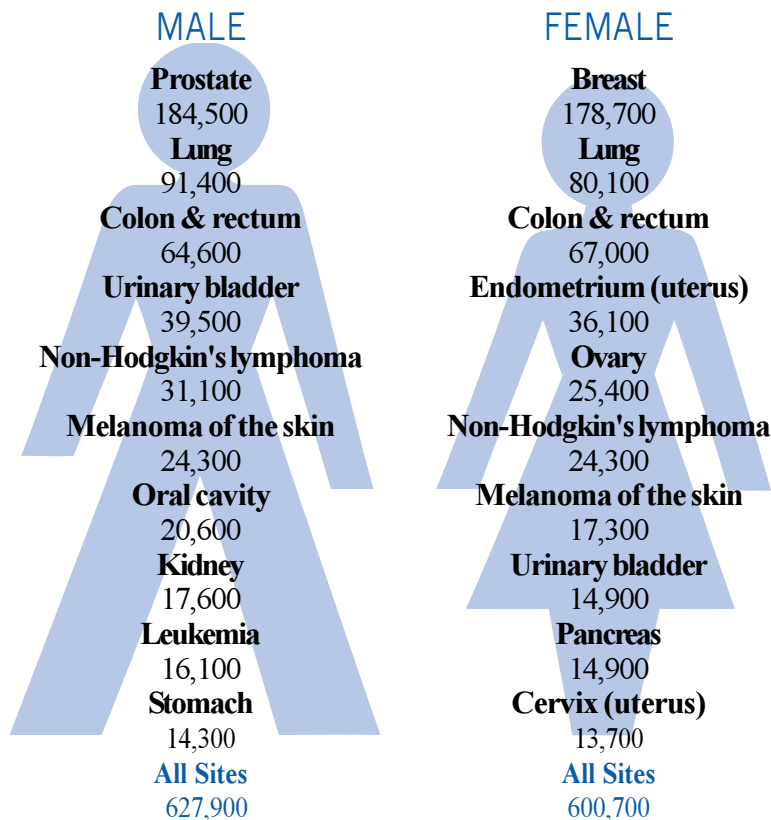
If your physician suspects the disorder, in addition to x-rays and blood testing, a sample of the bone marrow is done to find myeloma cells.

DIAGNOSING CANCER

Using the early clues for signs of cancer, a diagnosis is often made with a biopsy (removal of tissue) from the tumor and examined under a microscope. If there is a suspicious possibility of cancer, the treating physician refers the specimen to a pathologist for microscopic interpretation.

A removed specimen may initially be interpreted by a “frozen section” where the pathologist will make a tentative diagnosis of cancer or noncancer. This technique is helpful during surgery to determine if the diagnosis of cancer is present in questionable tissue, while the patient is still under anesthesia. A “permanent” block of tissue, which has undergone fixation for a more detailed interpretation, is most dependable for planning the treatment. This usually takes about 24 hours. If there is a question about the interpretation, a second opinion from another pathologist is wise. This process is in the best interest of the outcome of treatment. The goals are not to “miss” a cancer, and to avoid unnecessary cancer surgery or treatment if cancer is not proven. A candid conversation with a physician is advised if the diagnosis is delayed or in question.

CANCER INCIDENCE BY SITE AND GENDER (APPROXIMATED)



* Excluding basal and squamous cell skin cancer and in situ carcinomas except urinary bladder. American Cancer Society, Surveillance Research, 1998. © 1998, American Cancer Society.

TREATING CANCER

If the tissue is cancerous, you will be treated by a specialist in cancer treatment. The medical specialty is called Hematology/Oncology. No two cancer treatments are the same; each person with cancer is unique. The basic therapeutic options are similar: surgery, radiation therapy, and chemotherapy. Occasionally hormonal therapy, bone marrow transplantation, and chemotherapy with a stem cell rescue are done in selected cancers. Transplantation, however, is not effective in all cancers.

The choice of therapy or combination of therapies is important to consider. Not only will the goal be to destroy the cancer but to sustain a quality of life during and after treatment. The treatment is often toxic and causes significant side effects. Treatment choices require open discussions with your physician and an understanding of the disease, the treatment goals, and the side effects from the treatment.

A critical part of the diagnosis is determination of whether the cancer has spread. A diagnostic process called “staging” determines what other tissues or organs may have been invaded by the cancer. Staging the cancer is helpful in designing the treatment and expectations for success. Many tests assist a physician in staging the spread of the cancer and the appropriate therapy.

HEMATOLOGIST/ONCOLOGIST · RADIATION ONCOLOGIST · SURGERY TEAM

Physicians who specialize in cancer treatment can be helpful in making critical decisions. Never relinquish your responsibility for your health — you always have the option and obligation to ask questions, change your mind, or express your fears to everyone involved. The diagnosis may not change, but you should be the decision maker regarding your care and treatment.

Treating cancer is very complex and usually one physician is a part of a larger team of care givers. Your physician, usually an oncologist, will refer other specialists in the treatment. The team may involve a medical oncologist, a radiation oncologist, a surgeon, immunotherapists, and support persons including educators and counselors.

In this day of managed health care, the economical influence of selecting the team is often decided through the organization with whom you have a health insurance plan. This could be an HMO or a network of health care specialists called a preferred provider organization (PPO). If the managed care organization does not have the qualified personnel, the services are often available through contracted specialty referral systems.

Surgery Surgery has been the foundation of cancer therapy. The goals of surgery can vary. A biopsy can be done to determine if a growth is malignant, an excision can be done to remove a cancerous growth from the body, or for staging, to learn if malignant cells have spread to other parts of the body. Surgery is also done for bypassing the cancer to allow vital organs to func-

tion, which is called palliative cancer surgery. This is not done to treat the cancer itself. In some tumors that have spread, the surgery is done to decrease the size of the tumor (debulking) so that chemotherapy and irradiation can be more effective.

Surgery is most successful if the cancer has not spread. Sometimes, however, cancer cells break off from the primary tumor and travel through the blood and lymph system to other sites within the body to form secondary tumors that are referred to as metastases. In these cases, the tumor may grow at a distant site even though the primary tumor has been removed. If widespread, surgery is unlikely to cure the cancer but may be able to remove some remote or isolated metastases.

Side effects of surgery should be expected and discussed with the surgeon. Injuries to organs surrounding the cancer may occur. Disfigurement, due to radical surgery or a need for a blood transfusion sometimes occurs.

Radiation Therapy Cancer cells multiply rapidly and are more sensitive to radioactive energy than normal cells. By careful aiming and regulating of the dose, high-energy radiation can be used to destroy cancer cells. Radiation therapy (also referred to as irradiation) is either part of the treatment or the only treatment for approximately one-half of all cancer patients. Radiation therapy can be used alone, before surgery to shrink a tumor, after surgery to stop growth of any remaining cancer cells, or with anticancer drugs (chemotherapy) to destroy a malignant tumor.

Like surgery, irradiation is not curative if the cancer cells have spread throughout the body or outside the area of irradiation. It can also be used to reduce the size of the tumor so that the surrounding vital organs can continue functioning or to relieve pain from an expanding tumor mass.

Radiation therapy produces less physical disfigurement than radical surgery, but it still may produce side effects due to damage of normal tissue. The patient must cope with irritated skin, swallowing difficulties, dry mouth, nausea, diarrhea, hair loss, and loss of energy. How serious the side effects are depends on the body site treated and the amount of radiation used.

Chemotherapy Treatment with anticancer drugs is called chemotherapy. In some cancers, such as Hodgkin's disease (a type of lymphoma), leukemia in children, or cancer of the testes — chemotherapy can produce a cure even when the cancer is widespread. In cases where the cancer is not curable, chemotherapy can relieve symptoms and enhance the quality of life for the patient.

Cancer chemotherapy does not always mean the use of only a single drug. Combination chemotherapy is a group of drugs that work together to kill cancer cells. If anticancer drugs are used to destroy any cancer cells that remain after surgery or radiation therapy, it is referred to as adjuvant chemotherapy. Adjuvant (aiding) chemotherapy is a preventive measure commonly used for breast cancer that has spread into the lymph nodes of the armpit and discovered at the time of the initial surgery.

Anticancer drugs can also affect normal tissue cells. The normal cells most affected are those

that divide rapidly, such as in the bone marrow (anemia), the gastrointestinal tract (diarrhea), reproductive system (amenorrhea, infertility), and hair follicles (baldness). The side effects are varied, but similar to irradiation side effects. These toxic reactions include loss of hair, sores in the mouth, difficulty swallowing (esophagitis), dry mouth, nausea, vomiting, diarrhea, bleeding, and infection. Less common problems include damage to the heart, liver, lungs, or kidneys. With close supervision by an oncologist, many of these side effects can be minimized.

Immunotherapy The body's immune system acts as a watchdog to guard against the presence of what it interprets as a foreign substance. Cancer cells are seen as foreign to a body's immune system. For years, researchers have been trying to enhance the natural immune reaction toward cancer cells. When used as a method of treatment, this technique is called immunotherapy. Immunotherapy involves the use of biological agents (lymphokines) that normally are produced by white blood cells. The best-documented immunotherapy agent is interferon, which is produced by the body in response to a viral infection. The early trials were disappointing but more recently there has been success controlling a few types of cancer with one type of interferon, interferon alpha. Specifically, interferon alpha produces a remarkable improvement in people with a rare cancer known as hairy cell leukemia. Unfortunately, interferon therapy produces little or no improvement against the major cancer killers that arise in the lung, breast, and digestive tract.

Bone Marrow Transplantation Some cancers have shown initial response to surgery, radiation and/or chemotherapy, and then they relapse. These types may be treated with high doses of chemotherapy (which destroy the bone marrow) and collecting either bone marrow from a compatible donor (allogenic donor), or collecting immature bone marrow cells (stem cells) from the patient (autologous transfusion) prior to the ablative therapy. Simply storing the stem cells for future use, and immediate "rescue" of the bone marrow ablation is possible. This expensive technique shows promise in some cancers but risks of death, uncontrolled infection, and failure to cure the cancer must be considered by the patient, the family, and the treating oncologist.

Nutritional Support A person who has cancer and is in sound nutritional shape is better able to tolerate the side effects of chemotherapy, radiation, and surgery. Furthermore, good nutrition improves the sense of well-being, enhances tissue function and repair, and improves the immune function of the person with cancer. However, a common and difficult problem often associated with cancer has been weight loss and malnutrition (cancer cachexia).

Recent advances in the subject of nutrition have been very helpful in the management of cancer. Weight loss is no longer an inevitable consequence of cancer and cancer treatment. A dietitian is often used in the course of cancer treatment and can be very helpful and supportive in the management of nutrition.

Clinical studies have shown that a sound nutritional state can improve a person's chance of undergoing successful treatment and withstanding the rigors of cancer; however, no conclusive evidence exists to indicate that decreased or excessive amounts of any nutrient have a beneficial role in the treatment plan.

PAIN MANAGEMENT

Cancer does not always cause pain. More than one-half of all cancer patients do not experience exceptional pain; often the pain is moderate and less intense than that experienced in some forms of arthritis or nerve disorders. In general, pain relief can be achieved by tumor control with surgery, radiation therapy, or chemotherapy.

When cancer pain is not relieved initially by cancer treatment, there are many other ways of obtaining relief. Through a combination of pain relieving drugs and nondrug methods, most people with cancer can function as well as the other symptoms of the disease will permit. One of the primary goals of cancer treatment is to decrease pain with as few side effects as possible.

Pharmacological The principal strategies for treating and relieving cancer pain are pain relieving drugs (analgesics). Two categories are used: 1) nonsteroidal anti-inflammatory drugs (NSAIDs) including aspirin, ibuprofen, acetaminophen; and 2) narcotics, such as codeine and morphine.

Radiation Therapy When delivered to a selected site, such as a bone involved with cancer, radiation therapy can shrink the tumor and lessen or eliminate the pain.

Nerve Blocks Nerve pathways that carry pain impulses to the brain can be blocked either by the injection of certain substances into or around the nerve, or by surgery. These procedures have risks and some are considered experimental. However, for those who cannot tolerate the side effects of other pain medications, these methods can be helpful. For some cancers, such as pancreatic cancer, these procedures have become almost routine.

Behavior Modification Your physician may suggest some behavioral modification methods, in combination with other pain relief methods, to increase pain control. These methods include relaxation techniques, hypnosis, and biofeedback. These often help people to decrease their anxiety and build their confidence in coping with pain.

Alternative Medicine Although alternative medicine is not recognized as a cancer therapy in the medical community, it is recognized as effective in relieving the pain and supporting the rehabilitation process. Therapies such as biofeedback, massage, acupuncture, hypnosis, and meditation may offer a low risk, but have shown significant effective results in pain management.

HOSPICE CARE

The hospice program conveys a sense of caring and shelter. At the heart of the hospice approach is the team. Hospice workers (physicians, nurses, social workers, and clergy) provide an integration of various skills to help both the dying person and the family. Physicians and nurses provide the medical services; social workers can assist with psychosocial support for the person and the family and help with financial planning, insurance, and funeral arrangements; clergy offer spiritual counseling for both the dying person and his or her family; and volunteers help the hospice staff with clerical assistance and the person and family with their daily needs (eg, transportation, meal preparation, looking after the one who is ill). The care does not suddenly stop at a person's death. The hospice team continues to provide care for the family in the form of bereavement services.

To find hospice resources and services in your region, contact: National Hospice Organization, 1901 North Moore St., Arlington, Virginia 22209, (703) 416-4928.

LIFE AFTER CANCER TREATMENT

Cancer rehabilitation has contributed the best hope for rehabilitation and restoration of a normal life. Whatever form the rehabilitation takes, the goal is always the same: to restore you to the most comfortable lifestyle possible. This might mean job retraining, homemaker services, an exercise program, or learning to use a prosthesis. Such wide ranging skills and services usually call for an enhanced team approach. Some of the more common rehabilitation efforts come from a speech therapist or speech pathologist who can help with retraining for speech after a surgical procedure on the larynx or mouth; an enterostomal therapist who instructs in the use of an artificial opening (ileostomy or colostomy) for eliminating body wastes, resulting from either colon or bladder surgery.

To help during this transition in life, there are many volunteer support groups made up primarily of patients who have recovered from cancer. One of the best is the Reach for Recovery program for breast cancer patients of the American Cancer Society. Most communities have similar programs that can be helpful in the recovery process.



ON THE HORIZON

Research in new areas of cancer prevention and treatment is ongoing. One area of research is directed toward examining cancer at the molecular level. By identifying genes that may cause cancer or may make one more susceptible to cancer, scientists hope to be able to target people who are at risk so they can receive early treatment, or can avoid getting cancer at all, by modifying lifestyle (eg, diet, smoking, alcohol, overexposure to the sun). Other research is trying to find ways to boost the body's natural immune response so it can fight cancer wherever it appears in the body, and to not only be able to successfully treat cancer, but control it.

Breast cancer runs in the family and 1998 has brought some good news. A new class of estrogen-like drugs called SERMs (selective estrogen receptor modulators) show promise in stopping breast cancer before it starts. While still under research, scientists have discovered that high risk women lowered their cancer rates nearly 49 percent after taking the drugs tamoxifen or raloxifene.

Two other new drugs, angiostatin and endostatin, seem to squelch cancer in mice by attacking the blood supply that feeds tumors. If the drugs continue to show promise in animal studies, human trials will be next.

AVAILABLE RESOURCES

The American Cancer Society Look for the nearest local chapter, or call 1-800-ACS-2345.

National Hospice Organization 1901 North Moore St., Arlington, Virginia 22209, (703) 243-5900.

Aging and Death chapter This health guide.