Will scientists ever cure cancer? The simple answer, experts like Dr. Harmon Eyre, chief medical officer for the American Cancer Society in Atlanta say, is yes. But he doesn't mean they will completely wipe out cancers in the same way scientists have eliminated polio. With very early detection, medications that stimulate the immune system to attack abnormal cells, vaccines that block cancer-causing viruses and the development of new anti-tumor drugs, doctors will be able to drastically reduce the number of people killed by the group of diseases they call cancer. Dr. Eyre predicts that in 50 to 100 years, cancer will no longer be a major health problem. What is helping researchers in their battle against cancer is new information picked up from basic research into genetics.

Cancer is a disease of the cells. It's not just one disease; it is a group of more than 100 different diseases. It is an abnormal growth of cells that tend to reproduce in an uncontrolled way and in some cases, spread. Cancer is also called malignancy. A cancerous growth or tumor is sometimes called a malignant growth or tumor. A non-malignant growth or tumor is called benign. Benign tumors are not cancer. Cancer can infect any tissue of the body and has many different forms in each body area. Most cancers are named for the type of cell or organ in which cancer starts. If a cancer spreads, the new tumor keeps the same name as the original tumor.

A number of factors produce cancer. These factors are heredity, viruses, radiation, chemicals, and changes in the immune system. Cancer is a genetic process. Gene abnormalities can be inherited or they can be induced in a body cell by a virus or by damage from an outside source.

More than 1,350,000 new cases of cancer occur in the United States each year. It is the second leading cause of death in the nation, causing about 550,000 deaths annually.

The earlier a type of cancer is diagnosed and treated, the greater the chance of cure. The regular screening of people is very important because it allows diagnosis before the development of symptoms. Diagnostic study for cancer begins with a medical history of the patient and an extensive examination.

The biopsy is the only sure way for the diagnosis of cancer. In a biopsy, a piece of tissue is removed from the tumor itself. Aided by a CAT (computerized axial tomography) scan, a tumor in almost any part of the body can be biopsied through a thin, flexible needle.

The first approach to curing cancer is to remove all of the malignant cells by an operation. Sometimes, surgery is not always the answer. If a tumor has spread to different organs that are necessary for life, then it is too late to operate.

Radiation therapy is a very useful extra to surgery. Electromagnetic or particulate radiation is used for the process and is very destructive to tissue. Radiation may rapidly sterilize the tumor cells and prevent them from "seeding" at surgery. It could also shrink the tumor and make surgery easier.

Chemotherapy is the use of drugs in the treatment of cancer. Because a drug is carried out through the bloodstream in the body, chemotherapy is useful for tumors that have spread beyond the area that are in reach of surgery or radiation. Chemotherapy may be used with surgery or radiation. It is often used in addition to surgery when surgery is the major therapy.

There are many ways that people today can have cancer under control. The most important step is to stop tobacco use, which is the cause of 30 percent of all deaths from cancer.

A better diet is another measure. Foods with a lot of dietary fiber, vitamins A and C, and vegetables such as cabbage, cauliflower, and broccoli help lower the risk of cancer.

Lung Cancer

Lung cancer is the leading cause of cancer deaths in the United States among men and women. It claims more lives than colon, prostate, and breast cancer combined. In 1999, about 91,000 men and 68,000 women died of lung cancer. Lung cancer is also among the most preventable of all cancers. Smoking alone accounts for about 85 percent to 90 percent of lung cancer cases. Other leading causes include exposure to radon, asbestos and secondhand smoke.

In the lungs, abnormal cells start when the lungs are exposed to carcinogens (cancer causing materials). These materials are found in secondhand smoke, high concentrations of radon, and asbestos. Eventually, these abnormal cells become cancerous. Once in the lungs, cancerous cells have easy access to a large number of blood and lymph vessels. Tumors can invade these vessels, which may carry cancerous cells to nearby sites and even to hidden areas and organs within the body.

Lung cancer may be divided into two groups: small cell and non-small cell. Small cell lung cancer spreads violently and occurs almost all the time in smokers. In the United States, it accounts for about 20 percent of lung cancers. Non-small cell lung cancer, which is more common, accounts for almost 80 percent of lung cancers.

Smoking is the greatest risk factor for lung cancer. The most successful way to lower the chance of getting lung cancer is never to smoke, or if you do smoke, to stop. Studies have shown that smoking causes 9 out of 10 cases of lung cancer. Even if you don't smoke, your chances of getting lung cancer are increased by 30 percent when you are around secondhand smoke.

At its earliest stage, lung cancer has no symptoms. By the time people with lung cancer see a doctor, the cancer may have already reached an advanced stage. The most common symptom is a cough, which happens when the tumor irritates the lining of the airways or blocks the passage

of air. Some other symptoms are coughing up blood (even a small amount), chest pains, shortness of breath, a start of wheezing, and hoarseness. Lung cancer also may cause fatigue, loss of appetite and loss of weight. If it has spread to other parts of the body, people may have headaches or bone pain.

At the diagnosis stage, an X-ray or a CT scan can allow your doctor to view the level of lung cancer. An X-ray may reveal an abnormal mass in your lungs. A CT scan may show very small lesions and whether the cancer has spread to other areas.

Sometimes, there could be an undetectable spread of cancer to lymph nodes and other organs. As a result, cancer can appear again months and years later after surgery.

After diagnosis, treatment of lung cancer depends on the size, location, and type of cancer, as well as the overall health of the patient. The average length of survival after treatment and the chance of a cure also depend on the stage of the cancer, the cell type and the patient's response to treatment.

More advanced non-small cell lung cancers are generally treated with chemotherapy, or a combination of chemotherapy and radiation therapy. Using combination therapy depends on the patient's physical condition and the stage of the disease.

Prostate Cancer

Prostate cancer is the most common cancer in American men. It's estimated that by age 50, up to 1 in 4 men have some cancerous cells in the prostate gland. By age 80, it increases to 1 in 2 men. As men age, their risk of prostate cancer increases. The average age at diagnosis is 72. Prostate cancer also is the second leading cause of cancer deaths in American men. Yet unlike other cancers, you're more likely to die *with* prostate cancer than you are *of* it. On average, an

American man has about a 30 percent risk of having prostate cancer in his lifetime, but only about a 3 percent risk of dying of the disease.

Inherited DNA mutations appear to cause about 10 percent of prostate cancers. In other cases, increased levels of certain hormones may cause prostate cancer. Environment and diet also play a role.

The main risk factors of prostate cancer include:

- **Age.** As you get older, your risk increases. More than 80 percent of men with a diagnosis of prostate cancer are older than age 65.
- **Race or ethnic group.** Black men are more likely to have prostate cancer than men of any other group in the United States. Asian men, have the lowest rate of prostate cancer. The rate of prostate cancer in Hispanic and American Indian men is lower than in white men.
- **Family history.** Studies show that if your father or brother has prostate cancer, your risk of the disease is about twice as great as that of the average American male. And depending on the number of relatives with prostate cancer and the age at which they had it, the risk could be even higher.
- **Diet.** There's some evidence that a high-fat diet may increase the risk of prostate cancer.

The problem with detecting prostate cancer is that it often doesn't produce any symptoms in its early stages. That's why about 40 percent of prostate cancers aren't diagnosed until they've spread beyond the prostate. When symptoms do occur, they may be similar to benign prostatic hyperplasia (BPH), a non-cancerous enlargement of the prostate. They may also feel a persistent, dull pain in their lower pelvic area. Some other signs are a sudden need to urinate, difficulty starting to urinate, pain during urination, weak urine flow and dribbling, starting and

stopping of your urine flow, blood in your urine, general pain in the lower back, hips or upper thighs, and loss of appetite and weight.

There's more than one way to treat prostate cancer. The doctor might even recommend a combination of treatments, such as surgery followed by radiation. The treatment the patient and the doctor choose will probably depend on several factors including how fast the cancer is growing, how much it has spread, the patient's age and health. The most common treatments for prostate cancer are surgically removing the prostate gland, radiation, freezing the cancer cells with liquid nitrogen (cryotherapy), and hormone therapy.

Breast Cancer

Breast cancer is the disease many women fear most, though they are more likely to die of cardiovascular disease. Still, breast cancer is the main cause of cancer deaths of women ages 40 to 55. In 2001, about 192,000 women received a diagnosis of the disease. Of these, more than 40,000 died. Men also can develop breast cancer, though only about 1,000 men get it a year.

Most breast lumps are not cancerous. Yet the most common sign of breast cancer for both men and women is a lump or thickening in the breast. Often, the lump is painless. Other signs of breast cancer are a clear or bloody discharge from the nipple, retraction or indentation of the nipple, a change in the size of the breast, any flattening of the skin over the breast, and redness or pitting of the skin over your breast like the skin of an orange.

It isn't clear to scientists what triggers abnormal cell growth in breast tissue. It is known that between 5 percent and 10 percent of breast cancers are inherited. Defects in one of two genes, breast cancer gene 1 or breast cancer gene 2, put people at greater risk of developing the disease. Both men and women can inherit these genes from either parent.

The following factors can increase women's risk of breast cancer:

- **Age.** The disease rarely affects women under 30 years of age, while close to 80 percent of breast cancers occur in women over age 50.
- **Family history.** Women who have close relatives, such as a mother or sister, with breast cancer have a greater chance of developing breast cancer themselves.
- **Genetics.** Between 5 and 10 percent of breast cancers are inherited.
- **Caucasian ethnicity.** Caucasian women are more likely to develop breast cancer than black or Hispanic women.
- **Smoking.** Smoking increases the risk of breast cancer in women with a strong family history of breast and ovarian cancers.
- **Excessive use of alcohol.** Women who consume more than one alcoholic drink a day have a 20 percent greater risk of developing breast cancer than do women who don't drink.

Treatments exist for every type and stage of breast cancer. Most women will have surgery and an additional therapy such as radiation, chemotherapy or hormone therapy. Biological therapy, which uses your body's own immune system to fight cancer, is being tested in clinical trials.

Years ago, just the word cancer frightened people. I think, as people become more educated about the advances in cancer treatment and the number of death's decrease from this terrible disease the word cancer will become less frightening.