

Cancer Overview

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In the following overview, the authors broadly define the characteristics of cancer. They discuss how cancer spreads, its causes, as well as prevention and common treatment. The authors offer guidelines to reduce cancer risk at any age.

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Photo on previous page. At the end of the 2003 Avon Walk for Breast Cancer in Boston, walkers hold pink bandanas in recognition of the fact that during the time it took to complete the walk, 660 women were diagnosed with breast cancer. (AP Images)

Cancer is not just one disease, but a large group of almost 100 diseases. Its two main characteristics are uncontrolled growth of the cells in the human body and the ability of these cells to migrate from the original site and spread to distant sites. If the spread is not controlled, cancer can result in death.

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One out of every four deaths in the United States is from cancer. It is second only to heart disease as a cause of death in the states. About 1.2 million Americans are diagnosed with cancer annually; more than 500,000 die of cancer annually.

Cancer can attack anyone. Since the occurrence of cancer increases as individuals age, most of the cases are seen in adults, middle-aged or older. Sixty percent of all cancers are diagnosed in people who are older than 65 years of age. The most common cancers are skin cancer, lung cancer, colon cancer, breast cancer (in women), and prostate cancer (in men). In addition, cancer of the kidneys, ovaries, uterus, pancreas, bladder, rectum, and blood and lymph node cancer (leukemias and lymphomas) are also included among the 12 major cancers that affect most Americans.

Mutated Cells Grow Uncontrollably

Cancer, by definition, is a disease of the genes. A gene is a small part of DNA, which is the master molecule of the cell. Genes make “proteins,” which are the ultimate workhorses of the cells. It is these proteins that allow our bodies to carry out all the many processes that permit us to breathe, think, move, etc.

Throughout people’s lives, the cells in their bodies are growing, dividing, and replacing themselves. Many genes produce proteins that are involved in controlling the processes of cell growth and division. An alteration (mutation) to the DNA molecule can disrupt the genes and produce faulty proteins. This causes the cell to become abnormal and lose its restraints on growth. The abnormal cell begins to divide uncontrollably and eventually forms a new growth known as a “tumor” or neoplasm (medical term for cancer meaning “new growth”).

In a healthy individual, the immune system can recognize the neoplastic cells and destroy them before they get a chance to divide. However, some mutant cells may