



Breast Cancer and Environment – Peer Education Tool Kit

Zero Breast Cancer – Adolescent Education Project

Breast Cancer Glossary

Peer Educator Reference

Basic Cancer terms - Vocabulary for Peer Education Lesson Activities

Terms Related to Breast Health, Breast Cancer Detection and Treatment of Breast Cancer:

Breast Cancer: A disease that causes cells in the breast to change and grow in an uncontrolled pattern. Breast cancer is the most common form of cancer in women, and may be many different types of disease. Some people are born with abnormal cells, or may be more *susceptible* (likely to be affected) to factors that will cause cells to grow out of control. Cells can change abnormally during a person's lifetime; some cells progress to cancers, others are controlled by cells that regulate, or suppress, tumor growth. Some breast cancers stay in one site and are not as much of a threat as cancers that are growing rapidly or invading other parts of the breast.

Breast Cancer Cells: Cells that line the milk ducts and/or cover the surface of lobular organs that produce milk - are common sites where breast cancer develops. Most breast cancer begins in the milk ducts. It may take 20 years or more for breast cancer to develop. There can be factors both inside and outside of the body that create the conditions for normal cells to change to cancer. Not all cell changes in breast cells will progress to cancer.

Breast reconstruction: The breast can be re-built by a surgeon after a mastectomy (breast removal), using spare tissue (skin, fat or muscle) from another part of the body. Implants may also be used in this procedure.

Breast implants: Sacs filled with salt water inside rubber-like shells that are surgically positioned (inserted) behind the breast tissue to enlarge the breast (this is one method of breast reconstruction to restore the shape)

Breast self-exam (BSE): Checking your breasts (looking and feeling) monthly, for changes or lumps. You can learn to do BSE or ask your doctor or nurse for instruction. The main idea is to get to know the look and feel of your breasts in your late teens so that you can check with your health provider if you note any changes over time. BSE *does not take the place* of regular clinical breast exams by a doctor or a nurse, beginning at age 20.

Chemotherapy: Treatment with powerful drugs that kill cancer cells. Chemotherapy is often combined with surgery and radiation to treat cancer when it has spread, or if the cancer returns, or to prevent further spread. Chemotherapy side effects (most are temporary) may include nausea, vomiting, loss of appetite and fatigue.

Clinical breast examination. A doctor or nurse physically inspects and feels the breasts for changes as part of a woman's annual gynecological exam. Routine breast exams begin at age 20 and continue through adult life.

Mammogram: A low-dose X ray that gives a detailed picture of the breast tissue and some cancers.

Digitized mammogram-A mammogram that is recorded in computer code instead of on X-ray film.

Micro-calcifications are deposits of calcium in the breast that show up as white specks on a mammogram and *may be* an early sign of breast cancer. A **radiologist** reads a mammogram and decides if a cancer may be present

Mastectomy: The surgical removal of the breast, often followed by “reconstructive” surgery. Most surgeons now use a technique called “skin-sparing” surgery, so that the breast can be re-formed to a nearly normal shape

Oncologist: A doctor who specializes in cancer treatment by prescribing drugs and chemotherapy.

Benign (“be-9”) tumor: A non-cancerous growth that does not invade nearby tissue or spread to the body.



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Cancer: Changes in the body’s cells leading to abnormal cell division that can progress to a variety of diseases. Most cancers develop in many steps over a period of years or decades. Many types of cancers form a lump or mass called a **tumor** that can invade and destroy healthy tissue. Cancer cells can break away from the tumor and spread through the body through the bloodstream or the lymphatic system. **Not all tumors are cancer.** Cancers are named for the part of the body where they originated, even if they have spread. Cancers may develop over several years or decades. They may have both *known causes* and/or *risk factors*.

Carcinogen: Any agent -chemical, physical, or biological –that causes DNA damage that leads to cancer.

Diagnosis: The identification of a disease. Breast cancer can be diagnosed with a variety of medical tests.

First-degree relative: A parent, sibling, or child. Family history for cancer is concerned with this relation.

Immune system: The body’s complex defenses to fight infections and diseases, including cancer.

Incidence: The number of people who develop a disease, divided by the number of people at risk of developing the disease in a specific time period. Breast and other cancers are reported by incidence for every 100,00 people

In-situ cancer: Very early stage cancer that *has not spread* to surrounding healthy tissues.

Invasive cancer: A cancer that has broken through the borders and spread to surrounding healthy tissues.

Risk factor: Genetic alteration, a habit, or an environmental compound that increases chances for developing cancer. Many diseases and cancers are described in terms of “risk factors” – things that make us more likely to develop cancer. Some risk factors like gender, age, or family history are unavoidable. Others like alcohol intake, level of physical activity, and *adult* body weight can be modified, or changed, to lower one’s overall risk.

Tumor: An abnormal mass of tissue that results from too much cell division, and interfering with surrounding body tissues. Tumors have no useful purpose. They can be benign or malignant.

A **benign (“be -9”) tumor** is not cancerous, and does not invade surrounding tissue or spread to other parts of the body

A **malignant tumor** is cancerous; it can metastasize “me-tas-ta-size,” or spread to other parts of the body.

Biological and Cellular, and Hereditary and Genetic Terms Related to Cancer

Cell: The basic unit of all living things. Organs are made up of millions of cells. Each cell contains DNA (the genetic blueprint) and other essential components enclosed in a membrane. Organized cells can become tissues.

Cell division: A process in which a full-grown cell divides into two new ones.

DNA: DNA stands for deoxyribonucleic acid. The DNA molecule inside each cell carries genetic information (cell growth, division, and function) that is passed on from one generation to the next.

Gene: a segment of DNA, or heredity unit found inside all cells passed from parent to offspring. Genes determine hair and eye color and height, as well as susceptibility to certain diseases. Genes contain the information for making proteins in the cell. Breast cancer cells can be typed by genetic biomarkers. This genetic information helps doctors predict and decide what type of treatment will be effective.



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Genetic: Related to the genes and/or to inherited characteristics, as opposed to an environmental cause

Genetic susceptibility: An increased risk of developing a certain disease or disorders based on genetic traits.

Hereditary: Inherited, capable of being transmitted genetically from a parent to a child and through generations
Hormone: A chemical “messenger” produced in one part of the body by an endocrine gland (i.e. thyroid) or and organ (i.e. ovaries) that is transported to other parts of the body through the bloodstream. Hormones are involved in the body’s normal growth and development and sexual reproduction. Hormones such as *estrogen* and *progesterone* influence or regulate breast cells.

Mutation: A change in one or more genes that results in a new trait. It can be minor, harmful or have no effect on how the cell functions. Women and men with defects (mistakes) in the BRCA-1 and BRCA-2 genes have mutations in genes that would normally control or regulate breast cancer. They are in a high-risk category.

Introduction to Cancer (and Breast Cancer) Research Terms

Animal studies: Mice or rats are most commonly used to test for cancer-causing substances because they are small easy to handle and are generally similar to humans in their response to carcinogens. They can also be genetically engineered for breast cancer studies and they have a relatively short life cycle. Mice studies provide information on hormonal and chemical effects on the breast.

Bioinformatics: Using advanced computer techniques to analyze and keep track of large information in a biological laboratory study. Bioinformatics are used to analyze genome (genetic type) research.

Bio-monitoring: By collecting *samples* of body fluids and tissue from large groups or populations, scientists can analyze the presence of certain chemicals in the human body that may affect public health and diseases. Volunteers provide samples of saliva, urine, fat, or blood for laboratory study. The Marin Women’s Study is collecting biological specimens. Study volunteers can donate saliva or blood when they have a mammogram. This will help researchers study breast cancer in Marin County.

Carcinogen: A substance that causes cancer. Tobacco smoke is a *known* cancer carcinogen. Recent studies associate childhood exposure to second hand smoke with higher breast cancer risk in younger women. Breast cancer studies are looking at both *known* and *suspected* carcinogens. Bisphenol-A is a *suspected* carcinogen.

Environment: The combination of circumstances, physical conditions and outside influences surrounding and individual. Exposure to a wide variety of natural and manmade substances can play a role in cancer. Cancer risks associated with environmental chemicals *may* be present in the air, water, food and the workplace. Breast cancer may be influenced by environmental factors including lifestyle choices and habits, foods, nutrients, some prescription drugs, and exposures to natural and synthetic chemicals or toxins.

Environmental Health/Exposure Terms - Association with Cancer is Known or Suspected

Asbestos: A group of naturally occurring fibrous minerals used for insulating buildings and to make commercial textiles. Asbestos fibers and all commercial forms of asbestos are human carcinogens.

Atrazine: A commonly used pesticide that may pose a risk for **breast** and other cancers.



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Benzene: A colorless, flammable liquid with a sweet odor that is formed from both natural and man-made sources, including cigarette smoke. It is considered a human carcinogen.

Bisphenol-A: A chemical compound used to make clear and flexible (polycarbonate) plastics in DVD's, plastic water bottles and food can linings. Exposure over time to Bisphenol-A may pose a risk for breast cancer and prostate cancer. It can alter genes and cause other human health problems for children and adults. Exposures to Bisphenol A can be minimized by: 1) microwaving in glass; 2) not re-using scratched or heated plastic bottles.

Environment: The combination of circumstances, physical conditions and outside influences surrounding an individual. Exposure to a wide variety of natural and man made substances have specific relationships to cancer. Cancer risks associated with environmental chemicals *may* be present in air, water, food, or in the workplace

Environmental factors: such as viruses, sunlight and chemicals interact with cells throughout out lives.

Environmental risk factors: are influences in our surroundings, such as radiation, exposures, and infections

Environmental tobacco smoke (ETS): Also called second-hand smoke, is the combination of smoke emitted from the burning end of a cigarette, cigar, or pipe, and smoke exhaled by the smoker. ETS contains at least 60 known carcinogens. ETS, or second-hand smoke exposure is associated with breast cancer in younger women.

Herbicide: A chemical agent used in lawns and gardens that can destroy plants and weeds.

Ionizing radiation: An invisible, high frequency radiation that can damage the DNA or genes in the body.

Pesticide: .An agent used to destroy any type of pest (e.g. insect killers; termite control). Several pesticides *suspected* to interfere with normal sex and reproductive hormones warrant a **precautionary** approach. You can minimize pesticide exposure by always washing fresh fruits and vegetables before eating them.

Protective factors may be present in genes, or in the diet or other behaviors that help defend against cancer.

Phthalates: A class of industrial compounds used widely as plastic softeners, additives to perfumes and hairsprays, lubricants, and wood finishers, among other things. Phthalates are being studied for **breast** cancer.

Tobacco: Exposure to the carcinogens in tobacco products account for about one-third of all cancer deaths in the U.S. each year. Cigarette smoke contains more than 100 cancer-causing substances. Active smoking and exposure to second hand smoke (ETS) during the teen years are associated with some types of breast cancer.

Healthy Nutrition and Weight Maintenance Terms

Antioxidants: Chemicals (many found in foods and beverages) that protect against cancer. Antioxidants fight against the toxic forces or agents that can damage DNA through a process called “oxidative stress.” (Green tea is thought to be one source of powerful antioxidants, along with grapes, apples and green leafy vegetables.) Check with your teachers, your health department, or local agriculture department for food safety guidelines.

Body Mass Index (BMI): An index of *obesity (excessive overweight)* that uses weight and height to determine levels of body fat for children, teens and adults. The formula to calculate adult BMI is mass in kilograms (kg) divided by the square of height in meters (m²). You can check your BMI using a calculator on the National Institutes of Health web site. (www.health.nih.gov; link to body mass index)



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Carotenoids: Brightly colored particles found in the cells of vegetables, which may protect the body from cancer. **Beta-carotenes** (carotenoids) are found in carrots, peaches, cantaloupes, and sweet potatoes.

Cruciferous vegetables: The cabbage family - cauliflower, radishes, collards, kale and bok choy may protect against breast cancer. Broccoli contains a chemical that helps remove cancer-causing agents from cells. The best sources of these “micro-nutrients” are whole foods (not vitamin supplements or watery juices). Vitamins and minerals present in whole foods work together to eliminate toxins and boost the body’s immune system.

Dietary fat: Fat consumed as part of a person’s diet. Foods from animal sources are the major contributors of dietary fat (meat, poultry and dairy products). Fat is an essential nutrient that the body uses for energy and also for growth and repair and “insulation.” Some fats may “bind” with estrogen and potentially raise estrogen levels in the body over time. There are several types of dietary fats, of which the “trans-fats” (Omega-6 fatty acids) appear to increase the risk of certain diseases. That’s a good reason to *limit, but not eliminate* fat in the diet.

Energy expenditure Exercise or physical activity

Omega-3 fatty acids: Type of “polyunsaturated fatty acids” that the body absorbs from food. Found in cold-water fish (tuna, salmon) and in dark green leafy vegetables, flaxseeds and some vegetable oils (*good fats*).

Omega-6 fatty acids: Sources include corn oil and safflower oil used in cooking fried foods (*limit these*).

Phyto-estrogens: Naturally occurring compounds found in plants and legumes (such as beans, peas, soybeans and lentils) or plant products (such as whole grain cereals,) that act like “weak estrogens in the body.”

Basic Breast Development and Girl’s and Women’s Reproductive Cycles/Life Events

Estrogen: A family of hormones that promote the development of female (reproductive) characteristics

Mammary glands: Special organs in the breast that produce and secrete milk after childbirth for breastfeeding.

Menarche: The first menstrual period; which begins for girls at varying ages. Early menarche (before age 12) is considered to be *one* risk factor for breast cancer, possibly because it increases lifetime exposure to estrogen.

Menstruation: The discharge of blood-filled lining of the uterus also called the monthly “period.”

Menopause: The time in a woman’s life when her menstrual periods end, usually between ages 48-54. Later menopause (after age 55) is considered to be one risk factor for breast cancer and lifetime estrogen exposure.

Puberty: The stage during physical and sexual maturation when the body becomes capable of reproduction. Puberty may be a “window of susceptibility” for breast cancer while the breasts are changing and growing.

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Breast Cancer Questions & Answers for Young Women (Vogel, C., Twenty First Century Books, 200)

Breast Health and Cancer Detection (Aronson, V., Need to Know Library, Rosen Publishing Group, Inc. 2000)



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Cancer and the Environment, What You Need to Know, What You Can Do (U.S. Dept Health & Human Services)
National Institutes of Health, National Cancer Institute, National Institute of Environmental Health Sciences, 2003)

“Cancer Facts,” National Cancer Institute, (2005)

Good for You: Reducing Your Risk of Developing Cancer (American Cancer Society, Health Content Products, 2002)

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