

Basic Radiation Therapy Terms

accelerated radiation: radiation schedule in which the total dose is given over a shorter period of time. (Compare to hyperfractionated radiation.)

adjuvant therapy (add-joo-vunt): a treatment used in addition to the main (primary) therapy. Radiation therapy often is used as an adjuvant to surgery.

alopecia (al-o-pee-shuh): hair loss

anti-emetic (an-tie-eh-MEH-tik): a drug to prevent or treat nausea or vomiting.

applicator (ap-lick-ate-ur): a device used to place an implant or a medicine into the body. .

brachytherapy (brake-ee-THER-uh-pee): internal radiation treatment done by implanting radioactive material directly into the tumor or close to it. Also called internal radiation therapy.

cancer: a general term for more than 100 diseases that have uncontrolled, abnormal growth of cells that can invade and destroy healthy tissues.

catheter (cath-uh-tur): a thin, flexible tube through which fluids or other materials be put in or taken out of the body.

centigray (cGy) (sent-uh-gray): the preferred measurement of the amount of radiation dose absorbed by the body (1 cGy = 1 rad).

chemotherapy (key-mo-THER-uh-pee): the use of certain types of drugs to treat cancer.

conformal radiation therapy (con-for-mul ray-dee-A-shun): a newer type of radiation treatment that uses a special computer to help shape the beam of radiation to match the shape of the tumor and delivers the beam from different directions. This reduces the amount of exposure to nearby healthy tissues.

dosimetrist (doe-sim-uh-trist):: a person who plans and calculates the proper radiation dose for treatment.

electron beam (ee-leck-tron): a stream of high-energy particles called electrons used to treat cancer.

external radiation: radiation therapy that uses a machine located outside of the body to aim high-energy rays at cancer cells.

fractionated radiosurgery: see stereotactic radiosurgery.

fractionation (frack-shun-A-shun): dividing the total dose of radiation into smaller doses in order to reduce damage to healthy tissues.

fractions: the smaller, divided doses of radiation that are given each day.

gamma rays: high-energy rays that come from a radioactive source such as cobalt-60.

helical tomotherapy (he-lick-ul toe-mah-gruff-ee): a newer form of intensity modulated radiation therapy (IMRT) in which the radiation is directed from a donut-shaped machine that spirals around the body.

high-dose-rate (HDR) brachytherapy: a type of internal radiation in which the radioactive source is in place only for a

few minutes and then removed. This may be repeated several times over a few days to weeks.

hyperfractionated radiation (**hi-per-frack-shun-ate-ed**): radiation schedule in which it is given in smaller doses and more than once a day, but the overall length of treatment is the same. (Compare to accelerated radiation.)

implant, radioactive: a small source or container of radioactive material placed in the body, either in or near a cancer. (See also brachytherapy.)

intensity modulated radiation therapy (IMRT) (**in-ten-si-tee mod-you-late-ed**): an advanced method of conformal radiation therapy in which the beams are aimed from many directions and the intensity (strength) of the beams is controlled by computers. This allows more radiation to reach the treatment area while reducing the radiation to healthy tissues. (See also conformal radiation therapy.)

internal radiation: a type of therapy in which a radioactive substance is implanted into or close to the area needing treatment. Also called brachytherapy.

interstitial radiation (**in-ter-stih-shul**): a type of internal radiation in which a radioactive source (implant) is put directly into the tissue (not in a body cavity).

intracavitary radiation (**in-truh-kav-it-err-ee**): a type of internal radiation in which a radioactive source (implant) is placed in a body cavity, such as the vagina, as opposed to directly into a tumor.

intraoperative radiation (**in-truh-op-ruh-tiv**): a type of external radiation therapy used to deliver a large dose of radiation to the tumor and surrounding tissue during surgery.

linear accelerator (lin-ee-er ak-sell-er-a-ter): a machine that creates high-energy radiation to treat cancers using electricity to form a beam of fast-moving subatomic particles. Also called mega-voltage (MeV) linear accelerator or a linac.

medical oncologist: a doctor who is specially trained in the diagnosis and treatment of cancer and who specializes in the use of chemotherapy and other drugs to treat cancer.

palliative care (pal-ee-uh-tiv): treatment intended to relieve symptoms caused by cancer, rather than to cure it. Palliative care can help people live more comfortably.

platelets (plate-uh-lets): special blood cell fragments that help stop bleeding.

port (also treatment field): the area of the body through which external beam radiation is directed to reach a tumor.

proton beam therapy: a form of external radiation that uses proton beams to kill cancer cells. Protons are parts of atoms that cause little damage to tissues they pass through but are very good at killing cells at the end of their path.

rad: short for "radiation absorbed dose"; an older term of measurement of the amount of radiation absorbed by the body (1 rad = 1 cGy). (See centigray.)

radiation: energy carried by waves or a stream of particles. Types of radiation used to treat cancer include x-ray, electron beam, alpha and beta particle, and gamma ray. Radioactive substances include forms of cobalt, radium, iridium, cesium, iodine, strontium, samarium, phosphorus, and palladium.

radiation oncologist: a doctor who specializes in using radiation to treat cancer.

radiation physicist: a person trained to ensure that the radiation machine delivers the right amount of radiation to the treatment area. This person works with the radiation oncologist and dosimetrist to design, plan, and calculate the proper dose for radiation treatment. (See dosimetrist.)

radiation therapist: a person with special training to work the equipment that delivers the radiation.

radiation therapy or radiation treatment: the use of high-energy rays or subatomic particles that penetrate the body to treat disease.

radiation therapy nurse: a registered nurse who has special training in oncology and radiation therapy.

radiologist: a doctor with special training in reading and interpreting diagnostic x-rays and scans and performing specialized x-ray procedures.

radiopharmaceuticals (ray-dee-o-farm-uh-SUIT-uh-kulls): radioactive substances that are taken by mouth or injected into the body. They collect in the area of the tumor and help stop its growth..

radio-resistance: the ability of cells to not be affected by radiation.

radio-sensitivity: how susceptible a cell, cancerous or healthy, is to radiation. Cells that divide frequently are especially radiosensitive and are more affected by radiation.

simulation: a process involving special x-ray pictures that is used to plan radiation treatment so that the area to be treated is precisely located and marked.

stereotactic radiosurgery: a type of radiation treatment that gives a large dose of radiation to a small tumor area, usually in a single session. It is mostly used for brain tumors and other tumors inside the head. Though it is not surgery, it is able to focus the radiation on small areas. There are different types of equipment for this, such as the X-Knife™, CyberKnife®, Clinac®, and Gamma Knife®. Sometimes doctors give the radiation in many smaller treatments to deliver the same or slightly higher dose. This is sometimes called fractionated radiosurgery or stereotactic radiotherapy.

systemic radiation: uses radioactive materials such as iodine 131 and strontium 89 to kill cancer cells. The materials may be taken by mouth or injected into the body. (See radiopharmaceuticals.)

teletherapy (tell-uh-thair-up-ee): treatment in which the radiation source is at a distance from the body (external radiation).

treatment field (or **port**): the place on the body at which the radiation beam is aimed.

tumor: an abnormal lump or mass of tissue. Tumors are either benign (not cancer) or malignant (cancer).

unsealed radiation: internal radiation therapy that is swallowed or given by injecting a radioactive substance into the bloodstream or a body cavity. This substance is not sealed in a container or implant.

white blood cells: the blood cells that help defend the body against infection.

x-ray: a form of radiation that can be used either at low levels to make an picture of the inside of the body on film or at high levels to kill cancer cells.