

Glossary of Medical Terms

Radiation Emergency Assistance Center/Training Site (REAC/TS)
Oak Ridge Institute for Science & Education (ORISE)
PO Box 117, MS-39, Oak Ridge TN USA 37831
Routine Phone: 865-576-3131, Emergency Phone: 865-576-1005

Glossary of Terms

The following is a glossary of medical terms as defined briefly in as non-medical language as possible. These definitions are designed to help the non-medically trained understand the terminology the speakers use in describing the results from irradiation injury. The lack of knowledge by the participant of these terms in no way diminishes their capability to assist the medical profession in treating contaminated or irradiated patients. Perhaps the understanding of these terms will add comfort to those who find themselves working in the different arena of the medical profession.

Absolute Risk: See Risk-Absolute.

Acentric Chromosome: Lacking a central constriction, so that a chromosome will not survive subsequent cell divisions.

Acute Radiation Syndrome: A term for the collective response of the hematopoietic, gastrointestinal, cardiovascular, and central nervous system to exposure from radiation.

Anaplastic (anaplasia): The loss of distinguishing characteristics of a cell.

Anastomosis: A communication or connection between two vessels by collateral channels.

Aneuploid: Having more or less than the normal number of chromosomes.

Anorexia: Lack or loss of appetite for food.

Anxiety: A state of apprehension felt by a person in which the source is usually not as specifically perceived as in fear. It often pertains to future danger as punishment or threats to self-esteem. Anxiety typically leads to defensive reactions and is often associated with psychological changes.

Ataxia: Failure of muscle coordination.

Atrophy: The shrinking of a cell, tissue, organ, or part.

Basal Cell: One of the innermost cells of the deeper epidermis of the skin.

Biological Half-Life: The time required for the body to eliminate one-half of an internally deposited radioactive substance by normal processes of elimination. This time is the same for both stable and radioactive isotopes of a particular element. See Half-Life: Physical, Effective.

Bullae (Bulla): A large vesicle, usually 2 cm or more in diameter. A large blister.

C-Spine (Cervical Spine): That part of the spine associated with the neck.

Carcinogenic: Having the ability to produce a cancer.

Cathartic: An agent that causes evacuation of the bowels.

Centromere: The constricted portion of the chromosome at which the chromatids are joined and by which the chromosome is attached to the spindle during cell division.

Chelating Agent: A chemical that has the ability to firmly bind a metal ion (in the case of internal contamination, to remove it from the body via the excretory process).

Chromatid: One of the spiral filaments of DNA that make up a chromosome.

Chromosome: In animal cells, a structure in the nucleus containing a linear thread of DNA, which transmits genetic information and is associated with RNA and histories; during cell division, the material (chromatin) composing the chromosome is compactly coiled, making it visible with appropriate staining and permitting its movement in the cell with minimal entanglement.

Combined Injury: A tissue trauma or disease state resulting from more than one cause.

Conjunctivitis: Inflammation of the delicate membrane that lines the eyelids and covers the front of the eyeball.

Cytogenetics: The branch of genetics devoted to the study of chromosomes.

Cytoplasm: The aqueous solution and structure inside the cell.

Debridement: The removal of foreign material or contaminated tissue from a lesion until healthy tissue is exposed.

Dermis: That portion of the skin underneath the outer layer.

Desquamation: The shedding of skin in scales or small sheets.

Deterministic (Non-Stochastic) Effect: Associated with immediate or delayed cell death (lethal damage). Describes biological effects whose severity is a function of dose; for these effects, a threshold dose may exist; examples of

radiation induced somatic effects are cataract, nonmalignant damage to skin, hematologic deficiencies, and impairment of fertility.

Dicentric: In genetics, having two centromeres.

Differentiation (of cells): Development of mature characteristics of a particular type of cell.

Diploid: Having two sets of chromosomes.

DNA: A nucleic acid that is the carrier of genetic information.

Dysfunction: Impairment or abnormality of function.

Eczema: An inflammatory process of the skin.

Edema: Abnormally large amounts of fluid in tissue.

Effective Half-Life: The effective half-life of a given isotope is the time in which the quantity in the body will decrease by half as a result of both radioactive decay and biological elimination. See Biological, Physical Half-Life.

Endarteritis Obliterans: Inflammation of an artery in which the smaller vessels become narrowed or obliterated.

Epidemiology: The study of the frequency and distribution of diseases in a population.

Epidermis: The outermost layer of skin.

Epilation: Loss of hair.

Epithelitis: Inflammation of the epithelium.

Epithelium: The covering of internal and external surfaces of the body including the lining of vessels and cavities.

Erythema: A name applied to redness of the skin produced by congestion of the capillaries, which may result from a variety of causes.

Eschar: The crusty scab formed over burned, abraded or lacerated tissue.

Erythrocytes: The red blood cells.

Erythropoietin: A hormone that acts on stem cells of the bone marrow to stimulate red blood cell production.

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Fibrosis: The formation of fibrous tissue such as scar tissue.

Follicle: An anatomical sac, pouch-like depression or cavity.

Free Radical: A neutral, highly reactive atom or grouping of atoms that has an unpaired electron.

Gastrointestinal: Pertaining to the stomach and intestine.

GCSF (Granulocyte Colony Stimulating Factor): Proteins that stimulate the production of white blood cells.

Genetic Effect: An effect of ionizing radiation on genes of somatic (diploid) or reproductive (haploid) cells that is passed on to their progeny. The effect may be expressed clinically in exposed populations (somatic effects) or the descendants of the exposed population (inherited genetic effects).

Genotype: The genetic make-up that determines the type of a particular trait. Compare: phenotype.

GMCSF (Granulocyte Macrophage Colony Stimulating Factor): Proteins that stimulate the production of white blood cells.

Gonad: An ovary or testes.

Granulocyte: A white blood cell that is characterized by granules in its cytoplasm.

Half-Life (Physical): The time required for the activity of a given radioactive element to decrease to half of its initial value through radioactive decay. The half-life is a characteristic property of each radioactive element and is independent of its amount or condition. See Biological, Effective Half-Life.

Hematocrit (HCT): The percentage of red blood cells in the whole blood.

Hematology: The branch of medicine that studies or treats the blood or blood forming tissues.

Hematopoietic: Pertaining to or effecting the formation of blood cells.

Hemoglobin: The oxygen carrying pigment of the red blood cells.

In vitro: In an artificial environment.

Incidence Rate: The number of disease onsets in the population divided by the sum of the time periods of observation for all individuals in the population, often expressed as the number of new cases per 100,000 individuals per year.

In vivo: In the living body.

Interleukin: Types of protein having numerous biological effects, including the stimulation of antibody and bone marrow cell production.

Ischemia: A lack of blood to a part of the body usually due to a constriction or obstruction of a blood vessel.

Keratoses: Any horny growth on the skin such as a wart or callous.

Latent Period/Latency: Period of apparent biological/clinical inactivity between time of exposure of tissue to an injurious agent and observed response.

Lesion: Any pathological or traumatic injury to tissue.

Leukocyte: Any colorless cell; white blood cell; the cells that fight infection.

Lymphocyte: A white blood cell whose function is in antibody production.

Macrophage: A large white blood cell whose function is to cleanse the blood of debris or particles.

Medullary: Pertaining to or resembling marrow.

Metaphase: The second stage of cell division when the chromosomes are located along the center of the cell prior to separation.

Mitosis: A method of indirect division of a cell, consisting of a complex of various processes, by means of which the two daughter nuclei normally receive identical complements of the number of chromosomes characteristic of the somatic cells of the species.

Mucociliary Action: Natural cleansing action of mucous membranes of the respiratory tract. Tiny hair-like projections propel mucus and particles with a wave-like action.

Mutation: A physical or chemical change in the DNA in a gene or genes comprising the chromosomes in the cell nucleus. Radiation induced mutations in reproductive cells or their precursors may lead to inherited effects in the progeny of individuals in an exposed population. Radiation induced mutations in somatic cells may lead to effects in exposed individuals.

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Necrosis: Localized death of tissue.

Neoplasia: The formation of a neoplasm, i.e., the progressive multiplication of cells characterized by abnormal growth process, such as a tumor.

Neuro: Relating to a nerve or the nervous system.

Neutrophil: A granular white blood cell.

Oncogene: Genetic material carrying the potential for cancer and passed from parent to offspring.

Oogonia: The ovarian eggs.

Pancytopenia: Deficiency of all formed elements of the blood.

Parenchymal: The functional elements of an organ.

Pathogen: Any disease-producing microorganism or material.

Pathology: The branch of medicine that studies the functional and structural changes in tissues and organs caused by disease or trauma.

Pedicle: A foot-like, stem-like, or narrow strip of tissue.

Peripheral (blood): Located away from the center or at the outer regions of the body.

Phenotypes: The entire makeup of an individual as determined both genetically and environmentally. A type distinguished by visible characteristics rather than by hereditary traits. Compare: genotype.

Physiological: Pertaining to the living organism and its parts and the physical and chemical factors involved.

Platelets: A disc shaped structure found in the blood of all mammals that is essential in blood coagulation.

Pneumothorax: An accumulation of air or gas between the lungs and rib cage which may occur spontaneously or as result of trauma.

Probability: The mathematical chance that a given event will occur.

Probability of Causation (PC): The probability calculated from the increase in the probability that a particular disease outcome, C, (e.g. lung cancer) due to a Radiation Emergency Assistance Center/Training Site (REAC/TS)
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possible cause, D, (e.g. radiation dose) as a proportion of the possibility of C given D, everything conditional on certain characteristics of the individual (e.g. age, sex, smoker, etc.).

Prodrome: A symptom indicating the onset of a disease.

Prophylactic: Tending to ward off disease.

Psychological: A process that deals with the mind and mental activity in relation to behavior.

Psychosocial Stimuli: Certain environment social stimuli that can be damaging now or in the future. Individuals may sense danger or recognize damage and must act to protect themselves from such noxious stimuli.

Psychosomatic Illness: A real illness produced by psychological stimulation. The brain can produce such effects by autonomic nervous transmission, by control of endocrine glands, and by signals to the muscles. Since the term psychosomatic illness implies that a disorder is “all in one’s head,” a term growing in acceptance is psychophysiological disorder.

Radiation Sickness: The prodromal manifestations of acute radiation injury, varying in severity, scope and cause, depending on the conditions of exposure to ionizing radiation. An old term for acute radiation syndrome (ARS).

Radiopharmaceutical: A chemical compound labeled with radioactivity used in medicine for diagnosis or therapy.

RBCs: Red blood cells.

Risk: The probability of injury, harm or damage. Expressed in epidemiological terms as the absolute or relative risk.

Risk, Absolute: Relates to the number of disease cases or deaths induced. The excess absolute risk is expressed as the numerical difference between the risk in the exposed and the non-exposed population.

Risk, Relative: The ratio of the number of cases of disease or deaths observed in the exposed population and the number observed in the non-exposed population.

Septicemia: A bacterial infection or toxins in the blood throughout the system.

Somatic: Pertaining to the body.

Somatic Effect: An effect that may be expressed clinically in an individual.

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Spermatogonia: A developmental state of male germ cells.

Subclinical: Describing situations, problems, or groups of individuals with problems of less magnitude than those that mandate clinical attention but may nevertheless be quite bothersome for the individual.

Symptom: Any subjective evidence of disease or change in a patient's condition.

Syndrome: The sum of signs or symptoms that occur together and indicate a deviation from normal.

Teratogenic Effect: An effect on the fetus caused by exposure to a harmful agent. The deformities caused by thalidomide were in this category. For radiation, the first trimester of the pregnancy is the most sensitive period.

Thrombocytes: Blood platelets.

Torso: The trunk of the body without head or extremities.

Toxemia: A condition resulting from the spread of bacterial toxins in the bloodstream.

Transepidermal: Occurring through or across the skin.

Tumorigenesis: The production of tumors.

Ulcerative Enteritis: An inflammation of the intestine so severe as to cause ulcers to form.

Vascular: Pertaining to blood vessels.

Viable: Capable of living.

WBCs: White blood cells.