

Proton beam therapy

Glossary



Glossary

Here are some definitions for some of the words that patients may come across during treatment. Patients won't hear all of them; many will not be relevant to every case. For a more comprehensive glossary, visit brainstrust.org.uk/glossary.

General words

Word	Definition
Adjuvant	Usually used as 'adjuvant therapies'. These are treatments that are added to increase effect, e.g. radiotherapy, chemotherapy.
Asymptomatic	If you are asymptomatic, it means you don't have any symptoms.
Benign	Not threatening to health, unlikely to recur and not progressive. 'Non-malignant' is the preferred term.
Biopsy	A medical test performed by a surgeon or an interventional radiologist who will take a sample of cells or tissue for examination.
Blood brain barrier (BBB)	A barrier between brain tissue and circulating blood. It is there to protect the brain and prevents substances from leaving the blood and crossing into the brain tissues.
CSF (cerebrospinal fluid)	A watery fluid that flows in the ventricles within the brain and around the surface of the brain and spinal cord.

Word	Definition
Chemotherapy	Drug therapy for cancer.
Clinical presentation	The picture of signs and symptoms that leads to a diagnosis.
Concurrent	Happening at the same time. Radiotherapy and chemotherapy are often referred to as concurrent when they are given at the same time.
Concomitant	Naturally accompanying or following something.
End of life	A phrase used to describe a phase of an illness that has become advanced, progressive and incurable.
First-line management	Initial treatment of an illness.
Grade	A tumour will be given a grade that refers to the way the cells of the tumour look under a microscope. Tumours will be graded according to the highest grade of cell that the pathologist sees in the biopsy specimen. So if the tumour has a high percentage of grade II cells and a small percentage of grade III cells, the tumour will be graded as a grade III.
Histology	The study of tumour cells under a microscope.
Histopathology	The study of diseased tissues at a minute (microscopic) level.

Word	Definition
Imaging	The use of technology to create a picture, e.g. an MRI scan.
Immuno-histochemistry (IHC)	The process of detecting antigens or biological markers within tumours or tissue using antibodies. Immunohistochemistry provides insight about the classification of tumours by identifying cellular markers of phenotype, and about the tumour's potential to grow.
Intracranial	Inside the cranium (skull).
Laterality	The side of the body in which symptoms are showing.
Localised	Confined or restricted to an area.
Malignant	Cancerous, tending to invade normal tissue or to recur after removal.
Markers	<p>Pathologists can test for markers in the tumour tissue. Markers can be genetic, molecular or immunohistochemical. These tests can:</p> <ul style="list-style-type: none"> • aid the diagnosis of tumours that are sometimes hard to diagnose • allow clinicians to work out a prognosis • indicate whether a tumour will respond to a specific type of treatment.
MDT	Multidisciplinary team.
Metastatic tumour	A secondary tumour formed of cancer cells that began elsewhere in the body.

Word	Definition
MRI (magnetic resonance imaging)	A special radiology technique that takes pictures of internal structures of the body using magnetism, radio waves and a computer to produce the images of body structures.
Microvascular proliferation	Abnormally thickened blood vessels. They tend to be leaky and cause contrast enhancement on imaging.
Modality	A method of treatment.
Morphology	The form and structure, e.g. of a tumour.
-oncology	The branch of medical science dealing with tumours of a particular organ, e.g. 'neuro-oncology' is brain, 'haemo-oncology' is blood.
Pathology	The study of the causes and effects of diseases.
Optimal	Most desirable or satisfactory.
Overall survival (OS)	The percentage of people in a study or treatment group who are still alive for a certain period of time after they were diagnosed with or started treatment for a disease.
Palliative	Having the goal of relieving symptoms and improving quality of life.
Prognosis	A forecast as to likely outcome, the chance of recovery.

Word	Definition
Progression-free survival (PFS)	The length of time during and after the treatment of a disease that a patient lives with the disease but it does not get worse.
Proliferation	An increase in the number of cells as a result of cell growth and division.
Prophylaxis	Preventive treatment or action.
Radiotherapy	A treatment in which high-energy radiation is used to damage cancer cells and stop them from growing and dividing.
Regime	A regulated system of treatment.
Systemic	Affecting or circulating throughout the body.
WHO classification	The World Health Organization (WHO) classification for the grading of tumours.

Imaging

Here are some definitions relating to imaging, the use of technology to create a picture of a part of the body or the whole of the body, e.g. an MRI scan.

Word	Definition
Anterior	Placed before or in front.
Artefact	Fuzziness or distortion in an image caused by manipulation, such as file compression.
Axial	Perpendicular to the long axis of the body.
Calcification	Calcium deposits in soft tissue.

Word	Definition
Contrast	A substance given to patients to increase the contrast in the scan and make it easier to see certain features.
Coronal	Relating to the plane created by an imaginary line that divides the body at any level into anterior and posterior portions. Also called the 'frontal plane'.
Cyst	Cysts are abnormal sacs made up from natural matter, usually fluid.
Delineation	The outline of the tumour. Also used to delineate target volume of tumour for surgery and radiotherapy.
DTI (diffusion tensor imaging)	A refinement of magnetic resonance imaging (MRI) that allows the doctor to measure the flow of water and track the pathways of white matter in the brain. DTI is able to detect abnormalities in the brain that do not show up on standard MRI scans.
EEG (electro-encephalogram)	A record of the tiny electrical impulses produced by the brain's activity. By measuring characteristic wave patterns, the EEG can help diagnose certain conditions of the brain.
Eloquent	Relating to an area of the brain that, if damaged or removed, will result in loss of sensory processing or linguistic ability.

Word	Definition
Enhancement	A process whereby a substance is used to enhance the structures during a scan. This reduces the lowest grey values to black and the highest to white.
Fibrillary	Made up of minute fibres
FLAIR (Fluid-attenuated inversion recovery)	A pulse sequence used in scanning to null signal from fluids. For example, it can be used in brain imaging to suppress cerebrospinal fluid (CSF).
fMRI (functional MRI)	Functional MRI takes the map obtained with traditional MRI imaging and adds on additional dimensions, such as measuring regional blood flow over time or showing something about the biochemistry of a tumour in a specified location.
Focal	Limited to a specific area.
Foci	‘Foci’ is the plural of ‘focus’. These are cells that can only be seen under a microscope.
Gadolinium	A substance that enhances tumour images using magnetic resonance imaging (MRI).
Heterogeneous	A state of having different, or a variety of, characteristics and qualities.
Homogeneous	Of a uniform, consistent nature.

Word	Definition
Hyperostosis	An excessive growth of bone.
iMRI (intraoperative magnetic resonance imaging)	The use of magnetic resonance imaging (MRI) to see tumours clearly while performing surgery.
Increased (high) signal	Hyperintensity signals show up as increased brightness (white) on MRI using different scanning techniques. The nature of scans causes tissues with more water to give off brighter signals that appear whiter on the scans.
Inflammation	Swollen tissue.
Intrinsic	Originating from, or situated within, an organ or tissue.
Isotope	A form of a chemical element that has a different-from-normal atomic mass. Isotopes are used in a number of medical tests because they can produce images of tissues that can be used to detect diseases or conditions.
Lesion	A lesion describes damage or destruction to any part of an organ. It may be due to trauma or any other disease that can cause inflammation, malfunction or destruction of a cell or tissue.

Word	Definition
Margin	<p>1. A border or edge of the tumour.</p> <p>2. In surgery, 'margin' refers to an amount that is allowed but that is beyond what is needed. So the margin taken around the tumour.</p>
Metabolism	The chemical and physical processes that happen to maintain the body and produce energy.
Midline	An imaginary line (front to back) that separates the right and left.
Motor	Relating to movement or the control of muscles.
Metastasis (plural - metastases)	The development of a secondary tumour in another part of the body. The tumour cells usually travel through blood vessels, lymph channels or spinal fluid.
MRI (magnetic resonance imaging)	A special radiology technique that takes pictures of internal structures of the body using magnetism, radio waves and a computer to produce the images of body structures.
Multifocal	Having many focal points, when damage caused by the disease occurs at multiple sites.
Neoplasm	A tumour, either benign or malignant.
Oedema	Swelling caused by fluid.

Word	Definition
Perfusion MRI	A special type of MRI that uses an injected dye in order to see blood flow through tissues.
PET (positron emission tomography)	A scanning device that uses low-dose radioactive sugar to measure brain activity.
Posterior	Back.
Pseudo-progression	Swelling or contrast enhancement on a scan that suggests tumour progression or recurrence related to treatment. Pseudoprogression can stabilise without additional treatments and often remains clinically asymptomatic.
Sagittal	The front-to-rear plane of the body (chest to back).
Signal	Brightness of a tissue or structure on MRI.
SPECT (single-photon emission computed tomography)	A scanning technique that uses radioactive materials.
T1 weighting	MRI image showing structures; cerebrospinal fluid appears black on the image.
T2 weighting	MRI image showing water; oedema and cerebrospinal fluid appear white on the image.
Vascularity	The blood supply of a tumour.

Radiotherapy

Here are some definitions that relate to radiotherapy, a treatment in which high-energy radiation is used to damage cancer cells and stop them from growing and dividing.

Word	Definition
cGy (centigrays)	A unit of absorbed radiation dose equal to one hundredth of a gray.
Conformal	Relating to the shaping of radiotherapy beams in three dimensions to match the shape of the tumour.
Cyberknife®	Brand name of a machine used to deliver linear accelerator stereotactic radiosurgery.
Demyelination	Loss of the myelin sheath of a nerve.
Dose	The total amount of ionising radiation absorbed by material or tissues, expressed in centigrays.
Dose rate	The quantity of a treatment given over a period of time.
External beam	Radiation therapy that uses a machine to aim high-energy rays at a tumour.
Fractionated	Divided into parts. This relates to the dividing of the total dose of radiation to be given into several smaller, equal portions delivered over a period of days.
Gamma Knife®	Brand name of a machine used to deliver stereotactic radiosurgery (SRS), a focal form of radiation therapy.

Word	Definition
IMRT (intensity-modulated radiation therapy)	A form of radiation therapy that uses specialised equipment to shape radiation beams to the size and shape of the tumour.
Late effects	A health problem that occurs months or years after a disease is diagnosed or after treatment has ended.
Linac (linear accelerator)	An electrical device that creates ionising radiation in the form of X-rays (photons).
Mask	A mould to prevent the head from moving so that the patient is in the exact same position for each treatment.
Necrosis	Dead cells.
Palliative radiation	Radiation therapy with a goal of relieving symptoms and improving quality of life.
Proton beam therapy	A form of radiation therapy that uses high-energy protons to treat tumours.
Radiation oncology	The use of radioactive substances, X-rays or high-energy particles, such as electrons or protons, for the treatment of tumours.
Radiosurgery	A special form of radiation therapy that uses a large number of narrow, precisely aimed high-dose beams of ionising radiation.

Word	Definition
Stereotactic radiosurgery (SRS)	<p>A form of radiation therapy that focuses high-powered X-rays on a small area of the body, better targeting the abnormal area. It is a treatment, not a surgical procedure. Some types of stereotactic radiosurgery require a specially fitted face mask or a frame attached to the patient's scalp.</p> <p>Other names: Gamma Knife, Cyberknife, stereotactic radiotherapy (SRT), stereotactic body radiotherapy (SBRT), fractionated stereotactic radiotherapy.</p>
Toxicity	State of being poisonous.
Tumour progression	When a tumour recurs, or begins to grow again. The second stage of tumour development.

Sources

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The following websites were consulted for this glossary:

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brainstrust glossary: **brainstrust.org.uk/brain-tumour-support/quality-of-life/practical-help/glossary**.

Summary of data held in brain tumour registry (BTR) records.

The following people were consulted for this glossary:

- patient/carer representatives
- diagnostic radiographer
- radiation oncologist - neuro-oncology
- consultant surgeon
- consultant pathologist.

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