



## Effects of Treatment

### Radiation based therapies

Radiation therapy is a cancer treatment that uses high or concentrated doses of radiation to kill cancer cells and shrink tumors.

Radiation effects can vary and will be dependent on the dose, the treatment (external or internal) and the site being treated. Effects may also vary depending on whether you have had previous radiation and / or chemotherapy.

Complications of radiation therapy include:

- **Fatigue** - may be due to other potential effects of radiation such as possible anaemia, the increased energy requirement your body needs to deal with repair and recovery or simply the time it takes. For example, many External Beam Therapies require a daily attendance at hospital for several weeks (the procedure itself may only take minutes, but unless you live nearby and / or have your own transport, each session can involve a whole day).
- **Bone marrow suppression** - radiation therapy can have an effect on how well the bone marrow can continue to produce blood cells. We need healthy blood cells to deliver oxygen and nutrition around our body, help fight infection and also repair damage and prevent bleeding. If bone marrow production of cells is reduced this can lead to anaemia, reduced immunity, delayed healing and bruising/bleeding.
- **Altered liver or kidney function** - both the liver and kidneys are involved in the regulation , filtering and elimination of waste products in our bodies, including products within the bloodstream. Substances from damaged tumour cells and the breakdown of radiation particles once they have done their job, need to be eliminated from the body - and the liver and kidneys are vital in this. However, sometimes these substances can cause damage to healthy liver and kidney cells - leading to reduced function.
- **Nausea/vomiting**
- **Radiation dose restrictions** - if you have previous been treated with radiation and / or chemotherapy - your specialist team will need to consider whether these previous treatments may alter the type and dosage of radiation the treatment will involve.
- **Fertility** - depending on the type of treatment and the area to receive radiation, fertility may be affected.
- **Pain / inflammatory response** - the body may see the procedure as an injury. The natural response to injury is inflammation - caused by a rush of protective and repair factors to the site of harm. The tumour doesn't want to be killed, but as its cells are attacked, it may release certain substances that cause inflammation (swelling) - which can lead to discomfort and / or pain.

Rarely, a more severe reaction may be experienced as tumour cells are damaged and die - this sudden destruction can cause the release of certain chemicals into the bloodstream, that the kidneys cannot get rid of as fast as they'd like - this is called **Tumour Lysis Syndrome**. Typically, onset is within 1-5 days of the procedure or chemotherapy and severity can range from a few abnormal blood results to the other extreme, which may include renal failure and cardiac disturbances (heart problems).

- **Target site skin reaction** - this is more common in External Beam Radiotherapy - where a specific spot/site of the body is targeted to receive radiation. As the beam passes through the skin it can cause surface irritation - from a reddening or irritation of the skin to something like a burn. Very rarely this can lead to the breakdown of skin - this is rare, the team giving you treatment will keep a close eye on skin health to prevent this happening.
- **Fibrosis / damage** - as above, this may be more common in External Beam radiotherapy, but effects deeper tissue, rather than the skin surface. As the beam passes through body tissue it can cause irritation and inflammation leading to internal 'scarring' - this is known as fibrosis - and is a more common side effect in EBRT to the lungs and abdominal/pelvic area.

#### **Very rarely**

- **MDS** - this is a type of blood cancer that affects the bone marrow. It causes low levels of one or more types of blood cells. You will be carefully monitored during and after treatment, by blood tests, to ensure that healthy cells are not damaged - but if they are, this is found as soon as possible to reduce the risk of this damage leading to cancerous changes.

**You will be given self care advice (for before and after treatment) : this will include how to best prepare for the procedure and what to expect afterwards - including when to seek medical help.**