What are the side effects of treatment?

Side effects can develop when normal tissues receive radiation. The types of side effects seen will depend on many factors such as the area treated and the goal of the treatment (definitive, palliative, stereotactic). For some treatments, the side effects can be notable, whilst for others no side effects are seen.

There are two types of radiation therapy side effects: **acute** and **late**.

**Acute** side effects occur during or shortly after the completion of radiation therapy – typically starting in the second or third week of treatment and last 2 – 4 weeks. While acute side effects are common, they are generally transient and self-limiting; resolution will occur over the following weeks. Rarely side effects are prolonged as a result of biologic variation. Acute side effects are seen most commonly in tissues that rapidly divide and have the ability to repair themselves (skin, oral mucosa, lining of the gastrointestinal tract, and foot pads). While side effects are resolving, we support our patients with pain medications and other supportive care. Symptomatic therapy and patience is generally the best treatment and care must be taken not to damage the tissues further (animal scratching, or human scrubbing). On rare occasion after radiation of nervous tissue (brain or spinal cord) acute edema (swelling) may occur and must be treated with corticosteroids until symptoms resolve.
Late side effects occur 6 months or later after the completion of radiation therapy. Late side effects are seen in tissues that are slowly dividing. As the cells cannot replicate or repair themselves readily, radiation-induced damage cannot be repaired as easily. Unlike acute side effects, which are common and self-limiting, late effects are much less common (rare). When late effects occur they have the potential to be serious and can be permanent. Late side effects are typically seen in connective tissues (bone, nervous tissue, and cartilage), skin and eyes. More specifically we can see muscle fibrosis, skin fibrosis, bone necrosis and fracture, or radiation induced second cancers that can (rarely) occur several years after radiation therapy.

The risk of specific side effects can often be controlled with thoughtful radiation planning. These side effects will be discussed with you on an individual basis. Our TomoTherapy unit significantly reduces the incidence and severity of side effects seen due to precise radiation delivery. Studies performed here at the Veterinary Medical Teaching Hospital have indicated significantly reduced ocular (eye) side effects in dogs treated for nasal tumors.

Overall, what is the likelihood your pet will experience radiation side effects?
Because of patient and tumor variations, we cannot accurately predict which patients will or will not experience side effects and to what degree they will occur. Although acute side effects are common and occur to some degree in nearly all patients, they are generally self-limiting and transient. Late term side effects can be more serious and permanent; however, our dosing schedule is aimed at minimizing the likelihood of late side effects. The likelihood of a serious late side effect is less than 5%.

While radiation therapy can cause some discomfort in the short term, the goal is for our patients to have a good quality of life following treatment.