

# Radiation Therapy

## Frequently Asked Questions



VETERINARY  
MEDICAL CENTER

UNIVERSITY OF MINNESOTA

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Welcome to the radiation therapy (RT) service - we are here to help you get prepared now that you have elected to pursue RT to treat your pet's tumor. We understand how overwhelming this can be. To help you be most prepared and comfortable going forward, we have provided answers to frequently asked questions about the radiation process below.

### **Why does my pet need a CT scan before radiation therapy? Why does it take 7-10 days after the CT to start radiation therapy?**

While not all pets need a CT scan prior to treatment, most of our pets are best treated with the use of a CT. Once we have completed the radiotherapy planning CT (also referred to as CT for RT simulation or CT simulation), our radiation oncologist creates a treatment plan unique to your pet's conformation and tumor shape and location. To help ensure that the radiation plan is optimal, the radiation oncologist outlines every major organ as well as the tumor on each image of the CT scan (there are typically 100-200 images). We use these images to help design radiation beams to best target the tumor, while minimizing radiation dose to the nearby normal tissues. This also lets us know how to prepare you for any potential side effects (acute or late radiation effects). It typically takes several days to create the treatment plan. Before we can use the plan for treatment, we perform quality assurance checks to ensure the linear accelerator properly delivers radiation according to the plan. This includes a QA check with the RT technician (tech), and in some cases, an additional test with a physicist from University of Minnesota Medical School who will travel to the Veterinary School up to twice a week. As soon as the plan has passed all of these checks, we call you to select start dates. We may try to offer treatment for the next day so we can get your pet started as soon as possible.

### **What happens for my pet in the morning after I drop him/her off?**

#### ***Before Radiation Treatments:***

After you have dropped off your pet for treatment, the RT technician (tech) will examine them with an oncologist. The tech who will perform anesthesia will speak with an anesthesiologist about your pet and his/her protocol in order to select the most appropriate anesthetic drugs. If you have a dog that you have permitted to have social time, she/he will stay with the other pet dogs in oncology until it is time for radiation treatments. If she/he is not permitted to have social time (all cats, some dogs), then your pet will be in an individual kennel in one of the oncology wards. The wards are checked every hour by staff to make sure all patients are safe and comfortable.

#### ***Time for Radiation Treatment:***

When it is your pet's time for radiation treatment, he/she will be walked down to the radiation treatment room, which is a large vault region that houses the linear accelerator. Because we want your pet to feel comfortable during treatment, we try to play and have fun with them before any procedures, which can help lower his/her anxiety and build trust. Your pet is then anesthetized according to the anesthesia-approved protocol, which typically involves injectable drugs given by intravenous (IV) route first followed by gas (inhalant) anesthesia. We use modern anesthesia equipment and monitoring devices to ensure your pet receives the best care. We then use positioning devices, such as vacuum-formable mattresses that conform to your pet's body or a customized dental mold, to ensure we have your pet in proper position for treatment. Most of the pets we treat with

radiation therapy undergo a CT simulation first, which allows us to design a reproducible position for your pet, where the radiation plan targets tumor tissue and reduces dose to nearby normal tissues. After your pet is positioned for treatment, we obtain images of your pet and “match” them your pet’s ideal position created at the CT simulation. We can make slight shifts to ensure that your pet is indeed in his/her optimal position for treatment (image-guided radiation therapy). We then treat your pet’s tumor with his/her treatment plan, where the linear accelerator rotates around your pet. Pets are under anesthesia for approximately 15-30 minutes on average, depending on their positioning and treatment plan. Once treatment is complete, your pet is recovered from anesthesia and we will call you with a pickup time. For pets that stay with us for treatment, they are returned to social time in oncology or to the kennel.

### **Why does my dog need to be under anesthesia every day?**

Your pet needs to remain immobile for each radiation treatment for the radiation plan to accurately target the tumor while minimizing dose to nearby normal tissue. Therefore, general anesthesia is used to keep your pet comfortable and immobile. We cannot ask your pet to sit still for imaging and treatment (as occurs in most human cancer radiation treatments). Our margin of error for radiation treatment is very small (often as little as 1-2 millimeters) so even small movements can affect the quality of your pet’s radiation protocol. For anesthesia, we aim to use IV medications that are processed rapidly in the body (as opposed to drugs injected into the muscle). For many pets, we keep the same protocol through treatment. However, for some pets, we work with you to adjust the anesthesia protocol over several treatments to find just the right protocol for your pet. We want to use a protocol that lets us treat as safely and swiftly as possible, while keeping your pet as normal as possible at home. We depend on you to let us know how your pet does, so please let us know on your daily drop off sheet how your pet did at home the night before.

### **Why does my pet have to have an IV catheter in their leg all week?**

To help us treat your pet as safely and quickly as possible each treatment, your pet will have an IV catheter placed at the first treatment of each week. This also reduces your pet’s anxiety because we do not need to insert a new needle at each treatment, which gives us more time to interact and play with your pet. The IV catheter is a soft flexible tube that is inserted into the vein (there is no sharp needle in the vein) and wrapped with soft padding to secure it in place. You will not need to do anything with this catheter – but it is very important to prevent your pet from chewing or licking at the catheter. Some patients need to have an E-collar on to stop them from chewing at it.

### **How does payment work going forward?**

On the first day of treatment we will have prepared an estimate for you to sign. This will be an estimate for all of the routine expected costs associated with your pet’s radiation treatment protocol. This can occasionally change, but we will speak with you before changing your estimate to inform you of the reasons for any changes. The estimate will have a high end and a low end. You are asked to pay 75% of the high end of the estimate on the first day of treatment. With that deposit, we will deduct our daily charges from it until the last week or two of therapy. Once the initial deposit has been used, we will have you pay daily until treatment is complete. The primary reasons for the total cost exceeding the low end of the estimate include medications, lab work, or additional monitoring or rechecks throughout therapy.

### **What kind of side effects are expected?**

This is a difficult question to answer, because the type and risk of side effects is unique to each pet, and is

dependent on several factors (the type of tumor, the size of the tumor, whether or not surgery has been performed first, etc.). If acute toxicity develops, which refers to adverse changes that occur during or shortly after radiation therapy, we expect it to be manageable and to recover within a few weeks. The radiation oncologist will highlight specific toxicity to watch for that is specific to your pet's plan. You will find this at the bottom of your very first RT discharge letter.

**If my pet does have a radiation burn, what can I put on it, and how can I care for it?**

In 99.9% of cases, we ask that you leave the radiation site alone to avoid doing any unintentional trauma to the site. Radiation therapy injures the top layers of skin cells, and they are very fragile. This means that even if you very gently rub at the radiation site, it can cause irritation, infection and delay healing. In some cases, we will recommend some treatment; if this is true for your pet, the RT tech will teach you how to care for and manage the radiation wound.

**What happens after radiation therapy treatments are completed?**

Even though your pet has completed radiation therapy, he/she is still "one of ours" and we would really love to know how he/she is doing. We typically recommend a standard monitoring schedule, which is often based on the type of treatment recommended and what type of response we expect. We understand that not everyone can return to the VMC, but please update us periodically on your pet's health. We greatly appreciate that you have trusted your pet's care to us for radiation and we are here to help in the monitoring period after treatment too.