HOW THE TREATMENT WORKS MEDICALLY

VIRGINIA VETERINARY CENTERS

BUSH VETERINARY NEUROLOGY SERVICE

Understanding Radiation Therapy

Radiation therapy involves the use of high-energy X-rays or electrons to target and destroy cancerous cells. Importantly, pets undergoing this treatment do not become radioactive at any point during the therapy.

Types of Radiation Therapy

There are several forms of radiation therapy utilized in veterinary medicine:

- External Beam Radiation Therapy (EBRT): The most common method, where a machine called a linear accelerator directs radiation precisely at the tumor.
- Stereotactic Radiation Therapy (SRT): A highly precise form of radiation that delivers high doses in fewer sessions, often used for tumors in sensitive or hard-to-reach areas.
- Brachytherapy: Involves placing radioactive material directly inside or near the tumor. This method is less common in veterinary practice.
- Radioisotope Therapy: Uses radioactive substances that are ingested or injected, such as radioactive iodine for treating hyperthyroidism in cats.

Administration of Radiation Therapy

The equipment used to deliver radiation is known as a linear accelerator (LINAC). This machine is housed in a specially designed room that safeguards both the environment and the operators from radiation exposure. The radiation dose administered during therapy is significantly higher–approximately 1,000 times–than that used for diagnostic imaging, making it highly effective in destroying cancer cells.

A veterinary radiation oncologist prescribes the total radiation dose for each patient. Rather than delivering the entire dose in a single session, it is divided into multiple smaller doses called "fractions". Typically, one fraction is administered daily, although in some cases, two fractions may be given per day, spaced at least six hours apart. This fractionated approach allows healthy tissues time to repair between sessions, while cancer cells, which are less efficient at healing, are progressively destroyed. The number of fractions required varies based on the individual needs of each patient.