

Answers to the top 5 questions from owners of pets with cancer

1. What caused my pet's cancer?

In general, cancer most often results from a combination of genetic and environmental factors. Evidence for a genetic cause of cancer in companion animals is supported by the many examples of breed predispositions to certain tumor types. There are also heritable forms of cancers that result from mutations in germline cells. The majority of genetic alterations that eventually lead to cancer occur because of spontaneous mutations. These mutations may occur as a result of chronic exposure to known cancer-causing substances (e.g. sunlight, chemicals, hormones, etc.) In human medicine, up to one-third of all tumors are related to environmental and life-style factors. In veterinary oncology, we know that nutrition, hormones, viruses, carcinogens, pesticides, UV light, asbestos, and canned cat foods are all factors that might increase the risk of cancer in pets. Although we often do not know the underlying cause of the cancer, advances in surgical, medical, and radiation oncology allow us the opportunity to provide treatment options for owners and help their pets live longer as a result.

2. Will performing a biopsy cause the cancer to spread/become more aggressive?

While it has been shown that tumor cells can disseminate into the bloodstream during surgical manipulation, the ability of these cells to arrest and implant within target tissue is extremely poor, and most circulating tumor cells are rapidly destroyed by the host's immune system. Performing a biopsy without giving consideration of future treatment options however could result in significant changes to the optimal treatment plan for the patient. Biopsies should be planned such that they can be obtained from a region of the primary tumor that can be either entirely removed with a more definitive surgical excision, or be included in the planned field of radiation. Surgical incisions on the extremities should be orientated along the longitudinal along the axis of the limb to avoid generating a circumferential scar. The biopsy procedure should not cause disruption of existing tissue planes, as this will necessitate a larger surgical resection and/or radiation field to control the local disease. It is recommended to avoid placing drains within biopsy sites for tumors as the drain could allow for tumor-contaminated fluid to contact all tissues through which the drain was placed. Similarly, post-operative seromas or fluid pockets may allow tumor cells to invade previously uninvolved tissue planes. Pretreatment biopsies are generally indicated for most tumors, with the exception of those procedures associated with a high degree of morbidity (e.g. biopsy of the CNS) or when knowing the tumor type would not change the choice of therapy (e.g. biopsy of a splenic mass or primary lung tumor.)

3. Will my pet become sick from chemotherapy?

The goal of veterinary oncology is to preserve quality of life for as long as possible, while imparting the least amount of deleterious effect to the patient. In general, approximately 25% of all animals receiving chemotherapy will experience some sort of side effect from therapy. This generally entails mild and self-limited gastrointestinal upset and/or lethargy that occur in the first few days following treatment. These signs can usually be controlled using over the counter or prescription medications. However, approximately 5% of chemotherapy patients will have severe side effects that require hospitalization. With appropriate management, the risk of these side effects causing the death of a patient is less than 1%. If a patient experiences serious side effects, the dose of chemotherapy is reduced to avoid similar complications in the future. Every precaution is made to be sure that patients are healthy enough to undergo treatment *prior* to

instituting therapy. In general, the quality of life for patients receiving chemotherapy is excellent. Studies have indicated that the majority owners are happy with their decisions to pursue treatment for their pets and their outcomes and would elect to pursue treatment again, after seeing how well their animals did during therapy.

4. Can my pet receive vaccinations during a course of chemotherapy? Likewise, can flea/tick/heartworm medications be used while my pet is receiving chemotherapy?

Myelosuppression resulting from chemotherapy should not be confused with immunosuppression. Myelosuppression refers to a decrease in bone marrow activity, resulting in reduced circulating numbers of red blood cells, white blood cells, and/or platelets. Immunosuppression refers to a reduction in the ability to fight infection. Studies have shown that dogs receiving chemotherapy, though myelosuppressed, can mount sufficient humoral immunity to maintain sufficient titers when challenged with vaccines. However, it is unclear whether cancer can ultimately result in a compromised immune system, and as such many veterinary oncologists do not recommend vaccinating patients while they are receiving chemotherapy as a means to avoid unnecessary immune stimulation. It is important to remember that it is whether or not an animal is considered up to date on vaccination, not it's vaccinal titer, that would be considered in case of exposure (e.g. to rabies virus). Patients can receive flea/tick/heartworm prevention, as there have been no reports of contraindications using these products along with chemotherapy.

5. Can my pet be around family members or other animals while undergoing treatment?

In general, while a pet is receiving chemotherapy, it is considered safe for that animal to interact with all family members. Depending on the chemotherapy drug(s) that the pet is receiving, there may be certain times after a treatment that the pet would be considered at a higher risk for picking up an infection, so precautions may be necessary at certain times after treatment. For any oral chemotherapy drugs that are to be administered at home, it is important that the capsules or pills are kept out of the reach of children. If anyone on the household is pregnant, trying to become pregnant, nursing, or considered immunocompromised, they should not handle chemotherapy drugs. Most oral drugs have a protective coating, but we recommend that latex or polyvinyl gloves be worn when handling these medications and that the person handling the drugs washes their hands afterwards. It is very important not to cut the pills into pieces or open the capsules, as this can increase the risk of exposure. The metabolites of the chemotherapy drugs can be present in the urine and/or feces for up to 72 hours after an animal has been treated. As such, dogs should be walked away from public areas during this time period. Gloves should be worn when handling an animal's feces, litter, vomit, etc. Cat litter and any body fluids that occur indoors can be flushed down the toilet. Hands should be washed thoroughly after handling and potentially contaminated fluids/waste.

If you have a questions regarding chemotherapy in companion animals, or believe you have a patient that could potentially benefit from consultation with a veterinary oncologist, please call 585 424-1260 to schedule an appointment or to speak with Dr. Intile directly.

Dr. Joanne Intile, DVM, MS, DACVIM (Oncology) works full-time at Veterinary Specialists of Rochester. She received her veterinary degree from Cornell University in 2005. Following

graduation, Dr. Intile accepted a rotating internship in small animal medicine, surgery, and emergency and critical care at Long Island Veterinary Specialists before returning to Cornell to complete a residency in medical oncology. Dr. Intile is a member of the American College of Veterinary Internal Medicine, the Veterinary Cancer Society, the AVMA, and Phi Zeta, the National Veterinary Honor Society. During her residency she was awarded the Robert S. Brodey Memorial Award for outstanding clinical research project in oncology at the 27th Annual Conference of the Veterinary Cancer Society in 2007. Dr. Intile has professional interests in clinical chemotherapy trials including developing novel rescue protocols for canine lymphoma, the use of Vitamin D for anti-cancer therapy, and hospice care/pain relief for cancer patients.