



VETERINARY ONCOLOGY CONSULTANTS

Helping veterinarians treat pets with cancer

Information for Pet Owners and Caregivers of Puppy Thomas

Chemotherapy in dogs

The treatment of cancer has evolved over the last few decades to parallel treatment in humans, with certain differences. The important difference between cancer therapy in humans, and that offered for pet animals, is in the goals of therapy. In humans, many cancers are cured, and cancer survivors may enjoy many decades of comfortable life. For this reason, treatment of cancer in humans is aggressive and often associated with severe side effects. Part of what makes this possible is the availability of intense, specialized supportive care units and strategies for human cancer patients. While pet animals are very similar biologically to humans, these types of supportive strategies are not available for pets; in addition most pet owners and pets prefer to avoid severe side effects and prolonged hospitalization for quality of life reasons. Therapies are therefore directed at preserving quality of life; and tumour control, or remission, is often the aim rather than cure at any cost.

The goal of veterinary cancer therapy is to achieve a "complete clinical remission" or to make the pet as normal as possible with no outward evidence of cancer. Often the treatment starts with surgery. If the surgeon is unable to remove all the tumour cells without causing compromise to your pet's quality of life, then radiation therapy may be offered as a follow-up. If the tumour has spread to other sites, or if the risk of spread is very high, then treatment may involve the use of anti-cancer medications (chemotherapy). They are used in a set format, or "protocol". Various such protocols exist, using slightly different drug sequences and dosages.

Two recent studies surveyed dog owners whose pets had received chemotherapy. After chemotherapy 92% were happy they had

treated their dog, and 80% said they would treat another pet with chemotherapy if the need arose. Quality of life scores during chemotherapy were reported to be the same as prior to developing lymphoma in nearly 70%, while the other 30% felt their pet's life was less than before lymphoma, but very acceptable; none felt quality of life was poor during chemotherapy. In the other study 89% of dog owners did not regret using chemotherapy in their pet, and the same percentage felt their pet's quality of life was good during therapy.

What about side effects?

It is important to recognize that although your pet's cancer may not be curable, your pet can enjoy a high quality of life during chemotherapy. All anticancer drugs have the potential to produce adverse side effects. However, the side effects that can occur in pets are usually not as severe as those which occur in humans due to the lower doses used.

The starting dose of any particular chemotherapy drug used in pets is one that we know most pets will tolerate without significant side effects. However, a minority will experience some side effect that, while it will go away by itself in a few days, is considered to have an unacceptable impact on quality of life. Rarely, severe side effects can occur that require treatment in the hospital, but even then the pet will usually recover within a few days. When side effects occur, future doses of that drug are reduced to try to prevent the side effect from occurring again. On the other hand, if a pet experiences no impact whatsoever of a particular drug, the dose may be increased slightly in the future in an effort to be as effective as possible against the cancer. In this way, each pet's chemotherapy is tailored to the individual. We also often use other medications such as antibiotics and anti-nausea medications along with chemotherapy to further reduce the risk of side effects.

As the care giver, you have an important role in recognizing the side effects, managing them at home whenever possible, and alerting your veterinarian if the side effects persist. It is important for you to know what the possible side effects of each drug are so that you will know what to expect. Some side effects that may occur, depending on the particular medications your pet receives, include:

Low white blood cell count

1. The white blood cell count may drop below normal. This does not cause a problem unless the cell count drops too low, and the body cannot fight off infections. If this happens, your pet's symptoms may include fever, lethargy, vomiting, and loss of appetite.
2. Infections caused from having a low white blood cell count are potentially the most severe side effect of chemotherapy. Infections are most likely to occur 5-7 days after a treatment is given.
3. The most common source of infection is the pet's own gastrointestinal tract. *Do not feed your pet raw meat during chemotherapy.*
4. If your pet shows symptoms of infection 5-7 days after a treatment, take their temperature (normal is 37.8°-39.2°C). If it is greater than 39.4°C, or if you cannot take the temperature, you should call the hospital immediately. A fever with a low white blood cell count is an emergency, and your pet may need to be admitted to the hospital and receive intravenous fluids and antibiotics.

Lethargy

1. Your pet may seem tired, not as energetic as usual. Allow your pet to rest as much as he or she wants. The energy level should return to normal within a couple of days.

Anorexia (loss of appetite)

1. This can occur after some treatments in dogs and more commonly in cats.
2. Offer your pet enticing foods such as chicken, ham and tuna. Try warming the food.
3. Call the hospital if your pet's temperature is greater than 39.4°C or if the anorexia persists for more than 48 hours.

Nausea & vomiting

1. Vomiting is uncommon but if it occurs, would usually be seen 2-5 days after the treatment.
2. Withhold food and water for 12 hours, then offer your pet small amounts of water.
3. If your pet does not vomit after drinking water, offer bland foods such as boiled chicken and rice or chicken baby food. Gradually reintroduce normal diet.
4. Call the hospital if your pet's temperature is greater than 39.4°C or if vomiting is severe, accompanied by a fever, or persists longer than 24 hours.

Diarrhoea

1. Diarrhoea is uncommon but if it occurs, would usually be seen 2-5 days after the treatment.
2. Withhold food for 12 hours. Water is OK.
3. Offer bland, easily digestible foods such as boiled chicken and rice. Gradually reintroduce normal diet. Bismuth liquid can be given.
4. Call the hospital if your pet's temperature is greater than 39.4°C or if diarrhoea persists for more than 48 hours.

Is there any risk to me?

Usually there is no risk to the owner of a pet receiving chemotherapy. However, all chemotherapy drugs are potentially mutagenic (can cause mutation in the DNA) or carcinogenic (can cause cancer), and the risk involved in contacting small amounts is not yet known. Platinum drugs (carboplatin and cisplatin) are excreted in the urine for about 48 hours after administration, so contact with the urine of animals that have received one of these should be avoided for 3 days, and any soiled bedclothes should be discarded rather than washed.

In addition, *women who are or may be pregnant* should not handle any chemotherapy medications that are dispensed to be given at home, and should avoid contact with the urine or faeces of a pet that has received chemotherapy within the past 3 days.

Can my pet have regular exercise?

In general, your pet can take as much exercise as he or she feels up to. During periods of low white cell counts, it is a good idea to avoid parks and other areas where unknown animals may be contacted. During periods of low platelet count, your veterinarian may restrict vigorous exercise where there is a risk of injury for a short time.

Should my pet eat a special diet?

It usually is not a good idea to change your pet's diet too dramatically during a time when he or she is undergoing a lot of other stresses. However, we *do not recommend feeding raw meat* to pets that are receiving chemotherapy, as it appears to increase their risk of infection if the immune system becomes suppressed. The food should of course be of good quality and nutritionally balanced as far as possible. There is some evidence that higher protein and fat

and lower carbohydrate content is beneficial to pets that have a high tumour burden. There is also some evidence that supplementation with fish oil may improve response to chemotherapy; although the impact is still minor compared to the therapy itself. Again, quality of life is the most important criterion for pets undergoing treatment for cancer and it is important that the diet you choose is one that your pet enjoys.

Can my pet receive regular health care?

Your pet should continue to receive heartworm preventative medication. Topical flea and tick prevention are preferred, although more recently released oral forms (such as fluralaner [Bravecto]) are reported to be free of interactions with chemotherapy; dips are best avoided. Spinosad [Comfortis] is an inhibitor of drug transport and may increase toxicity of some chemotherapy. Vaccination should be delayed until 6 months after finishing treatment. Minor dentistry or surgery can be done during periods when your pet's white blood cell and platelet counts are normal.

Will my pet lose hair?

Usually dogs will not lose their fur, but clipped areas may be slow to grow in, and breeds that have hair that needs regular trimming (such as poodles, many terriers) may have some thinning. Any lost hair will grow back within a few months after chemotherapy is finished, although rarely there may be a color or texture change.