

# Is your pet facing chemo?

## Answers to your top questions.

If chemotherapy is recommended to treat your pet's cancer, it's natural that you'll have questions and concerns. When do we recommend chemotherapy? How does it work? What are the risks, and what can you expect? Here are some insights from Dr. Sue Ettinger, or "Dr. Sue Cancer Vet," as her clients call her.



In the world of veterinary oncology, chemotherapy is often recommended to control a pet's cancer, prolong survival and maintain a good or even excellent quality of life.

Chemotherapy drugs are compounds that are toxic to cancer cells, which multiply very rapidly. Most chemotherapy drugs work by damaging the ability of cancer cells to divide and replicate. Therefore, the goal of conventional chemotherapy is to arrest cancer cell growth and to kill the cancer cells.

Note: This is different from a relatively newer form of chemotherapy called metronomic chemotherapy. Metronomic chemotherapy is low-dose oral (or pulse) chemotherapy given on a continuous treatment schedule. Since it's given daily or every other day, the chemotherapy is administered at lower doses than typical chemotherapy, often with a reduced toxicity profile. This is covered the accompanying handout "FAQ about metronomic chemotherapy."

### When is chemotherapy recommended for my pet?

Chemotherapy may be recommended for your pet for one of the following reasons:

#### 1. To reduce or eliminate your pet's

**cancer.** For tumors sensitive to chemotherapy (such as lymphoma, myeloma or leukemia), chemotherapy is usually the most effective single treatment. Depending on the cancer being treated, multiple chemotherapy drugs may be given in a protocol, such as the CHOP multi-agent chemotherapy protocol for lymphoma in dogs and cats.

#### 2. To prevent or delay metastasis (spread) of your pet's cancer.

Chemotherapy is typically administered after the primary tumor has been controlled locally with surgery, radiation therapy or both. If your pet's tumor has a high likelihood of metastasis, chemotherapy will likely be part of the treatment plan. For example, bone cancer (osteosarcoma) in dogs has a very high metastatic rate, so chemotherapy is recommended and most effective after the bone tumor has been removed.

#### 3. To make your pet more comfortable.

Occasionally, chemotherapy may be recommended as a palliative treatment for tumors that cannot be removed with surgery or treated with radiation therapy. The goal is to make your pet more comfortable and alleviate problems associated with the tumor, such as pain or pressure.

#### 4. To increase the sensitivity of your pet's tumor to radiation therapy.

Some pharmaceuticals have been shown to increase the ability of radiation therapy to kill cancer cells without increasing the toxicity to normal tissue that is in the radiation field.

### Will chemotherapy make my pet sick?

The surprising answer is no! Chemotherapy is very well-tolerated in most dogs and cats. In my experience, 80% of pets have no side effects. Fifteen to 20% will have mild to moderate side effects, but the side effects only last a few days and will improve on their own. Cats tend to tolerate chemotherapy even better than dogs, and both dogs and cats handle chemotherapy better than people. Most of my clients tell me the good days definitely outweigh the bad days while being treated. Many clients are in disbelief their pet is getting chemotherapy because the side effects are so rare and the dog or cat is so "happy and healthy."

Plus, we have effective medications to minimize any side effects that do happen, and they help your pet get through the side effects more quickly. These are covered in the handout "Helping a Pet

get through Chemotherapy.” Still, most chemotherapy drugs have the potential for side effects, so it is important to be aware of them when making the decision to treat and so we can identify them early when they occur. However, they would not be used if their potential benefit of killing cancer cells did not outweigh the possible toxicity. Most pets that we recommend chemotherapy are likely to live longer and live better with chemotherapy treatment than without.

### Why do we see side effects during my pet's treatment? What will they look like?

In addition to killing rapidly dividing cancer cells, the chemotherapy will injure or damage some normal cells. Some normal cells that divide rapidly are susceptible to the toxic effects of chemotherapy. The three most common side effects we see in pets are:

**1. Gastrointestinal toxicity.** This can manifest as nausea, vomiting, diarrhea or loss or changes of appetite. These side effects most commonly occur for one to five days after the chemotherapy treatment and last two to three days. Severe gastrointestinal side effects are uncommon.

Generally, the side effects are mild and resolve on their own without additional treatment, but we can minimize the impact on our pets by 1) being proactive and preventing and 2) identifying effects early and treating when it occurs.

Keep in mind that pets with nausea can be hard to figure out. A nauseous pet tends to approach food to eat but then turn away without eating. They may also salivate or appear anxious.

**2. Bone marrow toxicity.** This toxicity typically causes low blood counts (white blood cells, red blood cells and platelets). It is the white blood cell that is most susceptible to being damaged by chemotherapy because these cells are rapidly dividing, so we monitor the white blood cell counts of veterinary patients

undergoing chemotherapy very closely.

If the cells that produce the white blood cells are damaged, the patient's white blood cell levels may fall low enough to increase susceptibility to infection. The good news is that white blood cells recover quickly—typically within days—and antibiotics may be prescribed to decrease the risk of infection while they are low. If your pet acquires a systemic infection, you may notice severe lethargy or fever. Please call your veterinarian if you note either.

For most chemo-



therapy, the likelihood of a low white blood cell count is typically the seventh day after chemotherapy treatment, but there are definitely exceptions such as carboplatin, Lomustine and chronic oral chemotherapy protocols.

Platelet counts may also be affected, but this is more common with long-term chemotherapy. Platelets aid in blood clotting. When the platelet count is low, clotting can become an issue, and you may notice more bruising than normal or nosebleeds. It is very important that you stay in contact with your veterinarian so

we can help determine the severity of any problems at home.

**3. Hair loss.** This side effect is usually mild in dogs but can show up unexpectedly. It's not nearly as common as it is in people receiving chemotherapy, because your dog's hair does not grow continuously throughout their lives.

Exceptions are Old English sheepdogs, poodles, Westies and other breeds whose hair does continue to grow—in other words, dogs that need periodic hair clipping. The hair will regrow after chemotherapy is stopped. And remember that dogs don't worry about how they look, so the psychologic impact is minimal compared with people.

It's important to note that in any breed, the hair will be slow to regrow in areas that we need to shave for access to veins or for other procedures, such as abdominal ultrasound. In addition, when the hair regrows, it may be of a slightly different color or texture.

Cats may lose their whiskers when they are undergoing chemotherapy.

**4. Other effects.** Some intravenous chemotherapy drugs can be extremely irritating to the tissues if they leak out of the vein when we administer the drugs. This can result in swelling, inflammation, ulceration and tissue damage. Examples of drugs that can cause this are doxorubicin, vincristine, vinblastine and mechlorethamine (part of the MOPP rescue protocol for lymphoma).

We are very careful about minimizing this by administering these chemotherapeutic drugs through catheters and giving the treatments in a quiet, dedicated room. In addition, all treatments are given by experienced veterinary oncology nurses or oncologists.

In addition to the above side effects, other drugs may have unique potential toxicities. Your veterinary oncologist will review this information with you if your

pet is scheduled to receive any of these particular drugs.

Severe side effects from chemotherapy are rare. Only about 5% of chemo patients have severe side effects that require hospitalization, and typically for just 24 to 48 hours. Most patients feel better with IV fluids, injectable nausea medications and antibiotics. In addition, with chemotherapy dose reductions and medications to prevent further side effects, most of my patients can receive that same chemotherapy drug again without any further issues.

### How might my pet's chemotherapy given?

Chemotherapy treatment may consist of one drug or a combination of several drugs. Most drugs are given by intravenous (IV) injection or orally. Less commonly, chemotherapy is given in the muscle (intramuscularly, or IM), under the skin (subcutaneously, or SQ), or into the chest or abdominal cavity. The therapy will be planned by your veterinary cancer specialist based on your pet's cancer and other medical problems that may impact drug choice.

Cancer specialists work very closely with your pet and you to tailor the protocol to your pet's condition and to minimize side effects. We strive to maintain a good to excellent quality of life for your pet while he or she is undergoing treatment. As I often say, live longer, live well. Our patients need to do both.

Chemotherapy is usually given on an outpatient basis. Typically, your pet will stay for a short time to allow for a physical examination, pre-chemo blood work and chemotherapy treatment.

Most pets are awake for their treatment, and sedation is not required. The length of the actual treatment depends on the drug, but most drugs are given intravenously over five to 30 minutes. Some of the newer immunotherapies do require a full day at the clinic, but this is not the norm.

For some cancers, you may be administering oral chemotherapy at home. Please see the "Helping pets through chemo" handout for tips and safety recommendations for handling chemotherapy and having a pet on chemotherapy in the home.

Giving chemo to your pet is not a

contract. If you do not like how your pet is handling it, you can stop. I always encourage people to try a dose or two, and most of them are so surprised and pleased, they return with their pet for more treatments. Meet with your cancer specialist and learn about the options. Even if you decide not to treat, you will have made an educated decision. It is frustrating to wish you had started therapy earlier but thought the treatment would not be tolerated.

Remember, chemotherapy would not be used if the potential benefits of killing cancer cells did not outweigh the possible toxicities. Most pets tolerate chemotherapy extremely well. Your pet is quite likely to have normal activity and energy and continue its routine.

We will work very closely with you to minimize side effects while maximizing the therapeutic benefits for your pet. Our goal is that your pet feels good and have a good to excellent quality of life while undergoing chemotherapy treatment (and after treatment too).

Cancer can be scary, but we can do this together: [#livelonglivelowell](#)  
[#kickcancersbutt](#)

