Cancer and Chemotherapy

A cancer diagnosis can be upsetting news. Banfield is prepared to get you the answers you need in this difficult time and to ensure that your Pet remains comfortable. Cancer can be treatable and early diagnosis will aid your veterinarian in delivering the best care possible.

What is cancer?

Cancer is an uncontrolled growth of abnormal cells on or within the body. Cancer may be benign (not recurrent) or malignant (recurrent and can spread). Cancer may be localized (lump) or it may invade adjacent cells and spread throughout the body. While malignant cancer is usually the most dangerous form of cancer, benign cancerous growths may also need to be treated as they can cause pain/irritation, hinder movement and obstruct important physical pathways.

How common is cancer in pets and what kind do they get?

Cancer is common in pets and the incidence increases with age. Dogs get cancer at roughly the same rate as humans, while cats are susceptible to fewer cancers. Some common areas that cancer develops in pets are listed below.

Skin – Skin tumors are very common in older dogs, but much less common in cats. Most skin tumors in cats are malignant, but in dogs they are often benign.

Breast – 50% of all breast tumors in dogs and greater than 85% of all breast tumors in cats are malignant. Spaying your female pet between 6 and 12 months of age greatly reduces the risk of breast cancer. Surgery is the treatment of choice for this type of cancer. Follow up treatment may be recommended.

Mouth & Nose – Cancer of the mouth is common in dogs and less common in cats. Signs to watch for are a mass on the gums, bleeding, odor, or difficulty eating. Since many swellings are malignant, early, aggressive treatment is essential. Cancer may also develop inside the nose of both cats and dogs. Bleeding from the nose, difficulty breathing, or facial swelling are symptoms that may indicate cancer and should be checked by your Banfield veterinarian.

Lymphoma – Lymphoma is a common form of cancer in dogs and cats. It is characterized by enlargement of one or many lymph nodes, or invasion of the internal organ by cancerous cells. A contagious feline leukemia virus can cause lymphoma in some cats. Chemotherapy is frequently effective in controlling this type of cancer.

Feline Leukemia Complex – The feline leukemia virus is contagious among cats and will occasionally cause different types of cancer. It is not contagious to humans. While a great deal of research is ongoing, no consistently effective treatment is presently available for virus-positive cats.

Testicles – Testicular tumors are rare in cats and common in dogs. Most of these cancers are preventable with castration (neutering) and curable with surgery if done early in the disease process.

Abdominal Tumors – Tumors inside the abdomen are common but it is difficult to make an early diagnosis. Weight loss or abdominal enlargement can be signs of these tumors.

Bone – Bone tumors are most often seen in large breed dogs and rarely in cats. The leg bones, near joints, are the most common sites. Persistent pain, lameness, and swelling in the affected area are common symptoms of the disease.

What is chemotherapy and how does it work?

Chemotherapy drugs are compounds toxic to cancer cells. Chemotherapy drugs may be injected intravenous (directly into a vein) or subcutaneously (under the skin). They can also be given orally. Cancer cells generally multiply very rapidly. Most chemotherapy drugs work by damaging the ability of these rapidly growing cells to divide, eventually killing them.

What are the benefits of chemotherapy?

1. Chemotherapy is the most effective single treatment for some types of cancer, offering the best opportunity for remission (disappearance of signs or symptoms), while at the same time, preserving a good quality of life. A good example of this type of cancer is lymphoma, also called lymphosarcoma.
2. Chemotherapy is often recommended after surgical removal of a malignant (cancerous) tumor. The purpose of chemotherapy in this setting is not only to try to prevent recurrence of the cancer at the original site, but also to try to prevent metastasis (spread). An example of a cancer in which chemotherapy is routinely used in this way is with canine or feline malignant mammary tumors.
3. Chemotherapy may be administered to some pets while they are also receiving radiation therapy (treatment with high energy rays to damage cancer cells) for the treatment of their cancer. Some chemotherapy drugs are effective in this situation because they increase the ability of the radiation to kill the cancer cells.
4. Occasionally, chemotherapy will be used alone for the treatment of cancer that cannot be surgically removed, treated with radiation therapy, or may have metastasized. In most of these cases, the goal of treatment will not be to cure the cancer, but rather to improve the patient's quality of life by reducing pressure, bleeding, or pain.

How is chemotherapy administered and what is the treatment length?

Your pet's veterinarian will determine if chemotherapy would be helpful for the treatment of your pet's cancer. If your pet is able to have chemotherapy performed at your Banfield hospital, the veterinarian will consult with Oncura, a company with several veterinarians specially trained in oncology (cancer treatment), who will plan the course of therapy. Your pet will have the chemotherapy agent administered at your Banfield hospital. Your pet might also need to see a veterinary specialist for surgery and/or radiation treatment. Treatment for each pet is individually tailored, and may include several different types of chemotherapy agents.

The vast majority of chemotherapy drugs are administered by intravenous injection. In most cases, treatment can be given on an outpatient basis. However, your pet will usually need to be dropped off for the day so the veterinarian has ample time to examine your pet, administer the chemotherapy, and watch your pet for a set duration of time after administration to ensure there are no side effects. It is your responsibility to make an appointment for each visit for chemotherapy; however, your Banfield veterinarian will notify you at the end of each visit when the next appointment should take place.

The length of a particular chemotherapy protocol varies depending on the type of cancer being treated. The most common cancer treated with chemotherapy is lymphoma. Although chemotherapy for this disease is often very successful, pet parents of cats and dogs with this type of cancer should realistically expect that their pet will need some form of chemotherapy for the rest of their lives. The course of treatment for other types of cancer is usually much shorter, generally 12 to 15 weeks. The specific length of your pet's individual course of treatment will be discussed in detail with you.

Is chemotherapy expensive?

Chemotherapy can be costly. It involves the same drugs used to treat human cancer patients, and many of these drugs are expensive. In addition to the treatment, your pet will benefit from the expertise of several highly trained veterinary professionals. Frequent laboratory testing must be done to ensure the chemotherapy is not impacting your pet's bone marrow or internal organs. The exact cost of chemotherapy varies with the size of the pet, the number of treatments, and the drugs being administered. The projected cost of your pet's individual treatment will be discussed in detail with you prior to beginning treatment.

What happens after treatment?

It is important for your Banfield veterinarian to examine your pet periodically after chemotherapy treatment has been discontinued, usually at one to two month intervals. This will allow potential problems, such as recurrence of the cancer, to be detected quickly. Treatment options have a greater potential for success when problems are identified early.

Finally, it is important to realize that cancer in pets is rarely cured. Many pets ultimately have recurrence of their cancer, and pet parents may eventually have to make the difficult decision to humanely euthanize their pet. However, it is vital to understand that most cats and dogs receiving chemotherapy have an excellent quality of life during and after treatment. It is often possible to provide many additional months, and sometimes even years, of happy life with chemotherapy.

Will my pet have any side effects from chemotherapy?

Although the majority of pets do not experience significant side effects from chemotherapy, each pet responds differently to treatment. As with any medication, serious side effects can occur. Your Banfield veterinarian will discuss with you the potential side effects of your pet's medications. If side effects occur, future treatments may be adjusted to hopefully minimize future side effects and to achieve the best possible therapeutic response.

There are some risks involved with any type of treatment for cancer. As in people, some normal cells will be injured and killed by the chemotherapy drugs. Some side effects may be caused by the death of normal cells; however, these side effects are usually outweighed by the benefits of killing the cancer cells. Generally, dogs and cats tolerate chemotherapy much better than human patients. The two side effects encountered most commonly in canine and feline patients receiving chemotherapy are toxicity to the gastrointestinal (GI) tract and to the bone marrow. Normal cells in both of these areas divide very rapidly, so they are more susceptible to the toxic effects of the chemotherapy.

GI Side Effects – When the cells lining the gastrointestinal tract (lining of the intestine) are affected, the result may be nausea, vomiting or diarrhea. Most pets will experience this side effect once or twice during their course of chemotherapy treatment, but the symptoms are usually mild and can be overcome with supportive care at home.

Bone Marrow Side Effects – When the cells of the bone marrow are affected, the result may be serious. The progenitor cells, which produce the white blood cells necessary to fight infection, are found here. If these progenitor cells are damaged, the pet's white blood cell count may drop low enough to result in an increased susceptibility to infection. Even bacteria to which a patient would normally be resistant can cause serious illness in this situation. White blood cell counts of all canine and feline chemotherapy patients are monitored carefully, and rarely a cat or dog receiving chemotherapy will develop a life-threatening systemic (throughout the entire body) infection. It is important to closely adhere to your Banfield veterinarian's recommendations for repeat blood tests. The only way to successfully treat these infections is to hospitalize the pet to administer intravenous fluids and antibiotics.

Hair Loss – Hair loss in dogs receiving chemotherapy is usually very minor, with some notable breed exceptions. If your pet is a Poodle, Old English Sheepdog, Schnauzer,

Puli, Lhasa Apso, Shih Tzu, or Maltese, you should expect that your pet will lose a significant amount of hair during the initial stages of chemotherapy. However, the hair that is lost will grow back after your dog's course of chemotherapy has been completed, or once treatments are administered less frequently. Cats usually do not lose any hair, although many will lose their whiskers.

Perivascular (tissues surrounding a blood vessel) inflammation – Some chemotherapy drugs can be extremely irritating to the subcutaneous or perivascular tissues if they leak outside the vein during injection. Examples include the chemotherapy drugs vincristine and doxorubicin (Adriamycin®). Severe inflammation, ulceration and swelling can occasionally be seen. However, this complication is rare because all chemotherapy drugs are carefully administered through intravenous catheters. An alternative to using intravenous catheters is a vascular access port (VAP) called CompanionPort™. Even though this complication is rare, it cannot be completely prevented. However, we take great care when administering any medication. After intravenous injection appointments, please observe your pet for the following:

- If your pet goes home with a bandage wrapped around the leg where chemotherapy was administered, this pressure bandage must be removed later that day. Otherwise, circulation will be compromised, and the paw may swell later.
- Check the injection site one to two times a day to make sure the area looks normal. If this area is warm, swollen, red, or looks abnormal, please call your Banfield hospital. If your Banfield hospital is closed please contact a local emergency veterinary hospital.
- If this complication is suspected while still at the hospital, you will be advised on specific treatments to be done at home and what to monitor.
- If your pet is licking excessively at the injection site, contact your Banfield veterinarian. If your Banfield hospital is closed contact a local emergency veterinary hospital.

Common side effects

Nausea and vomiting – Nausea is often manifested by anorexia (not eating), drooling, or approaching food but then not eating. If your pet is showing symptoms or nausea or vomiting, give them the prescribed anti-nausea medication and contact your veterinarian.

Diarrhea – If your pet is having diarrhea, follow these directions:

- Offer the bland diet (as above) and fresh water. When you switch back to your pet's regular diet, wean them back gradually over a few days.
- For dogs, Pepto-Bismol (Bismuth subsalicylate 262mg) can be given (one tablespoon of the regular strength formula or tablet per 15 pounds of body weight every 6 hours) orally 2–3 times daily. This will discolor your pet's stool.
- Do not give Pepto-Bismol to cats.
- If you were sent home with an anti-diarrheal medication start the medication as prescribed.
- If the diarrhea is severe, bloody, or black, persists for more than 48 hours, or is accompanied with a fever greater than 103° F, your pet must be seen by your Banfield veterinarian, or if after hours, an emergency veterinarian.
- See "Low White Blood Cell Count" for instructions on taking your pet's temperature.

Dehydration – Dehydration can develop following nausea, vomiting, diarrhea, and fever.

- When properly hydrated, your pet's gums should be pink, moist and shiny. Your pet's skin should bounce back when gently lifted (also called skin turgor) and not form a tent. This is usually done over the neck region. Note these traits are somewhat subjective and vary according to age, breed and panting.
- If the dehydration is severe, fluid therapy is likely indicated. Your pet must be seen by your Banfield veterinarian or if after hours, an emergency veterinarian.

Low white blood cell count – After treatment, the white blood cell count is expected to drop below normal and

then return to normal by the next treatment. Typically, the decrease should not cause a problem. If the white blood cell count falls too low, the body can have difficulty fighting infection. Signs to watch for include lethargy, vomiting, diarrhea, poor appetite, and a fever. Please notify your Banfield veterinarian if any of these symptoms are observed.

- If your pet is showing any of the above signs, take your pet's temperature with a rectal thermometer. You can buy a digital thermometer at your local drug store.
- Normal temperature is 99.5° to 102.5° F for dogs and cats.
- If your pet's temperature is greater than 103° F, or if you are unable to take the temperature and your pet has signs of severe illness as discussed above, your pet must be seen by your Banfield veterinarian, or if after hours, an emergency veterinarian.

Increased frequency of urination or bloody urine –

- Prednisone (a glucocorticoid often used in cancer patients) commonly causes pets to urinate more (a larger volume) and to drink more. Make sure your pet has access to fresh water at all times.
- In dogs, some chemotherapy can cause irritation and inflammation of the bladder, called cystitis. This can cause bloody urine, frequent small amounts of urine, and your pet may appear uncomfortable during urination.
- The chemotherapy drug cyclophosphamide (Cytoxan) can cause cystitis. A diuretic (medication that increases urination) is also administered when cyclophosphamide is used. Therefore it is important that your dog has frequent walks and access to ample fresh water. Diuretics can decrease the frequency of the cystitis.
- If your pet has not received this chemotherapeutic agent, and has bloody urine or increased frequency, please inform your Banfield veterinarian immediately.

What happens if my pet has an emergency?

If you think your pet is seriously ill and needs immediate medical attention, you need to call your Banfield hospital, or take your pet to a local emergency hospital if your Banfield hospital is closed. The emergency veterinarian will determine if hospitalization is necessary. It is an extremely rare occurrence for chemotherapy to cause such significant toxicity that an emergency office visit is required, but it is best to have your pet evaluated by a veterinarian if any abnormalities are noted.

We recommend the _____ _____ emergency hospital whose phone number is _____.

Are there any special precautions if giving oral chemotherapy at home?

It is important to minimize your exposure to chemotherapy, thus precautions must be taken.

- Keep the medication in the vial, and do not store it in your kitchen or near food.
- Ensure children and pets do not have access to the medications.
- Do not eat, drink, or chew gum when giving the medication.
- Do not crush or break the pills.
- Wear unpowdered latex gloves when handling the medication (unless you are allergic to latex). Dispose of the gloves promptly in a separate garbage bag from your regular household items.
- Wash your hands thoroughly after administration.
- Gloves and empty vials must be returned to your Banfield veterinarian for disposal.

What should I do if I am exposed to chemotherapy?

- A small amount of the chemotherapy agents are normally excreted in the urine and feces. Wear gloves when handling feces or urine (i.e. if they have an accident in the house/apartment). Soiled bedding can be washed as you normally would.
- Wash skin thoroughly if it comes in contact with chemotherapy drugs. If your skin becomes irritated, contact your physician immediately.
- Call poison control in case of accidental ingestion by a human.
- Wear gloves when cleaning. Slowly apply cleaning detergent to soiled areas. Do not spray or splash cleaners on spill as this can cause the chemotherapy agent to aerosolize (go into the air). Soak up areas with paper towels and immediately dispose of the waste.
- If you are pregnant, trying to become pregnant, or are breastfeeding, avoid the following:
    - Contact with these drugs.
    - Contact with your pet and your pet's urine or feces for 72 hours after chemotherapy has been given.
- If you are immunosuppressed or are taking immunosuppressive medication, avoid the following:
    - Contact with these drugs.
    - Contact with your pet and your pet's urine or feces for 72 hours after chemotherapy has been given.

As always, if you have any questions or concerns about the health of your pet, please contact your Banfield veterinarian immediately.

For additional information, please contact your Banfield medical team.

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