

Chemotherapy: Drugs Used to Treat Cancer

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Drugs are often used to treat cancer in dogs and cats.

How do anti-cancer drugs work?

Chemotherapy works by killing cells that are actively dividing (growing and making new cells). This is an important characteristic of cancer cells. Other actively dividing cells normally found in the body include those in the bone marrow, hair follicles and the lining of the stomach and intestines. That is why side effects usually involve these cells.

How is the best chemotherapy determined?

Many different regimens are used in the treatment of cancer in dogs and cats. The choice of which drug(s) to use is based on multiple factors including:

- The species of pet
- Health status of the pet
- The type of cancer
- Stage of the cancer

Many times, multiple drugs are used in combination to treat the cancer. This can increase their effectiveness and decrease the number and/or severity of side effects of the drugs.

How is chemotherapy given to pets?

Most anti-cancer drugs are given by injection into the vein (intravenous). This must be done with extreme care to avoid getting any of the medication outside of the vein, where it can be very irritating to the tissues. A few anti-cancer drugs are available in oral forms.

Because of the potential toxicity of the drugs, all anti-cancer medications must be handled very carefully. Your veterinarian and the clinic staff will need to take safety precautions when preparing these medications for use and providing the therapy to your cat or dog. Depending on the drug, these can include wearing protective clothes, gloves, masks, and goggles. With proper safety precautions, some of the oral forms of chemotherapy can be given at home.

What are some of the common drugs used in chemotherapy in dogs and cats?

The following table lists the more common drugs used in the treatment of cancer in dogs and cats.

Drug	Effective Against	Administration	Side Effects
Carboplatin	Carcinoma Sarcoma (especially osteosarcoma in dogs)	Intravenous	Bone marrow suppression Loss of appetite and vomiting in small dogs
Chlorambucil (Leukeran)	Chronic lymphoid leukemia Low grade lymphoma	Oral	Seizures Bone marrow suppression Liver toxicity (uncommon)
Cyclophosphamide (Cytoxan)	Lymphoma Some sarcomas Some carcinomas	Intravenous or Oral	Bone marrow suppression Severe inflammation of the bladder (hemorrhagic cystitis)

Doxorubicin (Adriamycin)	Lymphoma (dogs) Some sarcomas	Intravenous	Bone marrow suppression Locally irritating Vomiting Heart toxicity Kidney toxicity (cats)
L-asparaginase	Lymphoma (especially dogs)	Subcutaneous or intramuscular injection	Allergic reaction Vomiting Bone marrow suppression if given with vincristine
Lomustine (CCNU)	Lymphoma Mast cell tumors Histiocytic sarcoma Some brain tumors	Oral	Bone marrow suppression Liver toxicity Kidney toxicity (uncommon)
Mitoxantrone (Novantrone)	Lymphoma (dogs) Some carcinomas (dogs)	Intravenous	Bone marrow suppression Colitis (can be severe)
Vinblastine (Velban)	Lymphoma Mast cell tumors (dogs)	Intravenous	Bone marrow suppression
Vincristine (Oncovin)	Lymphoma Venereal tumors (dogs) Some sarcomas	Intravenous	Bone marrow suppression if used with L-asparaginase Loss of appetite Nervous system toxicity (rare)

-table adapted from: Moore, A. Commonly used chemotherapy drugs, Part 1. NAVC Clinician's Brief. October 2010.