



Veterinary Oncology Glossary

**[hyperlink to definition](#)*

Cancer can be a complex disease with a language all of its own. To help with understanding and communication, the WSAVA's Oncology Working Group has created a glossary of commonly used terms, and how they specifically relate to veterinary oncology. The Working Group hopes this empowers owners to talk more confidently and effectively with their veterinarian about the choices facing them in terms of diagnosis and management of their pet's disease.

Adjuvant Chemotherapy

This is when [chemotherapy](#)* is given after a surgical procedure that appears to have removed all [cancer](#)* tissue, with the intention of preventing [regional metastasis](#)* or [distant metastasis](#)*.

Benign

This is a [neoplasm](#)* which does not spread to other body areas, a process called [metastasis](#)*. Diagnosing a mass as benign is often good news because if removed completely the patient should be cured and require no further treatment. Even though benign tumors do not spread, they can still cause a problem if they interfere with normal actions such as swallowing, breathing, walking, or going to the toilet.

Biopsy

This is a test to obtain samples of either cells or tissue to determine whether the mass is infectious, inflammatory or a [neoplasm](#)*, and if a neoplasm, if it is [benign](#)* or [malignant](#)*. The sample might be taken by a [fine needle aspirate](#)*, a core biopsy, or even a mini surgical procedure to take a small wedge of the mass.



Figure: a mass such as this foot lesion needs a biopsy to determine whether it is neoplastic, or inflammatory

Cancer

The process of body cells or tissues dividing uncontrollably, invading local tissues, and potentially then undergoing [regional metastasis*](#) or [distant metastasis*](#)

Cancer grade

The grade refers to how many cells are dividing, how well-organised (good) or chaotic (bad) the tumor sample looks, and if there are cancer cells invading blood vessels or local body tissues. The grade is determined by a pathologist looking at all the samples taken, including [histopathology*](#). Grades in veterinary medicine are often assigned 1, 2 or 3, with 1 being the least aggressive and 3 being the most aggressive.

Cancer stage

The stage refers to how advanced the cancer is. Your veterinarian will assess your pet with a thorough clinical examination (including rectal examination) and may then advise further tests such as blood work, x-rays, ultrasound, [biopsies*](#) or [fine needle aspirates*](#), or [CT or MRI](#). The larger the original [cancer*](#) is, and the more places it is found in the body, the higher the [stage*](#) of the disease. Finding [metastasis*](#) increases the stage in all cases. It is always better to have a cancer in one place (even if large) than to find cancer cells in the local [lymph node*](#) or other internal organs.

Chemotherapy

[Cancer*](#) cells are rapidly dividing and chemotherapy is the use of drugs that damage and kill rapidly dividing cells. The drugs are sometimes given orally, but many are given intravenously, typically every few weeks. The same chemotherapy drugs given to human patients are also given to veterinary patients, but lower doses are used to minimise side-effects, yet still hopefully slow the cancer down, and improve overall [median survival time*](#). Side-effects that might be seen include vomiting, diarrhoea, weight loss, and sometimes bone marrow depletion. These are often easily managed with medications (or time) and adjustments to future doses might be made to reduce the risk of these happening again.



Figure: a dog receiving chemotherapy through a catheter into a vein in the front leg



Figure: closed administration systems are mandatory in some countries for chemotherapy administration

CT / MRI / radionuclide scan

Advanced imaging tools used in human medicine that are now increasingly been seen in veterinary medicine. These are 'doughnut' shaped devices that the patient passed through and either radiation (CT) or magnetic fields (MRI) allow the internal tissues and organs to be accurately seen, reconstructed into thin slices (1 mm sometimes) to give a very accurate 3D understanding of where the **cancer*** is in the tissues, if it is affecting or invading nearby vital structures, and whether there is any evidence of **regional metastasis*** or **distant metastasis***. A radionuclide scan uses small amounts of radioactive material (often injected in a vein) that selectively attaches to places of interest (tumors or organs). The radioactivity is then measured using a specific scanning machine.



Figure: a dog undergoing a CT scan. He is anaesthetised to be motionless for the study.

Curative treatment

This is a single treatment (e.g. **surgery***) or combination of treatments (e.g. surgery and **chemotherapy***) that is designed from the outset to put the patient into **remission***. Whether this is a realistic goal depends on the type of **cancer***, the **grade***, the **stage***, **prognostic factors***, and what treatment options are available in the region in terms of **surgery***, **chemotherapy***, **immunotherapy*** and **radiotherapy***.

Cytology

This is the study of examining cells under a microscope to determine the underlying disease process. It is usually carried out by a specialist pathologist or cytologist, but some immediate and early information about the cells can often be identified by your veterinarian or oncologist.

Distant metastasis

Cancer* cells travel in the blood stream to internal organs, often some distance from the original mass, for example lungs, liver or spleen. Organs such as the heart and brain can also be affected by metastasis which can cause significant health problems e.g. collapsing episodes or seizures. Distant metastasis means the cancer is now widespread, and efforts are focussed on keeping the animal as comfortable as possible. Anti-cancer drugs, i.e. **chemotherapy***, might be considered but distant metastasis means the cancer is a high **stage*** and is a poor **prognostic factor***.

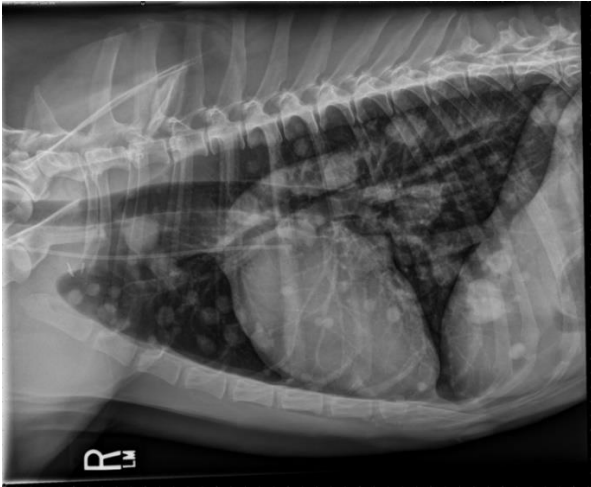


Figure: a chest x-ray of a dog with bone cancer, with spread to the lungs. All the small white circles of varying sizes in the chest cavity are lung metastases.

Euthanasia

This is the painless humane end of life, usually through a high dose of anaesthetic being injected directly into the blood stream. Commonly referred to as 'putting to sleep'.

Fine needle aspirate (FNA)

A specific type of **biopsy*** where a needle (similar to that used for vaccines) is inserted into a **tumor***, and gentle suction is applied by a syringe, to suck out cells or fluid. These cells are put onto microscope slides and examined by a cytologist, pathologist, or the oncologist. The primary goal of a FNA **cytology*** is to determine whether a mass is inflammatory (e.g. an abscess or infected tissue) or a **neoplasm***.

Immunotherapy

Vaccines against a specific tumor type of **cancer*** (e.g. melanoma) can be given with the aim of using the animal's own immune system to target cancer cells within the body. The advantage of this over **chemotherapy*** is that the immune system is working all the time and is never 'off' and so theoretically has better anti-cancer activity, the disadvantage however is like any vaccine it can take several months to reach full immune response, versus chemotherapy which has an effect immediately. The other main advantage of immunotherapy is the near absence of side-effects.

Lymph node

This is an important cluster of immune cells (think your tonsils) that target bacteria, foreign material and **cancer*** cells in the circulation. Lymph nodes tend to 'drain' a certain area, e.g. the lymph nodes of the armpit drain the front leg, or the lymph nodes of the neck drain the mouth and skull. Oncologists will examine the nearest lymph nodes to a cancer to determine whether cancer cells have already spread there, what is called **regional metastasis***. This is often an important **prognostic factor***, as it shows the cancer is at a more advanced **stage***.



Figure: The lymph node immediately behind the knee is being examined. This lymph node (popliteal) drains all tissues below the knee.

Malignant

This is a **neoplasm*** which can spread to other body areas via metastasis. This is the definition of **cancer***. In addition to potential spread elsewhere, other features of malignancy can include more rapid growth and deeper invasion into the local tissues (and so more difficult to remove completely).

Median disease-free interval (DFI)

This is the period between the treatment of the **cancer*** in your pet and the first signs of the cancer coming back somewhere in the body. This is a statistical 'estimate', as identifying the point that the cancer has returned, either through regrowth or **metastasis*** can depend on whether the cancer causes new symptoms, or how thoroughly recurrence is looked for. Not all cancers will come back, and the time between recurrence and possible death of the patient can vary greatly between tumors.

Median survival time

This is an attempt by oncologists and statisticians to tell the family when they might lose their pet to **cancer*** (if at all). It is very hard to predict how one individual patient will do, even in human oncology, but we are better at predicting how a large group might do, on average. Median survival refers to how long the middle patient of a group will survive. For example a median survival of 100 patients of 12 months means 50% will die before 12 months, and 50% afterwards, with the 'middle' patient dying exactly at 12 months. What this means for you is that a median survival of 3 years for one type of tumor or treatment is a much more optimistic projection than a median survival of 9 months. Even with the best statistical analysis, veterinary oncologists cannot predict how long **your** pet will live but only can depend on general estimates published in the literature.

Metastasis

The action of **cancer*** cells leaving the original mass, travelling in the blood stream or lymphatic fluid, settling out in a tissue away from the primary mass, and starting to divide and grow. Certain tumors tend to metastasise to certain areas, e.g. bone cancer preferentially metastasises to the lungs (**distant metastasis***), and melanoma in the mouth usually spreads to local **lymph nodes*** at the angle of the jaw first (**regional metastasis***).



*Figure: the grey/black fleshy area at the front of the dog's jaw is oral melanoma. This can commonly metastasise to the regional **lymph nodes*** in the neck which should be examined, and sampled with a **fine needle aspirate***.*

Neoadjuvant chemotherapy

This is when **chemotherapy*** drugs are given as the first line of treatment, often to try and shrink the cancer before moving onto other treatments, typically **surgery***.

Neoplasia/neoplasm

This is an uncontrolled growth of cells in the body, typically forming a mass. The mass comes from a single cell or tissue that has undergone a genetic change to keep dividing and never die, i.e. has become immortal. Such a growth is called a neoplasm, and can be **benign*** or **malignant***.

Oncology

The study of **cancer***. Cancer knowledge is always evolving and veterinary oncologists have undergone further training in the diagnosis, treatment, and prevention of cancers to be able to advise on the best treatment options for each individual animal.

Pathology / Histopathology / Histology

This is the study of examining sections of tissue under a microscope following a **biopsy***. This has an advantage over **cytology*** in that not only is a diagnosis more likely to be made but also the mass might be able to be **graded*** and **prognostic factors*** identified which could help with the decision making.

Palliative treatment

This is a treatment plan to maximise benefit to the patient in the short-term by improving comfort and quality of life, usually by reducing symptoms, prior to **euthanasia***. No attempt is made for palliative care to be a **curative treatment*** either due to the **cancer stage***, family decision, local **oncology*** resources, or financial limitations. Examples include medications to help with nausea, antibiotics in the event the cancer is infected, or even small surgical procedures if the mass is causing pain or is restricting function.

Prognostic factors

These are features of either the **cancer***, or how it is affecting with the patient, that will help your oncologist 'predict' how well your pet might respond to treatment, and how quickly a mass might return. Common prognostic factors include **grade*** and **stage*** but also includes things like changes in blood work and whether your pet is clinically unwell or not.

Radiotherapy/ Radiation Therapy/ RT

This is the process of treating **cancers*** with high doses of radiation to kill the cancer cells where they are. They subsequently die over several weeks and months and the cancer starts to shrink. Sometimes RT is given before **surgery*** to make the mass smaller ahead of time. Sometimes however the surgery is performed first, and RT given to the surgical scar if the veterinarian is worried that cancer cells might be left behind. Patients need to be anaesthetised to receive radiotherapy and often multiple doses are given over many days. Due to the expense and logistics of treatment, radiation facilities for animal use may not be available in your region.



Figure: A radiation machine called a linear accelerator which delivers radiotherapy.

Regional metastasis

When a **cancer*** metastasises to the draining **lymph node*** or cluster of lymph nodes. This is often the nearest lymph node to the mass but not always. Lymph node metastasis is suspected if your veterinarian feels a larger or firmer local lymph node, or an abnormal node is identified by diagnostic tests e.g. ultrasound. The diagnosis can be confirmed by a **fine needle aspirate*** or **biopsy*** and **histopathology*** where cancer cells are found amongst the normal lymph node cells. It is important to know even a normal looking and feeling lymph node can still contain cancer cells, so your veterinarian may ask to sample a lymph node that does not appear abnormal.

Remission

Your veterinary surgeon or oncologist can find no evidence of **cancer*** cells or cancer disease in the body, based on physical examination, blood work, and diagnostic imaging tests. Normally we say that animals are cured from cancer after 3-5 years of remission, but this depends on the cancer type.

Sarcoma / Carcinoma / Round Cell Tumor

All **cancers*** are divided into 3 main groups depending on the original cell or tissue of origin, i.e. the cells that started dividing abnormally in the beginning. Broadly speaking cancers that arise from the skeleton and connective tissues (muscles, fat etc) tend to be sarcomas, those from internal organs (e.g. liver, lung, intestines) tend to be carcinomas, and round cell cancers are those of the immune system, blood, or sometimes skin. Knowing the origin helps us to treat the cancer appropriately and confidently.

Surgery

The mainstay of treatment within **oncology***. **Benign*** masses should be cured by surgery, and surgery is often the first step in treating **malignant*** cancer. If there is no evidence of **regional*** or **distant metastasis*** and the tumor is low **grade***, then a successful malignant cancer surgery may achieve **remission*** with no further treatment being required, and the cancer may never return. More cancers in humans are cured by surgery alone than any other treatment, and it is true to say the same applies in veterinary oncology.

Tumor

This refers to any abnormal lump, bump, growth or swelling. It simply means an abnormal collection of tissues or cells. A tumor can be **neoplastic***, and **benign*** or **malignant*** or not a **neoplasm*** at all (e.g. an abscess).

For more information on the work of the WSAVA Oncology Working Group visit
[wsava.org/committees/oncology-working-group](https://www.wsava.org/committees/oncology-working-group)