

Lymphoma

What is cancer?

Cancer is the uncontrolled growth of a small population of abnormal cells. These abnormal cells form by a mutation during the normal division cycle and are able to escape detection by the body's immune system. They have an intrinsic capacity to divide rapidly and uncontrollably leading to the development of tumours.

Lymphoma is the second most common cancer for feline patients. The average age of cats presenting with lymphoma in Australia is 11 years, however there is a wide range from 1 year to 20 years.

Lymphoma is a cancer of a white blood cell called a lymphocytes. Lymphocytes are the second most important white blood cell behind neutrophils. They are an important part of your pet immune system involved in fighting infection and disease. There are two major types of lymphocytes: T cell and B cell. This distinction becomes important when diagnosing lymphoma as the type of cell (T or B) that is neoplastic can have a major impact on treatment and outcome.

There are many different forms of lymphoma depending on where the cancer cells originate. The most common form in cats involves the tumour originating within the abdomen (intestines, stomach, liver and spleen). Other less common forms involve the chest, skin, nose, brain, spinal cord, kidney, bone marrow or the eye.

Although very rare, a virus known as Feline Immunodeficiency Virus (FIV) which is the equivalent to human AIDS can infect cats and lead to the development of certain cancers such as lymphoma.

What are signs that my cat has lymphoma

This depends on which form of lymphoma [PET] has. The signs will vary according to the body system affected. For the abdominal form, the signs will be those of vomiting, inappetance, lethargy, diarrhoea, weight loss etc. If it is in the chest then the cat may have difficulty breathing.

How is Lymphoma diagnosed?

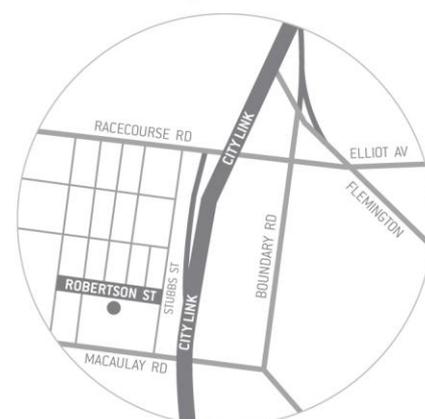
Lymphoma is usually diagnosed by a combination of blood tests and imaging. Because most lymphomas of the cat are internal, unlike in the dog where they affect the lymph nodes on the periphery, some form of

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imaging is often required to obtain a diagnosis. The blood tests will look at the level of red and white cells and also the organs of the abdomen. Imaging often involves ultrasounds, xrays and in the rare circumstance a CT or MRI. Usually a biopsy of some tissue from the affected organ is required in order to confirm the diagnosis. This may involve obtaining a sample with a fine needle or through an endoscope or surgically. The sample is sent off to a pathologist for confirmation.

How is lymphoma tumours graded?

Lymphoma in cats is graded from 1-5 with 1 being the least affected and 5 the worst.

1	Single tumour identified
2	Single tumour with local lymph node involvement
3	Multiple tumours
4	Liver and spleen involvement
5	Bone marrow or central nervous system involvement

What are your options for treatment?

Because lymphoma is a blood cancer and spread throughout the body in most circumstances, a simple surgical excision is not an option. Like in humans, the treatment for lymphoma is chemotherapy.

For further information on chemotherapy and its side effects please see the chemotherapy handout. In brief, chemotherapy in animals is not as intense as in humans, and in animals we value the quality of life with high regard.

There are essentially three options when considering how to treat [PET]. They are

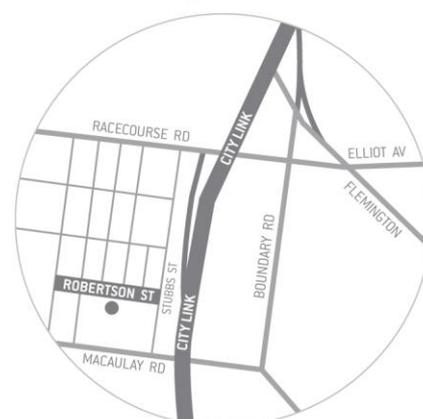
1. Do nothing
2. Palliate

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3. Chemotherapy or Radiation therapy

If nothing is done, depending on how severely [PET] is affected, [PET] will live on average of a few weeks to a month.

If you choose to palliate, then prednisolone tablets will be dispensed. There are a very mild and cheap form of chemotherapy that will give [PET] some quality of life for 1-2 months. However if you choose to go down this path, than chemotherapy down the track is not an option, because the use of prednisolone makes the remaining cancer cells resistant to any other chemotherapy drugs. A decision needs to be made at the start and stuck with.

Chemotherapy is most often a combination of different drugs. These drugs are rotated in a protocol that goes for 15 weeks. This involves bringing [PET] to hospital on a weekly basis where a blood test is performed prior to administrating chemotherapy to ensure there are enough white blood cells and that the bone marrow is strong enough to cope. Some treatments can be given at home. Please see the table at the end of this handout which details the protocol. There are some chemotherapy protocols which are much less involved, however their average survival times are much less than compared to the more involved ones.

About 50%-70% of cats will respond to chemotherapy and go into complete remission. Complete remission however is not a cure though, and a cure is almost never achieved. Complete remission refers to there being no gross detectable tumour anywhere. It does not mean though that there is no microscopic evidence of cancer. If [PET] goes into complete remission and the cancer recrudesces further down the track, there are some reserved 'rescue' drugs that can be used, however you must note that cats will often no achieve a complete second remission and if they do it is short lived.

One quarter of cats that respond well will survive beyond a year. The best guide to how long [PET] will live is how they respond in the first 4-6 weeks to treatment. If they respond well than the prognosis is much better compared to if they respond poorly.

Certain types and stages of lymphoma can help give us a guide to how long [PET] will live. The better types to have are those involving the nose, chest and peripheral lymph nodes. The better grades to have are grade I and II. If [PET] is well at the start of treatment, than their prognosis is better compared to if unwell.

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Also the cell type involved can be a guide to prognosis. The small cell type lymphoma is favourable in cats compared to the large cell type.

Occasionally for lymphoma that is isolated to one particular location (i.e the nasal cavity) then radiation therapy is an option. Radiation therapy is not performed in Melbourne.

Week	Drug	Route	Where
1	Vincristine L-Asparaginase Prednisolone	IV SC PO	Hospital
2	Cyclophosphamide Prednisolone	PO PO	Home
3	Doxorubicin Prednisolone	IV PO	Hospital
4	Prednisolone	PO	Home
5	Vincristine Prednisolone	IV PO	Hospital
6	Cyclophosphamide Prednisolone	PO PO	Home
7	Doxorubicin Prednisolone	IV PO	Hospital
8	No tx. Stop pred.		Home
9	Vincristine L-Asparaginase	IV SC	Hospital
10	Cyclophosphamide	PO	Home
11	Vincristine	IV	Hospital
12	Methotrexate	PO	Home
13	Vincristine	IV	Hospital
14	Cyclophosphamide	PO	Home

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15	Doxorubicin	IV	Hospital
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IV = intravenous injection

SC = injection under the skin

PO = oral tablet

The overall cost for this treatment is \$5000-5500

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