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## LUNG TUMORS

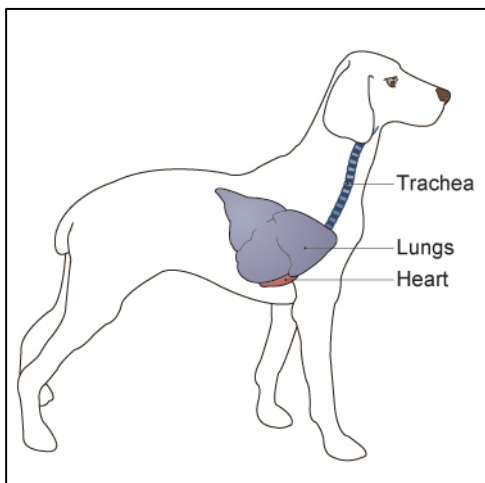
These notes are provided to help you understand the diagnosis or possible diagnosis of cancer in your pet. For general information on cancer in pets ask for our handout "What is Cancer". Your veterinarian may suggest certain tests to help confirm or eliminate diagnosis, and to help assess treatment options and likely outcomes. Because individual situations and responses vary, and because cancers often behave unpredictably, science can only give us a guide. However, information and understanding for tumors in animals is improving all the time.

We understand that this can be a very worrying time. We apologize for the need to use some technical language. If you have any questions please do not hesitate to ask us.

### ***What types of lung tumors are there?***

Most lung cancers originate from the epithelium lining the airways. In dogs, most are from the alveoli where oxygen is taken up into the body but in people and in cats, most originate in the main airways (bronchi). The point of origin is often difficult to determine and tumors may be multiple.

Benign cancers (**adenomas**) are very rare and usually do not cause illness. They are probably part of a progression from overgrowth (hyperplasia) to malignancy. Malignant cancers (**carcinomas**) spread within the lung through airways, blood and lymph vessels.



They also spread (metastasize) to the covering pleura of the lung and to lymph nodes. Some tumors progress further with metastases (secondary tumors) in bones and other parts of the body. A few cancers start in neuroendocrine cells, which produce chemicals called hormones that have actions in other parts of the body. A few also originate from connective tissue cells or the pleura of the lung (**mesothelioma**).

The lungs are also one of the main sites in which metastases from tumors of other parts of the body grow. These are sometimes difficult to distinguish from multiple tumors originating in the lung.

### ***What do we know about the cause?***

The reason why a particular pet may develop this, or any cancer, is not straightforward. Cancer is often seemingly the culmination of a series of circumstances that come together for the unfortunate individual.

Cancer is non-lethal genetic damage of cells (mutations in the DNA genome). Mutations have been found in canine lung cancer with upsets in the normal regulation of cell death and replacement. Little is known about the causes of these mutations but, as in people, some chemicals may be involved in initiating or promoting the cancers. There is a type of lung cancer in sheep that is due to infection with a virus.

### ***Why has my pet developed this cancer?***

Some animals have a greater tendency (genetic susceptibility) to cancer. Some breeds have far more cancers than others, often of specific types. The more divisions a cell undergoes, the more probable is a mutation so cancer is more common in older animals.

### ***Are these common tumors?***

These tumors are rare in animals. Lung cancer in California has been estimated at a population incidence of 4.2 per 10,000 dogs per year. The incidence in cats is slightly higher.

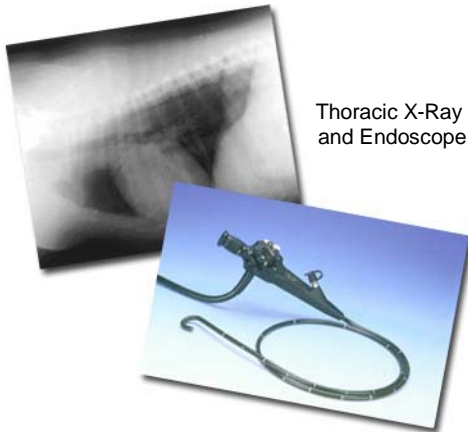
The average age of dogs with primary lung tumors is 10 years and they are rare in dogs less than 6 years of age. In cats, the average age is 12-13 years. Most tumors are in the lung lobes furthest from the head in both dogs and cats.

### ***How will these cancers affect my pet?***

More than half of dogs with these tumors cough. A quarter of them have breathing difficulties and some are lethargic with about one in eight showing loss of weight. Clinical signs in cats are similar but are more likely to include weight loss, lethargy and loss of appetite. A quarter of dogs that turn out to have lung cancer are brought to their veterinarian for clinical signs unconnected with respiratory disease. Cats may be lame due to bone metastases and most cats are anemic.

### ***How are these cancers diagnosed?***

X-rays of the chest are the most useful diagnostic aid and demonstrate tumors in approximately 3/4 cases. In order to identify the tumor type, it is necessary to obtain a sample of the tumor itself. Various degrees of surgical sampling may be needed such as trans-tracheal washes, fine needle aspirates and surgical biopsy using bronchoscopy or exploratory surgery. The tissue samples are submitted for microscopic examination. Cytology is the microscopic examination of small samples of cells from washes and needle aspirates. This can identify 20-25% of tumors. Histopathology is the microscopic examination of specially prepared and stained tissue sections. This is done at a specialized laboratory where the slides are examined by a veterinary pathologist. The information from this examination is more detailed and reliable than cytology.



Thoracic X-Ray and Endoscope

### ***What types of treatment are available?***

Surgical removal of the affected lung lobe is the most common treatment. Small, solitary tumors in dogs are often cured by this surgery. Chemotherapy has been tried in dogs with inoperable tumors.

### ***Can these cancers disappear without treatment?***



Cancer very rarely disappears without treatment. Very occasionally, spontaneous loss of blood supply to the cancer can make parts of it die. The body's immune system is not effective in causing these tumors to regress.

***How can I nurse my pet?***

After surgery, you should prevent your pet from interfering with the operation site, which needs to be kept clean. Any loss of stitches or significant swelling or bleeding should be reported to your veterinarian.

If you require additional advice on post-surgical care, please ask.

***How will I know how the cancer will behave?***

Histopathology will give your veterinarian the diagnosis that helps to indicate how it is likely to behave. The veterinary pathologist usually adds a prognosis that describes the probability of local recurrence or metastasis (distant spread).

***When will I know if the cancer is permanently cured?***

'Cured' has to be a guarded term in dealing with any cancer.

Surgical removal of the affected lung lobe may cure small, solitary tumors in dogs. In one survey, 72% of dogs so treated went into remission. However dogs with recurrence had average survival times of only 28 days post-surgery. The lymph nodes (glands) are often examined because if the cancer has spread to the nodes at the time of surgery, a successful outcome is less likely.

Surgical removal of the affected lung lobe is also the treatment of choice in cats but less successful because there is usually more extensive disease, metastasis or cats also have heart disease.

Chemotherapy has been tried in dogs with inoperable tumors but results are not encouraging.

Some features of the histopathology indicate whether your pet is likely to have a better prognosis. These include the closeness of the appearance of the cancer to normal tissue and whether there is microscopic evidence of spread to the lymph nodes. In general some types such as squamous cell and anaplastic carcinomas have a higher rate of metastasis than adenocarcinomas.

The cancers can spread within the lung and elsewhere so return of the original signs of illness may indicate the tumor has returned. In cats, these cancers frequently metastasize to bones, particularly those of the toes.

***Are there any risks to my family or other pets?***

No, these are not infectious tumors and are not transmitted from pet to pet or from pets to people.