

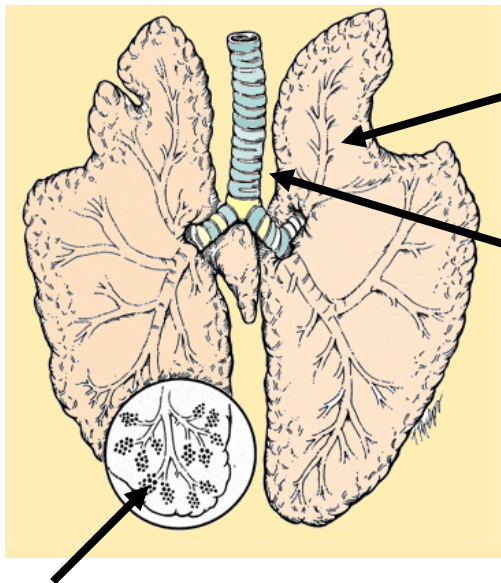


BRIEFLY, WHAT IS THE ANATOMY AND FUNCTION OF THE LUNGS?

The lungs and linked blood vessels deliver oxygen to the body and remove carbon dioxide.

Lungs lie on either side of the breastbone (sternum) and fill most of the chest cavity. The two lungs are each enclosed within a double membrane known as the pleura. The lungs are divided into five main sections called lobes. The right lung is the larger, being divided into three lobes, while the left is divided into two lobes.

Within the lungs, the bronchi branch into thousands of smaller, thinner tubes called bronchioles. These tubes end in bunches of tiny round air sacs called alveoli. Each of these air sacs is covered in a mesh of tiny blood vessels called capillaries. The capillaries connect to a network of arteries and veins that move blood through the body.



The larger tubes extending into the lung tissue are called the bronchi.

The trachea (windpipe)

The small airways in the white circle show the small bronchiole tubes and the clusters of alveoli (air sacs) that look like grape clusters





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WHAT IS CHRONIC BRONCHITIS?

Bronchitis literally means inflammation of the airways.

Chronic bronchitis is a disease in dogs affecting the smaller airways that branch out from the trachea (windpipe). These branches, called bronchi and bronchioles, allow the transport of air into and out of the alveoli, the sites of oxygen exchange.

Typically, inflammation within the airways results in excessive secretions that plug the airways. The end result is an impaired ability to bring oxygen into the alveoli for delivery to the rest of the body.

Although the term "asthma" is occasionally used to describe this form of airway disease in dogs, this term is very misleading. Asthma, in people, specifically refers to the reversible constriction of muscle within the walls of the bronchi.

Chronic bronchitis is associated with inflammation and swelling of the walls of the bronchi resulting in narrowing of the airways and obstruction or blockage of airways by plugs of mucus or other secretions. The inflammation of the airways is not reversible.

Bronchitis can be acute (short duration) and associated with reversible changes in the structure of the airways, or chronic (long duration, usually more than 2-3 months) and associated with permanent, irreversible changes in the airways. Bronchitis may be caused by bacterial infections, hypersensitivity disorders (allergies), parasites (i.e., lung worms, heartworm), or chronic inhalation of airway irritants. In chronic bronchitis the underlying cause cannot always be identified.





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HOW COMMON IS CHRONIC BRONCHITIS?

Chronic bronchitis, in association with tracheobronchial collapse, is probably the most common chronic airway disorder. Animals diagnosed with chronic bronchitis are generally over 6 years of age, and although there doesn't seem to be a clear sex or breed predisposition, lots of small and toy breeds eg. Poodles and Pomeranians, have been clinically diagnosed with chronic bronchitis. Obesity is also an important complicating factor.

WHAT ARE THE SIGNS OF CHRONIC BRONCHITIS?

Signs to look out for may include;

- Coughing, wheezing for a duration of 2-3 months or longer
- Increased or laboured respiration (normal respiratory rate is approximately 30 breaths per minute at rest)
- Exercise intolerance
- Decreased appetite
- Lethargy/weakness

HOW IS CHRONIC BRONCHITIS DIAGNOSED?

Usually the first test to diagnose chronic bronchitis is a chest radiograph (xray) which can highlight increased bronchial changes in the lung fields. A bronchoscopy allows a visualization and examination of the airway, and can offer the chance to perform a bronchial-alveolar lavage (BAL). A BAL allows the collection of fluid from the animal's lungs to determine what type of cellular changes are occurring and what type of therapy may be most effective. A bronchoscopy does require an anaesthetic, therefore if the patient's condition is critical, it may not be possible to perform this procedure.

The combination of all of these tests gives us our best evaluation of the animal's respiratory function, however if cost considerations prohibit us performing all of them, one or two will provide much valuable information.

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IS THERE TREATMENT FOR CHRONIC BRONCHITIS?

With chronic bronchitis, the goal is to simply control the clinical signs (aim to reduce the frequency and severity of the coughing by approximately 70-80%) and prevent worsening of the disease.

Unfortunately it is often difficult to stop the coughing completely.

Any underlying disease (i.e., bacterial infection or parasitic infection) must be diagnosed and treated.

Treatment of a stable chronic bronchitis patient involves the use of anti-inflammatories to break the cycle of mucosal damage and reduce excessive production of excretions, whilst some stable cases with evidence of tracheal collapse may benefit from bronchodilators eg theophylline. Bronchodilators (in theory) help to dilate or open the airways by relaxing the muscles around the airway walls.

Antitussives, such as codeine, can be useful to relieve non-productive, continuous coughing.

Changes may be needed in the animal's environment. Animals with chronic bronchitis often have sensitive airways, and the inhalation of irritating particles from certain environments may worsen their condition. It is strongly recommended that their exposure to smoke (cigarette or fireplace), dusts (carpet fresheners, flea powder), and sprays (insecticides, hair spray, perfumes, and cleaning products) be eliminated or minimized.

Weight loss is critical and strongly recommended for obese animals. Weight reduction can improve flow of oxygen and exercise tolerance, as well as decreasing coughing frequency.

Dental disease should also be addressed to minimize secondary bacterial complications.

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HOW MUCH LONGER WILL MY PET LIVE?

Prognosis is variable with this disease. In most animals, permanent damage to the airways has occurred and the disease cannot be cured. With proper medical management, clinical signs can usually be controlled and further damage to the bronchi can be stopped or slowed.

Periodic relapses of cough are not unusual and require treatment. *The cough is often not entirely eliminated, but reduced in patients.*

Some animals with chronic bronchitis develop severe irreversible changes to the airways termed bronchiectasis. These animals are highly susceptible to recurrent pneumonia. A sudden increase in cough in patients with bronchiectasis requires prompt evaluation and chest radiographs to determine whether pneumonia is present.

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