

# Bronchitis: Chronic, Sterile

## ABOUT THE DIAGNOSIS

In dogs, as in people, the lungs are the organ that allows oxygen to enter the body and that expels the body's carbon dioxide through the breath. In terms of structure, the lungs are made up of tissue (parenchyma) arranged into clusters of tiny, gas-exchanging chambers called alveoli. These alveoli—each one smaller than a pinhead—have a single channel for air inflow and outflow. These channels merge together to form the airways, or bronchi, and in turn, the bronchi merge together to form the trachea or windpipe. The result is that when air is inhaled the airflow enters into a single tube in the back of the mouth and nose (the trachea) and travels down the tube, splits to go into the bronchi, and then branches again many times so that the air travels through increasing numbers of smaller and smaller tubes until reaching the several million alveoli that make up the lungs. This is the normal process of each breath.

Bronchitis is the name given to irritation or inflammation of the branching tubes and airways—the bronchi. Irritation and inflammation of the bronchi cause swelling, and swelling of the bronchi narrows their width, restricting the amount and ease of airflow. It is a similar problem as asthma, except that in asthma, the bronchi become narrowed as a result of an allergic reaction, whereas in bronchitis, the bronchi become narrowed because either an infection or irritant particles like dust or smoke have landed on the bronchial surface and triggered both irritation and mucus (phlegm) production.

Chronic sterile bronchitis and chronic obstructive pulmonary disease are the two names given to the same age-related respiratory disease of dogs in which the bronchi are irritated by noninfectious causes (in other words, by pollens, dusts, air pollution, and so on), triggering a nagging and recurrent cough. This is not bronchitis in the sense of an infection, which is common in people and does occur in dogs ("kennel cough"). Rather, chronic sterile bronchitis is the irritation that produces excess mucus in the throat, in the absence of a bacterial or viral infection. Chronic sterile bronchitis is a very common cause of coughing in adult dogs.

Initially with chronic sterile bronchitis, symptoms are subtle or nonexistent because of the ability of the lungs to compensate for slightly decreased airflow. As chronic sterile bronchitis worsens, coughing, wheezing, and increased respiratory effort develop, with the exact nature of symptoms depending on the severity and progression of the irritant process in the airways. If chronic sterile bronchitis becomes severe enough, serious deficiencies in oxygen delivery can occur that can lead to repeated bouts of weakness, respiratory distress, and collapse. Likewise, in severe cases, bacterial pneumonia can sometimes occur.

Chronic sterile bronchitis can produce symptoms that mimic other respiratory diseases. Therefore, to pinpoint whether chronic sterile bronchitis is the cause of symptoms, your veterinarian will ask you questions about the symptoms you have observed, such as coughing, and how long they have been occurring, whether the severity has stayed the same, worsened, or waxed and waned, and so on. Your veterinarian will also examine your dog closely, including listening to the chest with a stethoscope, to try to identify clues that would make chronic sterile bronchitis more likely or less likely. All dogs suspected of having chronic sterile bronchitis need chest x-rays and often other tests as well, such as a routine blood screen. Finally, if there is a suspicion that an infection may be present in the airways, your veterinarian may recommend a

transtracheal wash or a bronchoalveolar lavage, which are procedures that retrieve a sample of respiratory secretions for analysis while your dog is sedated or under general anesthesia.

## LIVING WITH THE DIAGNOSIS

Chronic sterile bronchitis, as the name indicates, is a longstanding (chronic) disorder not caused by infections. Therefore, the main symptom, cough, can be a nuisance to the affected dog and to family members. It is rarely life-threatening, however, unless the cough has been gradually worsening for a long time (months to years), medications are not working, and the noise of the cough is disturbing to the family, leading to the decision to have the dog euthanized. Therefore, the cornerstones of dealing with chronic bronchitis are:

- Identifying it accurately, since many respiratory diseases can cause coughing and not all are treated with the same medications.
- Identifying other complicating or concurrent factors. Since chronic sterile bronchitis occurs mainly in older adult dogs, another chronic respiratory ailment of old dogs may be present at the same time. These include collapsing trachea, bronchial compression from atrial enlargement due to heart valve problems, interstitial fibrosing lung disease, and congestive heart failure. The tests described above also help to identify these other conditions and influence the overall treatment plan.
- Pinpointing any triggers or contributing factors and eliminating them as much as possible. Common triggers include airborne dusts, pollens, smoke, and volatile perfumes and fragrances (including carpet fresheners and other inhalants concentrated in low-lying areas). Eliminating the trigger can bring about a significant improvement in the cough.
- Weight control. Any excess body weight means fat stores that reduce the airspace for lungs and airways, as well as increasing the workload for moving around. Weight reduction in dogs that are overweight can produce dramatically better breathing and reduction or disappearance of fits of coughing.
- Administering the prescribed medications and understanding that the goal is for improvement and comfort, not cure.

The longstanding nature of chronic sterile bronchitis and the worsening that occurs with age mean that complete elimination of cough is rarely possible. By the time chronic sterile bronchitis causes symptoms (coughing), often there is some degree of permanent tissue damage to the airways. The lungs have a great ability to compensate for damage, destruction, and temporary dysfunction. Therefore, treatment is based around maximizing the function of the remaining tissue and trying to prevent further degeneration of the airways.

## TREATMENT

Short-term care revolves around supportive care (hospitalization, oxygen supplementation if necessary, bronchodilators, antiinflammatories, etc.). Such intensive measures are **RARELY** necessary, since chronic bronchitis usually produces a nagging, longstanding cough and not respiratory difficulty or distress.

Long-term care and management involves the steps mentioned above. Specific medications that are used for treating chronic sterile bronchitis include: bronchodilators, to decrease the coughing reflex and reduce the speed of airflow during coughing; cough suppressants, to break the cycle of coughing and airway irritation

and bring comfort to a chronically coughing dog; possibly antihistamines, if an allergic component is thought to be part of the trigger for coughing; and weight loss, if there is any sign of overweight or obesity. As a last-ditch effort, it may be necessary to give pills or syrups that contain corticosteroids (cortisone-like drugs). These are excellent antiinflammatories but they also cause significant weight gain and can decrease immune function, potentially creating problems in the long term.

Inhalation therapy (“puffers”) that administers bronchodilators or corticosteroids has been an important part of management of bronchitis and asthma in human medicine. In the recent past there have been good inventions (specialized inhaler masks) to help appropriately supply these medications to dogs and cats, and this form of treatment is revolutionizing treatment for chronic respiratory disease in dogs and cats. Most animals are surprisingly tolerant to this form of treatment, and it is easy to perform. If your dog is diagnosed as having chronic sterile bronchitis and requires treatment, you should ask your veterinarian about inhalation therapy, or he/she may refer you to a respiratory specialist (a Diplomate of the American College of Veterinary Internal Medicine, specialty of Small Animal Internal Medicine: [www.acvim.org](http://www.acvim.org); in Europe: [www.ecvim-ca.org](http://www.ecvim-ca.org)).

### DOs

- Expect extended needs. Healing can be slow, and symptoms, especially coughing, often wax and wane over the rest of a dog’s lifetime. However, chronic sterile bronchitis is most commonly a “nuisance disorder” and rarely is life-threatening.
- Keep an eye open for unusually labored breathing at rest. This is **NOT** part of chronic bronchitis, so if you find that your dog is short of breath while at rest (not just panting, but having difficulty breathing), you should contact your veterinarian without delay to determine whether another problem is present.
- Be sure that your dog feels well enough to continue to eat and drink. If not, a compounding problem, such as secondary infection, or different disease altogether, may be present.
- Continue to give medications even if your pet looks much better. Often, the improvement is dependent on the medication, and symptoms can return very quickly if medications are stopped.
- Buy and use a harness instead of a collar. This will place less pressure on the neck and trachea, meaning less of a trigger for coughing.
- Some dogs feel better when they inhale cold steam, which moistens the inside of the lungs and bronchi. You can provide this up to once or twice per day by running a warm shower and having your dog walk around the bathroom during that time.

### DON'Ts

- Don’t allow overexertion, which can set off a fit of coughing.
- Avoid obesity, which is damaging in multiple ways (smaller lung capacity, narrower airways, greater demand for airflow, etc). You should candidly ask your veterinarian if he/she thinks your dog needs to lose weight. In overweight patients with chronic bronchitis, weight loss helps reduce coughing without the possible negative effects of any medications, while bringing health benefits to the joints and many other parts of the body.

### WHEN TO CALL YOUR VETERINARIAN

- If symptoms are worsening. “On-and-off” coughing is to be expected, but worsening is not and may require more aggressive treatment.
- If you notice unexplained shortness of breath or labored breathing, especially if the tongue, gums, or skin take on a bluish tinge that they did not have before. This could be a sign of insufficient oxygenation, which is an emergency.
- Your veterinarian should also give you some specific warning signs based on medications prescribed, underlying disease, and other specifics to your pet. If not, you should ask about these points.

### SIGNS TO WATCH FOR

- Difficulty breathing, shortness of breath, and/or gasping for breath are considered true emergencies. If an animal with chronic sterile bronchitis is ever breathing or gasping with great distress, like “a fish out of water,” he/she needs to be seen by a veterinarian immediately.
- Weakness, tiredness, poor appetite, and even withdrawal from normal activities are signs that could indicate a complication (like pneumonia), an unrelated but significant problem, or an adverse reaction to medication. In any case, any of these symptoms warrants a call to your veterinarian.

### ROUTINE FOLLOW-UP

- This is dependent on severity of signs and severity, according to test results. Typically, patients are rechecked after a few weeks, unless their initial state was so severe that they needed to stay overnight in the hospital. In these more severe cases, the first recheck will usually be in the first 7 to 10 days after discharge.
- Routine follow-up afterward is usually every few months to monitor progress, to ensure that complications are not beginning, and to be sure medications are working properly without causing negative effects.

*Other information that may be useful: “How-To” Client Education Sheets:*

- How to Count Respirations and Monitor Respiratory Effort
- How to Deal with Incessant Coughing

Practice Stamp or Name & Address