

# Pneumonia

## ABOUT THE DIAGNOSIS

In animals, as in humans, pneumonia is an infection or inflammation of the lungs. Dogs and cats can develop pneumonia for several reasons, and pneumonia is usually a complication of an underlying problem. "Community-acquired pneumonia," which is the most common form of pneumonia in people (often a resulting from a cold, or the flu), is rare in pets. In other words, when pneumonia is confirmed in a dog or cat, it is essential to search for the underlying cause with medical tests, such as blood and urine tests, and to treat both the pneumonia and, whenever possible, the underlying cause as well.

Pneumonia often produces generalized symptoms like most other infections in animals: lethargy or tiredness, poor appetite, and so forth. In addition, animals with pneumonia may also develop specific respiratory symptoms as a result of the infection within the lung tissue. These symptoms can include shortness of breath, coughing, raspy or fluid-sounding respirations, hacking, and gagging. It is important to know that symptoms of pneumonia in dogs and cats may be subtle, so the absence of visible symptoms should not be used for assuming that pneumonia is absent.

It is also important to keep in mind that many disorders other than pneumonia can produce these same symptoms, so a dog or cat cannot be known to have pneumonia, even by the most skilled veterinarian, without diagnostic tests such as radiographs (x-rays) of the chest. Additionally, routine lab tests including a complete blood count, serum biochemistry panel, and urinalysis are necessary to seek out the effects and contributing factors of pneumonia in all animals suspected or confirmed of having pneumonia. Finally, cats with pneumonia are always tested for feline leukemia and feline immunodeficiency virus, since these serious conditions can significantly compromise an animal's immune system, making pneumonia extremely difficult to treat.

The best way to identify specific bacteria involved in pneumonia is to sample them directly, which is done either via transtracheal wash (under sedation, the patient has samples of the lung secretions retrieved with fluid and a catheter) or bronchoalveolar lavage (under general anesthesia, either a tube or a small camera [endoscope] is passed into the mouth and down to the lungs to retrieve lung secretions and cells).

The following are a few classes of underlying causes of pneumonia:

**Viral Infections:** These are viruses that are passed from one dog to another or one cat to another. Viral infections of the airways typically do not cause pneumonia by themselves but do weaken the local defenses, allowing bacteria to multiply and cause pneumonia. Some viral infections cannot be cleared by the immune system, and these may cause recurrent or persistent problems, whereas others are self-limiting and improve or disappear altogether in a week or two. If a viral infection is suspected as the underlying problem, veterinarians usually recommend follow-up x-rays to make sure the pneumonia is resolving.

**Megaesophagus:** Weakness of the esophagus (the tube through which food travels from the mouth to the stomach during swallowing) can lead to recurrent regurgitation or "burping up" of food and water. Under these circumstances, food and water risk being inhaled into the lungs, causing pneumonia.

**Fungal:** Fungal pneumonias are the result of inhalation of spores of fungi in the soil. Examples are coccidioidomycosis (found in

arid parts of the United States and Latin America), histoplasmosis, and blastomycosis (damp, moist environments in North America). These fungal infections can cause severe pneumonias that are initially difficult to treat. However, when caught early and with good treatment response by the patient, a complete cure is possible.

**Foreign Material:** Foreign material inhaled into the lungs can mechanically and chemically irritate the lungs. The subsequent inflammation often allows secondary bacterial infection and pneumonia.

## LIVING WITH THE DIAGNOSIS

When medical tests, including chest x-rays in every case, confirm that pneumonia is present, treatment is necessary. In milder cases, this may mean antibiotic pills that you can give at home, but if the pneumonia is moderate or severe in degree, the dog or cat generally needs to be hospitalized so the antibiotics can be given by injection and in order to give intravenous (IV) fluids and other medications as necessary. Another in-hospital treatment commonly used for pneumonia is nebulization, which is the inhalation of highly humidified air to help break up the thick secretions and mucus that are involved in the immune response. Coupage is a technique of gently thumping the chest to help break up the fluid in the lungs' small airways to allow them to be coughed up. Nebulization and coupage are used in the hospital but can be taught to you by your veterinarian or the veterinary staff for home use. There are other treatments involved in hospitalized care of pneumonia patients, such as oxygen supplementation and ventilatory support, which may or may not be necessary depending on your pet's specific type and severity of pneumonia. Because cough often accompanies pneumonia, it is tempting to want to suppress the cough. However, this would be dangerous. Instead, coughing is important to recovery from pneumonia as it is part of the body's defense system to bring infected debris and mucus up and out of the lungs.

Any pet that has pneumonia needs adequate time for rest and recovery. Often pets will feel better soon after the initiation of the appropriate supportive care and medications. However, the lungs may still be congested with infected material. They may tire quickly or have shortness of breath after limited activity and can easily do too much. Therefore, any pneumonia patient who is recovering well should still be handled carefully for at least 1 or 2 weeks after symptoms have disappeared to allow the lung tissues to heal adequately.

The long-term outlook for recovery (prognosis) is dependent on the severity of the pneumonia and the underlying cause. Bacterial pneumonias are generally rewarding to treat, since a good response to antibiotics results in disappearance of the infection. However, bacterial pneumonia is often the "tip of the iceberg," since certain viruses (e.g., distemper), concurrent conditions such as megaesophagus, or other predisposing causes as discussed above are usually present, too, and these may or may not be easy to eliminate.

If the underlying cause of pneumonia is curable, then the healing of lung tissue can take place over the following days to weeks. If the underlying cause is not curable (such as scar tissue in the lungs, idiopathic megaesophagus, etc.), then periodic flare-ups of bacterial pneumonia may occur for the remainder of the animal's life.

The lungs have a great ability to compensate for damage, destruction, and temporary dysfunction. However, in the most severe cases, scarring and secondary damage following pneumonia can be severe enough to cause long-term respiratory (breathing) compromise.

Contagion (spread to other dogs or cats) can happen if the underlying cause of the pneumonia is a virus or certain bacteria. This is an important point worth raising with your veterinarian, and here again, the importance of identifying underlying causes of pneumonia becomes apparent. If in doubt, you should avoid having your pet with pneumonia be in contact with other pets to eliminate the risk of direct transmission of viruses or bacteria through secretions or through the air. Spread of pneumonia from animals to humans (zoonosis) is extremely unlikely. Precautions should be taken, and the situation should be discussed, especially if a member of the household is immunocompromised.

## TREATMENT

Short-term care revolves around antibiotics and supportive care (hospitalization, intravenous fluids, oxygen therapy if appropriate, intravenous antibiotics, nebulization, coupage, etc.).

Long-term care and management revolves around identifying and then treating or removing the underlying cause. This is highly variable from one patient to the next. Some disorders are easily treated or self-resolving, such as some viral infections; others require ongoing medications (such as megaesophagus) or an operation (such as inhaled foreign body); and still others cannot be eliminated completely and recurrent bouts of pneumonia are a lifelong condition (such as when scar tissue has formed within the lungs as a result of inflammation and long-standing infection of any cause).

## DOs

- Realize that pneumonia in dogs and cats virtually always has an underlying cause. This means that the outcome of pneumonia is directly linked to the ability to identify and eliminate the underlying problem.
- Understand that your veterinarian should recommend medical tests, since pneumonia cannot be identified with a stethoscope alone. Your veterinarian may refer you to a specialist in internal medicine (known specifically as Diplomates of the American or European College of Veterinary Internal Medicine; directories at [www.acvim.org](http://www.acvim.org), [www.vetspecialists.com](http://www.vetspecialists.com) and [www.ecvim-ca.org](http://www.ecvim-ca.org)) to search for, identify, and treat the disorder that may be underlying the pneumonia in your dog or cat.
- Spend a few minutes several times a day watching your pet breathe and counting the breaths. This should be done when your pet is resting, or better yet sleeping. Breathing should be easy, not labored. The rate of breathing should be fewer than 30 to 40 breaths per minute at rest.
- Expect extended needs if the pneumonia is severe or the underlying cause is irreversible. Healing can be slow, and dogs and cats with pneumonia may need significant help and care at home in addition to a hospital stay.
- Make sure your dog or cat with pneumonia continues to eat and drink to help with rebuilding strength and to continue the healing process.
- Continue to give medications even if your pet looks much better. Animals with pneumonia often start feeling better long before all of the infection is cleared from the lungs, and stopping the medication too early can allow the pneumonia to start all over again.

## DON'Ts

- Don't encourage physical exertion or vigorous activity during the recovery stage of pneumonia (which means while you are giving medications, and for 1-2 weeks thereafter). Interacting

with the environment and participating in normal activities often needs to wait until healing is complete. Animals with pneumonia need time to rest and recover.

- Don't confuse the "terminal retch" for vomiting. "Terminal retch" is a loud, hacking gagging sound that happens at the end of a fit of coughing and may produce a small amount of phlegm or foam from the mouth. This is a common way for a fit of coughing to end, and it is not a digestive problem (i.e., not vomiting).
- Don't insist on a cough suppressant; cough is actually good for recovery from pneumonia.

## WHEN TO CALL YOUR VETERINARIAN

- You should call your veterinarian if symptoms are worsening, coming back, or persistent for extended periods of time (several days or more).
- If your pet cannot get comfortable to rest, or makes odd noises or has an appreciable effort breathing.
- Coughing is to be expected, but persistence and worsening of cough may require more intensive treatment.
- A new onset of bluish discoloration of the tongue, together with labored breathing, indicates poor oxygenation and may require emergency treatment.
- Your veterinarian should also give you some specific warning signs based on medications prescribed, underlying disease, and other specifics to your pet.

## SIGNS TO WATCH FOR

- A persistent wet and "productive" cough can be a sign of concern. This is generally accompanied by swallowing of the material coughed up.
- Difficulty breathing, shortness of breath, and/or gasping for breath are considered true emergencies. If an animal with pneumonia is ever breathing/gasping with great distress, like "a fish out of water," he/she needs to be seen by a veterinarian immediately.
- Be aware of weakness, tiredness, poor appetite, and even withdrawal from normal activities.

## ROUTINE FOLLOW-UP

- X-rays may be taken at the end of any treatment to evaluate the level of healing and clearance of the lungs.

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

- How to Count Respirations and Monitor Respiratory Effort
- How to Provide Home Respiratory Therapy (Humidification, Nebulization, Coupage)



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