

## Infectious Tracheobronchitis: 'Kennel Cough'

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'Kennel Cough' is the term that was commonly applied to the most prevalent upper *respiratory* problem in dogs in the United States. Recently, the condition has become known as tracheobronchitis, canine infectious *tracheobronchitis*, Bordetellosis, or Bordetella. It is highly contagious in dogs. The disease is found worldwide and will infect a very high percentage of dogs in their lifetime.



### Infectious agents involved

There are many different agents that contribute to the disease process of tracheobronchitis. The most common are parainfluenza, *Bordetella bronchiseptica*, and mycoplasma. Canine adenovirus, reovirus, and **canine herpes virus** are thought to possibly contribute to the disease. Although any one of these organisms can cause symptoms of the disease, the majority of cases are the result of more than one organism.

The most common viral agent is parainfluenza virus. This common *virus* will cause mild symptoms lasting less than 6 days unless there is involvement with other bacteria, as is usually the case. Most 5-way vaccines and 'kennel cough' vaccines offer some protection against this virus.

*Bordetella bronchiseptica* is the most common bacteria isolated from this disease. Clinical signs of infections occur three to four days after exposure, and if uncomplicated with other agents, will last around 10 days. However, after the infection has been resolved, the affected animal will continue to shed the bacteria for 6 to 14 weeks and can spread the disease to other susceptible animals during that time. *Bordetella* is one of the agents protected against through the use of *intranasal* 'kennel cough' vaccines. Parainfluenza and *Bordetella* most commonly appear together in infectious tracheobronchitis, creating a disease that normally lasts from 14-20 days.

### Symptoms

The most common symptom is a dry hacking cough sometimes followed by retching. Many owners describe the cough as having a 'honking sound.' A watery nasal discharge may also be present. With mild cases, dogs continue to eat and be alert and active. Many times, there is a recent history of boarding or coming in contact with other dogs. In more severe cases, the symptoms may progress and include lethargy, fever, inappetence, pneumonia, and in very severe cases, even death. The majority of severe cases occur in immunocompromised animals, or young unvaccinated puppies.

### Diagnosis

Diagnosis is usually based on the symptoms and a history of recent exposure to other dogs. Bacterial *cultures*, viral isolation, and blood work can be performed to verify individual agents of the disease, but due to the characteristic nature of the symptoms are not routinely performed.

### Treatment

There are two treatment options depending on the severity of the disease. In the most common mild (uncomplicated) form of the disease, antibiotics are usually not used. If the dog has a good appetite and is alert but suffers only from a recurrent cough, we will often let the disease run its course just as we would with a cold in humans. Treating the mild case does not shorten the length in which the animal will be a potential spreader of the disease. Many times, prednisone is given to help reduce the severity and frequency

of the cough and to make the dog more comfortable. In addition, **Bronchodilators** like **aminophylline** or cough suppressants may also be used.

In more severe (complicated) cases where the animal is not eating, running a fever, or showing signs of pneumonia, antibiotics are often used. The most common ones are **tetracycline** or **trimethoprim-sulfa**. However, many other choices are also available. Steroids or cough suppressants are not usually recommended because of the risk of **immunosuppressive** with steroids and the need to continue to clear extra fluid or mucous in pneumonia patients. Bronchodilators and even aerosol therapy can be used. In moderate or severe cases, veterinary care should be instituted, as the resultant pneumonia could become life threatening if not treated properly and promptly.

## Vaccination and prevention

The best prevention is to not expose your dog to other dogs, especially young puppies. If this cannot be avoided, then proper vaccination is the next best option. Chances are that if your dog is regularly vaccinated with a standard 5-way or 7-way vaccine, he is already being protected against several of the agents causing tracheobronchitis, mainly parainfluenza and adenovirus. However, these vaccines alone rarely provide protection against contracting the disease, although they will help reduce the severity of the disease if the animal becomes infected.

More commonly, for best protection, an intranasal vaccine containing both parainfluenza and *Bordetella* is used. Intranasal vaccines create localized **immunity** that greatly reduces the incidence of clinical signs and illness. There are several precautions and warnings that need to be observed pertaining to this vaccine. Some dogs will develop mild signs similar to tracheobronchitis when given this vaccine. Very often, the symptoms will last for several days and the dog will recover without treatment. Dogs that are vaccinated can also **shed the virus** and cause other dogs to become mildly infected and show mild signs. This shedding usually lasts less than 72 hours. In addition, it takes up to 4 days after vaccination for dogs to develop protection. When you combine these facts, you will see why I strongly recommend that a dog not be given intranasal vaccine within 72 hours of coming into contact with other susceptible dogs. Do not give the vaccine the day before a dog show, boarding, etc. Try to give at least four days before contact with other dogs, and preferably 7 days. This way you will protect your dog from becoming infected by other dogs, and protect those dogs from becoming infected by yours.

This vaccine is not without its problems. It is a very effective vaccine, but it must be used carefully and is generally only recommended for dogs that are at high risk. If your dog is not shown, boarded, or comes into contact with stray dogs, your dog is considered low risk.

In kennels where tracheobronchitis is a problem, strict hygiene with thorough cleaning and disinfection of cages and food and water containers is essential. In addition, kennels that are indoors should have good ventilation with an air turnover rate of at least 12 times an hour. Agents causing tracheobronchitis can be transmitted on hands and clothing as well as through the air, so infected animals must be isolated and handlers should wear gloves and use proper handwashing to help prevent spread. Vaccination of all animals, especially puppies is indicated in problem kennels. After initial vaccination as puppies, a yearly booster is recommended. However, some dogs that are at very high risk are vaccinated every six months.

## Human health risk

Until recently, infectious tracheobronchitis was considered to not be a human health risk. Recently however, research indicates that *Bordetella bronchiseptica* may cause disease in some humans, primarily those with compromised **immune systems**. In normal, healthy adults there does not appear to be a risk factor, but young children and

immunocompromised individuals should take precautions against coming into contact with animals that have symptoms of tracheobronchitis.

## Summary

'Kennel Cough,' now more commonly referred to as 'infectious tracheobronchitis' is a widespread disease caused by several different viruses and bacteria. It is usually a self-limiting disease and most animals do not require treatment. Intranasal vaccines are effective, but due to some possible side effects, are recommended for animals that are at higher risk. Infectious tracheobronchitis is a disease of dogs and wild canids, it does not appear to be a risk to healthy humans or cats.

## References

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