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<input type="checkbox"/>	Ask a Question
<input type="checkbox"/>	Online Meetings
<input type="checkbox"/>	Take our Survey
<input type="checkbox"/>	Veterinarian Log In
<input type="checkbox"/>	Staff Log In

Information Sheet

Canine Infectious Tracheobronchitis (Kennel Cough)

Table of Contents

- [Managing Kennel Cough in the Shelter](#)
- [Kennel Cough Information for Foster Homes](#)
- [Client Information Handout](#)
- [Antibiotic Susceptibility Patterns](#)



- Kennel cough, or infectious tracheobronchitis of dogs, is caused by any of the following: the bacterium *Bordetella bronchiseptica* and/or viruses canine parainfluenza (CPiV) and canine adenovirus-2 (CAV-2). All of these pathogens are spread in respiratory secretions and are acquired by new patients through inhalation.
- Kennel cough can be controlled in a kennel through quarantine and early testing and removal of affected dogs. However, there will always be a risk of new introductions. Vaccines cannot be used as the main control method.
- Although most dogs in homes survive kennel cough, the disease course can be prolonged and the cost and effort in treatment extensive. Many dogs in shelters are euthanized because of kennel cough. If dogs with kennel cough are placed up for adoption, veterinarians and citizens in the community lose faith in the shelter, resulting in fewer adoptions and more dog euthanasia.

Identification and management of affected individual animals

Please note: The following protocol was designed for one specific shelter based on their constraints. The should be used only as a model for other shelters, catteries and kennels, and this information does not apply to household pets.

- Quarantine:** Preferably, dogs are quarantined for 10 days and not introduced to the general population until after quarantine and they are not coughing.
- Diagnosis:** The diagnosis of kennel cough is usually clinical. Dogs with a hacking cough or moderate to extensive discharge from eyes and nose must be identified to a supervisor immediately and removed to isolation. The diagnosis may be confirmed by viral and bacterial culture but this is not routine.
- Treatment** (*where resources for medical care and housing are very limited*):
 - If a dog is past its stray holding period and is either behaviorally or medically marginal or unacceptable with respect to adoptability, it will be euthanized immediately.
 - If a dog is in its stray holding period or deemed otherwise medically or behaviorally adoptable, it should be treated as directed by the veterinarian.
 - If a dog has a hacking cough for more than 2 weeks despite treatment, it should be euthanized (some dogs develop chronic illness, may be prolonged carriers, and may infect other dogs for weeks to months).
 - Medication should be given at the time of cleaning and by the same person to minimize traffic

in isolation.

4. **Return to the general population:** No dog will be moved from isolation to the general population without a veterinarian's approval and dogs should be completely free of a cough for at least 7 days before moved back to the general population.

Management of the isolation room

1. Only the bare minimum of personnel should enter isolation. Authorized personnel require special training and permission from the supervisor.
2. Isolation should be cleaned last, after all other areas of the shelter. Personnel leaving isolation should not go back into the general kennels.
3. A footbath with bleach and a large long handled scrub brush should be kept near the door of isolation and personnel leaving the area should thoroughly scrub their boots with bleach. Alternatively, an extra pair of boots can be kept in isolation.
4. Prior to entering isolation, refill bleach bath and place fresh towel or carpet square. There should be enough bleach in the foot bath to cover the bottom of shoes so that it gets into the cracks in the tread.
5. Kennel Attendants in isolation should wear Tyvek suits, rubber boots, and gloves while working in isolation. Tyvek suits should be labeled (by owner) and kept on a hook in isolation. They are worn at all times in isolation but not in any other part of the facility.
6. Gloves should be discarded in a waste container in isolation.

Cleaning the isolation area

1. Keep one kennel on the end of each aisle in isolation open for movement during cleaning. The open kennel is cleaned first, then the next dog is moved in, and the second kennel cleaned, and so forth.
2. When moving the dogs in isolation, use the non-porous slip leash. Sanitize the leash each time between moving different dogs with bleach.
3. When cleaning kennels, shovel out the waste and then scrub the kennel (walls, gate, floor and plate). Rinse the shovel, scrub brush, and all parts of the kennel with bleach. Rinse, then squeegee.

Kennel Cough Information for Foster Homes

What causes kennel cough

- Kennel cough, or infectious tracheobronchitis, of dogs, is caused by any of the following: the bacterium *Bordetella bronchiseptica* and/or viruses canine parainfluenza (CPiV) and canine adenovirus-2 (CAV-2).
- All three of these pathogens are spread through coughing and sneezing. Animals become infected by inhaling the agents.

Diagnosis and treatment of kennel cough

To diagnose kennel cough caused by *B. bronchiseptica*, we use bacterial cultures from the lungs, deep throat, or nose. However, if a dog has recently received a kennel cough vaccine, the culture could be false-positive. Tests are not usually run to diagnose the viruses associated with kennel cough, although a university or other research facility can culture them as well. Most veterinarians rely on clinical signs to "confirm" the diagnosis, typically by eliciting a hacking cough when gently squeezing on the trachea or windpipe.

Most dogs in homes survive kennel cough, although the disease course can be prolonged for weeks to months. They may cough, have discharge from their eyes and nose, and may develop pneumonia. The rate of kennel cough is higher in dogs that are also infected with distemper virus.

Treatment of kennel cough is surprisingly not straight-forward. Antibiotics that should kill the bacteria include trimethoprim-sulfa, clavamox, tetracycline, and baytril. There are some strains of *B. bronchiseptica* that have resistance to one or more of these antibiotics, so if there is a long-term problem, it may be worthwhile to have a lab culture the bacteria and test it for antibiotic resistance, although some dogs don't eliminate their bacteria even if given appropriate drugs. Many strains are resistant to ampicillin/penicillin and basically all strains are resistant to cephalosporin-type drugs. There is no specific treatment for the viruses, just good nursing care, low stress, lots of fluids, and being in a place where there is fresh air flow and few other dogs.

Keys to preventing the spread of infection

1. Always remember that vaccines do not completely protect a dog that is exposed to kennel cough. For maximum protection of your own dogs, they should receive the canine kennel cough vaccine at least

- 1 week and not more than 5 months before bringing in foster dogs into your home.
2. Keep traffic down. If possible, dogs with kennel cough can be in a quasi-isolation within your home. Medication and other treatments should be given to dogs with kennel cough after other dogs in the home have been handled.
3. "Decontaminate" the environment. Clean everything that can be bleached (such as floors, food dishes, leashes, etc. by thoroughly washing with soap and water and then bleaching with 1 part bleach per 30 parts water, and soaking for at least 10 minutes daily. Things that cannot be bleached should:
 1. Not be exposed to dogs with kennel cough.
 2. Be set outside in hot sun for 6+ hours AND/OR be cleaned as well as possible with soap and hot water, or by using a steam cleaner, etc.
4. Before an animal returns to the shelter or goes to a new home, it should be free of coughing for at least 7 days and be seen by veterinarian.
5. It is time to consider humane euthanasia if the dog develops neurological disease (a sign of distemper), severe pneumonia, or severe kennel cough for more than 3 weeks. Pneumonia can sometimes be treated by hospitalization, IV fluids and antibiotics, but this may be beyond the call of duty for foster homes.

A few things to consider when fostering an animal with kennel cough

1. Many dogs in shelters are euthanized because of kennel cough. If dogs with kennel cough are placed up for adoption, veterinarians and citizens in the community lose faith in the shelter, resulting in fewer adoptions and more dog euthanasia.
2. Do not overburden yourself and your home. If you have too many animals, you increase the risk of disease and accidents spread in your home and you exhaust yourself. Burned out rescuers provide no benefit to animals. If you need a break, take it.
3. Lots of dogs with kennel cough get well if given a low-density, clean supportive environment. If you can provide this and keep numbers of dogs down, you can make a real difference.

Client Information Handout

Congratulations on your new dog! The shelter staff has worked very hard to ensure the health of your dog, but kennel cough is a very common disease in dogs adopted from shelters. Here is some information about this condition and you on how you can help your newly adopted dog to recover from this condition and lead a long and healthy life!

1. Kennel cough is common, contagious, and very rarely fatal. The disease is a chronic bronchitis with cough caused by bacteria and/or viruses that spread among dogs and cats in shelters.
2. Kennel cough is spread by air and therefore is as common in animal shelter as the common cold is in a day care center.
3. Kennel cough could spread to your other dogs. Vaccinated, healthy dogs in a home usually develop mild if any signs of kennel cough after exposure to a new dog. Talk to your veterinarian if you have concerns.
4. RARELY, an immunocompromised person (with AIDS or undergoing cancer chemotherapy) could be infected with *Bordetella bronchiseptica*, one of the bacteria involved in kennel cough. If someone in the family is severely immunocompromised, please discuss kennel cough with your physician.
5. Kennel cough is manageable in a home. The BEST thing to do for a dog with kennel cough is provide them with a warm, stress-free home. In this environment most dogs will recover within a few weeks.
6. There are vaccines that either prevent kennel cough or reduce the severity, but giving these vaccines to an animal who is already infected will not help the animal recover any quicker.
7. Sometimes cough suppressants and antibiotics are used in treating kennel cough, and may help the dog deal with the disease. These medications can be obtained through your regular veterinarian.
8. Severe, untreated cases of kennel cough can develop into pneumonia, so it is important to discuss kennel cough with your veterinarian.

When should you seek treatment?

1. We recommend that all newly adopted dogs be seen by a veterinarian within a few days of adoption, for a routine health check.
2. If any of your dogs develop a hacking cough or discharge from eyes and nose, you should make an appointment with a veterinarian.

Steps we are taking at the shelter

1. Care of our dogs is overseen by a veterinarian and veterinary technician.
2. We treat dogs diagnosed with kennel cough and we provide written notice to you, when you adopt a

dog with kennel cough. The alternative would be to euthanize these dogs, and we certainly appreciate your being willing to give them a chance to get well!

Antibiotic Susceptibility Patterns

Antibiotic susceptibility patterns for positive *bordetella* cultures submitted to the Veterinary Medical Teaching Hospital (VMTH) at Davis

Antibiotic	Shelter samples		*VMTH Samples (including all shelter samples)	VACCINES
	Dogs	Cats	Dogs and Cats	
Amoxicillin/ clavamox	81.2%(16)	29.1%(55)	59%(78)	100%(3)
Ampicillin	28.6%(14)	3.6%(56)	7.6%(79)	0%(3)
Timentin	85.7%(14)	66.7%(57)	71.1%(76)	100%(3)
Amikacin	100%(7)	82.5%(57)	85%(80)	100%(3)
Gentamicin	100%(17)	87.7%(57.7)	90%(80)	100%(3)
Chloramphenicol	68.8%(16)	80.4%(51)	75.3%(73)	100%(3)
Enrofloxacin	87.5%(16)	93%(57)	90.5%(74)	100%(3)
Tetracycline	100%(16)	98.3%(58)	98.8%(80)	100%(3)
Trimethoprim Sulfa	70.1%(17)	94.7%(57)	87.5%(80)	100%(3)
*Only a small number of positive <i>Bordetella</i> cultures are listed here. We are currently working on a comprehensive listing of all <i>Bordetella</i> positive cultures tested for sensitivity in the VMTH				