

## **1) Climate Change**

Please keep in mind that your puppy or dog has been in a very different environment. In the winter, it may take some time for him or her to acclimate to the cold weather and snow. Please gradually introduce him or her to the northern elements. He or she may also be adjusting from outside life, to indoor heat or air conditioning. The change could make your pup more susceptible to illness, particularly after the stress of travel, and moving to a new home. The stress and environmental changes can compromise the immune system leading to an upper respiratory infection (URI). These infections are easily treated if caught early. Please contact your veterinary at the first sign of a URI such as coughing, sneezing, or discharge from the nose or eyes. With their weakened immune systems from stress and climate change these URI can quickly progress to more serious conditions if left untreated.

## **2) Your First Vet Visit**

As a part of the adoption contract, you agree to have your new puppy or dog examined by a licensed veterinarian **within 7 days of adoption**, and not less than yearly, thereafter. You agree to keep your dog current on all vaccinations, including, but not limited to rabies, distemper, and parvo. You must also ensure that your new puppy/dog receives preventative medication to protect against fleas, ticks, intestinal worms and heartworms.

At your first visit, please consult your veterinarian about the best time to give your dog/puppy a Lyme vaccine and booster. It is also critically important that you procure the necessary doses of heartworm preventative.

At the first visit your pup will have a full physical exam, de-worming and some initial vaccines. If your pup had his first vet visit before you brought him home, be sure to have those records on hand. You should also bring a stool sample in for examination. After this initial visit the vet will ask that you return to a booster the vaccines until your puppy is a certain age. The time between boosters ranges from 2-4 weeks.

Despite the fact that our dogs come fully vetted, with age appropriate vaccines, it is possible that your dog or puppy is incubating for something even after the health certificate is issued. It is very important that you bring your pup to a vet visit soon after bringing him or her home. (dogguide.net)

## **(3) Heartworms in Dogs**

Heartworm disease has been reported in all 50 states. Heartworms are a parasite that spends part of its life cycle in a mosquito. One bite from an infected mosquito can transmit that parasite to your dog, where it develops further. Eventually, it grows into worms that can be up to a foot long, and which will infest your dog's organs, particularly the heart and lungs.

From the time of infection, it can be up to six months before your dog shows symptoms. This is why preventative use and annual testing is so important. Untreated, the condition is fatal. While it can be treated, if done in the later stages the process can be very expensive and painful and the follow-up can be difficult. During this time, too much physical activity can be deadly.

Even after successful treatment, a dog can be infected again. Protection against it is a lifelong need. To avoid infection, it's important to have your dogs tested regularly, as well as to prevent the disease in the first place with a medication recommended by your vet.

When your dog is taking the proper preventative, any heartworm larva transmitted to them by mosquitos will never develop to the next stage, and never become a threat to your dog's health or life. Missing a single dose of heartworm preventative or giving it late can make your dog vulnerable to infection, so it's not worth the risk.

(cesarsway.com)

## **4) Tapeworms**

As a dog owner, you've likely heard about tapeworms. They are tiny parasites that live in your dog's gut. They normally don't cause serious problems and are easily treated.

[Flea and Tick Control in Dogs and Cats](#)

### **Where Do They Come From?**

There are different kinds of tapeworms, but the most common one is caused by swallowing a tiny infected flea. Fleas can carry the tapeworm larvae or babies. If your dog swallows it -- maybe while grooming himself -- an adult tapeworm can grow inside your dog's intestines. Tapeworms are flat, white worms that are made up of tiny segments. Each part is about the size of a grain of rice. Tapeworms attach themselves to the walls of your dog's gut using hook-like suckers. Then they start to feed and grow.

### **Symptoms**

A tapeworm can grow from 4 to 28 inches long. Chances are you won't see the adult worm. As it grows, though, some of its segments fall off and pass through your dog's poop. You may see these tiny parts crawling near your dog's backside or on his bedding. You may also see them moving around in his poop.

Sometimes, these segments die and dry out. Then they're hard, yellow specks that can stick to the fur around your dog's bottom.

Because they're irritating, some dogs will scoot, dragging their bottoms across the floor, or lick their behinds a lot.

If those tapeworm segments make their way inside your dog's stomach, they can make your dog throw up. Then you may actually see a worm (maybe 5 to 8 inches long) in your dog's vomit.

If your dog has a heavy tapeworm infection, he may lose weight, even though he is eating normally.

### **Diagnosis**

Your vet will confirm a diagnosis after 1) seeing segments crawling on your dog or 2) seeing segments or eggs in your dog's poop under a microscope. Sometimes several samples are needed since tapeworm segments and eggs are not passed every time your dog poops.

## **Treatment**

There are several safe prescription drugs that treat tapeworms in dogs. These include epsiprantel (Cestex), fenbendazole (Panacur, Safe-Guard), and praziquantel (Biltricide). These deworming drugs can be given by tablet or as a shot. The medicine dissolves the worms, so you won't see them pass when your dog goes to the bathroom.

## **Prevention**

In most cases, you can prevent tapeworms with a few simple steps:

- Because fleas are the key cause, control them both on your dog and in your home and yard. Talk to your vet about flea spray, powder, collars, or topical liquid treatments.
- Work with your vet to keep your dog on a de-worming plan.
- Don't let your dog roam unsupervised, especially in places where other dogs or animals have been.
- Clean up after your pet, especially in your yard and in parks.

It's rare, but people can get tapeworms from their pets. You have to swallow an infected flea. This most often happens in children. To be safe, always wash your hands after playing with animals and playing outside.

(pets.webmd.com)

## **5) Canine Influenza**

There are many causes of kennel cough, both bacterial and viral. Canine influenza virus (CIV) is one of the viral causes of kennel cough. This highly contagious respiratory disease has affected thousands of dogs in the United States. Because CIV is a relatively new virus, most dogs have not been exposed to it before. Dogs of any age, breed and vaccine status are susceptible to this infection.

### **How Could My Dog Catch Canine Influenza Virus?**

CIV is easily transmitted between dogs through a combination of aerosols, droplets and direct contact with respiratory secretions. The virus does not survive for a long time in the environment, so dogs usually get CIV when they are in close proximity to other infectious dogs.

### **Which Dogs Are Prone to Canine Influenza Virus?**

Any dog who interacts with large numbers of dogs is at increased risk for exposure. There are vaccines available that may help protect against certain strains of canine influenza -- check with your veterinarian to see if they recommend that your dog be vaccinated.

### **What Are the General Symptoms of Canine Influenza Virus?**

While most dogs will show typical symptoms of kennel cough, a small percentage of dogs will develop a more severe illness. Symptoms of canine influenza virus include:

- Coughing
- Sneezing
- Variable fever
- Clear nasal discharge that progresses to thick, yellowish-green mucus
- Rapid/difficult breathing
- Loss of appetite
- Lethargy

### **Can Dogs Die From Canine Influenza Virus?**

If CIV is quickly diagnosed and treated, the fatality rate is quite low. Deaths are usually caused by secondary complications, such as pneumonia. It is very important that dogs with CIV receive proper veterinary care.

### **How Is Canine Influenza Virus Diagnosed?**

Veterinarians will typically conduct a thorough physical examination and run a series of tests to diagnose the illness.

### **How Is Canine Influenza Treated?**

Most treatment for canine flu involves supportive treatments that are given while the body fights off the virus. Specific anti-viral medications are available, but they aren't always used because they work the best early on, often before we realize that the dog is even sick. However, supportive care and appropriate treatment of secondary infections are important. Your veterinarian may advise the following to soothe your dog while the condition runs its course:

- Good nutrition and supplements to raise immunity
- A warm, quiet and comfortable spot to rest
- Medications to treat secondary bacterial infections
- Intravenous fluids to maintain hydration
- Workup and treatment for pneumonia

(pet.webmd.com)

## **6) Pneumonia (Bacterial) in Dogs**

Pneumonia is a condition which refers to an inflammation of the lungs. Bacterial pneumonia, meanwhile, refers to an inflammation of the lungs in response to a disease-causing bacteria. This inflammation is characterized by an accumulation of inflammatory cells and fluid in the lungs, airways, and alveoli (the portion of the airways in which oxygen and carbon dioxide are exchanged).

Prognosis for bacterial pneumonia is generally good if properly treated. However, there are two secondary conditions that may result from bacterial pneumonia, and which are associated with increased fatalities: hypoxemia and sepsis. Hypoxemia refers to severely low levels of oxygen in

the blood, while sepsis refers to a systemic infection with the presence of toxic, pus-forming bacteria in the dog's bloodstream.

Bacterial pneumonia is relatively common in dogs. Sporting dogs, hounds, and larger mixed-breed dogs seem to be at greater risk for bacterial pneumonia than other breeds.

## **Symptoms and Types**

Symptoms of bacterial pneumonia include cough, fever, difficulty breathing, lack of appetite and consequent weight loss, sluggishness, nasal discharge, dehydration, and rapid breathing. Intolerance to exercise due to breathing difficulties may also be apparent. Listening to the lungs with a stethoscope may reveal abnormal breathing sounds, a diagnostic process known as auscultation. Symptoms may include short rough snapping sounds known as crackles, and whistling sounds known as wheezes.

## **Causes**

Causes of bacterial infection in the lungs may vary -- with no single bacterium being thought of as responsible for this condition. In dogs, the bacterial organisms *Bordetella bronchiseptica* and *Streptococcus zooepidemicus* are the primary bacterial causes of pneumonia. Additional types of bacteria, as well as anaerobic bacteria - which are capable of living and growing in the absence of oxygen, may also be to blame.

Some risk factors that may increase the risk of bacterial pneumonia include a pre-existing viral infection, difficulty swallowing, metabolic disorders, and regurgitation.

## **Diagnosis**

Bacterial pneumonia is just one cause of pulmonary dysfunction. Additional causes may include aspiration pneumonia, in which the lungs become inflamed due to inhalation of material, such as a foreign body, or vomit. The symptoms of bacterial and aspiration pneumonia may be similar, and diagnosis must properly determine between them in cases of pulmonary dysfunction.

If bacterial pneumonia is suspected, there are a number of diagnostic procedures that may be used for your dog. A tracheal wash may be performed to gather some of the material (fluids and cells) that lines the trachea for analysis. Because the bacteria cannot always be seen via microscope, any specimens taken should be cultured for further examination. Other tests may include visual imaging, specifically X-rays of the chest and lungs. Blood analysis, and urine analysis tests will also be conducted.

## **Treatment**

Medication is necessary in cases of bacterial pneumonia; the proper antimicrobial can be selected based on results of bacterial cultures taken from a tracheal wash, for example. Additional treatment depends on the severity of signs. If multiple symptoms occur, such as anorexia, high fever, and weight loss, your dog will be actively treated in hospital to start.

If respiratory distress is apparent, oxygen therapy may be necessary. To avoid dehydration, your veterinarian may recommend administering electrolytes by intravenous (IV) fluid therapy.

Restrict your dog's activities throughout treatment, except as part of physiotherapy, or to help improve clearing of the lungs and airways. Be attentive to your pet's needs. Although you will need to allow for plenty of recuperative rest, you will also need to prevent your dog from lying in one position for long periods of time to avoid the risk of fluid accumulation in one spot. Encourage your dog to change positions semi-frequently.

## **Living and Management**

After the initial treatment, your dog should be fed a diet high in protein and energy density. Your veterinarian will monitor your dog's progress with blood tests, and if needed, X-rays of the chest and lung cavity. Any prescribed antimicrobial medications should be administered regularly, as prescribed by your veterinarian.

## **Prevention**

One way in which bacterial pneumonia can be prevented is by ensuring that pets receive regular vaccinations for prevention of infections.  
(petmd.com)

## **7) Bordetella (Kennel Cough) in Dogs**

If your dog is hacking away or constantly making noises that make it sound like he's choking on something, he may have a case of kennel cough, or canine infectious tracheobronchitis. Although kennel cough can sound terrible, most of the time it is not a serious condition, and most dogs will recover without treatment.

### **What is Kennel Cough?**

Just as human colds may be caused by many different viruses, kennel cough itself can have multiple causes. One of the most common culprits is a bacterium called *Bordetella bronchiseptica* m-- which is why kennel cough is often called Bordetella. Most dogs that become infected with Bordetella are infected with a virus at the same time. These viruses, which are known to make dogs more susceptible to contracting Bordetella infection, include canine

adenovirus, canine distemper virus, canine herpes virus, parainfluenza virus and canine reovirus.

Dogs "catch" kennel cough when they inhale bacteria or virus particles into their respiratory tract. This tract is normally lined with a coating of mucus that traps infectious particles, but there are a number of factors that can weaken this protection and make dogs prone to kennel cough infection, which results in inflammation of the larynx (voice box) and trachea (windpipe).

These factors include:

- Exposure to crowded and/or poorly ventilated conditions, such as are found in many kennels and shelters
- Cold temperatures
- Exposure to dust or cigarette smoke
- Travel-induced stress

## **Symptoms of Kennel Cough**

The classic symptom of kennel cough is a persistent, forceful cough. It often sounds like a goose honk. This is distinct from a cough-like sound made by some dogs, especially little ones, which is called a reverse sneeze. Reverse sneezes can be normal in certain dogs and breeds, and usually only indicates the presence of post-nasal drip or a slight irritation of the throat. Some dogs with kennel cough may show other symptoms of illness, including sneezing, a runny nose, or eye discharge.

If your dog has kennel cough, he probably will not lose his appetite or have a decreased energy level.

## **Treating and Preventing Kennel Cough**

Kennel cough is contagious. If you think your dog might have the condition, you should keep him away from other animals and contact your veterinarian.

Although most cases of kennel cough will resolve without treatment, medications may speed recovery or minimize symptoms during the course of infection. These include antibiotics that target *Bordetella* bacteria and cough medicines.

You may also find that keeping your dog in a well-humidified area and using a harness instead of a collar, especially for dogs that strain against a leash, will minimize the coughing.

Most dogs with kennel cough recover completely within three weeks, though it can take up to six weeks in older dogs or those with other medical conditions. Because serious, ongoing kennel cough infection can lead to pneumonia, be sure to follow up with your veterinarian if your dog doesn't improve within the expected amount of time. Also, if your dog at any time has symptoms of rapid breathing, not eating, or listlessness, contact your vet right away, as these could be signs of more serious conditions.

There are three forms of vaccine for kennel cough: one that is injected, one that is delivered as a nasal mist, and one that can be given by mouth. Although these vaccines may help, they do not guarantee protection against kennel cough or infectious tracheobronchitis because it can be

caused by so many different kinds of bacteria and viruses. Also, it is important to realize that neither form of the kennel cough vaccination will treat active infections.

The intranasal and oral kennel cough vaccinations are typically given to dogs once a year, but sometimes are recommended every six months for dogs at high risk for kennel cough. These forms of the vaccine tend to provide dogs protection against kennel cough sooner than the injected product.

(pets.webmd.com)

## **8) Intestinal Parasite (Coccidia) in Dogs**

### **Coccidiosis in Dogs**

Coccidiosis is a parasitic type of infection, caused by the coccidium, that most commonly causes watery, mucus-based diarrhea in dogs. If it is not treated, over time it can cause damage to the lining of the dog's intestinal tract. With treatment, the prognosis is good.

The condition or disease described in this medical article can affect both dogs and cats.

### **Symptoms and Types**

You may notice that the dog has watery, mucous-like diarrhea. As the condition progresses, bloody diarrhea and an inability to withhold it will begin to show. The dog may also be in a weakened state.

### **Causes**

Stress, as from moving, travel and weather changes, and being in an environment with other infected animals are the most common causes of this parasitic infection to develop. It is spread through fecal matter, and is most commonly found in puppies that have contracted the parasite from an adult dogs' feces. The coccidiosis infection is of particular danger for young dogs, since their immune systems are still underdeveloped.

### **Diagnosis**

A fecal examination is the most common method of diagnosis for this infection. The coccidium parasite will be readily visible under a microscope.

### **Treatment**

Treatment is generally outpatient. A medication to kill the parasite will be prescribed, and is generally highly effective and fast working. The dog will need to be rehydrated as a result of the diarrhea. If the dog is debilitated, it may be kept for observation. A follow up fecal examination within one to two weeks of the initial treatment will be needed to ensure that the parasite is no longer present in the animal's body.



## **Living and Management**

Owners should administer the prescribed medication as directed and monitor the dog for progress. If there is a decline in the dog's health, they should visit their veterinarian to ensure that there is not a more serious underlying health cause.

## **Prevention**

The best prevention is to keep infected animals apart. Testing the feces from a dog that is pregnant or has given birth to be sure that it is not infected will protect newborns from infection, or alert the breeder or owner to the problem so that treatment can be prescribed. New owners may wish to test the feces of a young dog as a preventive, since this is a common issue.

([www.petmd.com](http://www.petmd.com))

## **9) Parasitic Diarrhea (Giardiasis) in Dogs**

Giardiasis refers to an intestinal infection that is caused by the protozoan parasite giardia, which is the most common intestinal parasite that is found in humans. Dogs develop the infection by ingesting infectious offspring (cysts) that are shed in another animal's feces. The contamination can be from direct or indirect contact with the infected cysts. The organisms, once ingested, make their way into the intestine, often causing diarrhea. The treatment is typically performed on an outpatient basis with a good prognosis.

### **Symptoms and Types**

Symptoms are more visible in younger animals than in older animals and can be either sudden (acute), temporary (transient), non-continuous (intermittent), or ongoing (chronic) in nature. In some cases, dogs will exhibit diarrhea that is soft, frothy, greasy, and with a strong, awful odor or excessive mucus.

### **Causes**

One of the most common causes of the parasitic infection is the ingestion of infected fecal material, as the cysts are shed in animal feces. The most common cause of transmission is actually waterborne, as the parasite prefers the cool and moist environment. Up to 50 percent of young puppies will develop this intestinal infection, and up to 100 percent of dogs housed in kennels will develop it due to the massive exposure and closely shared living spaces.

### **Diagnosis**

Your vet will want to rule out other possibilities for the intestinal infection such as improper digestion (maldigestion), unabsorbed nutrients (malabsorption), or inflammatory bowel disease

(IBD) prior to recommending a treatment option. In cats, your vet will want to differentiate between giardia and other primary causes of large bowel diarrhea. The organism is primarily detected in the feces. A fecal smear is normally sufficient to test for their presence, although it is possible to have a false positive.

### **Treatment**

Treatment is typically done on an outpatient basis unless the dog has become sick and weak. Prescription drugs along with bathing are combined to reduce the likelihood of repeat infection and to remove the parasite from the dog's body. Repeat fecal exams are often required to confirm that the infection has been removed, as an ongoing (chronic) infection can be debilitating for the animal.

### **Living and Management**

It is important to observe for signs of dehydration, especially in younger animals. Administering the prescribed medication and taking the animal back in for examination are also important in a successful recovery.

### **Prevention**

Since one of the highest incidences of the infection spreading is in a kennel, seek places that offer private spaces for pets in order to avoid contamination from the other animals.

## **10) Canine Coronavirus Infection in Dogs**

A canine coronavirus infection (CCV) is a highly contagious intestinal disease that can be found in dogs all around the world. This particular virus is specific to dogs, both wild and domestic. The coronavirus replicates itself inside the small intestine and is limited to the upper two-thirds of the small intestine and local lymph nodes. A CCV infection is generally considered to be a relatively mild disease with sporadic symptoms, or none at all. But if a CCV infection occurs simultaneously with a viral canine parvovirus infection, or an infection caused by other intestinal (enteric) pathogens, the consequences can be much more serious. There have been some deaths reported in vulnerable puppies.

### **Symptoms and Types**

The symptoms of a CCV infection vary. In adult dogs, the majority of infections will be inapparent, with no symptoms to show. Sometimes, a single instance of vomiting and a few days of explosive diarrhea (liquid, yellow-green or orange) may occur. Fever is typically very

rare, while anorexia and depression are more common. Occasionally, an infected dog may also experience some mild respiratory problems. Puppies may exhibit protracted diarrhea and dehydration, and are most at risk of developing serious complications with this virus. Severe enteritis (inflammation of the small intestine) in puppies will occasionally result in death.

## **Causes**

This intestinal disease is caused by the canine coronavirus, which is closely related to the feline enteric coronavirus (FIP), an intestinal virus that affects cats. The most common source of a CCV infection is exposure to feces from an infected dog. The viral strands can remain in the body and shed into the feces for up to six months. Stress caused by over-intensive training, over-crowding and generally unsanitary conditions increase a dog's susceptibility to a CCV infection. Additionally, places and events where dogs gather are the most likely locations for the virus to spread.

## **Diagnosis**

A CCV infection will usually have some symptoms in common with other bacterial, viral, or protozoic infections, or with general food intoxication or intolerance. Therefore, certain tests may have to be administered to determine the actual cause of the infection. Biochemical analysis and urinalysis will typically show normal physiology, so sometimes specific serologic (serum) tests or antibody titers (measurement of antibody strength) may need to be used.

## **Treatment**

Puppies that have been exposed to this infection and are showing symptoms will need the most guarded care. What appears to be a small amount of diarrhea and vomiting can lead to a fatal condition for a defenseless, puppy. Most adult dogs will recover from a CCV infection on their own and without the need for medication. In some cases, diarrhea may continue for up to 12 days, and soft stool for a few weeks. If the infection does cause inflammation of the small intestine (enteritis), respiratory problems, or blood poisoning (septicemia), antibiotics may need to be prescribed. If severe diarrhea and dehydration occur as a result of the infection, the dog may need to be given extra fluid and electrolyte treatment. Once the dog has recovered from the infection, there will usually be no need for further monitoring. But, keep in mind that there may still be remnants of the virus that are being shed in your dog's feces, potentially placing other dogs at risk.

## **Prevention**

There is a vaccine available to protect dogs from this virus. It is normally reserved for show dogs and puppies, since they have undeveloped immune systems and are most vulnerable. Because the canine coronavirus is a highly contagious infection, the best prevention for it is to immediately isolate dogs that either exhibit the common symptoms or have been diagnosed with it. It is also important to keep kennels clean and hygienic at all times, to clean after your dog in both public and private spaces, and to protect your dog from coming into contact with other dog's feces, as much as that is possible.

([www.petmd.com](http://www.petmd.com))

## **11) Distemper in Dogs**

Canine distemper is a contagious and serious viral illness with no known cure. The disease affects dogs, and certain species of wildlife, such as raccoons, wolves, foxes, and skunks. The common house pet, the ferret, is also a carrier of this virus. Canine distemper belongs to the *Morbillivirus* class of viruses, and is a relative of the measles virus, which affects humans, the *Rinderpest* virus that affects cattle, and the *Phocine* virus that causes seal distemper. All are members of the *Paramyxoviridae* family. Young, unvaccinated puppies and non-immunized older dogs tend to be more susceptible to the disease.

### **Symptoms and Types**

The virus, which is spread through the air and by direct or indirect (i.e. bowls, bedding) contact with an infected animal, initially attacks a dog's tonsils and lymph nodes and replicates itself there for about one week. It then attacks the respiratory, urogenital, gastrointestinal, and nervous systems.

In the initial stages of Canine Distemper, the major symptoms include high fever ( $\geq 103.5^{\circ}\text{F}$ , or  $39.7^{\circ}\text{C}$ ), reddened eyes, and a watery discharge from the nose and eyes. An infected dog will become lethargic and tired, and will usually become anorexic. Persistent coughing, vomiting, and diarrhea may also occur. In the later stages of the disease, the virus starts attacking the other systems of the dog's body, particularly the nervous system. The brain and spinal cord are affected and the dog may start having fits, seizures, paralysis, and attacks of hysteria.

Canine distemper is sometimes also called "hard pad disease" because certain strains of the virus can cause an abnormal enlargement or thickening of the pads of an animal's feet. In dogs or animals with weak immune systems, death may result two to five weeks after the initial infection.

## **Causes**

The disease can be acquired from improperly attenuated vaccines, though this occurs rather rarely. Bacterial infections of the respiratory or gastrointestinal systems may also increase an animal's vulnerability to the disease. Non-immunized dogs that come into any kind of contact with an infected animal carry a particularly high risk of contracting the disease.

## **Diagnosis**

Canine distemper is diagnosed with biochemical tests and urine analysis, which may also reveal a reduced number of lymphocytes, the white blood cells that function in the immune system in the initial stages of the disease (lymphopenia). A serology test may identify positive antibodies, but this test cannot distinguish between vaccination antibodies and an exposure to a virulent virus. Viral antigens may be detected in urine sediment or vaginal imprints. Haired skin, nasal mucous, and the footpad epithelium may be tested for antibodies as well. Radiographs can only be used to determine whether an infected animal has contracted pneumonia. Computed tomography (CT) and magnetic resonance imaging (MRI) scans can be used to examine the brain for any lesions that may have developed.

## **Treatment**

Unfortunately, there is no cure for canine distemper. Treatment for the disease, therefore, is heavily focused on alleviating the symptoms. If the animal has become anorexic or has diarrhea, intravenous supportive fluids may be given. Discharge from the eyes and nose must be cleaned away regularly. Antibiotics may be prescribed to control the symptoms caused by a secondary bacterial infection, and phenobarbitals and potassium bromide may be needed to control convulsions and seizures. There are no antiviral drugs that are effective in treating the disease.

## **Living and Management**

In the more acute stages of canine distemper, it is necessary to monitor for development of pneumonia or dehydration from diarrhea. The central nervous system (CNS) must also be monitored because seizures and other neural disturbances may occur. A dog's chances for surviving canine distemper will depend on the strain of the virus and the strength of the dog's immune system. Recovery is entirely possible, although seizures and other fatal disturbances to the CNS may occur two to three months after recovery. Fully recovered dogs do not spread or carry the virus.

## **Prevention**

The best prevention for canine distemper is routine vaccinations and immediate isolation of infected animals. Special care must be taken to protect newborn pups from exposure, since they are especially susceptible to the disease.

([www.petmd.com](http://www.petmd.com))

## **12) Infectious Hepatitis in Dogs**

Infectious canine hepatitis is a highly contagious viral infection that affects the liver, kidneys, spleen, lungs, and eyes in dogs. It occurs worldwide, though it is rare in the United States, and it mostly affects young dogs under one year of age, though it can affect adults. Most cases occur in wild or unvaccinated dogs.

### **Signs & Symptoms of Infectious Canine Hepatitis**

This disease can cause a very wide range of signs and symptoms. These can range from mild to severe:

- Nausea
- Vomiting
- Sore throat
- Coughing
- Difficulty clotting blood, as displayed by bleeding around the teeth or spontaneous hematomas in the mouth
- Cloudiness of eye ("hepatitis blue eye") in 25% of cases, and usually in dogs under six months old
- Drinking and urinating alot
- Light colored stool
- Loss of appetite
- Jaundice
- Seizures
- Abdominal pain and enlargement
- Swollen lymph nodes
- Swelling of tonsils, head, neck, or trunk
- Weight loss
- Pale tongue, gums, and nose
- Fever of greater than 104°F lasting one to six days in dogs under one year of age

In mild cases, your dog will display a mild fever, moderate lethargy, and slight loss of appetite.

In this case, your dog will usually recover on its own in about two days.

In more severe cases, your dog can develop a biphasic fever (a fever associated with two different sets of symptoms as it progresses) for one to six days, pass bloody diarrhea or bloody vomit, tuck up their belly from pain associated with the liver, become sensitive to light (which

may cause tearing or squinting), and refuse to eat. Death can occur within a few hours and veterinary attention will need to be sought immediately.

The fatal form of the disease results in a sudden onset of severe symptoms. Bleeding from the nose and gums, enlarged abdomen due to fluid leaking from the liver, bloody diarrhea and vomit, seizures due to central nervous system association, disorientation, coma, and death may occur. Dogs may die suddenly without any obvious illness. Infectious canine hepatitis is most severe, and the mortality rate is highest, in young dogs. Veterinary attention will need to be sought immediately.

## Causes of Infectious Canine Hepatitis

Infectious canine hepatitis is caused by a virus known as the canine adenovirus-1 or (CAV-1). This virus is a resilient virus, able to survive outside of the host for weeks or months, and may only be killed using certain disinfectants. Your dog can contract CAV-1 virus through direct contact with infected saliva, urine, or feces, either with your dog's mouth or nose. Even a dog dish that has been licked clean can carry the virus. The tonsils and lymph nodes are the first body parts affected. The incubation period can last four to nine days, after which the virus enters the bloodstream.

## Diagnosis of Infectious Canine Hepatitis

Diagnosis begins with a complete history and a physical exam. There are several different tests used to diagnose canine hepatitis. The diagnostic path chosen will depend largely on the symptoms your dog has and the availability of diagnostic tools your veterinarian has. Your veterinarian will be most likely to do the following:

- **CBC/Chemistry Panel** - These blood tests will evaluate various internal organ functions, including the heart, liver, kidneys, pancreas, metabolism, and electrolyte balance. The CBC will measure the amount and different kinds of red and white blood cells that are present in the bloodstream. If your dog has infectious canine hepatitis, a low white blood cell count and elevated liver enzymes would be found.
- **ELISA testing** - This stands for "enzyme-linked immunosorbent assay," and is a test used to determine if a dog has been exposed to a certain pathogen by seeing if the dog's body has produced antibodies against the pathogen. It can be used to test for viruses, bacteria, microbes, or other material. In this case, the veterinarian would take a fecal sample and test it for the antibodies of the canine adenovirus-1.
- **Immunofluorescence** - This is a technique used to illuminate either viruses or their antibodies in a tissue or culture using a fluorescent dye. In this case, your veterinarian will make a tissue or cell smear and expose it to a virus-specific antibody for infectious canine hepatitis. The antibody will attach to any virus displayed in the sample and show under a microscope as a bright green spot on the slide.

Because of the wide variety of symptoms associated with this disease, your veterinarian might want to do other tests to differentiate this disease from others. This disease is commonly

mistaken for distemper because of the low white blood cell count and biphasic fever, as well as parvovirus because of the low white blood cell count and diarrhea.

## **Treatment for Infectious Canine Hepatitis**

Your veterinarian will likely treat infectious canine hepatitis according to the symptoms being displayed:

- A broad spectrum antibiotic may be administered.
- IV fluids, along with a dextrose solution, might be administered to rehydrate the dog.
- Blood transfusion may be necessary in severely ill dogs to replenish lost blood.
- The cloudiness of the eye will usually take care of itself, but an ointment may be given to relieve your dog from eye pain and light sensitivity.
- A fasting period may be instituted, followed by a light diet consisting of small, frequent meals.

Even after recovery, your dog can shed the virus in his urine for up to nine months. After recovering from the condition, the liver will completely recover, but long-term kidney damage, and prolonged eye cloudiness or glaucoma, may result as a delayed inflammation response. However, your dog will have lifelong immunity to the virus.

## **Prevention of Infectious Canine Hepatitis**

- Vaccination is the most recommended method of preventing infectious canine hepatitis. While it seems logical to vaccinate using the CAV-1 virus, this can usually cause unwanted side effects, such as the bluing of the eye and the shedding of virus. Vaccination with a very closely related virus, CAV-2, is much safer, and will help your dog build immunity against CAV-1. CAV-2 is also thought to play a part in a common condition called kennel cough, so vaccinating with CAV-2 would result in immunity to both conditions. This vaccine is usually mixed with the distemper and parvovirus vaccine given to puppies within the first months of life. Annual revaccination is often recommended.
- Your young or unvaccinated dog should be kept away from public places, dogs outside your household, or dirty food bowls that are left outside or belonging to dogs outside your household. Keep an eye on your dog during walks to ensure he/she does not consume urine or feces.
- Disinfection of contaminated areas with a bleach or iodine solution can kill the virus (pet360.com)

## **13) Bacterial Infection (Leptospirosis) in Dogs**



Leptospirosis is an infection of bacterial spirochetes, which dogs acquire when subspecies of the *Leptospira interrogans* penetrate the skin and spread through the body by way of the bloodstream. Two of the most commonly seen members of this subspecies are the *L. grippityphosa* and *L. Pomona* bacteria. Spirochetes are spiral, or corkscrew-shaped bacteria which infiltrate the system by burrowing into the skin.

Leptospire spread throughout the entire body, reproducing in the liver, kidneys, central nervous system, eyes, and reproductive system. Soon after initial infection, fever and bacterial infection of the blood develop, but these symptoms soon resolve with the reactive increase of antibodies, which clear the spirochetes from most of the system. The extent to which this bacteria affects the organs will depend on your dog's immune system and its ability to eradicate the infection fully. Even then, *Leptospira spirochetes* can remain in the kidneys, reproducing there and infecting the urine. Infection of the liver or kidneys can be fatal for animals if the infection progresses, causing severe damage to these organs. Younger animals with less developed immune systems are at the highest risk for severe complications.

The *Leptospira spirochete* bacteria is zoonotic, meaning that it can be transmitted to humans and other animals. Children are most at risk of acquiring the bacteria from an infected pet.

## Symptoms and Types

- Sudden fever and illness
- Sore muscles, reluctance to move
- Stiffness in muscles, legs, stiff gait
- Shivering
- Weakness
- Depression
- Lack of appetite
- Increased thirst and urination, may be indicative of chronic renal (kidney) failure, progressing to inability to urinate
- Rapid dehydration
- Vomiting, possibly with blood
- Diarrhea - with or without blood in stool
- Bloody vaginal discharge
- Dark red speckled gums (petechiae)
- Yellow skin and/or whites of eyes – anemic symptoms
- Spontaneous cough
- Difficulty breathing, fast breathing, irregular pulse
- Runny nose
- Swelling of the mucous membrane

- Mild swelling of the lymph nodes

## Causes

The *Leptospira spirochete* infection mainly occurs in subtropical, tropical, and wet environments. *Leptospira spirochetes* are more prevalent in marshy/muddy areas which have stagnant surface water and are frequented by wildlife. Heavily irrigated pastures are also common sources of infection. The infection rate for domestic pets has been increasing in the U.S. And Canada, with infections occurring most commonly in the fall season. Dogs will typically come into contact with the leptospira bacteria in infected water, soil, or mud, while swimming, passing through, or drinking contaminated water, or from coming into contact with urine from an infected animal. This last method of contact might take place in the wild. Hunting and sporting dogs, dogs that live near wooded areas, and dogs that live on or near farms are at an increased risk of acquiring this bacteria. Also at increased risk are dogs that have spent time in a kennel.

## Diagnosis

Because leptospirosis is a zoonotic disease, your veterinarian will be especially cautious when handling your pet, and will strongly advise you to do the same. Protective latex gloves must be worn at all times, and all body fluids will be treated as a biologically hazardous material. Urine, vomit, and any fluid that leaves the body will need to be handled with extreme caution.

You will need to give a thorough history of your dog's health, including a background history of symptoms, recent activities, and possible incidents that might have precipitated this condition. The history you provide may give your veterinarian clues as to what stage of infection your dog is experiencing, and which organs are being most affected.

Your veterinarian will order a chemical blood profile, a complete blood count, a urinalysis, an electrolyte panel, and a fluorescent antibody urine test. Urine and blood cultures will also be ordered for examining the prevalence of the bacteria. A microscopic agglutination test, or titer test, will also be performed to measure the body's immune response to the infection, by measuring the presence of antibodies in the bloodstream. This will help to definitively identify leptospira spirochetes and the level of systemic infection.

## Treatment

Dogs with acute severe disease should be hospitalized. Fluid therapy will be the primary treatment, in order to reverse any effects of dehydration. If your dog has been vomiting, an anti-vomiting drug, called an antiemetic, may be administered, and a gastric tube can be used to

nourish your dog if its inability to eat or keep food down continues. A blood transfusion may also be necessary if your dog has been severely hemorrhaging.

Antibiotics will be prescribed by your veterinarian, with the type of antibiotic dependent on the stage of infection. Penicillins can be used for initial infections, but they are not effective for eliminating the bacteria once it has reached the carrier stage. Tetracyclines, fluoroquinolones, or similar antibiotics will be prescribed for this stage, since they are better distributed into the bone tissue. Antibiotics will be prescribed for a course of at least four weeks. Some antibiotics can have side effects that appear serious, especially those drugs that go deeper into the system to eliminate infection. Be sure to read all of the warnings that come with the prescription, and talk to your veterinarian about the indications you will need to watch for. Prognosis is generally positive, barring severe organ damage.

## **Living and Management**

A vaccination for the prevention of the leptospirosis infection is available in some areas. Your veterinarian can advise you on the availability and usefulness of this vaccine. Make sure to inspect kennels before placing your dog in one – the kennel should be kept very clean, and should be free of rodents (look for rodent droppings). Urine from an infected animal should not come into contact with any other animals, or people.

Activity should be restricted to cage rest while your dog recovers from the physical trauma of this infection. Leptospirosis is a zoonotic disease, transmissible to humans, and other animals via urine, semen, and post-birth or post-abortion discharge. While your dog is in the process of being treated, you will need to keep it isolated from children and other pets, and you will need to wear protective latex gloves when handling your dog in any way, or when handling fluid or waste products from your dog. Areas where your dog has urinated, vomited, or has possibly left any other type of fluid should be cleaned and disinfected thoroughly with iodine-based disinfectants or bleach solutions. Gloves should be worn during the cleaning process and disposed of properly after.

Finally, if you do have other pets or children in the home, they may have been infected with the leptospira bacteria and are not yet showing symptoms. It may be worthwhile to have them (and yourself) tested for the presence of the bacteria. And, it is important to keep in mind that leptospires may continue to be shed through the urine for several weeks after treatment and apparent recovery from the infection. Appropriate handling practices will be the best prevention of the spread of infection, or of reinfection.

(petmd.com)

## **14) Parvo in Dogs**

The canine parvovirus (CPV) infection is a highly contagious viral illness that affects dogs. The virus manifests itself in two different forms. The more common form is the intestinal form, which

is characterized by vomiting, diarrhea, weight loss, and lack of appetite (anorexia). The less common form is the cardiac form, which attacks the heart muscles of very young puppies, often leading to death. The majority of cases are seen in puppies that are between six weeks and six months old. The incidence of canine parvovirus infections has been reduced radically by early vaccination in young puppies.

## **Symptoms and Types**

The major symptoms associated with the intestinal form of a canine parvovirus infection include severe, bloody diarrhea, lethargy, anorexia, fever, vomiting, and severe weight loss. The intestinal form of CPV affects the body's ability to absorb nutrients, and an affected animal will quickly become dehydrated and weak from lack of protein and fluid absorption. The wet tissue of the mouth and eyes may become noticeably red and the heart may beat too rapidly. When your veterinarian palpates (examine by touch) your dog's abdominal area, your dog may respond with pain or discomfort. Dogs that have contracted CPV may also have a low body temperature (hypothermia), rather than a fever.

## **Causes**

Most cases of CPV infections are caused by a genetic alteration of the original canine parvovirus: the canine parvovirus type 2b. There are a variety of risk factors that can increase a dog's susceptibility to the disease, but mainly, the virus is transmitted either by direct contact with an infected dog, or indirectly, by the fecal-oral route. Heavy concentrations of the virus are found in an infected dog's stool, so when a healthy dog sniffs an infected dog's stool, it will contract the disease. The virus can also be brought into a dog's environment by way of shoes that have come into contact with infected feces. There is evidence that the virus can live in ground soil for up to a year. It is resistant to most cleaning products, or even to weather changes. If you suspect that you have come into contact with feces at all, you will need to wash the affected area with household bleach, the only disinfectant known to kill the virus.

Improper vaccination protocol and vaccination failure can also lead to a CPV infection. Breeding kennels and dog shelters that hold a large number of inadequately vaccinated puppies are particularly hazardous places. For unknown reasons, certain dog breeds, such as Rottweilers, Doberman Pinschers, Pit Bulls, Labrador Retrievers, German Shepherds, English Springer Spaniels, and Alaskan sled dogs, are particularly vulnerable to the disease. Diseases or drug therapies that suppress the normal response of the immune system may also increase the likelihood of infection.

## **Diagnosis**

CPV is diagnosed with a physical examination, biochemical tests, urine analysis, abdominal radiographs, and abdominal ultrasounds. A chemical blood profile and a complete blood cell count will also be performed. Low white blood cell levels are indicative of CPV infection,

especially in association with bloody stools. Biochemical and urine analysis may reveal elevated liver enzymes, lymphopenia, and electrolyte imbalances. Abdominal radiograph imaging may show intestinal obstruction, while an abdominal ultrasound may reveal enlarged lymph nodes in the groin, or throughout the body, and fluid-filled intestinal segments.

You will need to give a thorough history of your pet's health, recent activities, and onset of symptoms. If you can gather a sample of your dog's stool, or vomit, your veterinarian will be able to use these samples for microscopic detection of the virus.

## **Treatment**

Since the disease is a viral infection, there is no real cure for it. Treatment is focused on curing the symptoms and preventing secondary bacterial infections, preferably in a hospital environment. Intensive therapy and system support are the key to recovery. Intravenous fluid and nutrition therapy is crucial in maintaining a dog's normal body fluid after severe diarrhea and dehydration, and protein and electrolyte levels will be monitored and regulated as necessary. Medications that may be used in the treatment include drugs to curb vomiting (antiemetics), H2 Blockers to reduce nausea, antibiotics, and anthelmintics to fight parasites. The survival rate in dogs is about 70 percent, but death may sometimes result from severe dehydration, a severe secondary bacterial infection, bacterial toxins in the blood, or a severe intestinal hemorrhage. Prognosis is lower for puppies, since they have a less developed immune system. It is common for a puppy that is infected with CPV to suffer shock, and sudden death.

## **Living and Management**

Even after your dog has recovered from a CPV infection, it will still have a weakened immune system, and will be susceptible to other illnesses. Talk to your veterinarian about ways by which you can boost your dog's immune system, and otherwise protect your dog from situations that may make it ill. A diet that is easily digested will be best for your dog while it is recovering.

Your dog will also continue to be a contagion risk to other dogs for at least two months after the initial recovery. You will need to isolate your dog from other dogs for a period of time, and you may want to tell neighbors who have dogs that they will need to have their own pets tested. Wash all of the objects your dog uses (e.g., dishes, crate, kennel, toys) with non-toxic cleaners. Recovery comes with long-term immunity against the parvovirus, but it is no guarantee that your pet will not be infected with the virus again.

## **Prevention**

The best prevention you can take against CPV infection is to follow the correct protocol for vaccination. Young puppies should be vaccinated at six, nine, and twelve weeks, and should not be socialized with outside dogs until at least two weeks after their last vaccinations. High-risk breeds may require a longer initial vaccination period of up to 22 weeks.  
([www.petmd.com](http://www.petmd.com))

## **15) Canine Parainfluenza**

### **Disease overview**

Canine parainfluenza virus (CPIV) is a highly contagious respiratory virus and is one of the most common pathogens of infectious tracheobronchitis, also known as canine cough.<sup>1</sup> Although the respiratory signs may resemble those of canine influenza, they are unrelated viruses and require different vaccines for protection.

### **Transmission**

CPIV is excreted from the respiratory tract of infected animals for up to 2 weeks after infection and is usually transmitted through the air.<sup>1</sup> The virus spreads rapidly in kennels or shelters where large numbers of dogs are kept together.<sup>2</sup>

### **Clinical signs<sup>1,2</sup>**

- Coughing (dry or moist)
- Low-grade fever
- Nasal discharge
- Lack of energy
- Loss of appetite

### **Risk factors**

- Dogs that come from shelters, rescue centers, breeding kennels, or pet stores
- Boarding at a kennel or doggie daycare
- Visiting groomers, dog parks, or engaging with other dogs on a daily basis
- Dogs that participate in events/competitions

### **Merck Animal Health Solutions**

<b>Product</b>	<b>Description</b>
	The Nobivac® line of 1-year combination and intranasal vaccines for dogs provides comprehensive protection against canine parainfluenza in addition to other commonly spread canine diseases

([merck-animal-health-usa.com](http://merck-animal-health-usa.com))

