

What Is *Campylobacter*?

- *Campylobacter* is a group of bacteria that normally inhabit the intestines of animals.
- *Campylobacter* is **the most common known cause of bacterial diarrhea** in people in the developed world.
- There are several species of *Campylobacter* found in both people and animals.
 - ▶ The most common species that cause disease in humans are *C. jejuni* and *C. coli*, which account for up to 95% of all human cases. *Campylobacter jejuni* is most often found in chickens, but it is found in pets as well.
 - ▶ The most common species found in dogs and cats is *C. upsaliensis*, which uncommonly infects humans. Cats can also commonly carry *C. helveticus*, but it's unknown if this species makes people ill at all.
- *Campylobacter* is an important cause of disease in humans. Disease in animals is much less common, but **the bacterium is often found in healthy pets**. When illness occurs, the most common sign in humans and animals is **diarrhea**.
- *Campylobacter* can sometimes spread beyond the intestinal tract, resulting in severe, even life-threatening **infection of other parts of the body**, particularly in animals or people who are very young, old, or have a weakened immune system.
- The risk of transmission of *Campylobacter* between animals and people can be reduced by increasing awareness of how it is transmitted and some common-sense infection control measures.



How Common Is *Campylobacter*?

Humans

- Infection with *Campylobacter* (campylobacteriosis) is one of the most commonly diagnosed causes of bacterial diarrhea in humans worldwide. In Canada, it has been estimated that over 8 000 cases occur every year, but because a lot of people who get diarrhea never see a doctor, it's likely that far more cases actually occur.
- Over 90% of campylobacteriosis cases are **sporadic** – they occur individually instead of in a group outbreak. More cases occur over the summer months.



- **The most common sources** of *Campylobacter* in humans are **contaminated food**, especially raw/undercooked meat (particularly chicken), or any food that has come in contact with raw chicken, and unpasteurized milk. Infections have also been associated with contact with live chickens or cattle, swimming in natural water sources (e.g. lakes, ponds), and drinking untreated water. *Campylobacter* is also commonly found in pigs and raw pork.
- According to some studies, **contact with pets, particularly dogs, can be a risk factor for campylobacteriosis**. In other studies, the risk is associated specifically with contact with young animals (puppies and kittens) or those with diarrhea.
- Campylobacteriosis can affect anyone, even healthy adults. However, infants and toddlers, seniors, and people with weak immune systems (e.g. HIV/AIDS, cancer or transplant patients) are at higher risk of developing disease and serious complications when exposed to *Campylobacter*.

Animals

- *Campylobacter* is quite common in pets, even healthy pets. For example, a recent study in Ontario found *Campylobacter* in the stool of 21% of healthy dogs. *Campylobacter* is slightly less common in cats, but it is still quite common.
- Early studies of *Campylobacter* in dogs commonly reported finding *C. jejuni* and *C. coli*, but *C. upsaliensis* was discovered in 1983, and has since become the most common species found in pets. It can be found in 7-42% of dogs and 16-66% of cats, and can be even more common in stray animals.
- Dogs and cats less than six months of age, strays, and animals kept in facilities like catteries, kennels and shelters are more likely to carry *Campylobacter*. Animals are more likely to get sick from *Campylobacter* if they are sick, stressed or have a weak immune system.
- Cats and dogs without diarrhea are just as likely to have *Campylobacter* in their stool as animals with diarrhea.
- Other household pets may also shed *Campylobacter*, including ferrets, hamsters, birds and rabbits.





How Do Animals & People Become Infected With *Campylobacter*?

Campylobacter normally lives in the intestine of people. It's actually a relatively fragile organism – it is easily killed by heat (e.g. cooking), drying and most disinfectants (when used according to the label directions). It can survive for a few days at room temperature and a bit longer if it's cold, but it doesn't grow or multiply well unless it's at least 30°C and the air has a low oxygen level. So although *Campylobacter* often contaminates food, it won't multiply and spread like some other bacteria do. *Campylobacter* spp. can also survive in untreated or improperly treated water, and many cases of campylobacteriosis in people have been traced to **contaminated drinking water**. Routine chlorination of water will kill *Campylobacter*.

- *Campylobacter* is usually transmitted by swallowing **contaminated water or food**, or **contamination of the hands** with stool which is then transferred to the mouth. Raw or undercooked chicken is a particular concern.
- The dose of *Campylobacter* required to cause infection in a person may be as low as a few hundred organisms.
- Animals may be infected in the same manner – by consuming contaminated water or food, or swallowing the bacteria after licking or chewing a contaminated object. The types of *Campylobacter* found in pets include many of the same types found in humans (*C. jejuni* and *C. upsaliensis*).



What Happens If A Person Or Animal Gets Campylobacteriosis?

Humans: Campylobacteriosis usually causes diarrhea, which may last a few days to a week or more, but in most cases goes away on its own. Diarrhea may be mild, or more severe and accompanied by vomiting, fever and stomach cramps. Infection without any signs of illness also occurs. Infection of other parts of the body besides the intestine is far less common, but may cause miscarriage, arthritis, meningitis, abscesses, or infection of the kidneys, prostate or gall bladder. Disease is more severe in people with weakened immune systems (e.g. HIV/AIDS, cancer or transplant patients). Some people who recover from *Campylobacter* infection develop other complications, such as reactive arthritis or Guillain-Barré syndrome (a neurologic condition that can cause paralysis). Death due to campylobacteriosis in otherwise healthy individuals is uncommon.



Animals: Most dogs and cats have no signs of illness when they're infected with *Campylobacter*. If they do get sick, they usually get mild to moderate diarrhea, which is more likely to happen in animals that are less than six months old or stressed (e.g. hospitalized, recovering from surgery, pregnant). Animals that have other intestinal infections at the same time (e.g. *Salmonella*, *Giardia*, parvovirus, worms) may also be more likely to get sick. Occasionally an animal may get very sick from *Campylobacter*, in which case they may vomit, have a fever or pass blood in their diarrhea.

How is *Campylobacter* Infection Diagnosed?

In both animals and people, the diagnosis of campylobacteriosis is typically made by **culturing the bacteria from the stool**. However, because *Campylobacter* can be found in the intestines of healthy individuals, a positive culture alone does not necessarily mean that *Campylobacter* is the cause of the animal's (or person's) disease. Isolation of *Campylobacter* from tissues or fluid not associated with the intestinal tract (e.g. blood, urine) indicates that the infection has invaded the rest of the body. Because *Campylobacter* can be difficult to grow in the laboratory, culture may take longer than for other kinds of bacteria, and testing for resistance to different antimicrobials can also be very difficult.



How Is Campylobacteriosis Treated?

Diarrhea due to campylobacteriosis in humans is treated with antibiotics. Resistance to the most commonly used antibiotics is becoming more of a problem, so it is vitally important to follow all physician directions with regard to medication. In animals, *Campylobacter* infection most often does not cause any illness, and even when it causes diarrhea it usually resolves without antibiotic treatment. However, antibiotics should be considered for sick animals with weakened immune systems, fever, bloody diarrhea, or animals with diarrhea that live in households with high-risk people or young children.



Healthy pets that are shedding *Campylobacter* should not be treated with antibiotics. This may increase the risk of developing antibiotic-resistant infections, and may actually prolong the amount of time an animal sheds the bacteria, because antibiotics disrupt the normal bacterial population in the intestine. It is unknown how long an untreated animal will take to clear infection with *Campylobacter*, but this likely depends on the opportunity for the animal to re-infect itself (similar to the situation with *Salmonella*).

Probiotics have also not been shown to be effective for eliminating shedding of *Campylobacter* in dogs. No effective **vaccine** for *Campylobacter* in any species has been developed to date.

How Can I Help Prevent My Pet (And Me!) From Getting *Campylobacter*?



As with *Salmonella*, measures to control the spread of *Campylobacter* and prevent re-infection of the patient (human or animal) are important. Infectious disease control measures are crucial whether or not an animal is treated with antibiotics. **Control of stool contamination** is of primary importance. Any dog or cat, healthy or sick, can potentially be shedding *Campylobacter* in its stool, therefore people should assume that **stools are biohazardous** and treat them as such. **With routine household infection control measures, the risk of transmission of *Campylobacter* from a non-diarrheic pet to a person is likely minimal.**

Hand Hygiene: Anyone **handling a pet or stool from a pet** should wash their hands immediately afterwards with soap and running water, or use an alcohol-based hand sanitizer. This is especially important in the case of sick or diarrheic animals, but **applies to all animals**, as even healthy pets can shed *Campylobacter*.

- ▶ Hand hygiene is also critical **after using the bathroom, prior to handling any food, and after handling any kind of raw meat product** (especially chicken).

At Home & In Public:

- **Dog stool should be picked up immediately** to prevent environmental contamination, especially in public areas like parks where other dogs and children may play.
- Prevent pets from drinking from puddles, ponds, lakes or other water sources that may be contaminated with stool from other animals.
- Do not allow your dog to eat its own stool or that of other animals.
- Minimize the risk of foodborne infection by **thoroughly cooking all meat products** prior to consumption.
- **Do not drink unpasteurized milk.**



What Do I Do If My Pet Is Diagnosed With *Campylobacter*?

Any animal with diarrhea (due to confirmed or suspected *Campylobacter* infection or any other infectious cause) should be kept separate from other animals, particularly young, geriatric, or otherwise sick pets. **High-risk individuals** (e.g. young, elderly and persons with weakened immune systems) **should avoid contact with diarrheic pets**, as these animals may shed higher numbers of potentially zoonotic enteric pathogens, including but not limited to *Campylobacter*, in their stool. Members of households that include high-risk individuals must pay particularly close attention to hand hygiene and other infection control measures at all times, even if the pet in question is healthy, as any animal (or person) could potentially be shedding *Campylobacter* in its stool.

- **Preventing stool contamination** of the environment, the pet's haircoat, and the hands and clothing of people in contact with the animal is of primary importance. Diligent attention to **hand hygiene, cleaning and disinfection** of any surface that becomes contaminated with pet stool are crucial. **Linens** that become contaminated should be washed separately and **dried completely using high heat** in a dryer.

Therapy Animals

Guidelines have been developed to reduce the risk of pets involved in animal visitation programs acquiring or transmitting infectious diseases. Owners involved in these programs should ensure that they follow these guidelines. Pets that visit healthcare facilities or are part of other animal visitation programs may come in contact with individuals with compromised immune systems who are more susceptible to infection with zoonotic pathogens. Routine screening of these animals for specific pathogens, including *Campylobacter*, is not recommended.



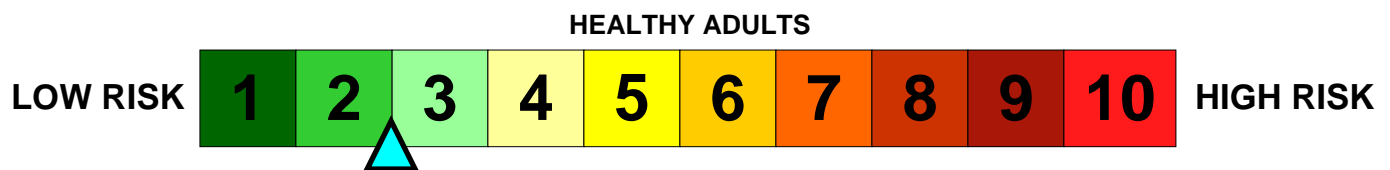
If I Have *Campylobacter*, Should I Test My Pet?

People may be able to transmit *Campylobacter* to pets. Anyone diagnosed with campylobacteriosis should be very diligent about washing their hands thoroughly after using the bathroom, and pet(s) should be prevented from drinking from the toilet. **There is no evidence that testing pets for *Campylobacter* is useful if a person in the household is diagnosed with campylobacteriosis.**

Normal, healthy pets should not be tested or treated for *Campylobacter*, but *Campylobacter* should be considered in animals that develop diarrhea. Transmission of *Campylobacter* from a pet to a human in a household is very unlikely if appropriate precautions (as described above) are observed. Even if there are high-risk individuals in the household, diligent attention to infection control measures will minimize the risk of transmission. Given the well-described benefits of pet ownership, **removal of the pet is not indicated**, unless extenuating circumstances exist which prevent proper infection control measures from being implemented. In these cases, the **pet may be temporarily removed** until its carrier status resolves, but this would very rarely be warranted.

Healthy pets that are shedding *Campylobacter* do not require treatment.

The risk of disease to the general population posed by *Campylobacter* in house pets such as dogs and cats is:



Individuals with compromised immune systems (e.g. HIV/AIDS, transplant and cancer patients) are more susceptible to many kinds of infections, including those which may be transmitted by pets. While these individuals are not advised to get rid of their pets, precautions should be taken to reduce the frequency of contacts that could result in pathogen transmission (e.g. avoiding contact with any animal stool), as well as the ability of infectious agents to survive in the household (e.g. prompt and thorough disinfection of potentially contaminated surfaces).

Infants and young children (less than 5 years old) are more likely than adults to extensively handle animals if given the opportunity, more likely to touch their faces or mouths, and less likely to wash their hands after handling an animal. Children may “snuggle” with pets; this very close contact can increase the risk of disease transmission.

- Young children should be supervised when playing with animals, and an adult should ensure that they wash their hands afterwards, and especially prior to handling food. Older children should be taught to do the same.

For these groups, the risk of disease posed by *Campylobacter* in house pets such as dogs and cats is likely:

