



## Pet Dogs & Human Health

As of 2000, there were estimated to be approximately 3.5 million domestic dogs in Canadian homes. Many dog owners live in very close contact with their canine companions. It is common for dogs to nuzzle and lick their owners, and many dogs sleep in the same bed as their owners. Given the high frequency of very close contact between dogs and people, it is easy to see how infection could be transmitted between them. Overall the risk of zoonotic disease transmission from dogs is very low, nonetheless it is important to be aware that it exists, and to take some simple precautions to reduce this risk.



## Things to Think About Before Getting a Dog

Your veterinarian is a great source of information and advice about the time and financial commitments involved in owning a dog, what breed and age of dog would be best suited to you, and from where you should get a dog. In order to decrease the risk of your dog becoming sick and/or potentially transmitting an infection to a person, it is recommended that the dog should be:

- ▶ **Well socialized and accustomed to handling:** this is best done when the dog is still a puppy, and will make the dog less fearful of different situations and less likely to bite or scratch a person.
- ▶ **Examined regularly by a veterinarian:** in order to assess the overall health of the dog, and check and treat (if necessary) for external and internal parasites. The dog's claws should also be kept well trimmed.
- ▶ **Spayed/neutered:** this will help to decrease roaming and aggression towards other dogs, the tendency for male dogs to urine mark, and prevents pregnancy in female dogs.
- ▶ **Kept leashed:** this decreases the chances of a dog running into the bush, drinking and/or eating things that may result in transmission of disease to the dog, and becoming sick or injured due to contact with other pets or wildlife.

If your new dog will be in contact someone who may be more susceptible to infectious disease (e.g. young children; HIV/AIDS, transplant and cancer patients), it is also recommended that your dog should be:

- ▶ **At least one year old:** this decreases the likelihood that the dog will carry intestinal parasites and harmful bacteria, and makes it easier to judge the dog's overall temperament to ensure it is relatively friendly and docile.
- ▶ **Examined thoroughly by a veterinarian BEFORE being taken home:** The dog can be kept at the veterinary clinic or at another house for a short time if treatment for a particular condition is necessary.
- ▶ **Already house-trained:** to ensure that stool and urine (and the pathogens in them) are not spread in the house.
- ▶ **Not acquired from a shelter:** because such dogs usually have an unknown medical history and may be in contact with other sick animals at the shelter facility, even if they do not appear sick themselves.

## Dog Care Tips

### Feeding

Dogs should NOT be fed raw meat or eggs, commercial diets with raw ingredients, or raw animal-based treats (e.g. untreated pig ears). These foods are often contaminated with bacteria like *E. coli*, *Campylobacter* and *Salmonella*, which can infect the person preparing the food. These bacteria can also infect the dog, which may or may not make the dog sick, but will result in the dog spreading the bacteria around the house.



### Poop-Scooping

Stool is the most important source of pathogens that owners can acquire from dogs. Some pathogens are present in fresh stool, and others survive in the environment for a long time.

- ▶ The best way to prevent environmental contamination of parks, yards, homes and any area where kids play, is to collect stool as soon as possible (always using a scoop or plastic bag) and dispose of it in the garbage. Do not put dog stool in a backyard compost unit, as these units do not produce enough heat to kill the pathogens in the stool.
- ▶ It is important to thoroughly wash one's hands with soap and running water after scooping or otherwise contacting any dog stool, in order to reduce the risk of disease transmission. Use of alcohol-based hand sanitizers in situations where soap and water may not be available (e.g. on long walks or hikes) is a simple and convenient alternative. The risk of becoming sick from pathogen from a dog's stool is minimal to most people, but it is higher for young children and immunocompromised individuals (HIV/AIDS, transplant and cancer patients). If possible, these higher-risk individuals should not handle dog stool at all.



## Preventing Dog Bites

- ▶ Dogs may bite for several reasons: out of fear, aggression or because they are trying to play. To decrease the risk of being injured by a dog, learn to recognize fearful and aggressive behaviour, and do not play roughly or wrestle with the dog using your hands or legs. Teach your dog submissive behaviour such as rolling over.
  - ▶ Never try to reach over or across a fearful or aggressive dog.
  - ▶ Avoid direct eye contact with very aggressive dogs.
  - ▶ Do not disturb a dog that is tied up, sleeping, eating or nursing puppies.
  - ▶ Some dogs may be protective of their owners, toys, food bowls, sleeping area or residence. It is important to know what a dog is protective of before approaching it.
  - ▶ Always allow a dog to smell you before attempting to touch it. Do this by slowly extending the hand to the dog in a closed fist, palm down.
  - ▶ Talk to the dog in a reassuring tone and move toward it slowly. Do not make loud noises that may startle, frighten or excite the dog.
  - ▶ Avoid making large gestures or quick movements.
- ▶ Do not run away from a dog as this will make it more likely to chase you.
- ▶ When you first pet a dog, pet it under the chin or on the chest. Do not try to reach over it to pet it on the back of the head or on its rump until you know the dog is comfortable with you.



## Vaccines and Parasite Control for Dogs

Keeping your dog's vaccines up-to-date will help keep your pet healthy, and also make it less likely to get sick from a disease that it might be able to transmit to people. Some vaccines, such as rabies vaccine, are recommended for all dogs, while others might only be recommended in certain situations, like if your dog was going to stay at a boarding kennel, you walk your dog in the woods, or if you live in certain areas. Talk to your veterinarian about what vaccines your dog should have. Some vaccines only need to be given every three years once your dog is an adult.



Fleas and ticks can carry infections from animal to animal or sometimes from animals to people. The larvae of some types of intestinal worms in dogs (e.g. hookworms, roundworms) can cause a disease called larval migrans in people, especially children. In Canada, however, these infections are uncommon, even though the worms are very common, particularly in puppies. Some species of tapeworm in dogs can also infect people. Your dog and its stool should be examined for parasites at least once a year at its annual check-up, and puppies should be dewormed when they are vaccinated. What your veterinarian recommends for regular parasite control in an adult dog will depend on where you live, the season, whether your pet goes outside and where, and whether or not there is a child or immunocompromised person living with the dog.

## Infection Control



### Bite Care

Any wound from a dog should be washed immediately and thoroughly with soap and running water. All bite wounds should be reported to the appropriate provincial or municipal health unit. Antibiotic treatment should be considered for any bite wound associated with:

- ▶ the hand, or any joint or bone.
- ▶ any kind of crushing injury.
- ▶ an immunocompromised individual.
- ▶ excess redness, pain, swelling, discharge or fever.

If the biting animal's rabies vaccination status is out of date or unknown, the animal should be isolated for ten days and observed for signs of rabies. If the dog was a stray it may be euthanized immediately and tested for rabies.

### Hand Hygiene

Hands should be washed with soap and water after handling any pet, including dogs. This is especially important after coming in contact with urine, feces or any bodily discharge from a dog. This simple precaution can reduce the transmission and spread of several of the zoonotic pathogens which are carried by dogs. It is important to remember that many of the potentially zoonotic diseases of dogs can be carried by an animal without actually making it sick, therefore you might not be able to tell your dog is infected and you should always wash your hands.



## Zoonotic Diseases of Dogs

The following are some of the more common or well-known diseases that dogs can transmit to people. Please refer to individual disease information sheets for additional details.

### Infections that cause diarrhea:

- ▶ These include the bacteria *Campylobacter jejuni* and *Salmonella* sp., and the protozoa *Cryptosporidium* sp. and *Giardia intestinalis*. All of these are notifiable diseases in people in Canada. They may cause no illness at all, or they may cause diarrhea, or in higher-risk individuals (e.g. HIV/AIDS, transplant, cancer patients, young children) they may cause much more serious illness. They are transmitted by contamination of food or water that is ingested, or fecal contamination of the hands, which is then transferred to the mouth.



### Dog Bite Wound Infections:

- ▶ The proportion of dog bite wounds that become seriously infected is less than that of cat bite wounds (approximately 4%-20%). Usually multiple kinds of bacteria are present in each wound, and infection can be severe if it is not treated. The amount of physical trauma caused by a dog bite, particularly one caused by a large dog, may be more of a concern than the infection.

### Dermatophytosis (ringworm):

- ▶ A fungal skin infection caused by one of several species of *Microsporum* or *Trichophyton*. Infection in dogs can look like many kinds of skin disease. In humans it can cause areas of red, raised, itchy skin that are often lighter in the center and therefore appear as a "ring." The fungus is transmitted by contact with the skin, fur or dander of an infected animal, particularly if the person's skin is damaged or moist.

### Echinococcosis:

- ▶ Disease caused by certain species of tapeworms. Ingestion of the worm's eggs from the stool of an infected dog can result in the formation of hydatid cysts in the liver, lungs or elsewhere in the body. The cysts grow very slowly, but can press on other organs or tissues. The cysts can also become infected, forming abscesses, or burst, resulting in the formation of more cysts or a severe allergic reaction.

### Larval migrans (cutaneous, visceral, ocular etc.) caused by hookworm and roundworm larvae:

- ▶ This condition can be caused by various species of hookworms and roundworms, some of which infect dogs. Eggs of the parasites are passed in the stool of infected animals, and release larvae which can penetrate a person's skin or be accidentally ingested. The larvae then migrate under the skin (cutaneous), through various internal organs (visceral) and occasionally the eye or brain (ocular or neurological), causing irritation and inflammation (larval migrans). The ocular form can result in blindness. Infection is most likely to occur in young animals and children.

### Leptospirosis:

- ▶ A bacterial infection caused by various serovars of *Leptospira interrogans*, which is passed in the urine of infected animals and people. The organism travels through the blood and tends to localize in the kidneys or liver, but it can also infect other tissues. *Leptospira* can penetrate the skin, and transmission can also occur by ingestion, usually of water contaminated with urine from infected wildlife, or sometimes from infected pets.

### Lyme Disease:

- ▶ Caused by a bacterial spirochete, *Borrelia burgdorferi*, this disease is *not* directly transmissible from dogs to humans, but both dogs and humans can be infected by the same ticks which carry the pathogen in some areas. In dogs it may cause fever, arthritis and renal disease. In people, meningitis, arthritis and myocarditis may occur.

### Rocky Mountain Spotted Fever:

- ▶ A rickettsial infection caused by *Rickettsia rickettsii* which is transmitted to people and pets by infected ticks. It can cause fever, sore joints and muscles and sometimes more serious conditions in animals and people. Although people cannot be infected directly by a dog, a dog may carry infected ticks into the house.

### Rabies:

- ▶ A viral infection of the nervous system which is almost always fatal once clinical signs appear. Dogs are usually infected by direct contact with a rabid animal, most often a skunk, fox, raccoon or bat. Transmission occurs when the saliva of an infected animal comes in contact with a wound (such as a bite or scratch) or mucous membrane (e.g. eyes, nose, mouth). Rabies is a reportable disease in humans and animals in Canada.



## Recognizing Illness in Dogs

The most common signs of illness in dogs are lethargy and decreased appetite, which can be caused by many conditions. If you think your dog is sick, it should be brought to a veterinarian as soon as possible. Just like for people, it is usually easier (and ultimately cheaper) to have your dog examined and treated when the signs of illness are still mild, instead of waiting to “see what happens” and risk the animal’s condition becoming more severe.

**Other signs of illness in dogs** include the following:

- Vomiting or unproductive retching
- Diarrhea, or changes in stool colour (especially if it appears to contain blood)
- Changes in urine colour (especially if it appears to contain blood)
- Excessive chewing or scratching of a particular part of the body (e.g. ears)
- Excessive head-shaking or rubbing
- Redness of the skin, with or without hair loss
- Excess discharge from the eyes or nose
- Repeated coughing or sneezing
- Drinking or urinating more than usual

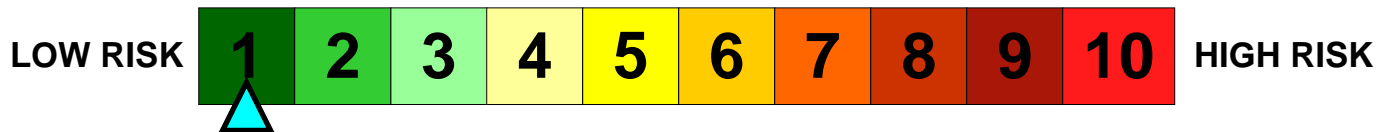


Although it is true that a sick dog with a fever will often have a warm, dry nose, many healthy dogs also have dry noses. Furthermore, a dog can still be very sick even if its nose is cold and wet.

## Zoonotic Disease Risk

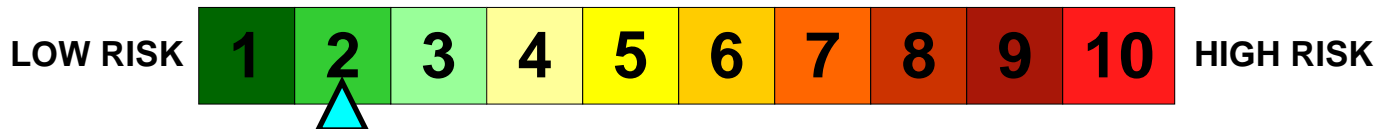
The zoonotic risk to the general population posed by most domestic dogs is:

### HEALTHY ADULTS/OLDER CHILDREN



Groups at higher risk of acquiring a zoonotic disease from a dog include immunocompromised individuals (e.g. HIV/AIDS, transplant and cancer patients), infants and young children, and the elderly. For these groups, the zoonotic risk posed by most domestic dogs is likely:

### YOUNG CHILDREN/IMMUNOCOMPROMISED PERSONS



## Precautions for Immunocompromised Dog Owners & Young Children

- Keep the animal’s claws well trimmed. Plastic nail caps can also be applied to help prevent scratching.
- If possible, have someone else clean up feces in the yard and when out on walks. Otherwise wear gloves and be very diligent about hand washing afterwards.
- Keep the dog in good health by having regular examinations by a veterinarian, as well as up-to-date vaccines and regular fecal exams to check for intestinal parasites. Ensure that the dog is free of fleas and ticks.
- Feed a high-quality commercial dog food that does not contain any raw ingredients. Also do not feed raw animal-based treats such as untreated pig ears.
- Do not let the dog lick the person in question, particularly on the face.
- Do not let the dog sleep in the same bed as the person in question.
- The person in question should not handle the dog if it seems ill.
- Always supervise young children when they play with a dog. Teach them:
  - ▶ to always be gentle and quiet so the animal does not become upset, frightened or too excited.
  - ▶ never to approach a dog they do not know.
  - ▶ to always wash their hands after playing with a dog.
- Hand washing with soap and water after handling a dog or contacting any urine, feces or other bodily secretions is one of the most important means of infectious disease control.

