

## Zoonotic Diseases: Toxoplasmosis

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### What are Zoonotic diseases?

There are certain diseases and infections that are transferred from animals to humans. They are called Zoonotic diseases, or Zoonoses. Animals are an important part of human life. They are helpful in many ways, like providing food, companionship, travel, sports and entertainment for humans across the globe. However, they sometimes carry harmful germs like viruses, bacteria, parasites and fungi. Even healthy-looking animals may carry germs and make people sick. These zoonotic diseases are very common in the United States and around the world. Therefore, the CDC works continuously to protect the people from these diseases.

### How do germs get transferred from animals to humans?

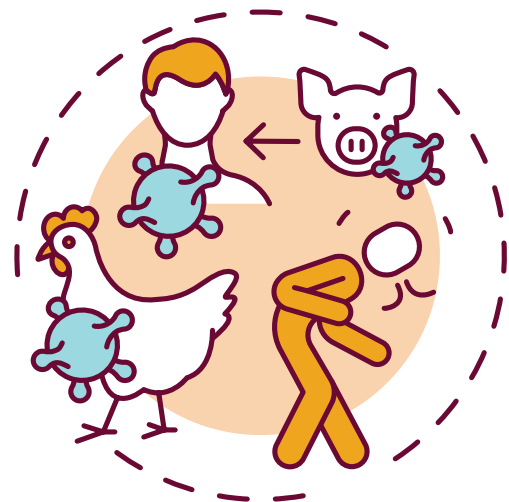
People come in close contact with animals for some reason or another. Common ways people can get infected are:

1. Direct contact: With animal saliva, blood, urine, mucus and feces.

2. Indirect contact: Living near (in the vicinity of) animals.
3. Vector-borne: Insect bites, mosquito bite or fleabite.
4. Waterborne: Drinking or being exposed to contaminated water with feces of infected animals.
5. Foodborne: Eating or drinking contaminated food like raw milk, undercooked meat, etc.

### What is toxoplasmosis?

Amongst food borne illnesses, **toxoplasmosis** is considered a major zoonotic disease affecting lives in the United States. Toxoplasmosis is a disease caused due to a parasite, *Toxoplasma gondii*, found in cat feces and contaminated food. More than 40,000,000 adults and children carry the toxoplasma parasite. Pregnant women, children under the age of five years, senior adults above the age of 65 years and people with weak immune systems are more vulnerable to illness.



## Zoonotic Diseases

## How do people get toxoplasma infection?

1. Accidentally swallowing the parasite by coming in contact with infected cat feces, such as while cleaning cats' litter box, touching things that have been exposed to cat feces containing toxoplasma and not washing hands after.
2. Mother-to-child transmission.
3. Eating undercooked, contaminated meat.
4. Drinking water contaminated with toxoplasma gondii.

## What are the signs and symptoms of toxoplasmosis?

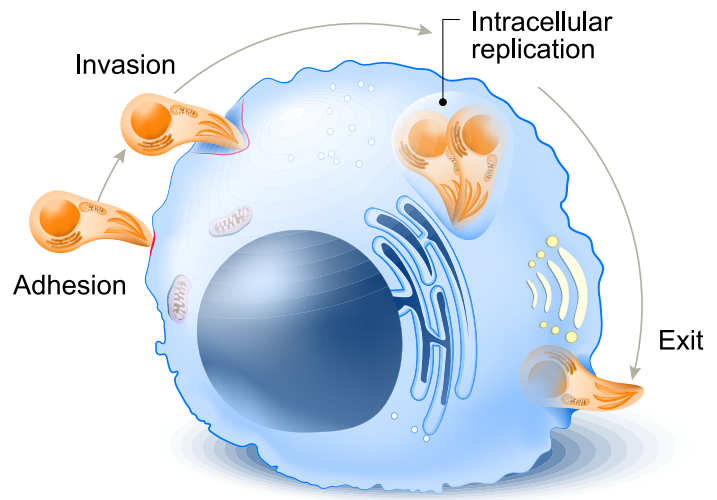
1. Most people infected with toxoplasma show no symptoms at all.
2. Some people, especially vulnerable populations, show flu-like symptoms, fever, swollen lymph glands, or muscle aches, lasting for a month or even more.
3. Severe toxoplasmosis can cause damage to brain, eyes and other organs.
4. Infants infected while still in the womb may not show symptoms at birth, but may develop symptoms later in life.

## What can we do to prevent toxoplasmosis?

We should follow certain guidelines to reduce risk of toxoplasmosis.

1. Use a food thermometer to make sure meat is cooked to a safe temperature to kill harmful pathogens like toxoplasma.
2. Do not sample meat until cooked.
3. Freezing meat for many days at subzero temperatures before cooking greatly reduces chance of infection.
4. Wash cutting boards, hands, knives and counter tops with soapy water after contact with raw meat.
5. Peel or wash fruits and vegetables.
6. Avoid drinking untreated water.
7. Wear gloves and wash hands with soapy water after gardening. Soil may be contaminated with cat feces containing toxoplasma.
8. Keep outdoor sandboxes covered.
9. Do not feed cat raw or uncooked meat. Feed only canned, dried commercial food or well-cooked table food.
10. Ensure that litter box is cleaned or changed daily.
11. If you are pregnant or immuno-compromised, avoid cleaning cat litter and do not adopt or handle stray cats. Pregnant women should take the most precautions to avoid toxoplasmosis infection.

# Toxoplasma



There are many other zoonotic diseases wherein infections get transferred from animals to humans. With proper hygiene, food safety and safe food handling practices, we can, to a great extent, prevent the infection of these diseases.

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## Toxoplasmosis in Cats

Cats are considered the definitive host for Toxoplasma gondii. Infection is very common; however, most cats that become infected will not show clinical disease. Occasionally young kittens or adult cats that are immunosuppressed will show symptoms including fever, loss of appetite or respiratory problems. When illness does develop, the kitten/cat should be tested for illness, such as Feline Immunodeficiency Virus (FIV).

Cats often become infected from ingesting meat from other infected animals, such as mice, or ingesting feces from an infected cat. When the cat eats the prey animal (mouse), the organism (the parasite) from the raw meat of the mouse

is released from the meat into the cat's digestive system and begins to multiply. A few days after the initial infection, the cat will shed the organism in microscopic egg-like structures (oocysts) through its feces into the environment for a period of a couple weeks. After the initial infection, the immune system will fight the infection, and although the cat may still carry the parasite, it will no longer actively shed oocysts. The infective stage or oocysts are resistant to elements and may remain in the environment where shed for up to a year. Accidental ingestion of cat feces is a common route of transmission in other animals and people; for instance, if an individual touches feces when cleaning a litter box and does not wash their hands thoroughly before eating. Since cats most often show no symptoms, care should always be taken when cleaning litter boxes. Sand boxes in playgrounds or backyards may be used as a litter box for outdoor or stray cats if not covered when not in use. Children should wash their hands after playing in any sand play areas that could be contaminated.

Prevention in cats include feeding a commercial diet and preventing them from consuming raw milk, raw meat or rodents. Cleaning litter boxes daily will also prevent kittens from stepping in the feces and then consuming when they lick their paws while cleaning themselves.

## Toxoplasmosis in Sheep and Goats

Livestock are considered intermediate hosts for *Toxoplasma gondii*. Small ruminants, including sheep and goats, may be infected by consuming oocysts. Rodents often live in barns and feed off of grain. This attracts feral cats, or barn cats may be kept for rodent control. Cats frequently defecate on hay, grain or in pastures, which the sheep/goat may then consume and become infected.

Healthy sheep and goats that are not pregnant are often asymptomatic or show no signs of infection. However, for pregnant ewes or does, infections can cause abortions, mummified fetuses, stillbirths or weak offspring. After the initial infection and loss of the fetus, the dam's immune system will fight the parasite and subsequent pregnancies aren't affected; however, she will be infected lifelong. If a dam has a stillborn, mummified or aborted fetus, the fetus and the placenta should be taken to a lab for diagnostic testing, as the placenta will show the microscopic reasons

and provide a more reliable diagnosis. Toxoplasmosis may also be transmitted to offspring through milk. This may cause mild symptoms of illness in the offspring. Humans can be infected if they consume the raw (unpasteurized) milk or by eating undercooked meat from an infected animal.

While reproductive losses can be very costly for small ruminant producers, extra care should always be taken when caring for the animals and handling fetuses, tissues and fluids. Abortions in small ruminants may also be caused by Q fever, brucellosis, leptospirosis, or *Campylobacteriosis*, which are also zoonotic. Producers should always wear gloves when assisting in births or handling reproductive fluids. Pregnant women should avoid contact whenever possible, as it could potential cause severe illness or death of their unborn fetus. It is always important to wear gloves and personal protective equipment when exposed to fetal fluids or placenta.

Prevention of infection in small ruminants should consist of preventing contamination of hay or feed from cat feces or rodents. As mentioned earlier, younger kittens are more likely to be initially infected then will shed the organism; therefore, if barn cats are kept, they should be spayed/neutered to prevent unwanted litters and younger cats in the population. Grain may be medicated with coccidiostats as a preventative. If you suspect a problem within your herd, discuss risk factors with your herd veterinarian for recommendations.

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