

# TOXOPLASMOSIS

## Disease Overview

Toxoplasmosis is caused by the protozoan parasite *Toxoplasma gondii* which is found worldwide. Infection in people is not common in Canada.

## Symptoms

Most infections are asymptomatic, and immunity is readily acquired. Infection may also cause acute illness with lymphadenopathy, or a mononucleosis-like illness with fever, lymphadenopathy and lymphocytosis persisting for weeks. *Toxoplasma* cysts can become reactivated in immuno-compromised individuals.

One of the major consequences, although rare, is pregnant women becoming infected and vertical transmission to the fetus. Congenital toxoplasmosis can cause severe neurological or ocular disease leading to blindness, as well as cardiac and cerebral anomalies.

## Reservoir

The main hosts are domestic cats who acquire infection from eating infected mammals (especially rodents) or birds, or from oocysts in soil contaminated with cat feces. Cats have the parasite in their intestinal track where its sexual stage of life cycle occurs, with subsequent excretion of infective oocysts. Oocysts can survive in the environment for many months.

Intermediary hosts (sheep, goats, rodents, swine, cattle, chickens and other birds) may carry infective stage parasites encysted in tissue (especially muscle and brain).

## Mode of Transmission

Hand to mouth transmission occurs through contact with oocytes from cat feces (e.g., cleaning cat litter boxes) or contact with soil (e.g., gardens) and sandboxes contaminated with cat feces.

Infection may also occur through contact with or ingestion of raw or undercooked meat or by drinking unpasteurized milk,

Transplacental transmission usually occurs following **primary infection** (first time exposure) in a pregnant woman.

Less common modes of transmission are from drinking water contaminated with the *Toxoplasma gondii* parasite, receiving an infected donor organ or tissue for transplantation, or from blood transfusion (extremely rare).

## Incubation period

Usually 10-25 days.

## Period of Communicability

Direct person to person transmission does not occur except for in utero.

## Risk factors

Increased risk for acquiring/severe illness:

- Pregnant women who have not been previously infected with *T. gondii* are at risk for acute infection and congenital transmission to the fetus.

- Patients undergoing cytotoxic or immunosuppressive treatment and HIV infected-patients are at high risk of developing illness from a reactivated infection. Prophylactic treatment can be considered.

## Surveillance Case Definition

### Confirmed case

Clinical illness with laboratory confirmation of infection:

- Detection of IgM and IgG antibodies to *Toxoplasma gondii* from a single blood specimen  
OR
- Detection of rise in IgG serology units taken at least 2-3 weeks apart  
OR
- Demonstration by microscopy or nucleic acid amplification of organism

Clinical illness includes lymphadenopathy, malaise, fever and myalgia. In those with immunocompromising conditions, illness includes rash, muscle involvement, encephalitis, chorioretinitis, pneumonia, myocarditis, or death.

Primary infection during early pregnancy may lead to congenital infection with fetal death, or hepatosplenomegaly, chorioretinitis, brain damage, fever, rash, convulsions or jaundice at birth or shortly after. Later in pregnancy, maternal infection results in milder or subclinical fetal disease with delayed manifestations such as chorioretinitis.

## Diagnosis and Laboratory Guidelines

Acute illness can be diagnosed serologically. IgG serology determines immune status and evidence of a past infection. IgM serology determines acute infection.

Congenital infection requires demonstration of IgM in neonatal blood; evidence of acute infection during pregnancy indicates a need for fetal blood sampling.

Serological tests may come back reactive, non-reactive or indeterminate.

IgG result	IgM result	Interpretation
Reactive	Reactive	Possible acute infection
Reactive	Non-reactive	Past infection
Non-reactive	Reactive	Possible acute infection
Non-reactive	Non-reactive	No evidence of infection

For more information on specimen collection and laboratory testing, please contact your regional laboratory.

## Reporting

Per Policy 2.2 Disease and Event notification to OCMOH and Disease and Event Reporting section

- Routine surveillance (RDSS) for all confirmed cases.

## Case Management

### Education

Case or relevant caregiver should be informed about:

- Nature of infection, length of communicable period, mode of transmission, and disease ecology
- Hand washing – before eating, after handling raw meat, and after contact with soil possibly contaminated with cat feces.
- Food safety - thoroughly cook meat; clean surfaces and utensils in contact with raw meat; and do not drink unpasteurized milk.
- Dispose of cat feces and cat litter daily (before sporocysts become the infective oocysts). Disinfect litter pans with scalding water, wear gloves and wash hands thoroughly afterwards.
- Control stray cats- prevent access of cats to sandboxes and sand piles used by children for play, and keep sandboxes covered when not in use.
- Discourage cats from hunting (i.e., keep them as indoor pets only) and do not feed them raw meat.
- **Preventative measures for pregnant women.** Unless known to have antibodies, avoid changing cat litter if possible; otherwise wear disposable gloves, thoroughly wash your hands with soap and warm water afterwards, and change the litter daily. Wear gloves during gardening and wash your hands thoroughly afterward. Thoroughly cook meat and avoid contact with raw meat. Raw fruits and vegetables should be peeled or thoroughly washed before eating. Avoid drinking untreated water. Wash your hands after patting, brushing or being licked by your cat.

### Investigation

Search for history of exposure to pets (cats), contact with contaminated soil, or exposure to raw or undercooked meat.

### Exclusion/Social Distancing

Not applicable

### Treatment

Not routinely indicated for healthy immunocompetent hosts, except for confirmed initial infection during pregnancy.

### Immunization

Not applicable.

## Contact Management

### Education

Per case management.

### Investigation

Contacts of cases are not at risk as there is no direct person to person transmission.

### Exclusion/Social Distancing

Not applicable.

### Prophylaxis

Not applicable.

## **Outbreak Management**

Activate the local outbreak plan when an outbreak is declared.