



THE UNIVERSITY OF TENNESSEE

Occupational Health Program

Toxoplasmosis

1.0 Introduction

Toxoplasmosis is an infection caused by the single-celled parasite *Toxoplasma gondii*, which is considered to be a leading cause of death attributed to foodborne illness in the United States. More than 40 million men, women, and children in the U.S. carry the *Toxoplasma* parasite, but very few have symptoms because the immune system keeps the parasite from causing illness. Toxoplasmosis is considered one of the neglected parasitic infections of the United States.

2.0 People at Risk

Individuals at greatest risk for Toxoplasmosis include:

- Pregnant women are at greater risk due to the potential of passing the infection to their fetus. Most infants who contract *Toxoplasma* from their mother do not have symptoms at birth but can develop serious symptoms later in life, such as blindness or mental disability. The infected newborn can be born with serious eye or brain damage. Infants born to mothers who are newly infected with *Toxoplasma gondii* during or just before pregnancy most likely to develop severe toxoplasmosis.
- Persons with severely weakened immune systems, such as individuals with AIDS, those taking certain types of chemotherapy, and those who have recently received an organ transplant.
- Personnel working with animals are at risk for being exposed to *Toxoplasma* while handling cat feces or litter boxes containing cat feces
- **Personnel who are performing research using *Toxoplasma gondii* are at greater risk, especially if working with the parasite in the tachyzoite phase of development.**

3.0 Transmission

A *Toxoplasma* infection occurs by one of the following:

- Accidentally swallowing the parasite through contact with cat feces that contain *Toxoplasma*. This might happen by:
 1. Cleaning the cat's litter box.
 2. Touching or ingesting anything that has come into contact with cat feces that contain *Toxoplasma*
 3. Accidentally ingesting contaminated soil (e.g. not washing hands after gardening or eating unwashed fruits or vegetables from a garden).
- Eating undercooked, contaminated meat (especially pork, lamb, and venison) or shellfish such as oysters, clams and mussels.
- Accidental ingestion of undercooked contaminated meat or shellfish after handling them and not washing hands thoroughly (*Toxoplasma* cannot be absorbed through intact skin).
- Eating food that was contaminated by knives, utensils, cutting boards and other foods that have had contact with raw, *Toxoplasma* contaminated meat or shellfish.
- Drinking water contaminated with *Toxoplasma gondii*.
- Maternal-fetal (congenital) transmission.
- Receiving an infected organ transplant or infected blood via transfusion, though this is rare given the rigorous testing done with blood donation.
- **Sharps injury while performing research with *Toxoplasma gondii* or a toxoplasma infected animal.**

4.0 Signs and Symptoms

Symptoms of the toxoplasmosis infection vary.

- Most people are unaware they have been infected with *Toxoplasma gondii* because they are asymptomatic.
- Some people who have toxoplasmosis experience flu-like symptoms, with swollen lymph nodes or muscle aches and pains that may last for a month or more.
- Severe toxoplasmosis, causing damage to the brain, eyes, or other organs can develop from an acute *Toxoplasma* infection or one that had occurred earlier in life and is now reactivated. Severe toxoplasmosis is more likely in individuals who have weak immune systems, though occasionally, even persons with healthy immune systems may experience eye damage from toxoplasmosis.
- Signs and symptoms of ocular toxoplasmosis can include reduced vision, blurred vision, pain (often with bright light), redness of the eye, and sometimes tearing. Ophthalmologists sometimes prescribe medicine to treat active disease. Whether or not medication is recommended depends on the size of the eye lesion, the location, and the characteristics of the lesion (acute active, versus chronic not progressing). An ophthalmologist will provide the best care for ocular toxoplasmosis.
- A fetus infected while still in the womb may be asymptomatic at birth, but may develop symptoms later in life. A small percentage of infected newborns have serious eye or brain damage at birth.

5.0 Diagnosis, Prevention and Treatment

Diagnosis-Toxoplasmosis is typically diagnosed by serologic testing. Immunoglobulin G (IgG) serum levels are used to determine if a person has been infected. If IgG antibodies are elevated, this signifies that the individual has been infected with *Toxoplasma*. IgG elevation occurs a couple of weeks or so after the *Toxoplasma* exposure. *Toxoplasma* antibodies are present for life in the exposed individual. More information on toxoplasmosis diagnosis can be found by accessing this [link](#).

Prevention

- Avoid drinking untreated water.
- Personnel working with animals should wear gloves when handling a cat litter box or cleaning up cat feces. The litter box should be changed daily to reduce the level of *Toxoplasma* that might be present.
- Wash hands thoroughly with soap and water after contact with soil, sand, or cat litter box.
- Cover non-intact skin with a bandage before applying gloves and handling cat feces or the cat litter box.
- Do not store or eat food/drink, take or apply medication, use tobacco products, or apply cosmetics inside areas where animal care is performed or where animals are housed. This also applies to all lab areas as well.
- Discard PPE prior to leaving the animal care or housing facilities and lab areas.
- *Toxoplasma* research, where a sharps injury or other exposure could occur, should not be performed outside the hours of Monday-Friday 8:00 am-3:30 pm to allow for adequate treatment to be initiated should a needlestick or other exposure occur. For questions regarding this requirement, please contact the OHP nurse at 865-755-8924 prior to working outside those specified hours.

Treatment-If a sharps injury occurs while performing research with a *Toxoplasma* infected animal, or working with the *Toxoplasma gondii* parasite, notify the OHP nurse immediately at 865-755-8924 for further guidance. Depending on the level of exposure, evaluation and treatment is usually indicated immediately. In the event the OHP nurse is unavailable, please contact Dr. Jon Parham with UT Occupational Health at 865-305-8831 to determine if treatment is needed.

6.0 Resources

[CDC Toxoplasmosis Link](#)

For further information related to possible zoonotic disease exposure, or further related resources, please contact UT Occupational Health Nurse Bryan Cranmore RN, COHN at bcranmore@utk.edu, or for urgent response the OHP nurse can be reached at 865-755-8924

Reviewed and Approved 12/2/2022

A handwritten signature in blue ink that reads "Bryan Cranmore RN". The signature is written in a cursive style.

Bryan Cranmore RN, COHN
Occupational Health Nurse