

## BASICS

Toxoplasmosis is caused by *Toxoplasma gondii*, a single-celled coccidian **PARASITE** with an indirect life cycle.

Domestic and wild cats act as **DEFINITIVE HOSTS**, and all warm-blooded animals, including humans, can serve as **INTERMEDIATE HOSTS**. Wildlife species, including bear, cervids, moose, bison, marine mammals, marsupials, small mammals, and birds, are susceptible to infection.

**TRANSMISSION** occurs via ingestion of oocysts shed in the feces of felids and tissue cysts in intermediate hosts. Transplacental transmission from mother to fetus also occurs.

In healthy adult animals, infection with *T. gondii* is usually **ASYMPTOMATIC**, as a strong immune response controls the infection. In young, geriatric, or immunocompromised animals, infection can cause severe disease as parasites invade the brain, lung, heart, or muscle. **CLINICAL SIGNS** are often non-specific and include fever, diarrhea, cough, lethargy, difficulty breathing, seizures, and death.

Some wildlife species are more susceptible to **CLINICAL DISEASE**. Infected marsupials, such as wallabies and kangaroos, may have loss of vision, diarrhea, breathing difficulties, and sudden death. *T. gondii* is a significant cause of encephalitis in sea otters and may have a negative population impact.

Toxoplasmosis is a common cause of abortion and stillbirth in domestic sheep and goats.

**DIAGNOSIS** of toxoplasmosis can be made by measuring antibody levels, microscopic identification of tissue cysts and parasites, and PCR analysis of tissues.

**TREATMENT** with sulfadiazine and pyrimethamine has been widely used for toxoplasmosis in humans.



**ZOONOTIC RISK**



**INGESTION & MOTHER-TO-FETUS**



**MAMMALS, BIRDS, & HUMANS**



**ALERT**



**HOW**



**WHO**

## DETAILS

There are **THREE INFECTIOUS STAGES** of *T. gondii*: tachyzoites (rapidly multiplying form), bradyzoites (tissue cyst form), and sporozoites (in oocysts).

Infected felids shed oocysts in their feces. In 1-5 days, the oocysts sporulate to contain infective sporozoites. Oocysts can remain viable in the environment for months to years. When an intermediate host ingests infective oocysts, tachyzoites replicate quickly within intestinal cells and spread to other tissues, such as muscle, brain, eyes, and lungs. As host immunity develops, replication slows and bradyzoites, as they are now called, become encapsulated in tissue cysts.

When a felid ingests tissue cysts in infected prey, bradyzoites are released and penetrate intestinal cells where they replicate. In 3-10 days, oocysts are shed in the feces and can continue for up to 20 days.

Cats typically develop immunity after infection and only shed oocysts once in their lifetime. However, an infected cat can shed millions of oocysts resulting in widespread environmental contamination.

Marine mammals, such as sea otters, dolphins, and seals, can become infected by ingesting oocysts in seawater contaminated by runoff in coastal areas.

*T. gondii* infection is common in wild game animals, such as black bears, white-tailed deer, and feral pigs, as well as domestic food animals, such as pigs, sheep, and rabbits.

Toxoplasmosis is a worldwide **ZOONOTIC** disease that can cause serious illness in susceptible people. Infection during pregnancy can be passed to the fetus leading to miscarriage, stillbirth, and birth defects in infants, including hydrocephalus, abnormally small brains, and eye abnormalities. Infection of immunocompromised people can be life-threatening, most often from encephalitis. Infection of the eye may lead to blindness if not treated.

**PRECAUTIONS AND PREVENTION** Good hygiene is effective at minimizing transmission of *T. gondii* to humans. Hands and equipment should be thoroughly washed after handling raw meat, including wild game. Risk of infection can be reduced by cooking meat to 145°F and washing fruits and vegetables before eating. Daily emptying of the cat litter box will get rid of oocysts before they become infective. Avoid contact with cat feces, soil, and aborted animals. Education of pregnant women is important to decrease their risk of infection.

To prevent infections in cats, do not feed raw meat to pet cats. Keep cats indoors to decrease environmental contamination.

