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Emerging Infectious Diseases Fact Sheet

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**Toxoplasma gondii**

* Toxoplasmosis
	+ *Toxoplasma gondii* causes toxoplasmosis, which in healthy people usually does not show any symptoms. Severe cases can cause damage to the brain and eyes, as well as other organs.
* Parasite transmission cycle
	+ It infects most warm-blooded species. *Felidae* are the only known definitive host. Many, many unsporulated oocysts are in the cats feces and take up to five days to sporulate in the environment and become infective. Intermediate hosts (birds, insects, etc.) become infected after ingesting infected soil, plants, or water. Shortly after ingestion the oocysts transform into tachyzoites that localize in muscle or neural tissue forming tissue cyst bradyzoites. Cats eat the intermediate hosts containing tissue cyst bradyzoites and become infected or they eat the sporulated oocysts. Humans become contaminated by eating meat that harbors tissue cysts that has been undercooked, consuming contaminated food/water, blood transfusion, or transplacentally.
* Location
	+ *Toxoplasma gondii* can be found all over the world as cats are an effective definitive host and it can be transmitted to any warm-blooded species. More infections are seen in areas with hot, humid climates and high altitudes. Currently, toxoplasmosis is a leading cause of death in foodborne illnesses in the U.S. as over 60 million people carry the parasite.
* Symptoms
	+ Signs and symptoms include swollen lymph nodes, “flu-like” side effects such as muscle aches and pains, reduced or blurred vision, pain in eyes in bright light, redness and tearing of the eyes. Infants who are born with the illness may suffer brain and eye damage, but most do not show symptoms of the disease until later in life.
* Susceptibility
	+ Those with repressed immune systems such as persons infected with AIDS or persons undergoing chemotherapy, and infants born to mothers who contracted the parasite during or shortly before pregnancy.
* Diagnosis and treatment
	+ Diagnosis is typically made based on serologic testing and measuring IgG levels to see if the patient has been infected. Diagnosis can also be made by observation of the parasite in stained tissue sections, CSF, or other biopsy fluids such as blood. To detect infection in an unborn child, molecular techniques can be used to detect the parasite’s DNA in the amniotic fluid.
	+ Healthy people generally recover without treatment. A combination of the drugs pyrimethamine and sulfadiazine, plus folinic acid is used in suffering patients. The parasite is not eliminated completely in infants and pregnant women because it is difficult to locate and ensure the drugs reach it in the body.
* Prevention
	+ Practices in preventing the spread of the parasite include cooking meats to proper temperatures, freezing meats for several days before cooking, peeling and washing fruits thoroughly, washing all cooking utensils, surfaces, and hands before and after use, avoid untreated drinking water, wear gloves when handling soil, washing hands, cover outdoor sandboxes, feed cats only dry or canned commercial food (not table scraps or raw meat), and changing cat litter boxes daily.
* Statistics
* In 1999-2000, 15.8% (1 out of 6) people ages 12-49 years old had been infected in the U.S.
* *Toxoplasma,* as well as *Salmonella, Listeria* account for 1,500 deaths in the U.S. each year.
* About 4,000 people infected with AIDS contract Toxoplasma encephalitis annually in the U.S.
* About 400 newborns in the U.S. are infected with congenital toxoplasmosis annually.
* Emergent disease
	+ Toxoplasmosis is considered an emergent disease because significant amounts of the population even in developed countries show evidence of having contracted this parasite. It is easily spread throughout underdeveloped areas with unsanitary water (most persons of lower socioeconomic status in a Brazilian town were infected by the age of 15), and just as easily spread in developed and underdeveloped countries through improper cooking practices.

Works Cited

"Parasites - Toxoplasmosis (Toxoplasma Infection)." *Cdc.gov*. Centers for Disease Control and Prevention, n.d. Web. 17 Sept. 2013. <http://www.cdc.gov/parasites/toxoplasmosis/gen\_info/index.html>.

Jones, Jeffrey L., Deanna Kruszon-Moran, and Marianna Wilson. "Toxoplasma Gondii Infection in the United States, 1999–2000." *Cdc.gov*. Centers for Disease Control and Prevention - Emerging Infectious Diseases, Nov. 2003. Web. 17 Sept. 2013. <http://wwwnc.cdc.gov/eid/article/9/11/03-0098\_article.htm#suggestedcitation>.

Jones, Jeffrey L., Lilian Maria Garcia Bahia-Oliveira, Juliana Azevedo-Silva, Cristiane C.F. Alves, Fernando Orefice, and David G. Addiss. "Highly Endemic, Waterborne Toxoplasmosis in North Rio De Janeiro State, Brazil." *Cdc.gov*. Centers for Disease Control and Prevention - Emerging Infectious Diseases, Jan. 2003. Web. 17 Sept. 2013. <http://wwwnc.cdc.gov/eid/article/9/1/02-0160\_article.htm>.