

Toxoplasma gondii

For LEO Webinar, April 29, 2014
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References:

[Climate and Health E-News No. 196](#)

[LEO Map – March 2014](#)

<http://www.adn.com/2013/10/10/3119219/link-found-between-undercooked.html>



Zoonoses in Alaska

Focus on Infections in Subsistence Species

- Brucella
- Toxoplasmosis
- Tularemia
- Echinococcus – Dogs, caribou
- Giardia – Rodents
- Trichinosis
- Q Fever

Background

Toxoplasmosis is caused by the protozoan parasite *Toxoplasma gondii*. In the United States it is estimated that 22.5% of the population 12 years and older have been infected with *Toxoplasma*.

CDC

Since the 1970s Toxo has been found in a variety of Alaska species (lynx, fox, wolves, bears, walrus, seals, caribou). Recently researchers detected Toxo in a beluga whale killed by Inuit hunters in the Beaufort Sea.

See***

Zoonoses in Alaska

Toxoplasmosis (*Toxoplasma gondii*)

- Worldwide infection.
- Cat species only host for sexual life cycle.
- Many species can be infected, and transmit the infection by cysts in tissues.
- Alaska wildlife (Zarnke, RL, et al, Journal wildlife Dis. 36 (2), 2000, 219-224), Black bear – 43%; wolves – 9%; Dall sheep – 7%; caribou – 6%; moose – 1%.
- Represents a risk to developing fetus, cancer patients and elderly adults.

Animal-to-human (zoonotic) transmission

Members of the cat family play an important role in the spread of toxoplasmosis. They become infected by eating infected rodents, birds, or other small animals. The microscopic parasite is then passed in the cat's feces.

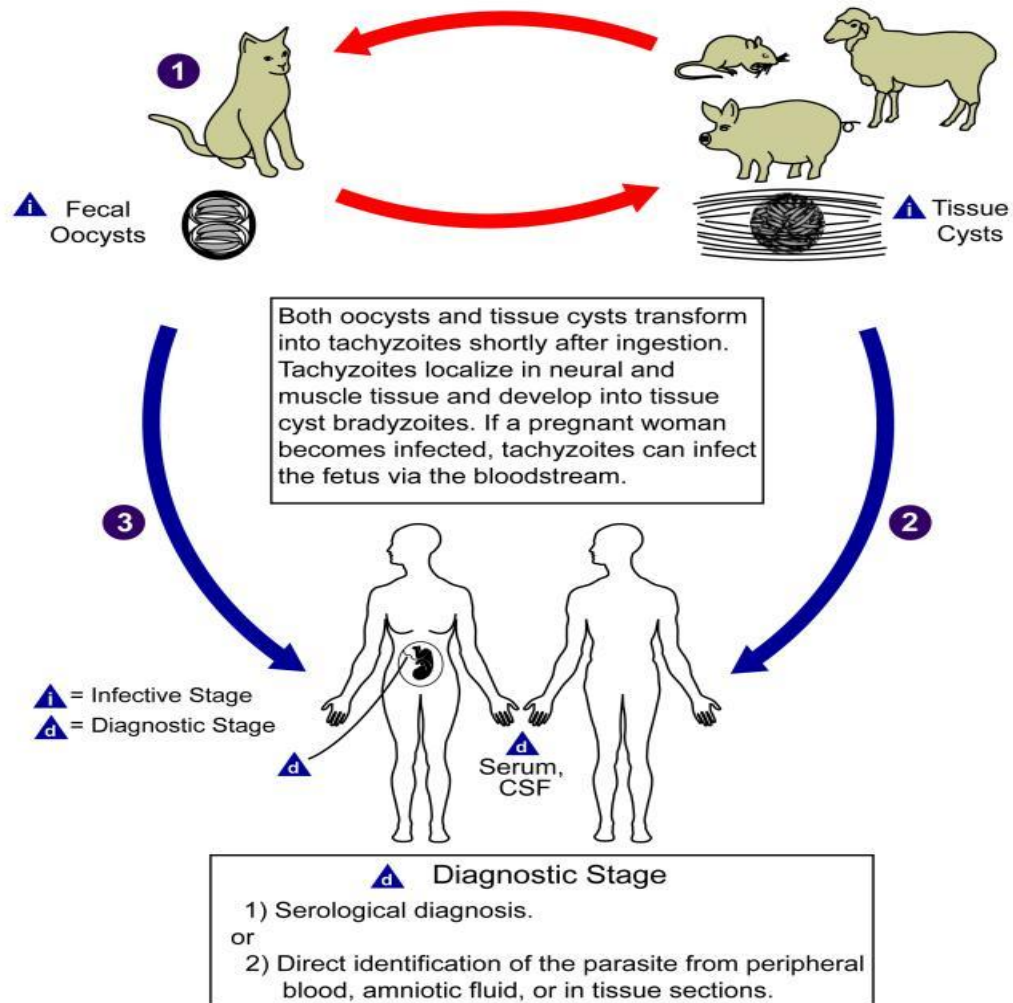
Zoonoses in Alaska

Prevalence of *Toxoplasma gondii* antibodies in marine mammals in the USA

Species	Source	No. Tested	% Positive	Test	Titer	Reference
Walruses	Alaska	53	5.6	MAT	1:25	Dubey et al.(2003b)
Sea Lions	Alaska	27	29.6	MAT	1:25	Dubey et al.(2003b)
	California	18	61.1	MAT	1:25	Dubey et al.(2003b)
Harbor Seals	Washington	380	7.6	MAT	1:25	Lambourn et al (2001)
	Alaska	311	16.4	MAT	1:25	Dubey et al (2003b)
Ringed Seals	Alaska	32	15.6	MAT	1:25	Dubey et al (2003b)
Bearded Seals	Alaska	8	50	MAT	1:25	Dubey et al (2003b)
Spotted Seals	Alaska	9	11.1	MAT	1:25	Dubey et al (2003b)

Toxoplasmosis

(*Toxoplasma gondii*)



Disease

Healthy people who become infected with *Toxoplasma gondii* often do not have symptoms because their immune system usually keeps the parasite from causing illness. When illness occurs, it is usually mild with "flu-like" symptoms. Eye disease is one potential affect of *Toxoplasma* infection
Symptoms of acute disease include eye pain and sensitivity to light.

Transmission

Toxoplasmosis is not passed from person-to-person, except in instances of mother-to-child (congenital) transmission and blood transfusion or organ transplantation.

People typically become infected by three principal routes of transmission: 1) animals, 2) food, 3) or congenital.

Link found between moose meat and unborn baby's infection

by Benjamin S. Brasch

bbrasch@adn.com October, 2013

Lauren Hamm's 34-week prenatal checkup was only supposed to be 10 minutes. But she left the hospital 96 hours later. Her son, born prematurely, didn't leave the neonatal intensive care unit for another three weeks. All because she had eaten a moose steak 10 weeks earlier. Medium rare. Doctors said the meat was infected with *Toxoplasma gondii*, a parasite that can be found in under-cooked game meat. It causes toxoplasmosis, an infection that brings mild flu-like symptoms, like swollen glands, in adults but can be deadly to an unborn child. Hamm's story was published in the September issue of *Alaska Medicine*. Doctors said Hamm had the infection and passed it on to her unborn baby, Bennett. He was born on Dec. 13, 2011, with a heart rate of 200 beats per minute, Hamm said. He had fluid around his organs and lesions on his eyes and brain. Hamm said 45 minutes after Bennett was born, his heart rate was still irregular. Doctors used a defibrillator and shocked his heart back into rhythm. Read more here: <http://www.adn.com/2013/10/10/3119219/link-found-between-undercooked.html#storylink=cpy>



Lauren Hamm with her 22-month-old son Bennett Hamm on Thursday, Oct. 10, 2013. Before Bennett was born, he got toxoplasmosis after his mother ate under-cooked moose meat.

BILL ROTH — Anchorage Daily News

Diseases of Domestic Animals Introduced into Arctic Wildlife



Ocular toxoplasmosis

C. Central, healed retinochoroiditis



Reducing risk of Toxoplasmosis is important for people with weak immune systems. The Toxoplasmosis in food can be killed by:

Cook to 150 – 160 F as measured with a food thermometer placed in the thickest part of the meat, then allow the meat to rest for three minutes before carving or consuming.

Toxo, can also be killed by freezing at a temperature of -4 degrees for 48 hours.

The Take Home

- Toxoplasmosis is a disease carried by members of the cat family
- It can infect a wide range of animals
- It is zoonotic – meaning it can pass from animals to people
- Many people (22.5%) in the U.S. are exposed
- Illness is rare in healthy people
- Toxoplasmosis has been newly identified in beluga
- It has been known to be present in Alaska wildlife for decades
- Consumption of a traditional diet is recommended for everyone.
- Cooking meat is recommended for people who are vulnerable.

