

# PUBLIC HEALTH REFERENCE SHEET

## Trichinellosis



<b>Name</b>	Trichinellosis, also known as Trichinosis Causative Agent: <i>Trichinella species</i>
<b>Reservoir &amp; Transmission</b>	Swine, dogs, cats, horses, rats, and many wild animals Consumption of raw or undercooked animal meat containing larvae
<b>Incubation Period</b>	1–2 days (enteral phase) to 2–8 weeks (parenteral phase) and varies up to 45 days depending on the infectious dose of parasites
<b>Common Symptoms</b>	Eosinophilia, fever, myalgia, periorbital edema
<b>Gold Standard Diagnostic Test</b>	Tissue biopsy, serological testing
<b>Risk Groups</b>	Individuals who ingest raw or undercooked meat, especially pork and wild game (e.g., cougar, fox, wolf)
<b>Geographic Significance</b>	Worldwide

### What is trichinellosis?

Trichinellosis, also called Trichinosis, is a parasitic disease caused by ingesting raw or undercooked meat on animals infected with the larvae of a species of round worm (nematodes) called *Trichinella*. Several different species of *Trichinella* can cause human disease; the most common species is *Trichinella spiralis*, which has a global distribution and is the species most commonly found in pigs. Other *Trichinella* species are less commonly reported as the cause of human disease and may be found in different parts of the world, usually infecting wild animals.

### What is the occurrence of trichinellosis?

Worldwide, an estimated 10,000 cases of trichinellosis occur every year. In the U.S., trichinellosis cases used to be more common; however, infection is now rare. During 2011–2015, 16 cases were reported per year on average. The number of cases decreased beginning in the mid-20th century because of improved pig-raising practices in the legislation prohibiting the feeding of raw-meat garbage to hogs, the use of commercial and home freezing of pork, and the public awareness of the danger of eating raw or undercooked pork products. Cases are less commonly associated with pork products and more often associated with eating raw or undercooked wild game meats.

### How are *Trichinella* transmitted?

When a human or animal eats meat that contains infective *Trichinella* cysts, the acid in the stomach dissolves the hard covering of the cyst and releases the worms. Infection occurs commonly in wild carnivorous (meat-eating) animals such as bear or cougar, or omnivorous animals such as domestic pigs or wild boar. *Trichinella* are transmitted to humans through consumption of raw or insufficiently cooked meat, primarily pork and pork products and wild game such as bear. Beef is not typically infected with *Trichinella* except through cross-contamination. Infection is not transmitted directly from person-to-person. Animal hosts remain infective for months, and their meat stays infective for appreciable periods of time unless cooked, frozen, or irradiated to kill the larvae. Infection results in partial immunity.

### Who is at risk for trichinellosis?

In the U.S., the risk of trichinellosis from commercially raised and properly prepared pork is very low. Individuals who eat raw or undercooked meats, particularly bear, pork, wild feline (such as a cougar), fox, dog, wolf, horse, seal, or walrus are at risk for trichinellosis.

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### What are the signs and symptoms of a trichinellosis?

The signs, symptoms, severity, and duration of trichinellosis vary from inapparent infection to a fulminating, fatal disease, depending on the infectious dose and host characteristics, such as age of the patient or immunological priming as a result of previous *Trichinella* infection. Initial symptoms, usually within 1–2 days after infection, may include nausea, diarrhea, vomiting, fatigue, fever, and abdominal discomfort. Subsequent symptoms, usually start 2–8 weeks after eating contaminated meat, and may include headache, fever, chills, cough, swelling of the face and eyes (periorbital edema), aching joints and muscle pains, itchy skin, diarrhea, or constipation. Muscle pain, tenderness, and swelling can cause patients to experience difficulty coordinating movements. For mild to moderate infections, most symptoms subside within a few months. Fatigue, weakness, muscle pain, and diarrhea may last for months.

### What are potential complications of trichinellosis?

In addition to physical damage to affected tissues, larval penetration and tissue migration causes an immune-mediated inflammatory reaction and stimulates the development of eosinophilia. More severe manifestations include myocarditis, encephalitis, and thromboembolic disease.

### How is trichinellosis diagnosed?

The diagnosis of trichinellosis is based on history of consumption of potentially contaminated meat, the presence of compatible signs and symptoms, and identification of *Trichinella* larvae in biopsy muscle tissue or serum detection of antibodies to excretory/secretory *Trichinella* antigen in EIA format. Muscle biopsy is infrequently performed but allows for molecular identification on the *Trichinella* species or genotype, which is not possible with antibody testing. IgG antibodies can be detected approximately 12 to 60 days post-infection. Antibody development depends on the amount of infective *Trichinella* larvae that are consumed. Levels peak in the second- or third-month post-infection, and then decline but may be detectable for 10 years or more following infection. At least two serum specimens should be drawn and tested weeks apart to demonstrate seroconversion in patients with suspected trichinellosis whose initial results were negative or weakly positive.

### How is trichinellosis treated?

Prompt treatment with antiparasitic drugs can help prevent the progression of trichinellosis by killing the adult worms, thus preventing further release of larvae. Once the larvae have become established in skeletal muscle cells, usually by 3 to 4 weeks post infection, treatment may not completely eliminate the infection and associated symptoms. The recommended antihelminths to treat the parasitic infection are mebendazole or albendazole. Treatment should begin as soon as possible, and the decision to treat is based upon symptoms, exposure to raw or undercooked meat, and laboratory test results.

### How can trichinellosis be prevented?

A potential risk of trichinellosis is from eating meat, particularly pork, from sources not subject to or not compliant with food safety laws, regulations, and inspections, such as animals raised or hunted for personal consumption or meat from unlicensed/unregulated food establishments, street vendors, and/or their meat suppliers.

- Cook meat to safe temperatures using a food thermometer to measure the internal temperature of cooked meat.
- Curing (salting), drying, smoking, or microwaving meat alone does not consistently kill infective worms; homemade jerky and sausage caused cases of trichinellosis.
- Freeze pork less than 6 inches thick for 20 days at 5°F (-15°C) to kill any worms.

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- Freezing wild game meats, unlike freezing pork products, may not effectively kill all worms because some worm species that infect wild game animals are freeze-resistant.
- Clean meat grinders thoroughly after each use.
- To help prevent *Trichinella* infection in animal populations, pigs or wild animals are not to eat uncooked meat, scraps, or carcasses of any animals, including rats, which may be infected with *Trichinella*.

### What are some public health considerations?

- When reporting trichinellosis in the Disease Reporting System internet (DRSi), document the source of infection, if known.
- A CDC case report form for trichinellosis is available at [https://www.cdc.gov/parasites/trichinellosis/health\\_professionals/index.html](https://www.cdc.gov/parasites/trichinellosis/health_professionals/index.html).

### References:

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