

TRICHINOSIS

Also known as: Trichinellosis

Responsibilities:

Hospital: Report by IDSS, facsimile, mail, or phone

Infection preventionist: Report by IDSS, facsimile, mail, or phone

Lab: Report by IDSS, facsimile, mail, or phone

Physician: Report by facsimile, mail, or phone

Local Public Health Agency (LPHA): Report by IDSS, mail, facsimile, or phone. Follow-up required

Iowa Department of Public Health

Disease Reporting Hotline: (800) 362-2736

Secure Fax: (515) 281-5698

1) THE DISEASE AND ITS EPIDEMIOLOGY

A. Agent

Trichinosis is caused by *Trichinella spiralis*, a parasitic intestinal roundworm. Multiple species of *Trichinella* are capable of causing infection in mammals, but *T. spiralis* is the most common cause of human infection.

B. Clinical Description

Trichinosis in humans can range from asymptomatic to fatal, depending on the infective dose. In the week following ingestion of infected meat, a patient may experience nausea, vomiting, diarrhea and abdominal discomfort, as the released larvae mature and attach to the intestinal mucosa. A sudden onset of muscle soreness and pain, fever, edema of the upper eyelid and urticarial rash, 2 - 8 weeks after ingestion, is characteristic of earlier infection, as larvae migrate into muscle tissue. Eye pain, photophobia, thirst, profuse sweating, chills, weakness and a rapid increase in eosinophil counts on blood exam may also occur. Recurring fever up to 104°F usually stops after 1 - 6 weeks. In the most severe infections, cardiac and neurologic complications, sometimes leading to death, may occur in the 3rd - 6th week.

C. Reservoirs

Swine, dogs, cats, horses, rodents and many wild animals, such as bear, wolf, wild boar, fox and Arctic marine mammals, can serve as reservoirs for *Trichinella*.

D. Modes of Transmission

Transmission occurs by ingestion of raw or undercooked meats containing *Trichinella* cysts. Pork and pork products are the most likely source. Beef products, which may become inadvertently adulterated with raw pork during processing, may also be a source. As many as 30% of domestic cases of trichinosis are thought to correlate with ingestion of meat from wild game animals. There is no person-to-person spread of trichinosis.

E. Incubation period

Gastrointestinal symptoms may appear within a few days after infection; appearance of systemic symptoms ranges from 5 - 45 days. The usual incubation period is 8 - 15 days. If large numbers of cysts are ingested, symptoms may occur more rapidly.

F. Period of Communicability or Infectious Period

Trichinosis is not transmitted directly from person-to-person. Animal hosts may remain infective for months, and meat from these animals remains infective until the larvae are killed by sufficient cooking, freezing or irradiation.

G. Epidemiology

Trichinosis occurs worldwide, and affects people of all ages. The incidence of disease is dependent on local customs regarding eating pork or undercooked meats. Over the past 40 years, few cases of trichinellosis have been reported in the United States, and the risk of trichinellosis from commercially raised and properly prepared pork is very low. However, eating undercooked wild game, particularly bear meat, puts one at risk for acquiring this disease.

H. Bioterrorism Potential

None.

2) DISEASE REPORTING AND CASE INVESTIGATION

A. Purpose of Surveillance and Reporting

- To identify sources of public health concern (*e.g.*, undercooked *Trichinella*-infected pork sold at a restaurant) and stop transmission at the source.
- To identify and control outbreaks.

B. Laboratory and Healthcare Provider Reporting Requirements

Iowa Administrative Code 641-1.3(139) stipulates that the laboratory and the healthcare provider must report. The preferred method of reporting is by utilizing the Iowa Disease Surveillance System (IDSS). However, if IDSS is not available to your facility the reporting number for IDPH Center for Acute Disease Epidemiology (CADE) is (800) 362-2736; fax number (515) 281-5698, mailing address:

IDPH, CADE
Lucas State Office Building, 5th Floor
321 E. 12th Street
Des Moines, IA 50319-0075

Postage-paid disease reporting forms are available free of charge from the IDPH clearinghouse. Call (319) 398-5133 or visit the website:

healthclearinghouse.drugfreeinfo.org/cart.php?target=category&category_id=295 to request a supply.

Laboratory Testing Services Available

The University of Iowa State Hygienic Laboratory tests single serum samples utilizing Enzyme Immunoassay. For more information about submitting specimens, contact the State Hygienic Laboratory at (319) 335-4500.

C. Local Public Health Agency Follow-up Responsibilities

Case Investigation: Complete the investigation using IDSS. The investigation will likely focus on suspect meat that has been ingested.

3) CONTROLLING FURTHER SPREAD

A. Isolation and Quarantine Requirements

None.

B. Protection of Contacts of a Case

None.

C. Managing Special Situations

Reported Incidence Is Higher than Usual/Outbreak Suspected

If an outbreak is suspected, investigate to determine the source of infection and mode of transmission. A common vehicle, such as food should be sought, and applicable preventive or control measures instituted (*e.g.*, removing an implicated food item from the environment). Consult with the epidemiologist on-call at the Center for Acute Disease Epidemiology (CADE) at (800) 362-2736. The Center can help determine a course of action to prevent further cases, and perform surveillance for cases that cross county lines.

D. Preventive Measures

To avoid future exposure, individuals should be made aware of the following:

- Thoroughly cook pork, pork products and wild game until the meat is no longer pink Allow sufficient cooking time so that all parts of the meat reach an internal temperature of at least 170°F. Freezing pork less than 6 inches thick for 20 days at 5°F will kill the larvae, but freezing wild game meats may leave some larvae alive, so this meat must always be thoroughly cooked.
- Grind pork in a separate grinder from other foods, and thoroughly disinfect the grinder between products.
- Thoroughly cook all meats from wild animals. Meat products should be processed by heating, freezing or irradiation prior to drying or smoking for jerky.
- Cook any meat fed to pigs or other animals being raised for human consumption. Hogs should not be allowed to eat uncooked carcasses of other animals, including rats, which may be infected with trichinosis.
- Be aware that curing (salting), drying, smoking, or microwaving meat does not consistently kill infective larvae.

Individuals known to have recently ingested the same product as the case being investigated should consult with a healthcare provider regarding treatment options.

4) ADDITIONAL INFORMATION

The Council of State and Territorial Epidemiologists (CSTE) surveillance case definitions for Trichinosis can be found at: www.cdc.gov/osels/ph_surveillance/nndss/phs/infdis.htm#top

CSTE case definitions should not affect the investigation or reporting of a case that fulfills the criteria in this chapter. (CSTE case definitions are used by the state health department and the CDC to maintain uniform standards for national reporting.)

Comment:

In an outbreak setting, at least one case must be laboratory confirmed. Associated cases should be reported as confirmed if the patient shared an epidemiologically implicated meal or ate an epidemiologically implicated meat product and has either a positive serologic test for trichinosis or a clinically compatible illness.

References

- American Academy of Pediatrics. *2003 Red Book: Report of the Committee on Infectious Diseases, 26th Edition*. Illinois, American Academy of Pediatrics, 2003.
- CDC. Trichinosis website: www.cdc.gov/parasites/trichinellosis/health_professionals/index.html
- Heymann, D.L., ed. *Control of Communicable Diseases Manual, 20th Edition*. Washington, DC, American Public Health Association, 2015.
- McAuley, J.B., Michelson, M.K., Schantz, P.M., Trichinosis Surveillance, United States, 1987–1990. *MMWR*. 1990; 40(SS-3): 35-42.