

Fascioliasis rev March 2021

BASIC EPIDEMIOLOGY

Infectious Agent

Fasciola species, a parasitic liver fluke (flat worm). Two *Fasciola* species infect people: *F. hepatica*, known as "the common liver fluke" and "the sheep liver fluke", is most common; *F. gigantica* is less common but can also infect people.

Transmission

Transmission occurs through consumption of raw aquatic plants (such as watercress) that are contaminated with infectious larvae (metacercariae), usually in locations around domestic and wild ruminants (commonly sheep, cattle and goats). Transmission can also occur by ingesting contaminated water, e.g., by drinking it or by eating vegetables that were washed or irrigated with contaminated water. Infection is not transmitted directly from person to person.

Incubation Period

Acute phase of infection: symptoms, if any, can start 4-7 days after the exposure and can last several weeks or months. Symptoms associated with the chronic phase of infection, if present, can occur months to years after the exposure.

Communicability

Infection is not transmitted directly from person to person. The life span of adult flukes in humans is estimated to range from 5 to 10 years, or longer.

Clinical Illness

- **Early (acute) phase:** symptoms may include fever, nausea, vomiting, diarrhea, a swollen liver (hepatomegaly), liver function abnormalities, skin rashes, shortness of breath and abdominal pain or tenderness.
- **Chronic phase** (after the parasite settles in the bile ducts) is marked by inflammation and hyperplasia and thickening of the bile ducts and gall bladder, leading to biliary lithiasis or obstruction. The symptoms of this phase, such as biliary colic, nausea, intolerance to fatty food, right upper quadrant pain, epigastric pain, obstructive jaundice, and pruritus, are the result of a blockade in the biliary tract and inflammation in the gall bladder. Inflammation of the liver, gallbladder, and pancreas can also occur.

DEFINITIONS

Clinical Case Definition

Fascioliasis (liver fluke trematode) is transmitted by eating raw watercress or other water plants contaminated with immature larvae, usually from locations around sheep, cattle, or related animals. The immature larval flukes migrate through the intestinal wall, the abdominal cavity, and the liver tissue, into the bile ducts, where they develop into mature adult flukes. In the early (acute) phase, symptoms may include fever; gastrointestinal problems such as nausea, vomiting and diarrhea; a swollen liver (hepatomegaly); liver function abnormalities, skin rashes; shortness of breath; and abdominal pain or tenderness. The chronic phase (after the parasite settles in the bile ducts), is marked by inflammation and hyperplasia and thickening of the bile ducts and gall bladder, leading to biliary lithiasis or obstruction. The symptoms of this phase, such as biliary colic, nausea, intolerance

to fatty food, right upper quadrant pain, epigastric pain, obstructive jaundice, and pruritus, are the result of a blockade in the biliary tract and inflammation in the gall bladder. Inflammation of the liver, gallbladder, and pancreas can also occur.

Laboratory Confirmation

- Microscopic identification of *Fasciola* eggs in feces, duodenal contents, or bile
- Detection of *Fasciola* coproantigens (antigens found in feces) by ELISA

Case Classifications

- **Confirmed:** A case that is laboratory confirmed
- **Probable:** A clinically compatible case with
 - Detection of *Fasciola* antibodies, **OR**
 - History of ingestion of watercress or freshwater plants and eosinophilia

SURVEILLANCE AND CASE INVESTIGATION

Case Investigation

Local and regional health departments should promptly investigate all reports of fascioliasis. Investigations should include an interview of the case or a surrogate to get a detailed exposure history. Please use the Fascioliasis Investigation Form available on the DSHS website: <http://www.dshs.state.tx.us/idcu/investigation/>.

Case Investigation Checklist

- Confirm laboratory results meet the case definition.
- Review medical records or speak to an infection preventionist or healthcare provider to verify case definition, identify possible risk factors and describe course of illness.
- Interview the case to get detailed exposure history and risk factor information.
 - Use the **Fascioliasis Investigation Form** to record information from the interview.
 - If the case is not available or is a child, conduct the interview with a surrogate who would have the most reliable information on the case, such as a parent or guardian.
 - Provide education to the case or his/her surrogate about effective hand washing and food safety practices. See Prevention and Control Measures.
- Fax completed forms to DSHS EAIDU at **512-776-7616**
 - For lost to follow-up (LTF) cases, please complete as much information as possible obtained from medical/laboratory records (e.g., demographics, symptomology, onset date, etc.) on investigation form and fax/email securely to DSHS EAIDU and indicate the reason for any missing information.
- If case is part of an outbreak or cluster, see Managing Special Situations section.
- All confirmed case investigations must be entered and submitted for notification in the NEDSS Base System (NBS). Please refer to the *NBS Data Entry Guidelines* for disease specific entry rules.

Prevention and Control Measures

- Routine hand washing with soap and warm water.
- Avoid eating uncooked watercress and other aquatic plants of wild or unknown origin, especially from grazing areas or places where the disease is known to be endemic.
- Vegetables grown in fields that might have been irrigated with contaminated water should be thoroughly cooked.
- Travelers to areas with poor sanitation should avoid food and water that might be contaminated.

Exclusions

School/child-care: No exclusions are specified for fascioliasis but the standard exclusion for diarrhea or fever applies:

- Children with diarrhea should be excluded from school/child-care until they are free from diarrhea for 24 hours without the use of diarrhea suppressing medications.
- Children with a fever from any infection should be excluded from school/child-care for at least 24 hours after fever has subsided without the use of fever suppressing medications.

Food Employee: No exclusions are specified for fascioliasis but the standard exclusion for vomiting or diarrhea applies:

- Food employees are to be excluded if symptomatic with vomiting or diarrhea until:
 - Asymptomatic for at least 24 hours without the use of diarrhea suppressing medications OR
 - Medical documentation is provided stating that symptoms are from a noninfectious condition.

Please see Guide to Excluding and Restricting Food Employees in Appendix A.

MANAGING SPECIAL SITUATIONS

Outbreaks/Clusters

If an outbreak is suspected, notify the appropriate regional DSHS office or DSHS EAIDU at (512) 776-7676.

The local/regional health department should:

- Interview all cases suspected as being part of the outbreak or cluster.
- Request medical records for any case in your jurisdiction that died, was too ill to be interviewed, or for whom there are no appropriate surrogates to interview.
- Prepare a line list of cases in your jurisdiction. Minimal information needed for the line list might include patient name or other identifier, DSHS or laboratory specimen identification number, specimen source, date of specimen collection, date of birth, county of residence, date of onset (if known), symptoms, underlying conditions, treatments and outcome of case, and risky exposures, such as consumption of watercress or other aquatic plants, recreational water contact or travel to an endemic country reported by the case or surrogate.

Line list example:

ID	Name	Age	Sex	Ethnicity	Onset	Symptoms	Risks	Notes
1	NT	34	F	White/non-Hispanic	12/4/16	Fever, epigastric tenderness	Ate watercress on trip to China	Reported travel with 5 other friends
2	PR	4	M	Unknown	11/30/16	Fever, Upper abdomen discomfort, hepatomegaly	Travel companion of Case ID# 1	Lost to follow up (LTF)

- If the outbreak was reported in association with an apparent common risk factor (e.g., food establishment serving watercress or other aquatic plants, recreational body of water, travel), contact hospitals in your jurisdiction to alert them to the possibility of additional fascioliasis cases.
- Determine the source of infection to prevent additional cases.
- Enter outbreak into NORS at the conclusion of the outbreak investigation. See Reporting and Data Entry Requirements section.

REPORTING AND DATA ENTRY REQUIREMENTS

Provider, School, Child-Care Facility, and General Public Reporting Requirements

Confirmed, probable and clinically suspected cases are required to be reported **within 1 week** to the local or regional health department or the Texas Department of State Health Services (DSHS), Emerging and Acute Infectious Disease Branch (EAIDU) at **(800) 252-8239** or **(512) 776-7676**.

Local and Regional Reporting and Follow-up Responsibilities

Local and regional health departments should:

- Enter the case into NBS and submit an NBS notification on all **confirmed and probable** cases.
 - Please refer to the *NBS Data Entry Guidelines* for disease-specific entry rules.
 - A notification can be sent as soon as the case criteria have been met. Additional information from the investigation may be entered upon completing the investigation.
- Fax completed forms to DSHS EAIDU at **512-776-7616** or email securely to an EAIDU foodborne epidemiologist at FOODBORNETEXAS@dshs.texas.gov.

When an outbreak is being investigated, local and regional health departments should:

- Report outbreaks within 24 hours of identification to the regional DSHS office or to EAIDU at **512-776-7676**.
- Enter outbreak information into the **National Outbreak Reporting System (NORS)** at the conclusion of the outbreak investigation.
 - For NORS reporting, the definition of an outbreak is two or more cases of similar illness associated with a common exposure.
 - The following should be reported to NORS:
 - Foodborne disease, waterborne disease, and enteric illness outbreaks with person-to-person, animal contact, environmental contact, or an indeterminate route of transmission.
 - Outbreaks as indicated above with patients in the same household.
 - Enter outbreaks into NORS online reporting system at <https://wwwn.cdc.gov/nors/login.aspx>
 - Forms, training materials, and other resources are available at <http://www.cdc.gov/nors/>
- To request a NORS account, please email FoodborneTexas@dshs.state.tx.us
 - Please put in Subject Line: NORS User Account Request
 - Information needed from requestor: name, email address, and agency name
 - After an account has been created a reply email will be sent with a username, password, and instructions for logging in.

LABORATORY PROCEDURES

Testing for fascioliasis is widely available from most private laboratories. Specimens are encouraged to be submitted to the DSHS laboratory for confirmation. Contact an EAIDU foodborne epidemiologist to discuss further.

Specimen Collection

- Submit a stool specimen in a sterile, leak-proof container.
 - Required volume: Stool 15 g solid or 15mL liquid.
- Fresh stool that cannot be received by the lab in less than 5 hours should be placed in formalin and PVA immediately.

Submission Form

- Use DSHS Laboratory G-2B form for specimen submission.
- Make sure the patient's name, date of birth and/or other identifier match exactly what is written on the transport tubes and on the G-2B form.
- Fill in the date of collection and select the appropriate test.
- If submitting as part of an outbreak investigation, check “Outbreak association” and write in name of outbreak.
- Payor source:
 - Check “IDEAS” to avoid bill for submitter.

Specimen Shipping

Transport temperature: May be shipped at ambient temperature or 2-8°C.

- Ship specimens via overnight delivery.
- DO NOT mail on a Friday, or state holiday, unless special arrangements have been pre-arranged with DSHS Laboratory.
- Ship specimens to:

Laboratory Services Section, MC-1947
Texas Department of State Health Services
Attn. Walter Douglass (512) 776-7569
1100 West 49th Street
Austin, TX 78756-3199

Causes for Rejection:

- Specimen not in correct transport medium.
- Missing or discrepant information on form/specimen.
- Unpreserved specimen received greater than 5 hours after collection.
- Transport media was expired.
- Specimen too old.

UPDATES

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- Minor edits.