

Amebiasis

Section 1

ABOUT THE DISEASE

A. Etiologic Agent

Entamoeba histolytica is a protozoan parasite that should not be confused with *Entamoeba hartmanni*, *Entamoeba coli*, or other intestinal protozoa that do not cause amebiasis. The trophozoite is the metabolically active form (which causes symptoms), but it is not as infectious as the cyst form because it cannot survive in the environment or transit through the acidic stomach. An infected person can shed both trophozoites and cysts in stool.

B. Clinical Description

Infections can be intestinal, extraintestinal, or both. Most cases are intestinal and are asymptomatic. Symptoms, when they occur, are multiple and varied, ranging from mild abdominal discomfort and diarrhea (often with blood and mucus), alternating with periods of remission or constipation, to severe illness with fever, chills, and significant bloody or mucoid diarrhea (“amebic dysentery”). Amebic colitis may be confused with inflammatory bowel diseases, such as ulcerative colitis. Rarely, *E. histolytica* invades the liver and forms abscesses.

C. Vectors and Reservoirs

Humans, primarily chronic or asymptomatic carriers, are the reservoir for amebiasis.

D. Modes of Transmission

This parasite is transmitted fecal-orally by ingestion of cysts. Transmission can happen via contaminated food or water or through person-to-person spread, particularly among preschool children, within households, and through sexual contact (e.g., oral-anal contact).

E. Incubation Period

The incubation period is commonly from 2–4 weeks, but it can vary from a few days to several months or years.

F. Period of Communicability or Infectious Period

The disease is communicable for as long as the infected person excretes *E. histolytica* cysts, which can continue for years. Asymptomatically infected persons tend to excrete a much higher proportion of cysts, and hence, are more likely to transmit the infection than persons who are acutely ill and who tend to excrete trophozoites in diarrheal stool.

G. Epidemiology

Amebiasis has a worldwide distribution. Prevalence is higher in areas with poor sanitation (such as parts of the tropics), in institutions for the developmentally disabled, and among men who have sex with men. The estimated prevalence in the U.S. is 4%.

H. Bioterrorist Potential

This pathogen is not considered to be of risk for use in bioterrorism

Section 2

REPORTING CRITERIA AND LABORATORY TESTING

A. What to Report to the Massachusetts Department of Public Health (MDPH)

Report any of the following:

- Demonstration of cysts or trophozoites of *E. histolytica* in stool.
- Demonstration of trophozoites of *E. histolytica* in extraintestinal tissue, tissue biopsy, or ulcer scrapings (by histopathology).
- Demonstration of specific antibody against *E. histolytica* (enzyme immunoassay [EIA] kits for *E. histolytica* antibody detection are commercially available in the U.S.)
- Antigen detection or positive PCR for *E. histolytica*.

Note: See Section 3C for information on how to report a case

B. Laboratory Testing Services Available

The Massachusetts State Public Health Laboratory (MA SPHL) does not provide testing services for amebiasis. However, the MA SPHL can forward sera to the Centers for Disease Control and Prevention (CDC) for antibody testing.

For more information about submitting sera for testing, contact the MA SPHL Clinical Microbiology Laboratory at (617) 983-6607.

Section 3

REPORTING RESPONSIBILITIES AND CASE INVESTIGATION

A. Purpose of Surveillance and Reporting

- To identify whether the case may be a source of infection for other persons (e.g., a diapered child, daycare attendee, or food handler), and if so, to prevent further transmission.
- To identify transmission sources of public health concern (e.g., a contaminated public water supply), and to stop transmission from such a source.

B. Laboratory and Health Care Provider Reporting Requirements

Amebiasis is reportable to the local board of health (LBOH). The MDPH requests that health care providers immediately report to the LBOH in the community where the case is diagnosed, all confirmed or suspect cases of amebiasis, as defined by the reporting criteria in Section 2A.

Laboratories performing examinations on any specimens derived from Massachusetts residents that yield evidence of amebiasis infection shall report such evidence of infection directly to the MDPH within 24 hours.

C. Local Board of Health (LBOH) Reporting and Follow-Up Responsibilities

Reporting Requirements

MDPH regulations (*105 CMR 300.000*) stipulate that amebiasis is reportable to the LBOH and that each LBOH must report any case of amebiasis or suspect case of amebiasis, as defined by the reporting criteria in Section 2A. Cases should be reported to the MDPH Bureau of Infectious Disease and Laboratory Sciences (BIDLS), Office of Integrated Surveillance and Informatics Services (ISIS) via MAVEN. Refer to the List of Diseases Reportable to Local Boards of Health for information on prioritization and timeliness requirements of reporting and case investigation

<http://www.mass.gov/eohhs/docs/dph/cdc/reporting/rprtbdiseases-lboh.pdf>

Case Investigation

It is the responsibility of the LBOH to complete all questions in each of the MAVEN question packages by interviewing the case and others who may be able to provide information. Some of the information required can be obtained from the health care provider or from the medical record.

Calling the provider

If the case was hospitalized (i.e. reporting facility is a hospital), call infection control at the named hospital. A list of infection preventionists can be found in the help section of MAVEN. If the case was seen at a clinician's office, ask to speak to a nurse working with the ordering provider. You should confirm that the patient was notified of the diagnosis and let them know that you will be calling the case for further information.

Calling the case or parent/guardian of the case

Before calling the case, review all the information in this chapter. The call may take a few minutes, so in order to maximize the chance of getting the information needed, it might be good to note the potential length of the call with your contact, and offer the opportunity to call back when it is more convenient. Asking questions about how the case or child is feeling may get the case or parent talking. If you are

unable to answer a question they have, don't hesitate to call the Division of Epidemiology and Immunization at 617-983-6800 for assistance, and call them back with the answer later. People are often more than willing to talk about their illness, and they may be very happy to speak with someone who can answer their questions.

Using MAVEN

Administrative Question Package

Monitor your "Online LBOH Notification for non-Immediate Disease" workflow in MAVEN for any new cases of amebiasis. Once a new event appears in this workflow, open the Administrative Question Package (QP) and under the "Local Health and Investigation" section, answer the first question "**Step 1** - LBOH acknowledged" by selecting "Yes". The "LBOH acknowledged date" will then auto populate to the current day. Completing this first step will move the event out of this workflow and into your "Online LBOH notified but Case Report Forms (CRF) are pending" workflow. Note the date you started your investigation by answering "**Step 2** - Investigation started" as "Yes" and then note the date where shown. Record your name, agency, and phone numbers where shown in "**Step 3** - LBOH/Agency Investigator."

Demographic Question Package

Record all demographic and employment information. It is particularly important to complete the Race/Ethnicity and Occupation questions.

Clinical Question Package

Complete the "Diagnosis/Clinical Information" section, providing the diagnosis date, symptom information and date of symptom onset and other medical information

Risk Exposure/Control & Prevention Question Package

Accurately record all risk questions regarding travel and consumption of any high risk foods. As you enter data into MAVEN, additional questions will appear for you to answer regarding risk/exposure.

Completing your Investigation

1. If you are finished with your investigation and follow-up is complete, mark "**Step 4** - Case Report Form Completed" as "Yes" and then choose Local Board of Health (LBOH) -Ready for MDPH review for the "Completed by" variable.
2. If you have made several attempts to obtain case information but have been unsuccessful (e.g., the case or health care provider does not return your calls or respond to a letter, or the case refuses to divulge information or is too ill to be interviewed), please complete "**Step 4** - Case Report Form Completed" as "No" and then choose a primary reason why the case investigation was not completed from the choices provided in the primary reason answer variable list.
3. If you are not online for MAVEN you may submit a paper case report form. After completing the form, attach laboratory report(s) and fax or mail (in an envelope marked "Confidential") to ISIS. The confidential fax number is (617) 983-6813. Call ISIS at (617) 983-6801 to obtain a copy of the case report form and to confirm receipt of your fax.

The mailing address is:

MDPH, Office of Integrated Surveillance and Informatics Services (ISIS)

305 South Street, 5th Floor
Jamaica Plain, MA 02130
Fax: (617) 983-6813

Section 4

CONTROLLING FURTHER SPREAD

A. Isolation and Quarantine Requirements (105 CMR 300.200)

Food handlers with amebiasis must be excluded from work.

Note: A case of amebiasis is defined by the reporting criteria in Section 2A of this chapter.

Minimum Period of Isolation of Patient

After diarrhea has resolved, food handling facility employees may return to work only after producing one negative stool specimen. If a case has been treated with an antiparasitic agent, the stool specimen shall not be submitted until at least 48 hours after cessation of therapy. In outbreak circumstances, a second consecutive negative stool specimen will be required prior to returning to work.

Minimum Period of Quarantine of Contacts

Contacts who have diarrhea and are food handling facility employees shall be considered the same as a case and shall be handled in the same fashion. In outbreak circumstances, asymptomatic contacts who are food handling facility employees shall be required to produce two negative stool specimens, 24 hours apart. No restrictions otherwise.

Note: A food handler is any person directly preparing or handling food. This can include a patient care or childcare provider.

B. Protection of Contacts of a Case

None.

C. Managing Special Situations

Daycare

Since amebiasis may be transmitted from person to person through fecal-oral transmission, it is important to follow up on cases of amebiasis in a daycare setting carefully. General recommendations include:

- Children with amebiasis who have diarrhea should be excluded until their diarrhea has resolved.
- Children with amebiasis who have no diarrhea and are otherwise not ill may be excluded or they may remain in the program, if special precautions are taken. Since most staff in childcare programs are considered food handlers, those with this parasite in their stools (symptomatic or not) can remain on-site but must not prepare food or feed children until their diarrhea has resolved and

they have one negative stool test (collected at least 48 hours after completion of therapy, if antiparasitic agents are given)(per 105 CMR 300.200).

- Notifying parents/guardians of attendees should be considered when cases of amebiasis occur in children or staff. Licensed daycare facilities must notify all parents in accordance with MDPH recommendations when any communicable disease or condition has been introduced into the program (606 CMR 7.11). MDPH epidemiologists are available to help determine whether notification is recommended and sample letters are available from the Division of Epidemiology and Immunization at (617) 983-6800.

School

Since amebiasis may be transmitted from person to person through fecal-oral transmission, it is important to investigate cases of amebiasis in a school setting carefully. General recommendations include:

- Students or staff with amebiasis who have diarrhea should be excluded until their diarrhea has resolved.
- Students or staff with amebiasis who do not handle food, have no diarrhea or mild diarrhea, and are not otherwise sick may remain in school if special precautions are taken.
- Students or staff who handle food and have this parasitic infection (symptomatic or not) must not prepare food until their diarrhea has resolved and they have one negative stool test (collected at least 48 hours after completion of therapy, if antiparasitic agents are given) (per 105 CM 300.200).
- The school nurse and school physician should consult with the LBOH and the MDPH epidemiologists to determine whether some or all parents/guardians and staff should be notified. Parent/guardian notification should be discussed with the school administrator prior to initiation. Sample letters are available from the Division of Epidemiology and Immunization at (617) 983-6800.

Refer to the MDPH *Comprehensive School Health Manual*

<https://massclearinghouse.ehs.state.ma.us/SCH/SH3001R.html> for complete guidelines on handling diseases spread through the intestinal tract.

Community Residential Programs

Actions taken in response to a case of amebiasis in a community residential program will depend on the type of program and the level of functioning of the residents.

In long-term care facilities, residents with amebiasis should be maintained on standard precautions until their symptoms subside and they test negative for this parasite. Refer to the MDPH Division of Epidemiology and Immunization's Long Term Care Infection Control Guidelines

<http://www.mass.gov/eohhs/gov/departments/dph/programs/id/epidemiology/providers/infection-control.html> for further actions. Staff members who provide direct patient care (e.g., feed patients, give mouth or denture care, or give medications) are considered food handlers and are subject to food handler restrictions (per 105 CMR 300.200). See Section 4A for more information. In addition, staff members with amebiasis who are not food handlers should not work until their diarrhea is resolved.

Reported Incidence Is Higher Than Usual/Outbreak Suspected

If the number of reported cases of amebiasis in your city/town is higher than usual, or if you suspect an outbreak, investigate to determine the source of infection and the mode of transmission. A common vehicle (e.g., water, food, or association with a daycare center) should be sought, and applicable preventive or control measures should be instituted (e.g., removing an implicated food item from the environment). Control of person-to-person transmission requires special emphasis on personal cleanliness and sanitary disposal of feces. Consult with the epidemiologist on-call at the MDPH Division of Epidemiology and Immunization at (617) 983-6800. The MDPH epidemiologists can help determine a course of action to prevent further cases and can perform surveillance for cases across town lines, which would otherwise be difficult to identify at the local level.

Note: Refer to the MDPH Foodborne Illness Investigation and Control Reference Manual for comprehensive information on investigating foodborne illness complaints and outbreaks. This manual can be located at <http://www.mass.gov/eohhs/gov/departments/dph/programs/environmental-health/food-safety/foodborne-illness/tools/foodborne-illness-investigations-and-control.html>. For the most recent changes to the Massachusetts Food Code, contact the Food Protection Program (FPP) at (617) 983-6712 or through the MDPH website at www.mass.gov/dph/fpp.

D. Preventive Measures

Personal Preventive Measures/Education

To avoid exposure, recommend that individuals:

- Always wash their hands thoroughly with soap and water before eating or preparing food, after using the toilet, and after changing diapers.
- Wash their own hands as well as the child's hands after changing diapers, and dispose of the diapers in a sanitary manner.
- Wash their own hands when caring for someone with diarrhea. Hands should be scrubbed with plenty of soap and water after cleaning the bathroom, after helping the person use the toilet, or after changing diapers, soiled clothes, or soiled sheets.

Discuss transmission risks that may result from oral-anal sexual contact. Latex barrier protection (e.g., dental dam) may prevent the spread of amebiasis to a case's sexual partners and may prevent exposure to and transmission of other fecal-oral pathogens.

International Travel

Travelers to developing countries should:

- Drink only bottled water, carbonated water, and canned or bottled sodas. Boiling water for one minute will kill parasites, bacteria, or viruses that may be present, including *E. histolytica*.

However, *E. histolytica* is not killed by low doses of chlorine or iodine; do not rely on chemical water purification tablets (such as halide tablets) to prevent amebiasis.

- Cook food thoroughly to kill parasites, bacteria, or viruses that may be present.
- Not eat fruit that has already been peeled or cut, or raw vegetables that may be contaminated.
- Drink only pasteurized milk or dairy products. Avoid eating unpasteurized dairy products or drinking raw milk. They can be contaminated with unclean water.

Note: For more information regarding international travel and amebiasis, contact the CDC’s Traveler’s Health Office at (877) 394-8747 or at www.cdc.gov/travel.

ADDITIONAL INFORMATION

The following is the formal CDC surveillance case definition for amebiasis. It is provided for your information only and should not affect the investigation or reporting of a case that fulfills the criteria in Section 2A of this chapter. (The CDC and the MDPH use the CDC case definitions to maintain uniform standards for national reporting.) For reporting to the MDPH, always use the criteria outlined in Section 2A.

Clinical Description

Infection of the large intestine by *E. histolytica* may result in an illness of variable severity ranging from mild, chronic diarrhea to fulminant dysentery. Infection may also be asymptomatic. Extraintestinal infection can also occur (e.g., hepatic abscess).

Laboratory Criteria for Diagnosis

Intestinal Amebiasis	<ul style="list-style-type: none"> • Demonstration of cysts or trophozoites of <i>E. histolytica</i> in stool; or • Demonstration of trophozoites in tissue biopsy, ulcer scrapings by culture, or histopathology.
Extraintestinal Amebiasis	<ul style="list-style-type: none"> • Demonstration of <i>E. histolytica</i> trophozoites in extraintestinal tissue.

Case Classification

Confirmed Intestinal Amebiasis	A clinically compatible illness that is laboratory-confirmed.
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Confirmed Extraintestinal Amebiasis	A parasitologically confirmed infection of extraintestinal tissue or among symptomatic persons (with clinical or radiographic findings consistent with extraintestinal infection), demonstration of specific antibody against <i>E. histolytica</i> as measured by indirect hemagglutination or other reliable immunodiagnostic test (e.g., enzyme-linked immunosorbent assay [ELISA]).
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Note: The most up-to-date CDC case definitions are available on the <http://www.cdc.gov/nndss/conditions>

REFERENCES

American Academy of Pediatrics. [*Giardia intestinalis* Infections.] In: Pickering L.K., ed. *Red Book: 2015 Report of the Committee on Infectious Diseases, 30th Edition*. Elk Grove Village, IL, American Academy of Pediatrics; 2015: 353-355.

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Heymann, D., ed. *Control of Communicable Diseases Manual, 20th Edition*. Washington, DC, American Public Health Association, 2015.