

# Amebiasis (Amebic Dysentery) Investigation Guideline

**CONTENT:**

**VERSION DATE:**

**Investigation Protocol:**

- Investigation Guideline

**04/2009**

**Supporting Materials found in attachments:**

- Fact Sheets

**04/2009**

**Revision History:**

<b>Date</b>	<b>Replaced</b>	<b>Comments</b>
02/2012	-	Removed references to KS-EDSS.

# Amebiasis (Amebic Dysentery)

## Disease Management and Investigative Guidelines

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### CASE DEFINITION (CDC 1990)

#### A. Clinical Description for Public Health Surveillance:

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

#### B. Laboratory Criteria for Case Classification:

- Intestinal Amebiasis:
  - Demonstration of cysts or trophozoites of *E. histolytica* in stool, or
  - Demonstration of trophozoites in tissue biopsy or ulcer scrapings by culture or histopathology.
- Extraintestinal Amebiasis:
  - Demonstration of *E. histolytica* trophozoites in extraintestinal tissue.

#### C. Case Classification:

- Confirmed, intestinal amebiasis:
  - A clinically compatible illness that is laboratory confirmed.
- 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 *E. histolytica* as measured by indirect hemagglutination or other reliable immunodiagnostic test (e.g., enzyme-linked immunosorbent assay).
- Probable (KDHE definition for internal data management):
  - Lab confirmed demonstration of *E. histolytica*-like cysts or trophozoites in stool without information on clinical symptoms.
- Suspect (KDHE definition for internal data management):
  - Positive serology in an asymptomatic person or in a person whose clinical symptoms have not yet been reported.

#### D. Laboratory Testing:

- Collection: Parasite (O & P) Feces Mailer. The traditional two vial system is preferred but the commercially available one vial system is accepted.
- Specimen: Feces, marble size, mixed well in 10% formalin and PVA bottles
- Timing of specimens:
  - Because parasites may be passed intermittently, the collection of three specimens within a 10-day period is recommended.
  - Specimens should be collected at least 48 hours apart and 48 hours after the receipt of any anti-parasitic therapy.
- Do not refrigerate the preserved samples.
- The State Public Health Laboratory is equipped to perform ova and parasite (O & P) examinations, if requested. Confirmatory testing to distinguish *E. histolytica* from morphological similar species will be done at the CDC.

- For additional information and/or questions concerning isolate submission, and laboratory kits call (785) 296-1620 or refer to online guidance at [http://www.kdheks.gov/labs/lab\\_ref\\_guide.htm](http://www.kdheks.gov/labs/lab_ref_guide.htm)

**E. Bioterrorism Potential:** None.

**F. Outbreak Definition:**

- Two or more cases clustered in time and space with a common or suspected common source.

## **INVESTIGATOR RESPONSIBILITIES**

**A. Investigation Related Tasks and Activities:**

- 1) Confirm diagnosis with appropriate medical provider.
  - Before contacting the patient or family, first determine what information has been released about the patient's diagnosis.
  - Obtain information that supports clinical findings in the case definition and information on the onset date of the symptoms.
    - It is important that clinical findings be obtained to confirm cases.
  - Obtain information on any laboratory tests performed and results.
    - If confirmatory testing has been ordered to follow-up O&P results, request copies of laboratory reports once they are received.
  - For hospitalization, obtain medical records, including admission notes, progress notes, lab report(s), and discharge summary.
- 2) Conduct case investigation to identify potential source of infection.
  - Determine if the case is involved in a high-risk occupation or other special situation is involved (e.g., foodhandler, daycare, etc.)
- 3) Conduct contact investigation to locate additional cases and/or contacts.
  - Assure proper screening occurs with contacts (i.e., stool samples)
- 4) Initiate control and prevention measures to prevent spread of disease.
  - Identify transmission(s) of public health concern (e.g., public water supply) and stop transmission from such a source.
  - If needed, assure that work restriction and exclusion are initiated for high-risk cases and/or contacts (e.g., foodhandler, daycare provider or attendee and direct patient care providers).
- 5) Report all confirmed cases to the KDHE Bureau of Epidemiology and Public Health Informatics, using established methods.

**B. Notifications:**

- 1) There are no special notifications or additional reporting requirements.
- 2) As appropriate, use the notification letter(s) and the disease fact sheet to notify the case, contacts and other individuals or groups.

## EPIDEMIOLOGY

Amebiasis has a worldwide distribution but is rare in children under the age of 5. Prevalence is higher in developing countries. In industrialized countries, risk groups include those living in institutions for the developmentally disabled, men who have sex with men, travelers and recent immigrants. In areas with good sanitation, amebic infections have a tendency to cluster in households and institutions. The estimated prevalence in the United States is 4%.

## DISEASE OVERVIEW

### A. Agent:

Amebiasis is a result of infection with *Entamoeba histolytica*, a protozoan parasite which is found in two forms. The trophozoite is the active form of the parasite which causes symptoms. Cysts are the infectious form which sometimes develops in the lower intestine but does not cause symptoms. Infected persons may shed both trophozoites and cysts in stool.

Molecular technologies have identified two *Entamoeba* species that are morphologically indistinguishable from *E. histolytica* – *E. dispar* and *E. moshkovskii*. *E. dispar* is nonpathogenic. *E. moshkovskii* is considered nonpathogenic but its potential role in human disease is still under study.

The light microscopic examination of stool (i.e., ova and parasite or O&P) will not distinguish between *E. histolytica*, *E. dispar* or *E. moshkovskii*. In 1997 the World Health Organization recommended that the microscopic observation of *E. histolytica*-like trophozoites and/or cysts in a stool specimen be reported as “*Entamoeba histolytica/Entamoeba dispar*” unless red blood cells are seen in the cytoplasm of the trophozoites or trophozoites are seen biopsy specimens with evidence of mucosal invasion and ulceration; both features are diagnostic for *E. histolytica*.

### B. Clinical Description:

Only about 10% to 20% of people who are infected with become sick from the infection. The symptoms often are quite mild and can include loose stools, stomach pain, and stomach cramping. Amebic dysentery is a severe form of amebiasis associated with stomach pain, bloody mucoid stools, and fever. This illness can alternate with periods of constipation or remission. Other symptoms include chronic abdominal pain, amebic granulomata in the wall of the large intestine and ulceration of the skin in the perianal region or in the penile region in active homosexuals. While rare, dissemination via the bloodstream can occur resulting in the formation of liver abscesses and, less commonly, the infection of other parts of the body, such as the lungs or brain.

### C. Reservoirs:

Humans, both chronic and asymptomatic carriers, are reservoirs for amebiasis.

### D. Mode(s) of Transmission:

Transmission is person-to-person through the fecal-oral ingestion of cysts. This may occur through fecal contamination of food or drink, contamination of fresh vegetables by polluted water or sexual exposure involving anal contact.

**E. Incubation Period:**

Variable from a few days to months, occasionally years; commonly 2-4 weeks.

**F. Period of Communicability:**

The disease is communicable for as long as an infected person excretes *E. histolytica* cysts, which may go on for years. Asymptomatically infected persons tend to excrete a much higher proportion of cysts and therefore more likely to transmit infection than persons who are acutely ill as they tend to excrete trophozoites. Trophozoites are not considered infective as they are destroyed by the acidity of the stomach and intestinal enzymes.

**G. Susceptibility and Resistance:**

Susceptibility to infection is general; those harboring *E. dispar* will not develop disease. Susceptibility to reinfection has been demonstrated but is rare.

**H. Treatment:**

Treatment involves the elimination of the tissue-invading trophozoites as well as the cysts in the intestinal lumen.

Whenever possible, *E. histolytica* should be differentiated (i.e., PCR, EIA) from morphologically similar species and treated appropriately. *E. histolytica* infections are treated regardless of symptoms. If *E. dispar* is the only species, treatment should not be given and other causes of illness should be sought.

With only microscopic evidence in asymptomatic patients, treatment should be withheld unless there is other evidence supporting the possibility of *E. histolytica* infection.

The following regimens are recommended for infections of *E. histolytica* that have been confirmed or are highly suspected (Redbook 2006):

- Asymptomatic, cyst excretors: treat with a luminal amebicide such as iodoquinol, paromomycin, or diloxanide.
- Mild to moderate intestinal symptoms or severe intestinal symptoms (dysentery) or extraintestinal disease (liver abscesses): treat with metronidazole (or tinidazole) followed by a therapeutic course of a luminal amebicide (iodoquinol or paromomycin).
- Alternative therapies: Dehydroemetine followed by a therapeutic course of a luminal amebicide for patients who's treatment of invasive disease has failed or cannot be tolerated; and an alternate treatment for liver abscess is chloroquine phosphate concomitantly with metronidazole (or tinidazole) or, if necessary, dehydroemetine, followed by a therapeutic course of a luminal amebicide.

## **STANDARD CASE INVESTIGATION AND CONTROL METHODS**

Standard investigation activities include the following:

- 1) Confirmation of diagnosis using case definition.
- 2) Collection of demographic data (birth date, county, sex, race/ethnicity)
- 3) Collection of clinical and additional laboratory data.

- 4) Determination of risk factors and transmission settings
- 5) Investigation of epi-links among cases (cluster, household, co-workers, etc).

Further investigative activity should include:

#### **A. Case Investigation - Identify Potential Source of Infection:**

Focus within the incubation period prior to symptom onset for:

- History of exposure(s), note association to:
  - History of colonic irrigation; specify date and place.
  - Exposure to a known carrier and/or persons with diarrheal illness within the incubation period; specify dates and places
  - Contact with visitors born outside the U.S. or travelled to a developing country within 6 months prior to onset; specify places and contact date.
  - Sexual contacts within incubation period.
- Travel history, with dates of exit from and reentry into Kansas
  - Include travel history with dates of travel
- Case finding and transmission setting:
  - Identify diarrheal illnesses among household members and guests, neighbors, schoolmates, and other possible transmission setting(s).
  - Residence in a facility for the developmentally disabled; note specific dates and places.
  - Attendance in daycare; note specific dates and places.
- Note occupation of the case and household members.
- If no plausible risk factors and/or transmission settings are identified, consider the restaurant/public gatherings attended and/or food history 2-6 weeks prior to onset.

#### **B. Contact Investigation – Identify Exposed Individuals / Populations:**

- A contact is defined as a household member, daycare co-attendeo or worker and sexual contacts of the case.
- If the case is a foodhandler, patrons of the food establishment may be contacts if the food handling practices and/or hygiene are in question.

#### **C. Isolation, Work and Daycare Restrictions**

- K.A.R 1-28-6 for amebiasis:
  - Each infected food handler shall be excluded from that person's occupation until three negative stools have been obtained. Both the second and the third specimens shall be collected at least 48 hours after the prior specimen.
- KS Food code regulations recommend that food handlers with diarrhea, fever or vomiting be restricted from handling food or be excluded from work if they serve high risk groups until symptoms have resolved for 24 hours. (Refer to the KDHE Foodborne Illness and Outbreak Investigation Manual for further information.)
  - Workers in schools, residential programs, daycare and healthcare facilities, who feed, give mouth care or dispense medications to clients subject to the same restrictions as food handlers.

**Note:** Exclusion is not allowing the employee to work at the establishment. Restriction is not allowing the employee to work with food; to clean equipment, utensils or linens; or to un-wrap single-use articles in the food establishment. High risk groups are more likely to experience foodborne disease because they are immunocompromised or older adults in a facility that provides health care or assisted living services, such as a hospital or nursing home; or are preschool age children in a facility that provide custodial care, such as a daycare center.

**D. Case Management, Including Follow-up of cases:**

- Routine follow-up of cases is not required unless engaged in a high-risk occupation as described above.

**E. Contact Management, Including Protection of Contacts:**

- Household member and close contacts should have microscopic examination of stools.
- Contacts that have diarrhea and engaged in food handling shall be treated under the Isolation and Work / Daycare Restriction guidelines.
- Use of chemoprophylaxis is not advised for contact management.

**F. Environmental Measures:**

- None, unless a public food or water source is identified.

**G. Education:**

- Hand washing after bathroom use and before preparing or eating food.
- Sexual transmission may be controlled by the use of condoms by men who have sex with men.

## MANAGING SPECIAL SITUATIONS

**A. Outbreak Investigation:**

- Notify KDHE immediately, 1-877-427-7317.
- If needed, seek reference laboratory confirmation of *E. histolytica* vs. *E. dispar* or *E. moshkovskii*.
- Investigate to determine the source and possible mode of transmission.
- Common vehicles (e.g., fresh vegetables) should be sought and applicable preventive or control measures instituted (i.e., removing the implicated food from the environment).
- Active case finding will be an important part of any investigation.

**B. Daycare:**

- Since amebiasis may be transmitted person-to-person through fecal-oral transmission, careful follow up on cases in a daycare setting is important.
- Children with amebiasis who have diarrhea should be excluded until after their diarrhea has resolved.
- Staff with *E. histolytica* in their stools (symptomatic or not) can remain on site, but must not prepare food or feed children until diarrhea is resolved and 3 negative stool tests are obtained (collected 48 hours apart).

### C. Schools:

- Since amebiasis may be transmitted person-to-person through fecal-oral transmission, it is important to follow up on cases of amebiasis in a school setting carefully.
- Students or staff with amebiasis who have diarrhea should be excluded until after their diarrhea is resolved.
- Students or staff who handle food and have *E. histolytica* infection must not prepare food until their diarrhea is resolved and they have 3 negative stool tests. Specimens must be collected 48 hours apart.

### D. Community Residential Centers:

- Actions taken in response to a case in a community residential program will depend on the type of program and the level of functioning of the residents.
- Staff members with *E. histolytica* infection who are considered food handlers should not work until their diarrhea is resolved.
- Staff members with *E. histolytica* infection who give direct patient care (i.e., feed patients, provide oral care, dispense medications, etc.) are considered food handlers and are subject to food handler restrictions.
- In long-term care facilities, residents with *E. histolytica* should be placed on standard enteric precautions until their symptoms subside and they have 3 negative stool cultures for *E. histolytica* collected 48 hours apart.
- In residential facilities for the developmentally disabled, staff and clients with amebiasis must refrain from handling or preparing food for other residents until their diarrhea has subsided and they have 3 negative stool samples collected 48 hours apart.

## DATA MANAGEMENT AND REPORTING TO THE KDHE

A. Organize and collect data.

B. Report data via the state electronic surveillance system:

- At a minimum, data collected during the investigation that helps to confirm or classify a case.

**Note:** Amebiasis is a notifiable disease in Kansas but is not reported to the CDC.

Laboratory reports demonstrating *E. histolytica*-like cysts or trophozoites in stool are initially reported in the KS-EDSS as “Amebiasis”, case status “Probable”. Clinical information collected locally will determine if the case is confirmed, based on the CDC case definition.

Because there are other conditions that may result in symptoms of amebiasis and the non-pathogenic *E. dispar* and *E. moshkovskii* are morphologically similar to *E. histolytica*, the following instances will result in a case being classified as “not a case”:

- Further testing reveals *E. dispar* or *E. moshkovskii*.
- Evidence of another etiological agent. (i.e., *Salmonella*, *Shigella*, *M. tuberculosis*, *Schistosoma mansoni*, *Balantidium coli*, inflammatory bowel disease, carcinoma, ischemic colitis, diverticulitis)

## ADDITIONAL INFORMATION / REFERENCES

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- C. Case Definitions:** CDC Division of Public Health Surveillance and Informatics, Available at: [www.cdc.gov/ncphi/diss/nndss/casedef/case\\_definitions.htm](http://www.cdc.gov/ncphi/diss/nndss/casedef/case_definitions.htm)
- D. Kansas Regulations/Statutes Related to Infectious Disease:** [www.kdheks.gov/epi/regulations.htm](http://www.kdheks.gov/epi/regulations.htm)
- E. KDHE Foodborne Illness and Outbreak Investigation Manual:** Available at: [www.kdheks.gov/epi/download/kansas\\_foodborne\\_illness\\_manual.pdf](http://www.kdheks.gov/epi/download/kansas_foodborne_illness_manual.pdf)
- F. KDHE Foodborne Illness Resources:** [www.kdheks.gov/epi/foodborne.htm](http://www.kdheks.gov/epi/foodborne.htm)
- G. Additional Information (CDC):** [www.cdc.gov/health/default.htm](http://www.cdc.gov/health/default.htm)

# Supporting Materials

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