ENTAMOEBA HISTOLYTICA

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192 –B
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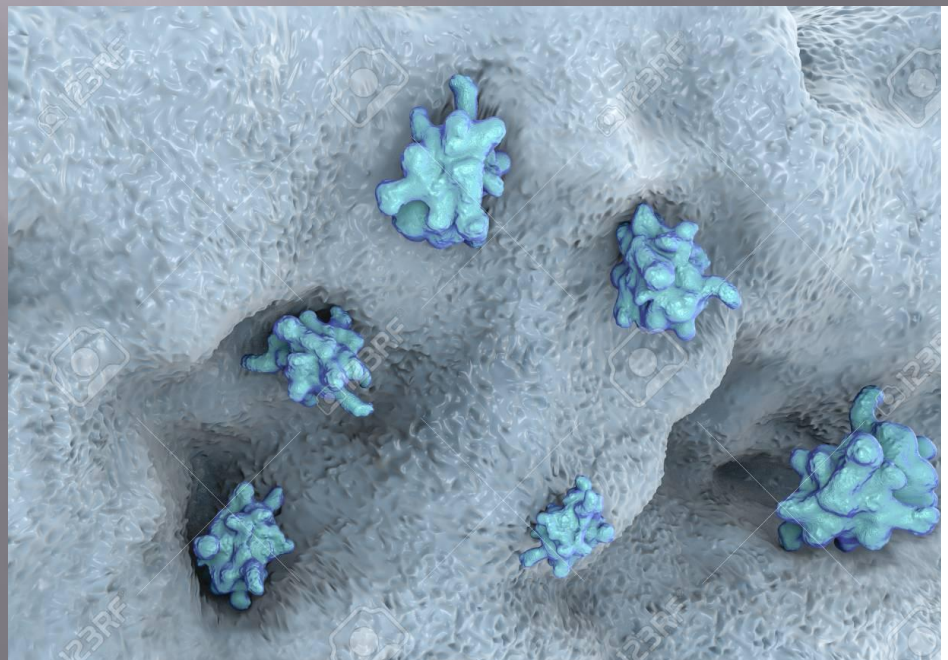
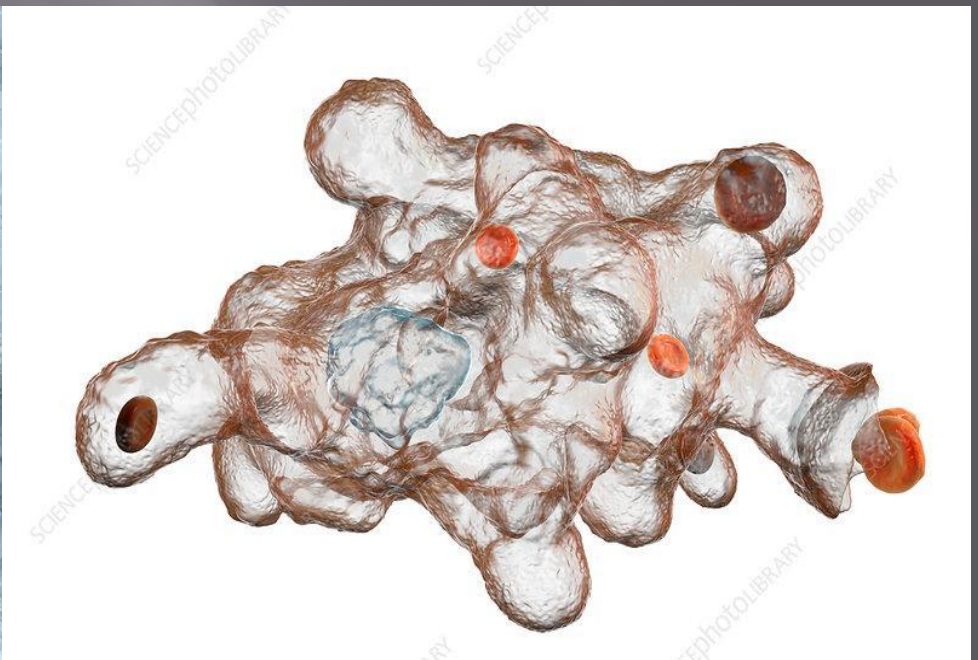
ENTAMOEBA HISTOLYTICA

Entamoeba histolytica is an anaerobic parasitic amoebozoan, part of the genus Entamoeba. Predominantly infecting humans and other primates causing amoebiasis, E. histolytica is estimated to infect about 35-50 million people worldwide.





CLASSIFICATION

Kingdom Protista
Phylum Sarcomastigophora
Phylum Sarcomastigophora
Class Zoomastigophorea
Order Diplomonadida
Family Hexamitidae
Genus *Giardia*

Subphylum Sarcodina
Superclass Rhizopoda
Class Lobosea

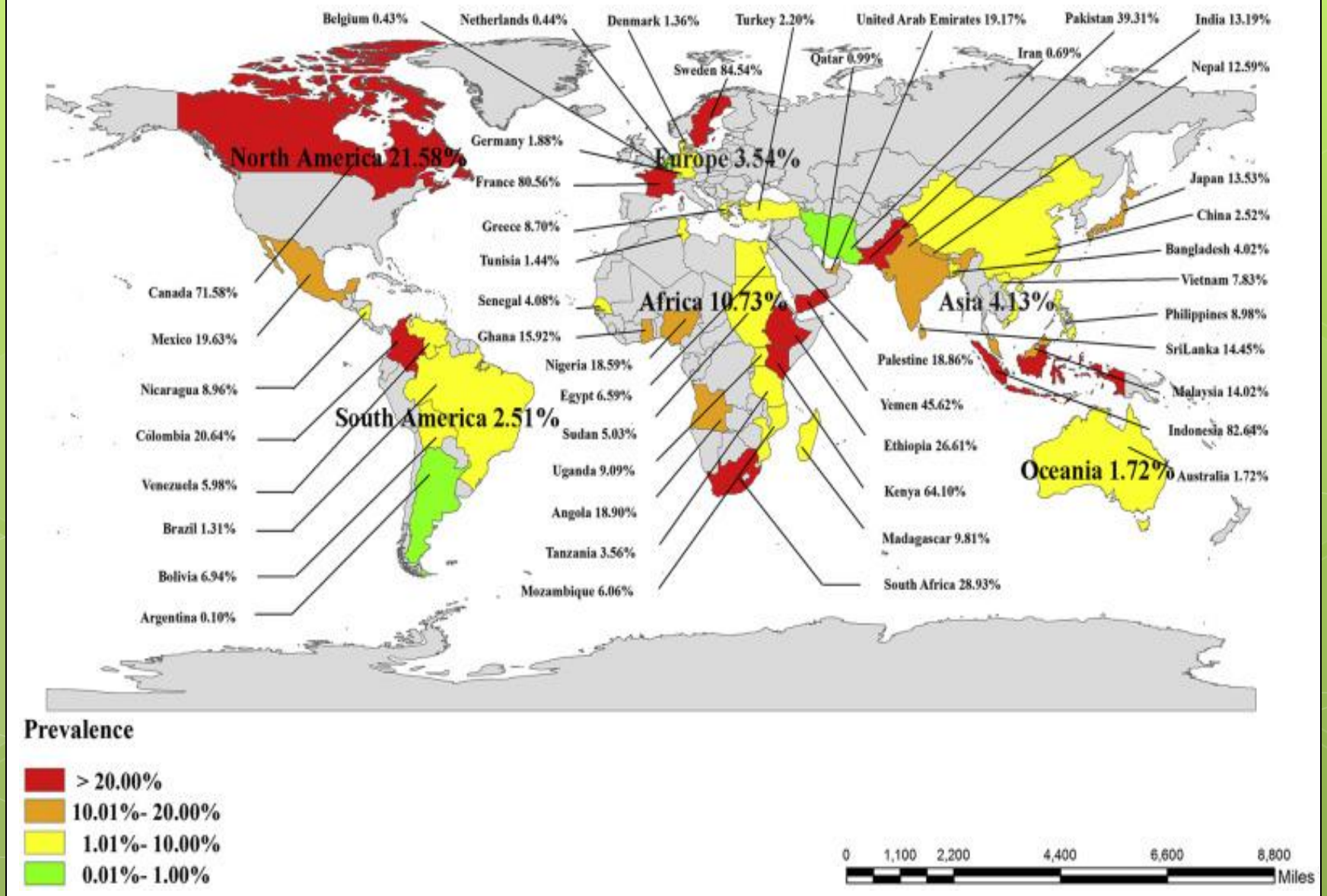
Order Amoebida
Family Endamoebidae
Genus *Entamoeba*

DISEASE OF ENTAMOBEA

- Entamoeba histolytica is an ameba that feeds on cells in the human colon. It is the cause of amebic dysentery (bloody diarrhea) as well as colonic ulcerations. The **infection** is also referred to as amebiasis.

GEOGRAPHICAL DISTRIBUTION

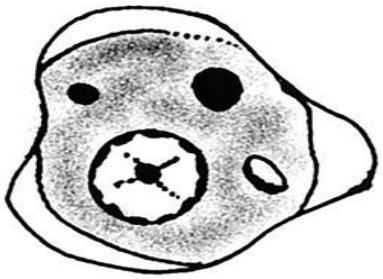
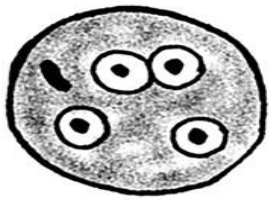
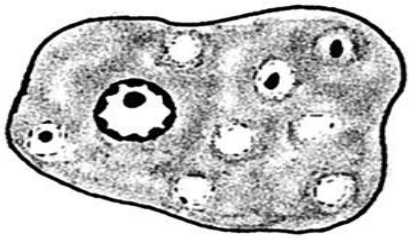
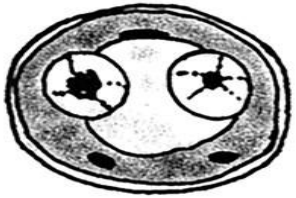
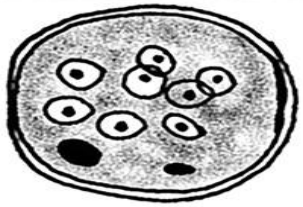
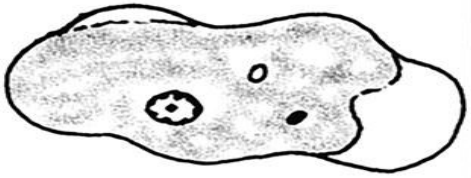
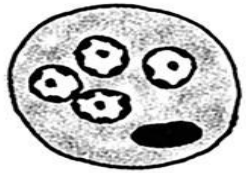
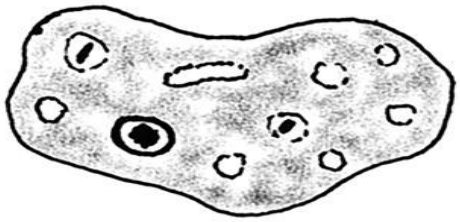
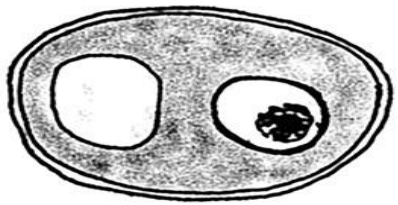
- COSMOPOLITIAN
- The prevalence of **Entamoeba infection** is as high as 50% in **areas** of Central and South America, Africa, and Asia.
  E **histolytica** seroprevalence studies in Mexico revealed that **more** than 8% of the population were positive


Belgium 0.43%
Netherlands 0.44%
Denmark 1.36%
Turkey 2.20%
United Arab Emirates 19.17%
Pakistan 39.31%
India 13.19%
Sweden 84.54%
Qatar 0.99%
Iran 0.69%
Nepal 12.59%
Germany 1.88%
North America 21.58%
Europe 3.54%
France 80.56%
Japan 13.53%
Greece 8.70%
China 2.52%
Tunisia 1.44%
Bangladesh 4.02%
Canada 71.58%
Senegal 4.08%
Africa 10.73%
Asia 4.13%
Vietnam 7.83%
Philippines 8.98%
Mexico 19.63%
Ghana 15.92%
Palestine 18.86%
SriLanka 14.45%
Nicaragua 8.96%
Nigeria 18.59%
Egypt 6.59%
Yemen 45.62%
Malaysia 14.02%
Colombia 20.64%
South America 2.51%
Sudan 5.03%
Ethiopia 26.61%
Indonesia 82.64%
Venezuela 5.98%
Uganda 9.09%
Oceania 1.72%
Australia 1.72%
Brazil 1.31%
Angola 18.90%
Kenya 64.10%
Bolivia 6.94%
Tanzania 3.56%
Madagascar 9.81%
Argentina 0.10%
Mozambique 6.06%
South Africa 28.93%
Prevalence
> 20.00%
10.01%- 20.00%
1.01%- 10.00%
0.01%- 1.00%
0
1,100
2,200
4,400
6,600
8,800
Miles

MORPHOLOGY

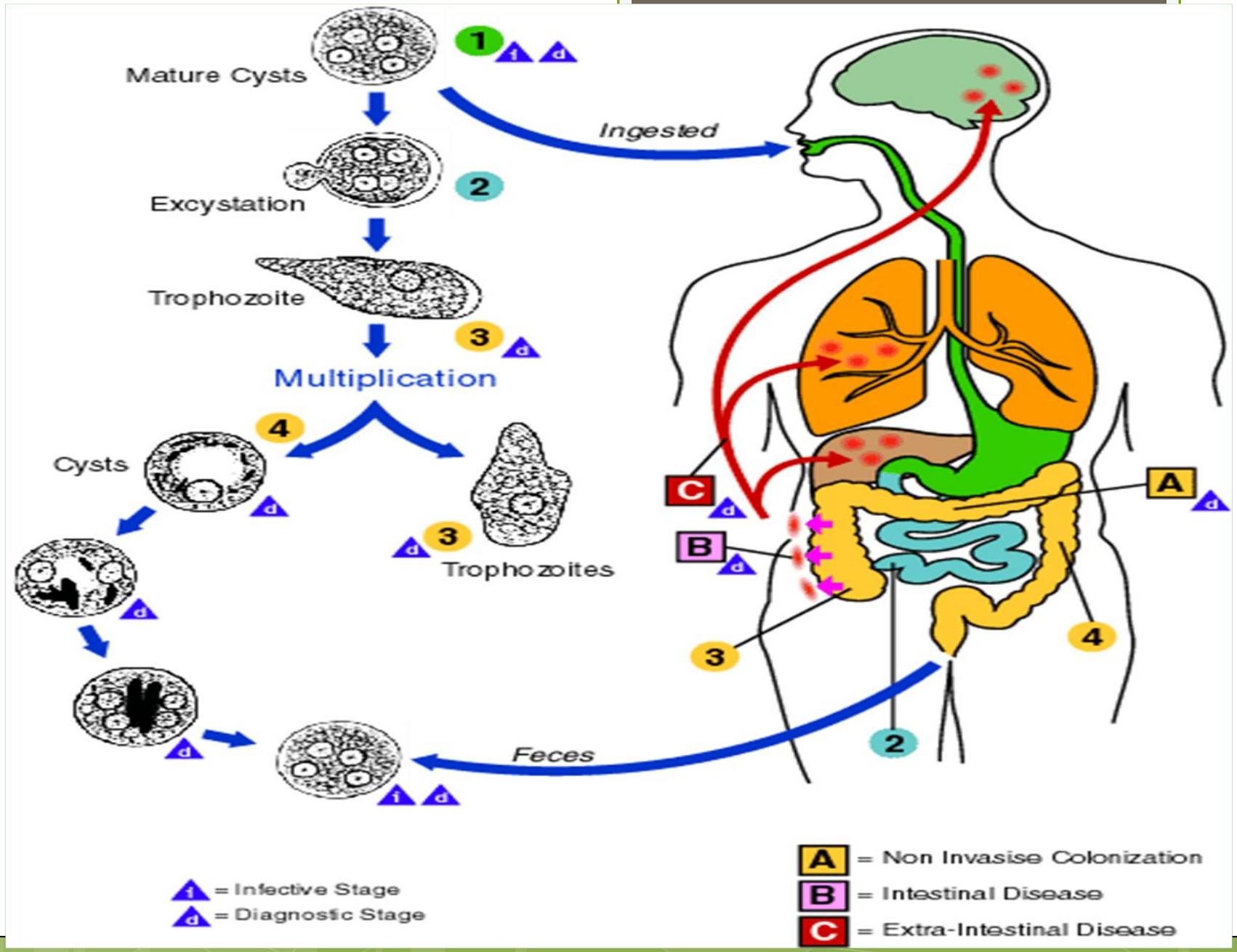
- **. Trophic:**
- The trophic forms vary in size from 15-40 micro average being 25 micro. The cell body is divisible into two distinct portions—ectoplasm and endoplasm. The ectoplasm is clear and translucent while the endoplasm is granular

- Cysts vary in diameter from 10-20 micro. The cysts are spherical. The cyst wall is double and the cytoplasm usually bears four nuclei. The cytoplasm is clear and often contains black rod-like chromatoid bar or bodies.

Organism	Trophozoite	Precyst	Cyst
E. histolytica *E. dispar* *E. moshkovskii*			
E. coli			
E. hartmanni			
I. bütschlii			

LIFECYCLE

- When the cyst of *E.histolytica* reaches caecum or lower part of ileum excystation occurs and an **amoeba with four nuclei emerges** and that divides by binary fission to form **eight trophozoites**.
- Trophozoites migrate to the large intestine and lodge into the submucosal tissue.
- Trophozoites grow and multiply by binary fission in the large intestine *(Trophozoite phase of the life cycle is responsible for producing characteristics lesion of amoebiasis)*.
- Certain numbers of trophozoites are discharged into the lumen of the bowel and are transformed into cystic forms.
- The cysts thus formed are unable to develop in the same host and therefore necessitate a transference to another susceptible host. The **cysts are passed in the feces.**


Mature Cysts
1
i
d
Ingested
Excystation
2
Trophozoite
3
d
Multiplication
4
Cysts
d
3
d
Trophozoites
d
d
i
d
Feces
C
d
A
d
B
d
3
4
2
i = Infective Stage
d = Diagnostic Stage
A = Non Invasise Colonization
B = Intestinal Disease
C = Extra-Intestinal Disease

PATHOGENECITY

- E. **histolytica**, as its name suggests (histo–lytic = tissue destroying), is **pathogenic**; infection can be asymptomatic or can lead to amoebic dysentery or amoebic liver abscess. Symptoms can include fulminating dysentery, bloody diarrhea, weight loss, fatigue, abdominal pain, and amoeboma

SYMPTOMS

- On average, about one in 10 people who are infected with E. **histolytica** becomes 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 stools, and fever

DIAGNOSIS

- A single stool examination has a low sensitivity of detecting the parasite (129). The best **diagnostic** method is detection of E. **histolytica** antigen or DNA in stool (78, 79). Clinical **diagnosis** of amebiasis is difficult because of the nonspecific nature of symptoms

TREATMENT

- Current U.S. **treatment** guidelines recommend as first line either metronidazole 750 mg PO tid for 7-10 days (35-50 mg/kg/d in children) OR tinidazole 2 g once PO daily for 5 days (50 mg/kg/day in children 3 years of age or older). Luminal agents used are paromomycin, iodoquinol, and diloxanide furoate.

PREVENTION AND CONTROL

- Improved sanitation will help to reduce the liklihood of transmission. Travelers to endemic areas can reduce the risk of infection by drinking bottled water, not using ice cubes in drinks, and washing fruits and vegetables with clean water (or by peeling them yourself).

Prevention & Control

Primary prevention

- Safe excreta disposal
- Safe water supply
- Hygiene
- Health education

Secondary

- Early diagnosis
- Treatment

Reference

- https://youtu.be/wBPh9svIU9Q
- https://youtu.be/gfCunkjxkMo
- https://youtu.be/VRMv_IzhMZc


Thank You
For Your Attention