WEEKLY EPIDEMIOLOGICAL REPORT

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Ministry of Health, Nutrition & Indigenous Medicine

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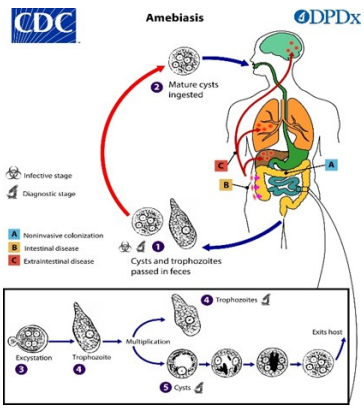
Amoebiasis

The genus *Entamoeba* includes many species, six of which (Entamoeba histolytica, Entamoeba dispar, Entamoeba moshkovskii, Entamoeba polecki, Entamoeba coli, and *Entamoeba hartmanni)* reside in the human intestinal lumen. Amoebiasis is an intestinal protozoan disease caused by Entamoeba Histolytica. E. Histolytica is a pseudopod-forming non-flagellated protozoan. It is transmitted faeco-orally. It means the infective form should be entered through the mouth to cause the disease. The infective form is mature cysts of E. Histolytica. Mature cysts and/or trophozoites are passed in the faeces of an infected patient/ asymptomatic carriers. Trophozoites are destroyed once they are outside the body, in the environment or if not in the acidic environment in the stomach. High-risk categories are travelers to the endemic countries, immigrants from endemic countries and homosexual males.



Through faecally contaminated food, water or hands the infective stage-mature cyst can enter another person's intestine. But there are cases in males who are having sex with males due to oral-anal contact of infective patient's faecal matter. Excystation occurs in the small intestine and the released trophozoites migrate to the large intestine. At the Large bowl, some may remain confined to the intestinal lumen- "non-invasive infection. They form cysts and the cysts are passed in faeces. So, they are called asymptomatic carriers. Some trophozoites invade the intestinal mucosa & cause invasive disease in the intestine-"amoebic colitis/ intestinal amoebiasis "or can enter into the blood circulation reaching extraintestinal organs such as the Liver, Brain, and Lung- "extraintestinal amoebiasis". People at higher risk for severe disease are those who are pregnant, immunocompromised, receiving corticosteroids, using alcohol or have diabetes.

The most common manifestation is asymptomatic colonization or mildly symptomatic patients (90%). These patients pass cysts in their stools without any sign of the disease. Most people resolve spontaneously. But in some, if left untreated, can lead to invasive disease. So it is recommended to treat asymptomatic cyst carriers. Microscopically usually cysts are seen in the stool sample. Trophozoites are rarely seen. If there are, they may lack ingested RBCs. Some people will get the invasive disease with intestinal manifestation (acute amoebic dysentery). The Incubation period is 1-4 weeks. Also, it has been seen after 1 year, 4-10% of asymptomatic carriers can develop invasive disease. Common clinical symptoms are abdominal pain/ tenderness with watery, bloody or mucous diarrhoea. Some may have localized abdominal pain while others may get diarrhoea and constipation alternatively. In these patients, trophozoites are seen in the faeces and submucosal tissue. Almost always stool for occult blood will be positive. Fever is an unusual finding (<40% of patients). Occasionally, some individuals may develop fulminant amoebic colitis (profuse bloody diarrhoea, fever, generalized abdominal pain with features of peritonitis, very high WBC count). Complications are Toxic megacolon, ameboma, cutaneous amoebiasis and rectovaginal fistula. Chronic amoebiasis may present as continuous attacks of diarrhoea or recurrent attacks with intervening periods of mild intestinal problems.

Out of extraintestinal manifestations, the most common manifestation is an amoebic liver abscess (ALA). It is associated with significant morbidity and mortality. But with quick and effective diagnostic methods and treatment, the

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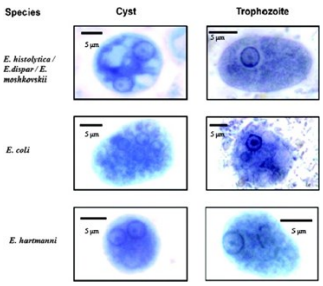
mortality rate has reduced up to 1-3%. These patients usually don't have bowel symptoms or amoebic colitis in colonoscopy. Symptoms are usually acute onset (<10%) R/upper quadrant pain, fever and cough. On examination, there will be R/ hypochondrial tenderness and a dull percussion note over the R/ Lung base. Jaundice is unusual. As the R/ lobe of the liver drains the caecum and ascending colon through the portal vein, it is the most common site of ALA. Laboratory findings may be leukocytosis without eosinophilia, mild anaemia, and raised ALP and ESR. Complications of ALA are due to rupture of the liver abscess through the diaphragm. It will cause pleuropulmonary amoebiasis, pericardial infection, brain abscess and genitourinary amoebiasis. The most common manifestation is pleural involvement and it has a good prognosis. The majority of ALA patients will resolve completely with treatment while only a few (7%) will have residual lesions in USS. The best method to diagnose ALA is positive serology combined with USS/CT. The serological test is highly sensitive (>94%) and highly specific (> 95%).



Amoebiasis is prevalent in developing countries where there is poor hygiene and a lack of access to sanitation. Amoebiasis is endemic in developing parts of Central and South America, Africa, and Asia. In the United States, the incidence is low. Other industrialized countries including parts of Asia, Europe, North America, and Australia have reported amoebiasis cases among males having sex with males. In Sri Lanka since 1985, amoebic liver abscess (ALA) has been a public health burden being only 2nd to Malaria among parasitic infections in the Jaffna district (5.9% of total hospital admissions). According to a study done by Kannathasan.S regarding amoebic liver abscess in northern SL, "annual admission rate of ALA in 2012, 2013, 2014, 2015 were 9.0, 7.0, 4.0 and 3.0 per 10 000 total admissions @TH Jaffna". Though the number of cases is declining over recent years, it is remaining as an important public health problem leading to significant morbidity.

. Histolytica mature cysts are round > 10 micrometres in size and have 1-4 nuclei (1-2 micrometres in immature cysts). Trophozoites of E.histolytica is about 20-25 micrometres in size and actively motile with a single nucleus and a central karyosome. Active amoeboid movements are only seen in fresh warm stools and are characteristic. Amoeba showing ingested RBC is diagnostic. There are several methods of diagnosis. Microscopic examination of a wet mount or stained, fixed stool sample for the identification of cysts or trophozoites is the easiest method. But wet mount is very insensitive as it only detects motile trophozoites which may contain ingested RBCs. Disadvantages are asymptomatic carriers can't be detected and can't differentiate E.histolytica from other entamoeba species correctly. Both methods are less sensitive (60%) than culture and antigen detection methods and false positivity is comparatively high (due to misidentification of macrophages as trophozoites, PMNs as cysts and other Entamoeba species). As these organisms may be excreted intermittently or may be unevenly distributed in the stool, it is recommended to take three stool samples within 10 days period. This also improves the detection rate to 85 to 95%. Concentration techniques such as zinc sulfate flotation or formalin-ether technique are useful in demonstrating cysts. But still, stained fixed smears are needed for the identification of the Entamoeba species. Other than the above tests, serological tests such as ELISA to detect antibodies and antigen-dependent tests can also be done. Culture of E.hisolytica in faecal specimens, rectal biopsy specimens, or liver abscess aspirates can be performed. But, parasite cultures are difficult, expensive, and need a huge labour force. Also, the overgrowth of bacteria, fungi, or other protozoans during culture is a problem. Therefore, culture is not recommended as a routine diagnostic procedure for the detection of Entamoeba histolytica. "The pioneering work of Sargeaunt et al. demonstrated that isoenzyme analysis of cultured amebae would enable the differentiation of Entamoeba species. A zymodeme is defined as a group of amoeba strains that share the same electrophoretic pattern and mobilities for several enzymes". But this method has several disadvantages. It is time-consuming, very costly and complex and needs an amoebic culture to perform the test which will encounter all the difficulties of culture.

There are many serological assays to detect antibodies against E.histolytica. such as indirect hemagglutination (IHA), latex agglutination, immunoelectrophoresis, counter immune electrophoresis (CIE), the amebic gel diffusion test, immunodiffusion, complement fixation, indirect immunofluorescence assay (IFA), and enzyme-linked immunosorbent assay (ELISA). There are many advantages. In developed countries, it helps to diagnose E.histolytica infection. ELISA is very helpful in the diagnosis of patients with ALA and is comparatively easy to perform. It may also be useful in the diagnostic evaluation of intestinal and extraintestinal infections where amebiasis is suspected but organisms cannot be detected in faeces. The disadvantage is that in amoebiasis endemic countries where people have already been exposed to E.histolytica, it won't distinguish an acute infection from a past infection.

Antigen detection using faecal ELISA is another diagnostic tool, which could be used in endemic countries, where most cases of amoebiasis occur and molecular techniques cannot be used because of cost. However, the sensitivity of the faecal antigen test is about 100 times less than that of PCR, and in addition, there are cross-reactions with other Entamoeba *species. The molecular methods, including PCR and real-time PCR, to detect E. histolytica, E. dispar, and* E. moshkovskii DNA in stool or liver abscess samples have led to an accurate diagnosis of E.histolytica and assisted in the selection of appropriate patients for antiamoebic therapy, minimizing undue treatment of individuals infected with other species of Entamoeba such as E. dispar and E. moshkovskii.

Symptomatic intestinal infection and extraintestinal disease should be treated with metronidazole or tinidazole followed by iodoquinol or paromomycin. Asymptomatic patients should also be treated with iodoquinol or paromomycin because they can infect others and 4%–10% can develop the disease within a year if left untreated. Prevention is better than treatment. Using water-sealed latrines and avoiding open defecation prevents faecal soil and water contamination. Washing hands with soap and water before eating, before food preparation and after defecation protect themselves and others. As cockroaches and flies can be cyst carriers, covering food is also very important. Vegetables and fruits should be washed thoroughly before use and human faeces should not be used as fertilizers. It is also very important to screen for any asymptomatic carriers in the food industry; if there are, they shouldn't be involved in the food industry. There should be a proper way of disposing of baby diapers and baby stools should be put into a commode. Health education of people, particularly food handlers, schools, community health centres as well as health care workers and food safety inspections by PHIs should be done to implement safety practices and control disease transmission.

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Table 1: Selected notifiable diseases reported by Medical Officers of Health 24th– 30th Sep 2022 (39th Week)

RDHS	Dengue Fever		Dysentery		Encephaliti		Enteric Fever		Food Poi-		Leptospirosis		Typhus		Viral Hepa-		Human		Chickenpox		Meningitis		Leishmania-		WRCD	
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	T*	C**
Colombo	58	10081	0	4	0	3	0	1	0	6	5	161	0	1	0	5	0	2	1	37	0	11	0	2	15	96
Gampaha	37	6382	0	5	0	1	0	1	0	12	2	178	0	0	0	10	0	4	1	47	0	33	0	29	6	84
Kalutara	30	3214	0	24	0	1	0	2	0	6	10	344	0	4	0	5	0	4	4	63	0	22	0	2	15	52
Kandy	100	4328	0	19	0	1	0	3	0	11	6	139	0	31	0	9	0	0	1	64	0	8	0	33	13	98
Matale	21	961	0	8	0	0	0	0	0	0	2	85	0	5	0	5	0	1	2	37	0	1	2	264	19	100
NuwaraEliya	2	194	1	22	0	0	0	3	0	5	1	76	1	14	1	7	0	0	0	35	0	6	0	0	28	93
Galle	27	3097	0	10	0	1	0	0	1	1	7	365	3	32	0	6	0	0	0	62	1	19	0	0	14	99
Hambantota	16	1393	0	32	0	0	0	0	0	2	3	199	3	44	0	6	0	0	2	30	0	17	28	438	16	100
Matara	21	1453	1	13	0	2	0	0	0	1	7	222	0	12	0	1	0	0	1	40	1	7	3	223	31	100
Jaffna	58	2700	13	76	0	3	1	59	1	61	1	21	10	442	0	7	0	4	1	94	0	11	0	1	65	93
Kilinochchi	3	110	1	8	0	0	0	3	0	24	0	11	0	12	0	0	0	0	0	4	0	3	0	2	25	100
Mannar	2	180	0	2	0	0	0	0	0	0	2	25	0	3	0	2	0	0	0	6	0	15	0	0	18	79
Vavuniya	0	71	0	3	0	1	0	2	0	0	0	18	0	1	0	0	0	0	0	27	0	0	0	4	1	92
Mullaitivu	0	56	0	5	0	0	0	2	0	6	0	25	0	5	0	0	0	0	0	7	0	2	0	1	22	91
Batticaloa	10	1061	6	64	0	8	0	0	0	21	1	38	0	0	0	1	0	1	0	27	0	30	1	2	39	99
Ampara	3	143	1	12	0	1	0	0	0	17	2	89	0	1	0	1	0	0	0	43	2	26	0	13	10	93
Trincomalee	2	1007	0	25	0	0	0	1	0	2	0	25	0	3	0	4	0	0	1	39	0	8	0	1	17	85
Kurunegala	16	2273	0	20	0	2	0	0	0	4	3	130	0	27	0	1	0	2	2	77	0	36	4	382	10	97
Puttalam	29	1784	0	3	0	1	0	1	0	0	1	26	0	8	0	1	0	0	0	18	2	26	0	4	15	90
Anuradhapur	7	401	0	11	0	2	0	1	0	7	0	154	2	24	0	2	0	1	0	61	1	47	1	317	9	96
Polonnaruwa	3	132	0	6	0	1	0	0	0	2	4	104	1	1	0	5	0	0	0	19	0	4	6	412	15	97
Badulla	21	899	1	24	0	2	0	1	0	14	10	219	1	49	4	128	0	0	3	50	0	13	2	21	18	100
Monaragala	6	414	0	6	0	1	0	4	0	3	0	241	1	29	0	51	0	0	0	55	4	47	0	116	12	98
Ratnapura	22	2482	1	41	0	6	0	3	2	30	15	803	1	22	2	26	0	0	1	67	3	54	4	178	14	93
Kegalle	21	2428	0	14	0	8	0	1	0	8	8	422	0	18	0	8	0	0	1	85	0	41	0	18	10	96
Kalmune	20	975	0	31	0	1	0	2	0	6	0	23	0	1	0	1	0	0	2	51	0	34	0	0	30	99
SRILANKA	**535**	**48219**	**25**	**488**	**0**	**46**	**1**	**90**	**4**	**249**	**91**	**4144**	**23**	**789**	**7**	**292**	**0**	**19**	**23**	**1145**	**14**	**521**	**51**	**2463**	**18**	**95**

Source: Weekly Returns of Communicable Diseases (esurvillance.epid.gov.lk). T=Timeliness refers to returns received on or before 30th Sep , 2022 Total number of reporting units 357 Number of reporting units data provided for the current week242 **C****-Completeness

Table 2: Vaccine-Preventable Diseases & AFP

24th– 30th Sep 2022 (39th Week)

Disease	No. of Cases by Province									Number of cases during current week in 2022	Number of cases during same week in 2021	Total number of cases to date in 2022	Total number of cases to date in 2021	Difference between the number of cases to date in 2022 & 2021
	W	C	S	N	E	NW	NC	U	Sab					
AFP*	01	00	00	00	00	00	01	00	01	03	01	60	49	22.4 %
Diphtheria	00	00	00	00	00	00	00	00	00	00	00	00	00	0 %
Mumps	00	00	00	01	01	00	00	00	00	01	01	69	59	8.6 %
Measles	00	00	00	00	00	00	00	00	00	00	00	17	11	54.5 %
Rubella	00	00	00	00	00	00	00	00	00	00	00	00	00	0 %
CRS**	00	00	00	00	00	00	00	00	00	00	00	00	00	0 %
Tetanus	00	00	00	00	00	00	00	00	00	00	00	05	02	150 %
Neonatal Tetanus	00	00	00	00	00	00	00	00	00	00	00	00	00	0 %
Japanese Encephalitis	00	00	00	00	00	00	00	00	00	00	00	01	04	- 66.6 %
Whooping Cough	00	00	00	00	00	00	00	00	00	00	00	01	00	0 %
Tuberculosis	00	06	08	10	07	32	00	13	18	94	150	5100	3756	35.7 %

Key to Table 1 & 2

Provinces: **W**: Western, **C**: Central, **S**: Southern, **N**: North, **E**: East, **NC**: North Central, **NW**: North Western, **U**: Uva, **Sab**: Sabaragamuwa.

RDHS Divisions: **CB**: Colombo, **GM**: Gampaha, **KL**: Kalutara, **KD**: Kandy, **ML**: Matale, **NE**: Nuwara Eliya, **GL**: Galle, **HB**: Hambantota, **MT**: Matara, **JF**: Jaffna, **KN**: Killinochchi, **MN**: Mannar, **VA**: Vavuniya, **MU**: Mullaitivu, **BT**: Batticaloa, **AM**: Ampara, **TR**: Trincomalee, **KM**: Kalmunai, **KR**: Kurunegala, **PU**: Puttalam, **AP**: Anuradhapura, **PO**: Polonnaruwa, **BD**: Badulla, **MO**: Moneragala, **RP**: Ratnapura, **KG**: Kegalle.

Data Sources:

Weekly Return of Communicable Diseases: Diphtheria, Measles, Tetanus, Neonatal Tetanus, Whooping Cough, Chickenpox, Meningitis, Mumps., Rubella, CRS,

Special Surveillance: AFP* (Acute Flaccid Paralysis), Japanese Encephalitis

CRS =**Congenital Rubella Syndrome

NA = Not Available

Covid-19 Prevention & Control

For everyone's health & safety, maintain physical distance, often wash hands, wear a face mask and stay home.

Comments and contributions for publication in the WER Sri Lanka are welcome. However, the editor reserves the right to accept or reject items for publication. All correspondence should be mailed to The Editor, WER Sri Lanka, Epidemiological Unit, P.O. Box 1567, Colombo or sent by E-mail to **chepid@sltnet.lk. Prior approval should be obtained from the Epidemiology Unit before publishing data in this publication**

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