



# WEEKLY EPIDEMIOLOGICAL REPORT

A publication of the Epidemiology Unit  
Ministry of Health

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Vol. 42 No. 36

29<sup>th</sup> – 04<sup>th</sup> September 2015

## Pinworm infection.

### Introduction

Pinworm infection is caused by a small, thin, white roundworm called *Enterobius vermicularis*. Although pinworm infection can affect all people, it most commonly occurs among children, institutionalized persons, and household members of persons with pinworm infection. Pinworm infection is treatable with over-the-counter or prescription medication, but reinfection, which occurs easily, should be prevented.

### Epidemiology

Pinworm infections are more common within families with school-aged children, in primary caregivers of infected children and in institutionalized children.

A person is infected with pinworms by ingesting pinworm eggs either directly or indirectly. These eggs are deposited around the anus by the worm and can be carried to common surfaces such as hands, toys, bedding, clothing and toilet seats. By putting anyone's contaminated hands (including one's own) around the mouth area or putting one's mouth on common contaminated surfaces, a person can ingest pinworm eggs and become infected with the pinworm parasite. Since pinworm eggs are so small, it is possible to ingest them while breathing.

Once someone has ingested pinworm eggs, there is an incubation period of 1 to 2 months or longer for the adult gravid female to mature in the small intestine. Once mature, the adult female worm migrates to the colon and lays eggs around the anus at night, when many of their hosts are asleep. People who are infected with pinworm can transfer the parasite to others for as long as there is a female pinworm depositing eggs on the perianal skin. A person can also re-infect themselves, or be re-infected by eggs from another person.

### Risk Factors

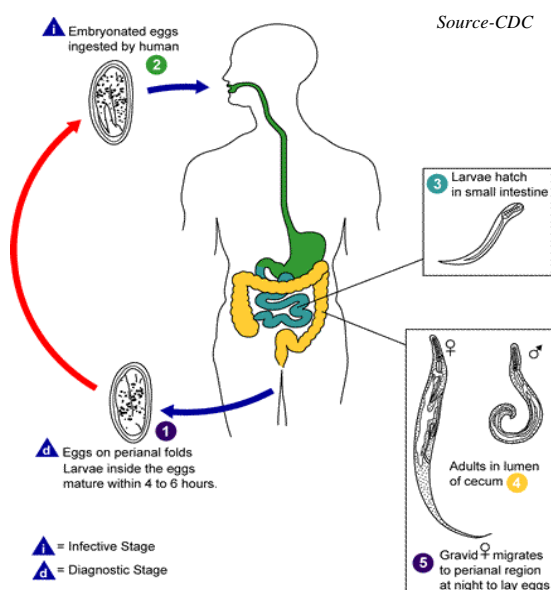
The people most likely to be infected with pinworm are children under 18, people who take care of infected children and people who are institutionalized. In these groups, the prevalence can reach 50%.

Pinworm is the most common worm infection in the United States. Humans are the only species that can transfer this parasite. Household pets like dogs and cats cannot become infected with human pinworms. Pinworm eggs can survive in the indoor environment for 2 to 3 weeks.

### Agent

The nematode (roundworm) *Enterobius vermicularis* (previously *Oxyuris vermicularis*) also called human pinworm. (Adult females: 8 to 13 mm, adult male: 2 to 5 mm. ) Humans are considered to be the only hosts of *E. vermicularis*. A second species, *Enterobius gregorii*, has been described and reported from Europe, Africa and Asia.

For all practical purposes, the morphology, life cycle, clinical presentation, and treatment of *E. gregorii* is identical to *E. vermicularis*.



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Eggs are deposited on perianal folds. Self-infection occurs by transferring infective eggs to the mouth with hands that have scratched the perianal area. Person-to-person transmission can also occur through handling of contaminated clothes or bed linens. Enterobiasis may also be acquired through surfaces in the environment that are contaminated with pinworm eggs (e.g., curtains, carpeting). Some small number of eggs may become airborne and inhaled. These would be swallowed and follow the same development as ingested eggs. Following ingestion of infective eggs, the larvae hatch in the small intestine and the adults establish themselves in the colon. The time interval from ingestion of infective eggs to ovi-position by the adult females is about one month. The life span of the adults is about two months. Gravid females migrate nocturnally outside the anus and oviposit while crawling on the skin of the perianal area. The larvae contained inside the eggs develop (the eggs become infective) in 4 to 6 hours under optimal conditions. Retro-infection, or the migration of newly hatched larvae from the anal skin back into the rectum, may occur but the frequency with which this happens is unknown.

### Disease

The most common clinical manifestation of a pinworm infection is an itchy anal region. When the infection is heavy, there can be a secondary bacterial infection due to the irritation and scratching of the anal area. Often the patient will complain of teeth grinding, and insomnia due to disturbed sleep or even abdominal pain or appendicitis. Infection of the female genital tract has been well reported.

### Diagnosis

A person infected with pinworm is often asymptomatic, but itching around the anus is a common symptom. Diagnosis of pinworm can be reached from three simple techniques. The first option is to look for the worms in the perianal region 2 to 3 hours after the infected person is asleep. The second option is to touch the perianal skin with transparent tape to collect possible pinworm eggs around the anus first thing in the morning. If a person is infected, the eggs on the tape will be visible under a microscope. The tape method should be conducted on 3 consecutive mornings right after the infected person wakes up and before he/she does any washing. Since anal itching is a common symptom of pinworm, the third option for diagnosis is analyzing samples from under fingernails under a microscope. An infected person who has scratched the anal area may have picked up some pinworm eggs under the nails that could be used for diagnosis.

Since pinworm eggs and worms are often sparse in stool, examining stool samples is not recommended. Serologic tests are not available for diagnosing pinworm infections.

### Treatment

The medications used for the treatment of pinworm are mebendazole, pyrantel pamoate and albendazole. All three of these drugs are to be given in 1 dose at first and then another single dose 2 weeks later. The medication does not reliably kill pin-

worm eggs. Therefore, the second dose is to prevent re-infection by adult worms that hatch from any eggs not killed by the first treatment. Health practitioners and parents should weigh the health risks and benefits of these drugs for patients under 2 years of age.

The safety of drugs used to treat pinworm have not been studied for pregnant women. If the infection is compromising the pregnancy (i.e. weight loss, sleeplessness) then treatment can be considered, but should be withheld until the 3rd trimester when the risk, if any, to the fetus is likely to be reduced. Breastfeeding should not be withheld during mebendazole therapy. Only about 2%-10% of an oral dose is absorbed and as expected, the amounts of the drug excreted in milk are below the level of detection and appear to be clinically insignificant. Excretion in breast milk of the other drugs used to treat pinworm is not as well characterized.

Repeated infections should be treated by the same method as the first infection. In households where more than one member is infected or where repeated, symptomatic infections occur, it is recommended that all household members be treated at the same time. In institutions, mass and simultaneous treatment, repeated in 2 weeks, can be effective.

### Prevention & Control

Washing hands with soap and warm water after using the toilet, changing diapers and before handling food is the most successful way to prevent pinworm infection. In order to stop the spread of pinworm and possible re-infection, people who are infected should bathe every morning to help remove a large amount of the eggs on the skin. Showering is a better method than taking a bath, because showering avoids potentially contaminating the bath water with pinworm eggs. Infected people should not co-bathe with others during their time of infection.

Also, infected people should comply with good hygiene practices such as washing their hands with soap and warm water after using the toilet, changing diapers and before handling food. They should also cut fingernails regularly and avoid biting the nails and scratching around the anus. Frequent changing of underclothes and bed linens first thing in the morning is a great way to prevent possible transmission of eggs in the environment and risk of reinfection. These items should not be shaken and should be carefully placed into a receptacle and laundered in hot water followed by drying in the hot sun to kill any eggs that may be there.

In institutions, day care centers and schools, control of pinworm can be difficult, but mass drug administration during an outbreak can be successful. Teach children the importance of washing hands to prevent infection.

### Source

Parasites-Enterobiasis, available at <http://www.cdc.gov/parasites/pinworm/>

Compiled by Dr.H.H.W.S.B Herath of the Epidemiology Unit

Table 1: Selected notifiable diseases reported by Medical Officers of Health 22nd - 28th Aug 2015 (35th Week)

RDHS Division	Dengue Fever		Dysentery		Encephalitis		Enteric Fever		Food Poisoning		Leptospirosis		Typhus Fever		Viral Hepatitis		Human Rabies		Chickenpox		Meningitis		Leishmaniasis		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	115	6275	3	138	0	8	0	70	0	100	5	203	0	8	0	25	0	3	6	336	0	27	0	0	0	81	19
Gampaha	52	2751	2	65	0	6	1	25	0	25	3	257	0	8	2	104	0	0	5	181	1	19	0	2	93	7	
Kalutara	19	998	1	72	0	4	0	32	0	72	2	218	0	3	1	24	0	2	5	215	0	36	0	0	69	31	
Kandy	13	816	0	85	0	6	1	27	1	34	3	84	1	49	0	107	0	0	3	163	0	12	0	11	87	13	
Matale	2	340	0	35	0	1	0	8	0	5	0	48	0	8	0	25	0	0	1	20	4	16	1	14	62	38	
NuwaraEliya	0	116	4	256	0	3	0	15	0	7	1	28	1	48	0	43	0	0	2	99	1	41	0	1	85	15	
Galle	25	539	1	60	0	3	0	7	0	19	3	167	3	55	0	7	0	0	5	197	0	38	0	2	75	25	
Hambantota	1	217	0	24	0	1	0	8	0	24	0	69	0	38	0	26	0	0	0	87	0	11	8	217	83	17	
Matara	6	278	1	51	0	6	0	4	0	44	3	116	2	27	1	26	0	0	5	182	0	16	7	90	100	0	
Jaffna	13	1236	19	602	0	9	0	157	0	63	0	14	2	540	0	10	0	2	0	164	1	15	0	0	100	0	
Kilinochchi	0	51	0	65	0	0	0	10	0	31	0	1	0	21	0	0	0	1	0	15	0	0	0	0	25	75	
Mannar	0	77	0	9	0	1	0	5	0	3	0	8	0	20	0	0	0	0	0	7	0	0	0	1	80	20	
Vavuniya	1	92	0	16	0	6	1	57	4	11	0	17	0	13	0	1	0	2	0	36	1	12	1	6	100	0	
Mullaitivu	2	113	0	23	0	2	0	11	0	1	0	5	0	9	0	3	0	1	0	5	0	3	0	5	60	40	
Batticaloa	0	1317	3	236	0	6	0	25	0	139	0	12	0	3	0	10	0	1	1	43	0	16	0	0	36	64	
Ampara	1	41	0	34	0	1	0	1	0	10	0	11	0	2	0	4	0	0	1	166	0	5	0	3	43	57	
Trincomalee	0	511	0	44	0	0	1	30	0	35	0	14	0	19	0	7	0	1	2	73	0	6	0	2	67	33	
Kurunegala	23	963	3	128	0	2	0	6	0	13	1	200	1	28	0	33	0	6	2	315	0	29	4	94	81	19	
Puttalam	3	541	0	37	0	4	0	7	0	9	0	25	0	18	0	1	0	0	2	39	1	24	0	2	46	54	
Anuradhapura	1	302	3	60	0	1	0	3	0	58	2	182	0	19	0	12	0	1	1	136	1	25	3	238	58	42	
Polonnaruwa	4	138	0	29	0	3	0	7	0	3	0	50	0	1	0	4	0	0	0	93	0	18	0	62	43	57	
Badulla	2	418	3	151	0	6	0	9	0	12	0	53	3	87	2	149	0	2	4	155	2	65	0	6	71	29	
Monaragala	4	152	2	87	0	4	0	14	0	4	1	135	1	62	0	88	0	1	2	77	0	18	0	25	91	9	
Ratnapura	9	742	3	223	0	12	0	37	0	8	3	241	1	50	5	169	0	1	0	95	0	45	0	15	50	50	
Kegalle	11	425	0	53	0	8	0	57	0	9	5	226	2	38	1	71	0	0	3	164	0	40	0	0	73	27	
Kalmunei	0	439	0	93	0	1	0	1	0	43	0	7	0	0	0	1	0	0	2	91	0	9	0	0	38	62	
<b>SRILANKA</b>	<b>307</b>	<b>19888</b>	<b>48</b>	<b>2676</b>	<b>0</b>	<b>104</b>	<b>4</b>	<b>633</b>	<b>5</b>	<b>782</b>	<b>32</b>	<b>2391</b>	<b>17</b>	<b>1174</b>	<b>12</b>	<b>950</b>	<b>0</b>	<b>24</b>	<b>52</b>	<b>3154</b>	<b>12</b>	<b>546</b>	<b>12</b>	<b>24</b>	<b>796</b>	<b>71</b>	<b>29</b>

Source: Weekly Returns of Communicable Diseases (WRCD).  
 \*T=Timeliness refers to returns received on or before 28th August, 2015. Total number of reporting units 337. Number of reporting units data provided for the current week. 243 C\*\*\_Completeness  
 A = Cases reported during the current week. B = Cumulative cases for the year.

**Table 2: Vaccine-Preventable Diseases & AFP**

**22<sup>nd</sup> - 28<sup>th</sup> Aug 2015 (35<sup>th</sup> Week)**

Disease	No. of Cases by Province									Number of cases during current week in 2015	Number of cases during same week in 2014	Total number of cases to date in 2015	Total number of cases to date in 2014	Difference between the number of cases to date in 2014 & 2015
	W	C	S	N	E	NW	NC	U	Sab					
AFP*	00	00	00	00	01	00	00	01	00	02	01	51	59	-15.5%
Diphtheria	00	00	00	00	00	00	00	00	00	00	00	00	00	0%
Mumps	02	00	02	00	00	01	00	00	00	05	09	260	501	-48.1%
Measles	44	04	07	00	00	04	01	03	04	67	33	2009	2526	-20.4%
Rubella	00	00	00	00	00	00	00	00	00	00	00	08	14	-43.1%
CRS**	00	00	00	00	00	00	00	00	00	00	00	00	04	-100%
Tetanus	00	00	00	00	00	00	00	00	00	00	00	14	10	+40%
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	07	21	-66.6%
Whooping Cough	00	00	00	00	00	00	00	00	00	00	00	59	39	+51.2%
Tuberculosis	56	41	18	12	05	32	05	07	37	213	291	6763	6636	+2.1%

**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

AFP and all clinically confirmed Vaccine Preventable Diseases except Tuberculosis and Mumps should be investigated by the MOH

**Dengue Prevention and Control Health Messages**

**Look for plants such as bamboo, bohemia, rampe and banana in your surroundings and maintain them**

**PRINTING OF THIS PUBLICATION IS FUNDED BY THE WORLD HEALTH ORGANIZATION (WHO).**

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](mailto:chepid@sltnet.lk). Prior approval should be obtained from the Epidemiology Unit before publishing data in this publication

**ON STATE SERVICE**

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