



# WEEKLY EPIDEMIOLOGICAL REPORT

A publication of the Epidemiology Unit  
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## Enterobiasis-An itchy problem

### Background

Pinworm is a small, thin, white roundworm (nematode) called *Enterobius vermicularis* that sometimes lives in the colon and rectum of humans. Pinworms are about the length of a staple. Pinworm infection occurs worldwide. Pinworms are particularly common in children, with prevalence rates in this age group having been reported as high as 61% in India, 50% in England, 39% in Thailand, 37% in Sweden, and 29% in Denmark

### At risk population

Pinworm infection occurs worldwide and affects persons of all ages and socioeconomic levels. Pinworm infection occurs most commonly among

- School-aged and preschool-aged children
- Institutionalized persons
- Household members and caretakers of persons with pinworm infection.

Pinworm infection often occurs in more than one person in the household and institutional settings. Child care centers often are the site of cases of pinworm infection.

### Signs and symptoms

Pinworm infection causes itching around the anus which can lead to difficulty in sleeping and restlessness. Symptoms are caused by the female pinworm laying her eggs. Symptoms of pinworm infection usually are mild and some infected people have no symptoms.

### Life cycle of the Pin worm

The entire lifecycle (from egg to adult) of the pin worm takes place in the gut of a

single human host.

The lifecycle begins with eggs being ingested. The eggs hatch in the duodenum (i.e., first part of the small intestine). The emerging pinworm larvae grow and migrate through the small intestine towards the colon (i.e. large intestine). Females survive for 5 to 13 weeks, and males about 7 weeks. The male and female pinworms mate in the ileum (i.e. last part of the small intestine), where after the male pinworms usually die and are passed out with stools. The gravid female pinworms settle in the first part of the large intestine, where they attach themselves to the mucosa and ingest colonic contents. Almost the entire body of a gravid female becomes filled with eggs. The estimations of the number of eggs in a gravid female pinworm range from about 11,000 to 16,000. The egg-laying process begins approximately five weeks after initial ingestion of pinworm eggs by the human host. The gravid female pinworms migrate towards the rectum and emerge from the anus, and while moving on the skin near the anus, the female pinworms deposit eggs either through

- Contracting and expelling the eggs
- Dying and then disintegrating
- Bodily rupture due to the host scratching the worm.

After depositing the eggs the female becomes opaque and dies. The reason why the female emerges from the anus is to obtain oxygen necessary for maturation of the eggs. The eggs are hardy and can remain viable (i.e., infectious) in a moist

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environment for up to three weeks. They do not tolerate heat well, but can survive in low temperatures. Two thirds of the eggs are still viable after 18 hours at -8 degrees Celsius (18 °F).

The surface of the eggs is sticky when laid and the eggs are readily transmitted from their initial deposit near the anus to fingernails, hands, night-clothing and bed linen. From here, eggs are further transmitted to food, water, furniture, toys, bathroom fixtures and other objects. Household pets often carry the eggs in their fur, while not actually being infected. Dust containing eggs can become airborne and widely dispersed when dislodged from surfaces, for instance when shaking out bed clothes and linen. Consequently the eggs can enter the mouth and nose through inhalation and be swallowed later. Although pinworms do not strictly multiply inside the body of their human host, some of the pinworm larvae may hatch on the anal mucosa, and migrate up the bowel and back into the gastrointestinal tract of the original host. This process is called *retroinfection*.

#### Mode of spread

Pinworm infection is spread by the fecal oral route, that is by the transfer of infective pinworm eggs from the anus to someone's mouth, either directly by hand or indirectly through contaminated clothing, bedding, food or other articles.

Pinworm eggs become infective within a few hours after being deposited on the skin around the anus and can survive for 2 to 3 weeks on clothing, bedding or other objects. People become infected usually unknowingly by swallowing infective pinworm eggs that are on fingers, clothing, bedding and other contaminated objects and surfaces or that are under fingernails. Because of their small size, pinworm eggs sometimes can become airborne and get ingested while breathing. Pinworm infections rarely spread through the use of swimming pools. Humans are considered to be the only hosts of pinworm.

#### Diagnosis

Perianal itching during the night strongly suggests pinworm infection. Diagnosis is made by identifying the worm or its eggs. Worms can sometimes be seen on the skin near the anus or on underclothing, pajamas or sheets about 2 to 3 hours after falling asleep.

Pinworm eggs can be collected and examined using the "tape test" as soon as the person wakes up. This "test" is done by firmly pressing the adhesive side of clear transparent cellophane tape to the skin around the anus. The eggs stick to the tape and the tape can be placed on a slide and looked at under a microscope. This test should be done as soon as the person wakes up in the morning before they wash, bathe, go to the toilet or get dressed because washing, bathing or having a bowel movement can remove eggs from the skin. The "tape test" should be done on three consecutive

mornings to increase the chance of finding pinworm eggs. Because itching and scratching of the anal area is common in pinworm infection, samples taken from under the fingernails may also contain eggs. Pinworm eggs are rarely found in routine stool or urine samples.

#### Treatment

The medications used for the treatment of pinworm are Mebendazole, Pyrantel pamoate and Albendazole. Treatment involves two doses of medication with the second dose being given 2 weeks after the first dose. All household contacts and caretakers of the infected person should be treated at the same time. Re-infection can occur easily so strict observance of good hand hygiene is essential (e.g. proper hand washing, maintaining clean short fingernails, avoiding nail biting, avoiding scratching the perianal area).

Daily morning bathing and daily changing of underwear helps remove a large proportion of eggs. Showering may be preferred to avoid possible contamination of bath water. It is a good idea to avoid co-bathing and the reuse or sharing of washcloths, especially in the case of small children. Careful handling and frequent changing of underclothing, night clothes, towels, and bedding can help reduce infection, re-infection, and environmental contamination with pinworm eggs. These items should be laundered in hot water, especially after each treatment of the infected person and after each usage of washcloths until infection is cleared.

Control can be difficult in child care centers and schools because the rate of re-infection is high. In institutions, mass and simultaneous treatment, repeated in 2 weeks can be effective. Hand hygiene is the most effective method of prevention.

#### Prevention

Strict observance of good hand hygiene is the most effective means of preventing pinworm infection. This includes washing hands with soap and warm water after using the toilet, changing diapers, and before handling food. Keep fingernails clean and short, avoid fingernail-biting, and avoid scratching the skin in the perianal area. Teach children the importance of washing hands to prevent infection. Careful handling (avoid shaking) and frequent laundering of underclothes, night clothes, towels and bed sheets using hot water also helps reduce the chance of infection and re-infection by reducing environmental contamination with eggs.

#### Sources

Enterobiasis, available from

<http://www.cdc.gov/parasites/pinworm/>  
<http://en.wikipedia.org/wiki/Enterobiasis>

Compiled by  
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**Table 1: Vaccine-preventable Diseases & AFP**

02<sup>nd</sup> – 08<sup>th</sup> July 2011 (27<sup>th</sup> Week)

Disease	No. of Cases by Province									Number of cases during current week in 2011	Number of cases during same week in 2010	Total number of cases to date in 2011	Total number of cases to date in 2010	Difference between the number of cases to date in 2011 & 2010
	W	C	S	N	E	NW	NC	U	Sab					
Acute Flaccid Paralysis	00	00	00	00	00	00	00	00	00	00	02	48	47	+ 02.0 %
Diphtheria	00	00	00	00	00	00	00	00	00	-	-	-	-	-
Measles	00	00	00	00	00	00	00	00	00	00	01	78	55	+ 41.8 %
Tetanus	00	00	00	00	00	00	00	00	00	00	00	12	13	- 07.7 %
Whooping Cough	01	00	00	00	00	02	00	00	00	03	00	23	14	+ 64.3 %
Tuberculosis	28	01	05	01	24	00	02	06	10	77	196	4664	4915	- 05.1 %

**Table 2: Newly Introduced Notifiable Disease**

02<sup>nd</sup> – 08<sup>th</sup> July 2011 (27<sup>th</sup> Week)

Disease	No. of Cases by Province									Number of cases during current week in 2011	Number of cases during same week in 2010	Total number of cases to date in 2011	Total number of cases to date in 2010	Difference between the number of cases to date in 2011 & 2010
	W	C	S	N	E	NW	NC	U	Sab					
Chickenpox	08	02	05	00	04	04	07	00	00	36	30	2524	1952	+ 29.3 %
Meningitis	01 KL=1	01 KD=1	00	00	01 KM=1	02 KN=2	00	01 BD=1	05 KG=5	11	22	475	999	- 52.4 %
Mumps	03	12	16	00	08	02	06	00	11	58	15	1422	544	+ 161.4 %
Leishmaniasis	00	00	04 HB=4	00	01 TR=1	02 KN=2	07 AP=7	00	00	14	05	382	165	+ 131.5 %

**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.  
**DPDHS 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, Whooping Cough, Chickenpox, Meningitis, Mumps.

**Special Surveillance:** Acute Flaccid Paralysis.

Leishmaniasis is notifiable only after the General Circular No: 02/102/2008 issued on 23 September 2008. .

**Dengue Prevention and Control Health Messages**

**Reduce, Reuse or Recycle the plastic and polythene collected in your home and help to minimize dengue mosquito breeding.**

**Table 4: Selected notifiable diseases reported by Medical Officers of Health**  
02<sup>nd</sup> - 08<sup>th</sup> July 2011 (27<sup>th</sup> Week)

DPDHS Division	Dengue Fever / DHF*		Dysentery		Encephalitis		Enteric Fever		Food Poisoning		Leptospirosis		Typhus Fever		Viral Hepatitis		Human Rabies		Returns Received Timely**
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	%
Colombo	301	4632	3	118	0	5	3	76	34	46	9	247	0	6	1	31	0	2	77
Gampaha	57	1497	0	79	0	11	1	29	0	17	3	343	1	18	5	76	0	4	53
Kalutara	34	689	1	91	0	4	2	30	1	20	7	175	1	1	1	5	0	0	75
Kandy	49	366	13	256	0	4	0	21	1	32	4	104	3	72	3	36	0	0	87
Matale	11	182	9	90	0	3	0	18	9	17	5	138	0	12	0	5	0	0	100
Nuwara	8	87	13	248	0	3	1	32	0	89	2	30	1	48	2	14	0	1	46
Galle	14	393	4	52	0	5	1	7	0	5	3	103	1	20	0	7	0	2	84
Hambantota	13	283	1	24	0	4	0	2	0	18	3	400	2	37	0	5	0	0	100
Matara	19	265	1	46	0	2	0	8	0	10	2	197	1	46	2	14	0	1	88
Jaffna	8	179	7	120	0	3	9	165	8	61	0	2	2	182	0	16	0	1	100
Kilinochchi	0	36	0	12	0	3	0	7	0	10	0	2	0	8	0	3	0	0	25
Mannar	0	22	1	11	0	0	0	18	0	78	1	12	0	30	0	2	0	0	100
Vavuniya	3	57	1	23	0	10	0	8	0	39	1	36	0	2	0	1	0	0	100
Mullaitivu	0	14	1	30	0	1	0	2	0	4	0	5	0	1	0	2	0	0	25
Batticaloa	8	627	8	479	0	4	0	5	0	11	0	20	0	1	0	2	0	4	71
Ampara	1	84	0	68	0	1	1	8	0	24	0	54	0	1	0	7	0	0	29
Trincomalee	6	111	8	501	0	2	0	2	0	8	1	82	0	4	0	6	0	0	83
Kurunegala	25	457	5	197	0	6	3	61	0	46	4	1346	0	47	2	21	1	4	70
Puttalam	3	299	4	115	0	0	1	18	0	9	0	89	0	15	0	6	0	1	58
Anuradhapu	1	155	0	79	0	1	0	2	0	24	1	230	0	16	1	9	0	1	47
Polonnaruw	3	182	4	80	0	1	0	9	0	12	0	72	0	1	2	12	0	0	71
Badulla	73	308	13	170	0	5	1	42	0	7	7	43	4	44	4	34	0	0	88
Monaragala	3	134	1	56	0	4	0	21	0	10	2	165	1	48	0	40	0	0	91
Ratnapura	22	492	13	313	0	5	0	30	0	16	7	323	0	23	0	25	0	2	78
Kegalle	29	329	4	71	0	12	1	50	0	22	6	242	1	19	8	82	0	0	82
Kalmune	1	21	4	418	0	0	0	0	0	15	0	4	0	2	0	2	0	1	77
<b>SRI LANKA</b>	<b>692</b>	<b>11901</b>	<b>119</b>	<b>3747</b>	<b>00</b>	<b>99</b>	<b>24</b>	<b>671</b>	<b>53</b>	<b>650</b>	<b>68</b>	<b>4464</b>	<b>18</b>	<b>704</b>	<b>31</b>	<b>463</b>	<b>01</b>	<b>24</b>	<b>75</b>

Source: Weekly Returns of Communicable Diseases WRCD).

\*Dengue Fever / DHF refers to Dengue Fever / Dengue Haemorrhagic Fever.

\*\*Timely refers to returns received on or before 08<sup>th</sup> July, 2011 Total number of reporting units =327. Number of reporting units data provided for the current week: 247

A = Cases reported during the current week. B = Cumulative cases for the year.

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**ON STATE SERVICE**

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