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# Helminth infections (worms)

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## 1. Helminth infections (worms)

We've all heard wild stories of returned travellers with giant worms in their gut, enticed out with a dangling piece of steak. But when it comes to worm infections, what are we likely to come across in UK primary care?

*This article was last updated in May 2024.*

### 1.1. Helminth infections: an overview

The most common worm infections in the UK are caused by threadworm (*Enterobius vermicularis*), also known as pinworm. Most of these are managed in the community and don't come to our attention unless they cause complications or require off-licence prescribing. Other worm

infections are much rarer, but worth knowing about, particularly for those who work in migrant health, with refugees or with returned travellers. The [UK Government Migrant Health Guide](#) is a useful resource when considering helminth infections in migrants. Even if asymptomatic, we should have a low threshold for considering helminth infections in this population (BJGP 2018;58(670):238).

And did you know that a love of sushi may have some wriggly consequences?! Read on to find out more...

## Helminths that can be caught in the UK

- Threadworm (*Enterobius vermicularis*).
- Toxocariasis.
- Anisakis (from raw fish).
- Cutaneous larva migrans.

## Helminth infections to consider in migrants or returning travellers

- Hook worm, whip worm and round worms.
- Strongyloidiasis.
- Schistosomiasis.

### 1.2. Threadworm

Threadworm infection is almost ubiquitous among young children, and adults are also frequently affected. Threadworms cause an intensely itchy

bottom, mostly at night, when the female worm comes out to lay her eggs around the anus. Threadworms are white or beige and 2–13mm in length. They can sometimes be seen around the anus or in the stool. Each female can lay around 15 000 eggs. Scratching the bottom transfers eggs to the fingers and under the fingernails, where they can be ingested, leading to a cycle of reinfection. Eggs are quite hardy, lasting up to 2 weeks, and can be deposited around the house, often infecting other family members and making it hard to eradicate infection once it takes hold (Am Fam Physician. 2004;69(5):1161-1169). Stool testing for threadworm is not usually necessary.

## Symptoms

Common	Less common
<ul style="list-style-type: none"><li>• Anal itch.</li><li>• Poor sleep.</li><li>• Irritability.</li></ul>	<ul style="list-style-type: none"><li>• Vaginal itch and dysuria.</li><li>• Abdominal pain (can mimic appendicitis).</li><li>• Dysphagia.</li></ul>

(BMJ Case Rep. 2017 Oct 6;2017, BMJ 2014;349:g6864)

## 1.3. Treatment

Treatment of threadworm infection is with anti-helminthics and hygiene measures, or hygiene measures alone. Hygiene measures are onerous to follow (washing sheets daily for several days – really?) so it's easy to get into a cycle of repeated infections. No nursery or school exclusion is required.



<p><b>Mebendazole</b></p>	<ul style="list-style-type: none"> <li>• Hygiene measures should be used alongside medication, and be continued for 2 weeks after treatment or for 6 weeks if used alone, e.g. during pregnancy (<a href="#">BNF – mebendazole</a>, accessed May 2024).</li> <li>• 100mg orally in a single dose. Available OTC.</li> <li>• Not licensed under 2y; off-label prescription 6m–2y.</li> </ul> <p><b>Use in pregnancy and breastfeeding:</b></p> <ul style="list-style-type: none"> <li>• <b>Pregnancy:</b> manufacturer advises avoid in pregnancy: toxicity in animal studies. <ul style="list-style-type: none"> <li>• Avoid in first trimester.</li> <li>• Consider after first trimester if hygiene measures fail – consider risk vs. benefit. Off-label.</li> </ul> </li> <li>• <b>Breastfeeding:</b> manufacturer advises avoiding, but the amount in breast milk is too small to be harmful.</li> </ul>
<p><b>Hygiene measures</b></p>	<p>May be used alone if &lt;6m of age or pregnant (<a href="#">NHS – threadworms</a>, accessed May 2024).</p> <ul style="list-style-type: none"> <li>• Wash hands and scrub under fingernails after using toilet, before eating and after changing nappies.</li> <li>• Encourage children to wash hands regularly.</li> <li>• Rinse toothbrushes before using them.</li> <li>• Shower each morning.</li> <li>• Disinfect kitchen and bathroom surfaces with hot water.</li> <li>• Vacuum and dust with a damp cloth.</li> <li>• Everyone in house to wear underwear at night and change it in the morning to reduce the ability to scratch anal areas and re-contaminate fingers.</li> <li>• Sheets and towels to be washed daily in hot water for several days following treatment.</li> <li>• Hygiene measures should continue for 6 weeks if used alone.</li> </ul>

## Perianal streptococcal dermatitis

Perianal streptococcal dermatitis may be misdiagnosed as threadworm infection in children. Always examine the anus of a child who has not responded to empirical treatment for threadworm (BMJ 2009;338:b1517). The infection, caused by group A *S.pyogenes*, occurs mainly in prepubescent children, with a peak incidence between 3 and 5 years.

It presents with:

- Pain around the anus, worse on opening the bowels.
- Well circumscribed, circumferential erythema around the anus.
- Fissuring.

It can be diagnosed by taking a perianal swab, which will culture a pure growth of group A streptococcus.

Treatment is usually with oral penicillin or clarithromycin (Eur J Pediatr;2021:180,1867). Consider safeguarding (BMJ 2009;338:b1517).

## 1.4. Toxocariasis

Toxocariasis is a soil-transmitted helminth from cats (*Toxocara cati*), dogs (*Toxocara cani*) and foxes (*Toxascaris leonina*). A study in the East Midlands found that almost 8% of soil samples in public parks were contaminated with eggs of the *Toxocara* species, hence the importance of immediate collection and disposal of dog faeces. Children are at highest risk of infection. Most cases are asymptomatic or have mild non-specific

symptoms, but, rarely, complications can occur, including (DTB 2023; 61:7):

- Ocular: unilateral visual loss, eye inflammation and damage to retina. Most common in children 5–10y.
- Visceral: fever, fatigue, cough, wheeze, abdominal pain or cardiac problems, including pericarditis and myocarditis. Most common in children under 3y.
- Neurological: epilepsy, meningoencephalitis.

Treatment with mebendazole or albendazole is only required for symptomatic infections.

Toxocariasis has also been implicated in development of asthma (Ann Allergy Asthma Immunol. 2014 Aug;113(2):187).

## 1.5. Anisakiasis: the problem with sushi!

Raw or undercooked seafood, including wild-caught salmon, cod, herring and squid from UK waters, may be contaminated with the worm species *Anisakis*. This can elicit an allergic reaction with angioedema, urticaria or anaphylaxis. The worm can also invade the stomach, intestine or peritoneal cavity. Gastrointestinal infection often presents with fever, abdominal pain, nausea and vomiting, mimicking an acute surgical abdomen. Complications such as intestinal bleeding, bowel obstruction, perforation and peritonitis have also been reported (BMJ Case Rep 2017, published online: 17 May 2017). It is well-recognised in Japan, but rare in the UK. Cooking or freezing of fish will kill the worms, and the Food Standards Agency requires freezing of fish intended to be consumed raw prior to sale or consumption. There is currently no risk with farmed fish ([Food Standards Agency – freezing of fish and fishery products](#)).

## 1.6. Cutaneous larva migrans: a worm under the skin

Cutaneous larva migrans is due to infection with animal hookworm from dogs, cats and other animals. Humans usually become infected by walking barefoot on sandy beaches or on moist soil contaminated with animal faeces. The worm penetrates the skin of the feet, but cannot penetrate past the basement membrane. Instead, it wanders around lost until it dies 4–8 weeks later. Humans are a dead-end host and the worm is unable to reproduce in humans. During its wanderings, it can be seen as a raised pink, serpiginous, migratory and intensely itchy rash under the skin. No treatment is required because the infection is self-limiting, but treatment with topical or oral anti-helminthics can shorten the duration of the infection and reduce itch. It is usually acquired overseas (where walking on the beach barefoot is more common than in the UK *and* beaches are more likely to be contaminated with animal faeces), but locally-acquired cases have been reported in joggers who get splashed with moist soil and in gardeners (BMJ Case Rep Published online: 13 Nov 2015).

## 1.7. Migrant health and helminth infections

### Hookworm, roundworm and whipworm (in migrants/returning travellers)

Hookworm (*Necator americanus* and *Ancylostoma duodenale*), roundworm (*Ascaris lumbricoides*) and whipworm (*Trichuris trichiuria*) are all transmitted through ingestion of soil contaminated by faeces containing eggs. This occurs in areas of the world with poor sanitation. Up to 20% of migrants



from endemic countries may have helminth infections on arrival in the UK. Many infections are asymptomatic and self-limiting. Consider soil-transmitted helminth infection in migrants from the Indian subcontinent, Indonesia or sub-Saharan Africa with:

- Eosinophilia: up to 60% of eosinophilia in this group is likely to be due to helminth infection.
- Unexplained gastrointestinal symptoms.
- Anaemia: hookworm infection is a major cause of anaemia in endemic areas.

Treatment is with oral mebendazole 100mg twice daily for 3 days.

## **Strongyloides (in migrants/returning travellers)**

Strongyloides infection (*Strongyloides stercoralis*) is also transmitted via contaminated soil, but, here, the larvae penetrate the skin, usually the foot, causing an intensely itchy rash, before migrating to the blood stream to reach the lungs. From the lungs, they reach the gastrointestinal tract through swallowed mucous. It is endemic in tropical and subtropical areas, including South and Southeast Asia, the Caribbean, sub-Saharan Africa, South America and northern Australia, but cases have also originated from southern Italy and Spain.

In Strongyloides:

- Up to 60% of infections are asymptomatic.
- Eosinophilia may be the only clue.
- Around 20% will have vague gastrointestinal symptoms such as nausea, vomiting, abdominal pain and bloating.
- Invasion of the lung can cause recurrent respiratory symptoms,

including fever, wheeze and pneumonitis.

- Infection may be lifelong.
- Reactivation of infection with serious complications may occur in immunosuppression, e.g. steroid use or chemotherapy.
- Treatment is with oral ivermectin (unlicensed).

(BMJ 2013;347:f4610)

## **Schistosomiasis (in migrants/returning travellers)**

There are two main species of Schistosome: *Schistosoma haematobium* (urogenital) and *Schistosoma mansoni* (intestinal). They are acquired from infected snails in tropical fresh water, particularly in sub-Saharan Africa where it may affect up to 20% of residents and travellers. The freshwater snail is an intermediate host. Chronic infection can lead to long-term complications, hence the importance of detection and treatment. Treatment is with praziquantel ([WHO – schistosomiasis](#), accessed March 2024).

-	Symptoms	Complications
<p><b><i>S haematobium</i></b> <b>(urogenital)</b> <b>infection</b></p>	<ul style="list-style-type: none"> <li>• Haematuria (micro or macroscopic).</li> <li>• In women: dyspareunia, vaginal nodules, vaginal bleeding.</li> </ul>	<ul style="list-style-type: none"> <li>• Kidney damage.</li> <li>• Bladder cancer.</li> <li>• Infertility in men.</li> <li>• Ectopic pregnancy.</li> </ul>
<p><b><i>S mansoni</i></b> <b>(intestinal) infection</b></p>	<ul style="list-style-type: none"> <li>• Abdominal pain, diarrhoea, blood in stool.</li> </ul>	<ul style="list-style-type: none"> <li>• Liver/spleen enlargement.</li> <li>• Ascites.</li> <li>• Portal venous hypertension.</li> </ul>



### Helminth infection (worms)

- Threadworm infections are common. Medications are not licensed in pregnancy or under 2y of age.
- Perianal streptococcal dermatitis can mimic threadworm infection.
- Anisakiasis from eating raw fish and seafood can present as an acute abdomen.
- Cutaneous larva migrans causes a distinctive migratory, raised, pink, serpiginous and itchy rash.
- Think of worm infections in returned travellers, migrants and refugees. Eosinophilia may be a clue.



### Useful resources:

Websites (all resources are hyperlinked for ease of use in Red Whale Knowledge)

- [NHS - worms in humans](#) (hygiene measures for threadworm)
- [Dermnet NZ - larva migrans](#)
- [Dermnet NZ - perianal streptococcal dermatitis](#)

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