

# BRING THREADWORMS OUT INTO THE OPEN AND TACKLE THIS ITCHY PROBLEM

## Advice for School Nurses

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Like head lice infection, threadworm infestation is very common, yet many parents do not know how to recognise if their child has threadworm. Diagnosis may be complicated by the fact that many children with threadworm are symptom-free, yet can still infect those around them. The School Nurse is very well placed to assist in the diagnosis, management and prevention of this common parasitic infection.

### Threadworm

Threadworm known as pinworm, or *Enterobius vermicularis*, is prevalent throughout the temperate zones of the world and is the most common helminthic (parasitic worm) infection in the UK. *E. vermicularis* is a 2-13 mm, white, slender nematode that dwells in the caecum, the appendix, and the ascending colon of humans. Threadworms are often described as looking like 'small threads of slowly-moving white cotton' and are best seen at night, as this is when the females usually emerge from the anus to lay their eggs.

Following ingestion of the eggs, the larvae hatch in the small intestine and establish themselves in the colon, reaching maturity in approximately two weeks.

### The threadworm life cycle

Eggs on the fingers and under the finger nails transfer between children in schools and to other members of the family. Eggs are transferred into the mouth and swallowed. The eggs hatch and larvae are released in the small intestine. The adult worms establish themselves in the colon. The female adult worm deposits eggs just outside the anus at night – one female worm may lay up to 15,000 eggs before dying.

The itching caused will result in scratching and the collection of eggs on the fingers and under the finger nails. The process of transfer will then be easily repeated.

The eggs can be spread through sharing bath towels and may survive for up to two weeks on clothing, bedding, in carpets and as general household dust.

### Symptoms

Perianal itching is the most common symptom especially at night<sup>1</sup>. This itching or prickling sensation around the perianal area is produced when a gravid female worm migrates to the anal area and inserts her tail pin into the mucosa to deposit eggs. However, infection may be asymptomatic<sup>1</sup> and individuals may present only because threadworms have been seen on the perianal skin or, less commonly, in their stools. It is estimated that as many as nine out of ten patients may not experience intense itching<sup>1</sup>.

In girls, perivaginal itching can also occur. Persistent or heavy threadworm infestation can cause loss of appetite, weight loss, insomnia, enuresis, and irritability.

Complications of threadworm infection are rare, but the most common complication is bacterial infection of the skin around the anus<sup>1</sup>.

### Transmission

Pinworm infection is primarily a condition of children, and parents are typically infected by transmission through their children. In adults, the highest rate of infection occurs in parents aged 30-39 years, typically because of transmission from their children aged 5-10 years<sup>2</sup>. Threadworms are usually passed between children in schools and nurseries where they are in close contact with each other. Sucking fingers, chewing nails and scratching – all everyday activities for younger children – help to spread the threadworm eggs, which are so small they cannot be seen by the naked eye. Transmission may occur through direct contact with contaminated furniture, clothing, towels, bedclothes, or doorknobs.

### Re-infection

Re-infection is fairly common and can occur by directly swallowing or by inhaling and then swallowing the eggs. Occasionally re-infection occurs when the eggs hatch on the mucosa and the larvae migrate back into the rectum.

The following measures should be recommended to help prevent re-infection:

Hygienic measures to prevent re-infection with threadworms

- Keep the nails short
- Wash hands and scrub nails before every meal or snack
- Bath or shower every morning (removes eggs laid at night)
- Wear pyjamas or pants in bed (clean ones every night)
- Change underwear every day
- Disinfect the toilet seat, toilet handle, and door handle regularly
- Damp dust and vacuum bedrooms daily
- Towels should not be shared

### Investigations

If the diagnosis is uncertain, the adhesive tape test for eggs may be useful. The following instructions should be given to the parent:<sup>3</sup>

- Apply transparent adhesive tape to the child's perianal skin first thing in the morning, before wiping or bathing.
- Remove the tape and either stick it to a glass slide or place it in a specimen container (whichever has been provided).

- Take this to the GP surgery so that it can be examined under a microscope either by the GP or the local laboratory.
- If ovoid threadworm eggs are present, these are usually easily seen under a microscope.

Stool examination is much less reliable, and is generally not recommended.

### Treatment

An anthelmintic is generally recommended, combined with strict hygiene measures<sup>4</sup>. Drug treatment has no effect on threadworm eggs only on the worms<sup>1</sup>, therefore effective hygiene measures are essential to prevent the transfer of the eggs from the perianal area.

It is important to recommend that all members of the family are treated, even if they have no symptoms. If possible, treatment should commence on the same day for all

the family. Mebendazole and Piperazine are effective threadworm treatments. Efficacy studies suggest that both Piperazine and Mebendazole produce cure rates of about 90%<sup>1</sup>. Both can be bought from a pharmacy without a prescription.

Mebendazole inhibits the uptake of glucose by the worms and acts mainly in the gut, with very little intestinal absorption. The worms are usually eradicated within a couple of days. Systemic side effects are minimal with mebendazole as the drug is largely unabsorbed. However, mebendazole is not licensed for use in children under two years of age.

Piperazine blocks the neurotransmitter acetylcholine in the worm, leading to paralysis; the worms are then excreted in the faeces. Piperazine may be combined with Senna to assist with removal of the paralysed worm, due to the laxative effect of the Senna.

Piperazine is available either as a tablet or a powder in sachets that can be mixed in water or milk. Prescribing nurses and health visitors can prescribe piperazine or mebendazole for the treatment of threadworms.

For those who are unable (e.g. pregnant or breastfeeding mothers) or unwilling to receive the drug treatment, the infection can be cleared by strict hygiene combined with mechanical removal of the eggs throughout the day until all the worms die or are cleared from the system. It can take around six weeks to break the threadworm life cycle.

Reinfection with threadworm after completing drug therapy is common. This may be due to the ingestion of eggs which may remain infective in the environment for up to 2 weeks after deposition. Therefore a second treatment two weeks after the first may be recommended<sup>4</sup> – again all family members should be treated at the same time.

## The Role of the School Nurse

**Given that up to 40% of children under the age of ten are likely to have threadworm at some stage<sup>5</sup>, the School Nurse is well-placed to assist with diagnosis, recommend or prescribe treatment and initiate effective hand hygiene programmes.**

**Parents** will need reassurance that threadworms are not due to a poor diet or unclean living conditions and can affect anyone. A Threadworm Fact Sheet or general leaflet will help to dispel many of the myths surrounding threadworms.

Useful information to consider in a Fact Sheet may include some of the following:

- Threadworms most commonly affect those aged 5-10 years but may infect the whole family
- The main symptom is intense itching around the anus at night
- The whole family should be treated at the same time with a treatment available from the pharmacy
- Strict hygiene measures are essential to prevent re-infection
- The family pet should not be blamed for threadworms and the only host are humans
- There is no need for an infected child to be excluded from school<sup>6</sup>

It is worth having a letter ready to send to parents if there is an outbreak at school, again reassurance is key and the fact sheet or

leaflet should be included to provide more information.

**Children** need to understand the importance of good hand hygiene which is a key factor in preventing threadworms. The nature of the threadworm life cycle means that habits such as bottom-scratching, thumb-sucking and nail-biting – all common in young children – contribute to the contraction and spread of threadworms. Encouraging regular hand washing is therefore crucial if the threadworm life cycle is to be broken.

Children should be advised to:

Always wash your hands...

- After visiting the toilet
- Before eating or handling food
- After touching animals
- Whenever hands look dirty

**Liaison with teaching/school staff** to discuss the need for effective hand hygiene practices should be undertaken, particularly if there is an outbreak of threadworms. You could consider discussing potential classroom activities focusing on hand hygiene and the use of posters and Handwashing wall charts to help engage the children in the subject.

### Conclusion

Tackling threadworms should be an essential aspect of the school nurse's role, as there is an opportunity to make a real difference to the health of younger children and their families simply by sensitively providing good advice.

**It's time for threadworms to come out into the open and not be overshadowed by head lice!**

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