Illnesses affecting infants and children

Common childhood rashes

Threadworms (pinworms)

Oral thrush

Common childhood rashes

- Most childhood rashes are associated with self-limiting viral infections.
- Some of these rashes fit well-described clinical pictures (e.g. measles) and are described below.
- Others are more difficult to label.
- They may appear as short-lived, fine, flat (macular) or slightly raised (papular) red spots, often on the trunk.

- The spots blanch with pressure (erythematous).
- There is usually associated cold, cough and raised temperature.
- These relatively minor illnesses occur in the first few years of life and settle without treatment.
- Any rash in early childhood, particularly during the first year, can be alarming and frightening for parents.
- Advice, reassurance and referral are needed as appropriate.

What you need to know

When did it start?

Where did it start?

Where did it spread?

Any other symptoms?

Infectious diseases

- Chickenpox
- Measles
- Roseola infantum
- Fifth disease
- German measles
- Meningitis

Rashes that do not blanch

Chickenpox (also known as varicella)

- This is most common in children under 10 years.
- It can occur in adults but is unusual.
- The incubation time (i.e. time between contact and development of the rash) is usually about 2 weeks (11–21 days).
- Sometimes the rash is preceded by a day or so of feeling unwell with a temperature.

- The rash is characteristic and difficult to diagnose when only very few spots are present.
- Typically it starts with small red lumps that rapidly develop into minute blisters (vesicles).
- The vesicles then burst, forming crusted spots over the next few days.
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- The spots mainly occur on the trunk and face but may involve the mucous membranes of the mouth.

- They tend to come out in crops for up to 5 days.
- The rash is often irritating.
- Once the spots have all formed crusts, the individual is no longer contagious.

- NHS Clinical Knowledge Summaries (CKS) advises that exclusion from school or work is not necessary after 6 days from the onset of the rash.

- The whole infection is usually over within 1 week but it may be longer and more severe in adults.

- Sometimes the spots can become infected after scratching, so it can be helpful to advise cutting the child's fingernails short to reduce the chance of this possibility.

Measles

- This is now a less common infection in the more developed countries but a significant cause of childhood mortality on a large scale in developing countries.

- A combined measles, mumps, rubella (MMR) vaccine is given between the ages of 12 and 15 months.

- the provisional number in 2012 for confirmed cases of measles was 2030 (www.hpa.org.uk).

- Many of these occurred in unvaccinated children, which included some in the travelling communities

Table 1 Nature and risk of complications of measles.

Complications	Risk
Diarrhoea	1 in 6
Ear infection	1 in 20
Pneumonia/chest infection	1 in 25
Fits	1 in 200
Meningitis/encephalitis	1 in 1000
Death	1 in 2500–5000
Serious brain complication years later (subacute sclerosing panencephalitis)	1 in 8000 (of children who have measles under 2 years)

- At the time of introduction of the MMR, there were about 86 000 cases per year.
- Measles has an incubation period of about 10 days.
- The measles rash is preceded by 3–4 days of illness with symptoms of cold, cough, conjunctivitis and fever.
- After the first 2 days of this prodromal phase, small white spots (Koplik spots), like grains of salt, can be seen on the inner cheek and gums. The measles rash then follows.

- It starts behind the ears, spreading to the face and trunk.
- The spots are small, red patches (maculae) that will blanch if pressed.
- Sometimes there are so many spots that they merge together to form large red areas.
- In most cases the rash fades after 3 days, at which time the fever also subsides.

- If, however, the fever persists, the cough becomes worse or there is a difficulty in breathing or earache, then medical attention should be sought as complications may be developing.

- Someone with measles is infectious for about 5 days after the rash appears.

Roseola infantum

- Roseola infantum is a viral infection occurring most commonly in the first year of life (but also between 3 months and 4 years of age).
- It can be confused with a mild attack of measles.
- There is a prodromal period of 3–4 days of fever followed by a rash similar to measles but which is mainly confined to the chest and abdomen.
- Once the rash appears there is usually an improvement in symptoms, in contrast to measles, and it lasts only about 24 h.

Fifth disease (erythema infectiosum)

- Fifth disease is another viral infection (parvovirus B19) that usually affects children.
- It does not often cause systemic upset but may cause fever, headache and, rarely, painful joints.
- The rash characteristically starts on the face.
- It particularly affects the cheeks and gives the appearance that the child has been out in a cold wind.
- Fifth disease is sometimes called 'slapped cheek' disease because of the appearance of reddened cheeks.

- The rash then appears on the limbs and trunk as small red spots that blanch with pressure.

- The infection is usually short-lived. Fifth disease can have adverse effects in pregnancy.

- If the infection occurs in the first 20 weeks of gestation, there is an increased chance of miscarriage and a small chance the developing baby will become anaemic.

German measles (rubella)

- German measles is a viral infection that is generally very mild, its main significance being the problems caused to the fetus if the mother develops the infection in early pregnancy.

- The incubation time for German measles is 12–23 days.

- The rash is preceded by mild catarrhal symptoms and enlargement of glands at the back of the neck.

- It usually starts on the face and spreads to the trunk and limbs.
- The spots are very fine and red. They blanch with pressure.
- They do not become confluent as in measles.
- In adults, rubella may be associated with painful joints.
- The rubella rash lasts for 3–5 days.

Meningitis

- Meningitis is a very serious infection that can be caused by bacterial, viral or fungal infections.
- The bacterial causes, which are much more serious than viral causes, include meningococcus, *Haemophilus* and pneumococcus infections.
- In the United Kingdom, there are now vaccines routinely given for meningococcus C, *Haemophilus influenza* B, and pneumococcus.
- Meningococcus can cause a septicaemia (infection spreading throughout the body in the blood) in addition to meningitis alone, causing a typical rash.

- Meningococcal septicaemia usually presents with flu-like symptoms that may rapidly worsen (see Table 2).
- There may be an associated rash that appears as tiny purplish red blotches or bruises.
- (Very small bruises are called petechiae and larger ones, purpura and ecchymoses).
- These bruises do not blanch with pressure.
- The spots will start as a few tiny pinpricks and progress to widespread larger ones which coalesce together.

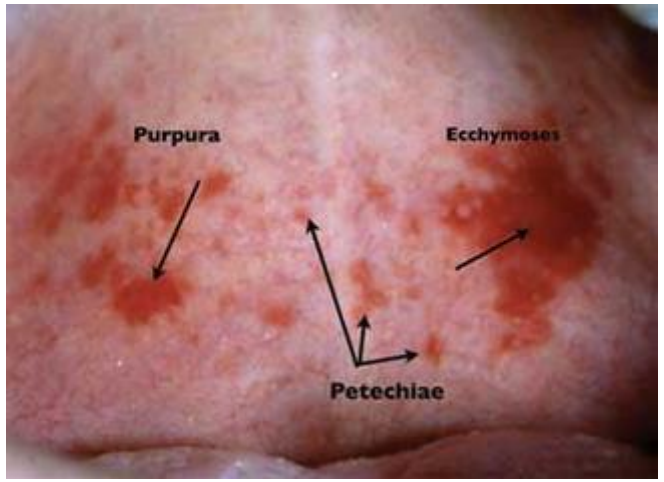

Table 2 Warning symptoms.

Meningitis symptoms in babies	Meningitis symptoms in children and adults
High temperature, fever, possibly with cold hands and feet	High temperature, fever, possibly with cold hands and feet
Vomiting or refusing feeds	Vomiting, sometimes diarrhoea
High-pitched moaning, whimpering cry	Neck stiffness (unable to touch chin to chest)
Blank, staring expression	Joint or muscle pains, sometimes stomach cramps
Pale blotchy complexion	Dislike of bright lights
May be floppy, may dislike being handled, may be fretful	Drowsiness
Difficult to wake or lethargic	Fits
Fontanelle (soft spot) may be tense or bulging	Confusion or disorientation
May have rash	May have rash

- The tumbler or glass test can be used to determine whether or not the rash is serious.
- The side of a glass tumbler should be pressed firmly against the skin.
- If the spots are the small bruises of septicaemia, they will not fade when the tumbler is pressed against the skin.
- Any suspicion of this condition requires emergency medical help.

Rashes that do not blanch

- As a general rule all rashes that do not blanch when pressed (use glass tumbler test described in section on meningitis) ought to be referred to a doctor.
- These rashes are caused by blood leaking out of a capillary, which may be caused by a blood disorder.
- It could be the first sign of leukaemia or a much less serious condition.
- Blanching is not a concept that parents are familiar with. It is important to explain what is meant by blanching and how parents can check for it.

When to refer

Suspected meningitis (see Table 2)

- Flu-like symptoms
- Vomiting
- Headache
- Neck stiffness
- Rash
- Small widespread spots or bruises that do not blanch when pressed
- Rashes that do not blanch when pressed

Management

- **Fever**
- Moderate fever (raised temperature up to 40◦C from normal 36.5◦C to 37.5◦C) is usually not harmful and some experts believe it could even have beneficial effects in some illnesses.

- The question of whether and when an antipyretic medicine should be given remains a matter of debate.

- The National Institute for Health and Care Excellence Guideline on Feverish Illness in Children advises against routine use of antipyretic to solely reduce temperature if the child is otherwise well and recommends:
- paracetamol or ibuprofen be considered when a feverish child is in distress, but not for the sole purpose of reducing body temperature.

- When using either medicine in children with fever:
- **1** continue only as long as the child appears distressed
- **2** consider changing to the other agent if the child’s distress is not alleviated
- **3** do not give both agents simultaneously
- **4** only consider alternating these agents if the distress persists or recurs before the next dose is due

Itching

- The itching caused by childhood rashes such as chickenpox can be intense, and the pharmacist is in a good position to offer an antipruritic cream, ointment or lotion.

- *Crotamiton cream* or *lotion* may help to soothe itchy skin.

- *Calamine lotion* has been used traditionally but it is now thought that the powdery residue it leaves may further dry and irritate itchy dry skin.

- If itching is very severe, *chlorpheniramine* can be effective in providing relief, can be given to children of 1 year and over and is licensed for use OTC in chickenpox rash.

- **Threadworms (pinworms)**

Threadworms (pinworms)

- Infection with threadworms *(Enterobius vermicularis)* is common in young children, and parents may seek advice from the pharmacist.
- As with head lice infections, many parents feel embarrassed about discussing threadworms and feel ashamed that their child is infected.
- Pharmacists can give reassurance that this is a common problem.
- In addition to recommending OTC antihelminthic treatment, it is essential that advice be given about hygiene measures to prevent reinfection.

What you need to know

- Age
- Signs of infection
  - Perianal itching
  - Appearance of worms
- Other symptoms
- Duration
- Recent travel abroad
- Other family members affected
- Medication

Age

Threadworm infection is very common in schoolchildren.

Signs of infection

- Usually the first sign that parents notice is the child scratching his or her bottom.
- Perianal itching is a classic symptom of threadworm infection and is caused by an allergic reaction to the substances in and surrounding the worms' eggs that are laid around the anus.
- Sensitisation takes a while to develop.
- So in someone infected for the first time, itching will not necessarily occur.

- Itching is worse at night, because at that time the female worms emerge from the anus to lay their eggs on the surrounding skin.
- The eggs are secreted together with a sticky irritant fluid onto the perianal skin.
- Persistent scratching may lead to secondary bacterial infection.
- If the perianal skin is broken and there are signs of weeping, referral to the doctor for antibiotic treatment would be advisable.

- Loss of sleep due to itching may lead to tiredness and irritability during the day.

- Itching without the confirmatory sighting of threadworms may be due to other causes, such as an allergic or irritant dermatitis caused by soaps or topical treatments used to treat the itching.

- In some patients, scabies or fungal infection may produce perianal itching.

Appearance of worms

- The worms themselves can be easily seen in the faeces as white- or cream-coloured thread-like objects, about 10 mm in length and less than 0.5 mm in width.
- Males are smaller than females.
- The worms can survive outside the body for a short time and hence may be seen to be moving.
- Sometimes the worms may be seen protruding from the anus itself.

- **Other symptoms**
- In severe cases of infection, diarrhoea may be present and, in girls, vaginal itch.

- **Duration**
- If a threadworm infection is identified, the pharmacist needs to know how long the symptoms have been present and to consider this information in the light of any treatments tried.

Recent travel abroad

- If any infection other than threadworm is suspected, patients should be referred to their doctor for further investigation.

- If the person has recently travelled abroad, this information should be passed on to the doctor so that other types of worm can be considered.

Other family members

- The pharmacist should enquire whether any other member of the family is experiencing the same symptoms.

- However, the absence of perianal itching and threadworms in the faeces does not mean that the person is not infected; it is important to remember that during the early stages, these symptoms may not occur.

Medication

- The pharmacist should enquire about the identity of any treatment already tried to treat the symptoms.

- For any antihelminthic agent, correct use is essential if treatment is to be successful.

- The pharmacist should therefore also ask how the treatment was used, in order to establish whether treatment failure might be due to incorrect use.

When to refer

Infection other than the threadworm suspected

- Recent travel abroad
- Medication failure

Management

- When recommending treatment for threadworms, it is important that the pharmacist emphasize how and when the treatment is to be used.
- In addition, advice about preventing recurrence can be given, as described under ‘Practical points’ below.
- The BNF states that mebendazole is the choice of treatment for patients of all ages.
- If symptoms do not remit after correct use of an appropriate preparation, patients should see their doctor.

Mebendazole

- Mebendazole is the preferred treatment for threadworms and is an effective, single-dose treatment.
- Compliance with therapy is high because of the single dose.
- The drug is formulated as a suspension or a tablet that can be given to children aged 2 years and over and to adults.
- Reinfection is common and a second dose can be given after 2–3 weeks. Occasionally, abdominal pain and diarrhoea may occur as side effects.
- Mebendazole is not recommended for pregnant women.

Piperazine

- Piperazine is effective against threadworm and roundworm.
- It is available in granular form in sachets.
- The incorporation of a laxative (senna) in the sachet preparation helps to ensure that the paralysed worms are then expelled with the faeces.

- *Instructions*
- One dose is followed by another 2 weeks later to destroy any worms that might have hatched and developed after the first dose.
- Only two doses are required.
- *Side effects*
- Side effects of piperazine include nausea, vomiting, diarrhoea and colic but these are uncommon.
- Adverse effects on the central nervous system
- include headaches and dizziness but these are rare.

Contraindications

- Piperazine can be recommended OTC for children from 3 months onwards.
- It should not be recommended for pregnant women because,
- Its use is contraindicated in epileptic patients since it has been shown to have the potential to induce fits in patients with grand mal epilepsy.
- The most common adverse effects are gastrointestinal with nausea, vomiting and diarrhoea.

Practical points

- **1** Parents are often anxious and ashamed that their child has a threadworm infection, thinking that lack of hygiene is responsible. The pharmacist can reassure parents that threadworm infection is extremely common and that any child can become infected; infection does not signify a lack of care and attention.

- **2** All family members should be treated at the same time, even if only one has been shown to have threadworms. This is because other members may be in the early stages of infection and thus asymptomatic. If this policy is not followed, reinfection may occur.

- **3** Transmission and reinfection by threadworms can be prevented by the following practical measures:
  - (a) Cutting fingernails short to prevent large numbers of eggs being transmitted. Hands should be washed and nails should be brushed after going to the toilet and before preparing or eating food, since hand-to-mouth transfer of eggs is common. Eggs may be transmitted from the fingers while eating food or onto the surface of food during preparation. Eggs remain viable for up to 1 week.
  - (c) Affected family members having a bath or shower each morning to wash away the eggs that were laid during the previous night.

- **Oral thrush**

Oral thrush

- Thrush (candidosis) is a fungal infection that occurs commonly in the
  - mouth (oral thrush),
  - in the nappy area in babies
  - in the vagina

- Oral thrush in babies can be treated by the pharmacist.

Age

- Oral thrush is most common in babies, particularly in the first few weeks of life.

- In older children and adults, oral thrush is rarer, but may occur after antibiotic or inhaled steroid treatment

- In this older group it may also be a sign of immunosuppression and referral to the doctor is advisable.

Affected areas

- Oral thrush affects the surface of the tongue and the insides of the cheeks.

Medication

- *Antibiotics*
- Some drugs predispose to the development of thrush. For example, broad-spectrum antibiotic therapy can wipe out the normal bacterial flora, allowing the overgrowth of fungal infection.

- It would be useful to establish whether the patient has recently taken a course of antibiotics.

- *Immunosuppressives*
  - Cytotoxic therapy and steroids predispose to thrush.
  - Patients using inhaled steroids for asthma are prone to oral thrush because steroid is deposited at the back of the throat during inhalation, especially
    - if inhaler technique is poor.
    - Rinsing the throat with water after using the inhaler may be helpful.

When to refer
Recurrent infection
All except babies
Failed medication

- **Treatment timescale**
- Oral thrush should respond to treatment quickly.
- If the symptoms have not cleared up within 1 week, patients should see their doctor.

Management

- **Antifungal agents**
- *Miconazole*
- The only specially formulated product currently available for sale OTC to treat oral thrush is miconazole gel.

- Preparations containing nystatin are also effective but are restricted to prescription-only status.

- Miconazole gel is an orange-flavoured product, which should be applied to the plaques using a clean finger four times daily after food in adults and children over 6 years, and twice daily in younger children and infants.

- For young babies, the gel can be applied directly to the lesions using a cotton bud or the handle of a teaspoon.

- The gel should be retained in the mouth for as long as possible.

- Treatment should be continued for 2 clear days, after the symptoms have apparently gone, to ensure that all infection is eradicated.

Practical points

- *Oral thrush and nappy rash*
- If a baby has oral thrush, the pharmacist should check whether nappy rash is also present. Where both oral thrush and candidal involvement in nappy rash occur, both should be treated at the same time. An antifungal cream containing miconazole or clotrimazole can be used for the nappy area.

- *Breastfeeding*
- Where the mother is breastfeeding, a small amount of miconazole gel applied to the nipples will eradicate any fungus present. For bottle-fed babies, particular care should be taken to sterilise bottles and teats.