Guidelines for the
Management of Scabies

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1. Introduction

Scabies is a common public health problem, with an estimated global prevalence of 300 million affected individuals\(^1\). It is particularly a problem where there is social disruption, overcrowding and where personal hygiene is poor\(^2\). Immunosuppression, poor nutritional status, homelessness and dementia are also risk factors.

Species are host specific; transmission between humans and other animals can occur, but usually only results in short-lived infection, and does not require treatment.

Infants, immobilised elderly, patients with HIV/AIDS, and other medically compromised patients are particularly predisposed to infection.

2. Some Facts About Scabies

Scabies is due to a parasitic mite \textit{Sarcoptes scabiei} \textit{variety hominis}. They are minute white disc-like arthropods, just too small to be visible to the naked eye. The adult female is around 0.4mm long and 0.3mm wide; males are slightly smaller. The female lays two to three eggs a day in burrows several millimetres in length in the skin. After two to four days larvae emerge to mature on the skin surface, and then make new burrows. They mature, mate, and repeat this cycle that takes 10 to 17 days. Males die after a short time, but the females live for up to six weeks.

The characteristic rash is not due to the mite itself but to an allergic reaction to the mite, its eggs and faeces. It may occur away from the burrows, especially on children.

3. Transmission

Spread is normally from person to person via direct skin contact, including sexual contact. Although the mites cannot fly or jump, they can crawl as fast as 2.5cm per minute on warm skin. It was previously believed that prolonged skin-to-skin contact was necessary for transmission to occur, but there is evidence that they can survive for at least three days off the skin surface.\(^3\) Lower temperatures and higher relative humidity prolong survival.

However, the average infested adult may have as few as 10 to 15 mites on their body surface at any one time and in such cases transmission does not normally occur via the bedding or clothing from an infected person.

In cases of severe infestation (Norwegian or crusted scabies), thousands of mites may be shed daily, and therefore transmission via fomites is possible as the mites survive on the sloughed skin in the environment.
4. **Signs and Symptoms of Classical Scabies**

There are three signs diagnostic of scabies:

- Burrows (figure 1)
- Erythematous papules (figure 2)
- Generalised pruritus (itching)

Burrows may be found on the web spaces of the hands, the flexure surface of the wrists, elbows, genitalia, axillae, umbilicus, belt line, nipples, buttocks and penile shaft. They appear as slightly elevated pink or grey, straight or tortuous lines one to 10 mm in length. Secondary papules are usually more prominent than the burrows.

The main symptom is an intense, itchy symmetrical rash. This pruritus is due to an allergic reaction to the mite, mites’ eggs and excrement. The rash will therefore not appear until the person becomes sensitised to the allergen, which takes three or four weeks. In subsequent infections it may only take one to four days to develop.

**Diagnosis**

Scabies should always be suspected when there is intense pruritus which is worse at night. The patient may give a history of contact with someone with an itchy rash in the last two months.

Symptoms may be atypical in the elderly due to a different immunological response, and infection may easily be mistaken for other disease such as psoriasis or eczema. Infection may manifest only as pruritic plaques and patches with faint scale and erythema. Burrows may be seen on unusual sites, and the back is frequently involved, in contrast to younger patients.
5. Crusted Scabies

Crusted or Norwegian scabies usually occurs in immuno-compromised patients including those with AIDS. Due to the poor immune response the itchy rash may not be present. It can become more severe when unrecognised, and the supposed condition is treated with topical corticosteroids.

It should be suspected when there is marked thickening and crusting of the skin. Nails are frequently involved.

It is caused by the same type of mite that causes typical scabies, but there may be one or two million present\(^6\). It is therefore highly infectious. The crusts flake off and contaminate the environment where mites can survive for several days.

6. Infection Control Precautions

If scabies is suspected in a hospitalised patient, please contact the Infection Control Team for advice.

When caring for people with both typical and crusted scabies in healthcare facilities disposable gloves should be worn during contact and for 24 hours following treatment. Individuals should be isolated until after the first application of treatment.

If crusted scabies is suspected, disposable gloves and gowns (with long sleeves) should be worn. Individuals with crusted scabies should be isolated until after the completion of the full course of treatment.

The spread of classical scabies without direct person-to-person contact is rare. However, the recovery of live mites from chairs and couches in the homes of patients with scabies supports the use of environmental measures. All carpets and upholstered furniture should be vacuumed, and the vacuum bag immediately discarded. Ideally, clothes, bed linen and towels should be machine washed at 60°C and machine dried the day after the first treatment. The mites die quickly at temperatures >55°C\(^7\). Items that cannot be laundered may be kept in a sealed plastic bag for at least 48 to 72 hours or in a freezer at -20°C for 72 hours.

7. Complications

Occasional secondary infection of the skin lesions following frequent scratching is possible, often by group A *Streptococcus pyogenes*, and *Staphylococcus aureus*.

8. Treatment

*Permethrin 5% dermal cream* is the treatment of choice. It is suitable for children over the age of two months, and adults, (but not by people who are allergic to chrysanthemums). It has the advantage of being able to be washed off 8 to 12 hours following application. N.B Children between two months and two years should be treated under medical supervision. (See Appendix 3 for dosage)
Malathion 0.5% in an aqueous basis is also effective and non-irritant and is suitable for treating adults and children. N.B., It is not to be used on infants less than 6 months except on medical advice. The liquid must remain on the skin for 24 hours. (See Appendix 3 for dosage). Alcoholic lotions are not recommended owing to the possibility of further irritating excoriated skin.

Pregnancy – malathion is the treatment of choice.

Lactation. Both permethrin and malathion may be used; women should be advised not to exceed the recommended dose and that they should not be used repeatedly.

Treatment of classical scabies consists of two applications of scabicide, one week apart. Cases of classical scabies can return to school or work after the first treatment.

Treatment of Resistant or Crusted Scabies may require 3 applications of scabicide on day 1, day 3, and day 7 to ensure that enough penetrates the skin crusts to kill all the mites.

Method of application:

♦ Remove all clothes, watches and jewellery.
♦ Apply to cool dry skin, i.e., at least five hours after a hot bath or shower.
♦ Treatment should be applied to all parts of the body including the scalp, neck, face and ears paying special attention to all skin folds and creases (including the umbilicus, genital and natal cleft areas), and in particular the finger nails, and the finger and toe webs. It may be helpful to use a nailbrush for finger and toe nails. (N.B. This is contrary to previous guidance which recommended application from the neck down for healthy adults.)
♦ Ensure help is available for application to the back
♦ The cream/lotion should be allowed to dry (10-15 minutes) before dressing or it may rub off.
♦ If any area of skin is washed before the end of the stipulated contact time the treatment must be reapplied. If hands will require frequent washing, plastic gloves should be used.

It is essential to apply the treatment as described above, as it will not otherwise be successful, and resistance will develop.

Systemic Therapy

Ivermectin is available on a named patient basis. Although it is not licensed in the UK, millions of people have been treated worldwide for various parasitic infections. It should not be administered in pregnancy, whilst breastfeeding, or to children under the age of five years. The dosage is 200 micrograms/kg by mouth. It may be useful in the treatment of immunocompromised patients, cases with severe crusted lesions, and in institutionalised outbreaks. There is some evidence that a minimum of two doses are necessary for successful eradication. The elimination half-life and the incubation time of 15 days to egg hatching suggest that administration of a second
dose of ivermectin on day 14 might be more effective than a single dose, although comparative studies are lacking. Many patients appear to have increased pruritus for 24-72 hours following administration.

Up to three weekly doses are indicated for crusted scabies when it should be used in conjunction with topical treatment (two treatments as for classical scabies).

9. Follow-up

The itch of scabies persists for some weeks after the infestation has been eliminated and antipruritic treatment may be required, such as a bath emollient, and/or crotamiton. These products are available to purchase over the counter. In some cases it may also be necessary to consider a sedative antihistamine for itch suppression at night, (e.g., alimemazine).

In crusted scabies the nails should be trimmed and the areas beneath the nails that are accessible scrubbed daily whilst being treated as they can act as reservoirs.

Evidence of cure requires about one month of follow-up as this is the length of time taken for lesions to heal, and for any eggs and mites to reach maturity should treatment fail.

Patients and carers should be aware that continuing pruritus is not therefore necessarily indicative of continuing infection and does not justify additional treatment.

10. Contact Tracing

A contact is defined as someone who has had prolonged (greater than 10 minutes on any one occasion) skin to skin contact over the previous two months.

All members of the affected household and all close contacts should be treated, even in the absence of symptoms, at the same time.

11. Schools, Nurseries, and other Children’s Groups

Once the diagnosis has been made, an infected child should not return to school until after the first application of treatment.

Should there be several infected children within the class/group, or a child suffers recurrent infection despite all close contacts being treated, advice should be sought from the Health Protection Team. Home visits by health visiting/school nursing staff may be utilised to check that these guidelines are being followed and to advise on further contact tracing.

From a legal point of view, the Education (Scotland) Act 1980 part 11, section 58 (5&6) makes it clear that is an offence for a parent to send a pupil to school with recurrent infections due to their failure to ensure adequate treatment. Head teachers
may exclude infected children until they have been treated. However, we recommend that this should only be done as a last resort after prolonged or recurrent infection which has been confirmed by a health professional.

12. Residential Settings

Many skin conditions can look similar to scabies, and they can also have the same itchy symptoms. It is crucial that any diagnosis of scabies, particularly in a residential setting, is accurate. This is because, if scabies is definitely diagnosed, there may be a need to treat all the people who have had close contact with the case, as well as everyone in the households of the close contacts.

The extent of treatment should be based on a risk assessment which includes the number of confirmed and symptomatic cases. See flow-chart for suggested management.

Single cases among residents or staff generally only require treatment of that particular individual, unless there is evidence of a significant amount of close contact with others. This should be followed by increased surveillance amongst all residents and staff for symptoms in the following weeks.

If more than one case of scabies is confirmed in a residential setting the Health Protection team should be contacted. They will then advise appropriate treatment. It may be necessary to treat all residents, staff and their families. It is essential in such cases to treat all relevant contacts simultaneously or at least within the same 24 hour period. In such situations symptomatic individuals should have two applications of treatment, and asymptomatic contacts one application.

Prescriptions for residents need to be obtained from GPs and ideally, everyone should be treated with the same insecticide. The employer should fund the treatment of staff.

The treatment day should be planned well in advance and extra staff deployed if necessary.
MANAGEMENT OF SCABIES IN THE RESIDENTIAL SETTING

Probable single case of classical scabies

- Stays in own room. No contact with other patients. Low dependency
- Treat patient only
- Observe situation closely for six to eight weeks

Probable single case of classical scabies

- Confused. Wanders about the home. Fairly tactile. Moderate/high dependency
- Treat all patients and staff who are close contacts of case
- Observe situation closely for six to eight weeks

Two or more probable cases. Patients and/or Staff

- Treat all patients, staff and close family members.
- Observe situation closely for six to eight weeks

Suspected case of crusted Scabies

- Refer to Dermatologist
- If confirmed treat resident as advised by Dermatologist and seek advice from Health Protection Team re treatment of contacts
Appendix 1

References:

4. Centre for Change and Innovation, Patient Pathways. Available at: http://www.pathways.scot.nhs.uk/

Other resources:


Acknowledgement:
The Health Protection Team are grateful for the assistance of the Medicines Information Department in accessing information regarding the use of ivermectin, and regarding treatment during pregnancy and lactation.

Pictures of scabies:
http://www.emedicine.com/derm/topic382.htm
Appendix 2

Useful telephone numbers:

Dr Ken Oates, Consultant in Public Health Medicine. 01463 704886

Helen Tissington, Health Protection Nurse Specialist 01463 704882

Appendix 3

Prescribing amounts:

**Permethrin 5% dermal cream**
Available in 30g tubes.
The approximate amounts are:

- Infants 2 months to 1 year: up to 1/8 tube
- Children 1-5 years: up to ¼ tube
- Children 5-12 years: up to ½ tube
- Adults and children over 12 years: up to 1 tube (max 2 tubes for large person)

**Malathion aqueous lotion 0.5%**
Available in 50 and 200 ml.
The approximate amounts needed are:

- Children up to 1 year: up to 20ml per application
- Children 1-5 years: up to 40ml per application
- Children 5-12 years: up to 100ml per application
- Adults and children over 12 years: up to 200ml per application