



SCABIES

Diagnosis and management

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Key concepts

- Scabies transmission occurs when there is transfer of a fertilised female mite by direct, (approximately five minutes) skin-to-skin contact with an infected person.
- Diagnosis is usually made clinically. Laboratory diagnosis is not usually necessary but may be useful for uncertain cases or cases in residential care.
- Malathion and permethrin are effective treatments for scabies.
- All recent contacts should be treated.
- The itch may persist for weeks even though the mite is gone. However itch beyond six weeks may indicate treatment failure.



Scabies is caused by the female scabies mite (*Sarcoptes scabiei*). The itchy skin rash is due to an allergic reaction that occurs to the mite's trail of debris, faeces and saliva. Scabies mites occur worldwide and are prevalent in New Zealand. Scabies infestation can affect all socioeconomic groups and is not a result of poor hygiene. It is however, more often associated with poverty and overcrowding.¹

Transmission of scabies usually occurs by the transfer of fertilised female mites

Scabies transmission occurs when there is transfer of a fertilised female mite by direct, prolonged (approximately five minutes) skin-to-skin contact with an infested person. Infection is easily spread to sexual partners and household members.

Transfer can also result from sharing clothing, towels and bedding as the mite can live for up to two to three days away from the human body.

In children, scabies transmission most commonly occurs at day-care centres, schools or sleepovers while in elderly people it most commonly occurs in residential care.

Diagnosis is usually made clinically

Scabies infestations can be difficult to diagnose. It should be considered whenever a patient complains of severe itch on the trunk and limbs, particularly when the visible signs are minor. Exposure to an infested person should promote a high index of suspicion.

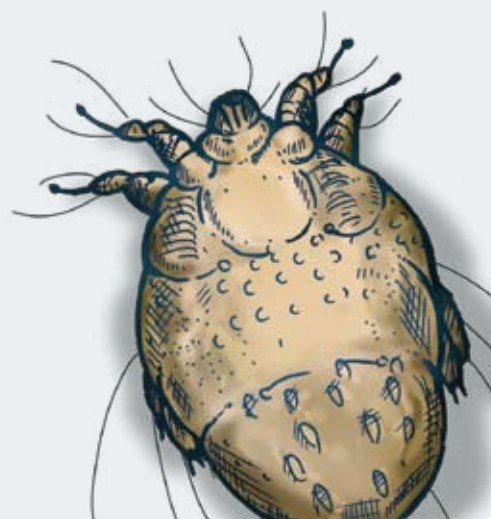
There is usually a history of intense itch, worse at night and after a hot shower/bath.

The itch related to scabies can start at variable times after a person becomes infested, from hours (if the person has been infested before and therefore previously sensitised) to several weeks in an initial infestation.

A confident clinical diagnosis can be made if burrows are observed on the wrists, finger web spaces and/or on the

Life cycle of scabies mite

After mating the male mite dies. Newly mated female mites will lay two to three eggs per day (for her lifespan of one to two months) in burrows within the stratum corneum. After approximately two to four days, the eggs hatch and the larvae leave the burrow to stay on the surface of the skin, or in short burrows until they reach maturity in seven to nine days.



sides and soles of the feet (Figure 1). Irregular clusters of inflammatory nodules in the axillae, genitalia or thighs are also highly suggestive of infestation.

Burrows are 5–10 mm long and they look like greyish pencil marks (Figure 2) on pale skin (in darker skin they may appear pale). Burrows can be difficult to identify when the skin has been scratched, is secondarily infected or in the presence of eczema.^{2,3} Burrows are best seen under magnification. Dermoscopy may reveal tiny grey triangular structures at the leading edge of the burrow (Figure 3).⁴

The rash is often widespread and polymorphic; there may be scratched papules and nodules, eczema, folliculitis and urticaria, usually sparing the head and neck. In infants, elderly and immunocompromised people, scabies



Fig 1: Burrows on foot of young adult patient



Fig 2: Scabies burrows with arrows to show where the mite can be seen on magnification



Fig 3: Dermoscopy reveals tiny grey triangles (the head of the female mite) at distal ends of burrows on fingers

may also affect the face and scalp.² Vesicles and pustules on the palms and soles are characteristic of scabies in infants, and may persist for several weeks after the mites have been successfully destroyed.⁵

Apply ink to burrows²

- Rub a non-toxic water-soluble felt pen over an area suspected of having burrows, wait a few moments and then wash off ink.
- In the presence of a burrow the ink will track down the burrow, forming a characteristic dark, zig-zag line.

Crusted scabies may occur in elderly, immunocompromised or institutionalised people

Elderly, immunocompromised or institutionalised people may present with crusted or “Norwegian” scabies, a variant of scabies where extensive hyperkeratosis occurs (Figures 4 and 5). The diagnosis is often delayed because itch may be less severe and typical papules and nodules are frequently absent. The rash may resemble psoriasis. Thousands or even millions of mites are present in the crusts making this type of scabies easily transmissible. Crusted scabies is a common cause of institutional outbreaks (e.g. rest homes, prisons, or hospitals). Staff who are even minimally exposed to someone with crusted scabies (e.g. laundry workers, cleaning staff) are at risk of infestation.⁶

Laboratory diagnosis is not usually necessary

Microscopy of burrow contents, or scrapings from the hands of a patient with crusted scabies, may reveal mites, eggs or faeces. Laboratory diagnosis may be useful for scabies in residential care or in cases where the diagnosis is uncertain. However, even experienced dermatologists only recover a mite or egg in about 50% of scabies cases.^{2,4}

Treatment – malathion and permethrin are effective treatments for scabies

Permethrin and malathion are the most frequently used treatments for scabies. While both have been used extensively, the best evidence is for permethrin.⁷ Researchers were unable to draw conclusions about malathion's effectiveness as there were no trials involving malathion.⁷

Gamma benzene hexachloride (Lindane) has been associated with aplastic anaemia and convulsions, possibly due to its application to broken skin. Lindane has been withdrawn in the UK and in Australia.⁷

Fully funded scabicides available in New Zealand are:

- 5% Permethrin cream – Left on for 8–14 hours before washing off. Reapplied after seven days.⁸ Permethrin is a safer choice in pregnancy, lactating women and infants because of its low inherent toxicity and low percutaneous absorption.⁹
- 0.5% Malathion lotion – Left on for 24 hours before washing off. Reapplied after seven days.⁸
- 1% gamma benzene hexachloride cream (Lindane) – Left on for 8–12 hours. Not reapplied. Lindane should only be used if other treatments have failed, and should not be used in patients weighing less than 50 kg, those with a seizure disorder or pregnant and lactating women.

Scabicides should be applied to the entire body from the chin and ears downwards. The face and scalp should also be included for infants under two years, people who are immunocompromised and elderly people (but avoiding contact with eyes). Particular attention should be paid to the area between toes and fingers, genitals and under nails (a soft nail brush may be necessary).⁸ This rarely causes stinging or irritation. Treatment needs to be reapplied to areas that are washed within the necessary application time (such as after hand washing). It can be helpful for a second person to assist with the application to areas that are not easily accessible.



Fig 4: Typical crusted scabies in elderly hospitalised patient



Fig 5: Crusted scabies in rest home resident: numerous burrows on palms

Note: The BNF recommends application of scabicides to the entire body, including the head and neck for all people.⁸

Immunocompromised patients and those with crusted scabies may prove resistant to repeated topical therapy and require systemic insecticide therapy such as oral ivermectin (200 mcg/kg).^{1,9}

Retreatment may be necessary if symptoms and signs persist; or after oral antibiotics if there is crusting due to secondary impetigo.

Reducing transmission – treat all recent contacts

Household members and anyone with recent direct and prolonged body contact should be treated at the same time even if they are not itchy. This is because infestation may occur up to several weeks before symptoms and secondary rash appear.

Clothing, sheets, pillow cases, towels and facecloths that have been in contact with the patient within the previous few days should be machine washed in hot water and dried (hot cycle) or dry cleaned.

It is not generally necessary to wash blankets, duvets or quilts. They can be hung outside in the sun for a day. There is no need to treat furniture or carpets with an insecticide, except in the case of crusted scabies where numerous mites may be found on fomites.

The itch may persist for weeks even though the mite is gone

Do not assess treatment response until four weeks after treatment is finished. Overtreatment with scabicides can cause skin irritation and contact eczema.⁶

Itch or rash may persist for weeks after treatment due to the continuing allergic reaction to persisting antigens within the skin. Oral antihistamines, crotamiton (Eurax) cream, emollients and mild to moderate potency topical steroids can be useful.

Itch beyond six weeks after initial treatment may indicate treatment failure (particularly if itch persists at the same level or is increasing in intensity). This could be due to re-infestation, inadequate treatment of contacts, resistance to therapy, or an incorrect initial diagnosis. Consider an alternative diagnosis and re-examine the person. If the diagnosis of scabies is established, a different scabicide should be tried if all contacts were originally treated simultaneously, and the treatment was correctly applied.²



Fig 6: Nodular scabies

Even after successful treatment, pruritic nodules may persist in some people. Nodules are usually brownish red, can be up to 2 cm in diameter and are most often seen around the genitals and axillae (Figure 6). Treatment with topical corticosteroids may be useful.⁹

People with scabies can become secondarily infected with streptococci or staphylococci, which should be treated with oral antibiotics for seven days. Flucloxacillin is recommended as empirical treatment, erythromycin is an alternative for those with penicillin allergy.²

Images contributed by NZ DermNet, the website of the New Zealand Dermatological Society.

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