

CMEARTICLE

Management of scabies

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Mdm Lee, who was alert and communicative, was wheeled into your consultation room for follow-up of hypertension. She had come from a nursing home and was accompanied by her daughter and a nurse from the home. While manually checking her blood pressure, you noticed that Mdm Lee was scratching incessantly. You examined her and noted numerous excoriated erythematous papules on the hands (palms and fingers), wrists, external genitalia and axillae. Mdm Lee said that she had felt increasingly itchy over the past week and had difficulty sleeping at night despite taking loratadine once daily. No new chronic medication had been prescribed to her in the past six months, according to the daughter and nurse. On questioning, the nurse said that none of the patients or staff in the ward had a similar rash. You made a provisional diagnosis of classic scabies and considered your next steps.

HOW COMMON IS THIS IN MY PRACTICE?

Scabies is a common infection affecting individuals of any age and socioeconomic status. The worldwide prevalence is estimated to be 100 million people.⁽¹⁾ Lim et al conducted a review of 114 patients who were treated for scabies at the National Skin Centre in 1982–1989.⁽²⁾ The data showed that with increased modernisation in Singapore, the prevalence of scabies was higher in institutions such as intermediate and long-term care facilities rather than in residential homes. The authors postulated that this was because of improvements in housing facilities, resulting in less crowding. With the increase in travel and humanitarian work by our local population, particularly in developing countries, the risk of contracting scabies from people living in compromised housing has correspondingly increased.⁽³⁾

Clinical manifestations

The two major clinical variants of scabies are classic scabies and crusted scabies. Symptoms typically appear 2–6 weeks after infestation. Classic scabies (Fig. 1), the most common presentation, is associated with a relatively low mite burden of approximately 10–15 mites on the body. Crusted scabies (Fig. 2), on the other hand, usually occurs in older or immunocompromised individuals and is associated with a higher mite burden (up to millions of mites on the body).⁽⁴⁾ It is also more often seen in disabled and institutionalised patients. This infestation often presents as generalised dermatitis with crusted hyperkeratoses on the palms, soles, under the fingernails, and on the ears, trunks and extremities. Pruritus may

be minimal or absent, or the host may be physically incapable of scratching.⁽⁵⁾

The salient features of classic scabies are intense itch, erythematous papules and excoriations, typical distribution, and a contact history of patients with scabies. The usual distribution is: the interdigital web space of the fingers, the insides of wrists and on the inner elbow; the soles of the feet; around the breasts and axillae; the male genitalia, especially the scrotal and penile areas; and on the buttocks, knees and shoulder blades.⁽⁶⁾ In children, common sites of infestation are the scalp, face and neck, and palms and soles.

WHAT CAN I DO IN MY PRACTICE?

Making the diagnosis

The combination of visual inspection, noting the characteristic pruritic lesions and their distribution, together with contact history enables the primary care practitioners to make a confident diagnosis of scabies. Differential diagnoses include other pruritic conditions such as drug eruptions, eczema, lichen planus and other infestations such as hemiptera (bedbugs). Apart from the symptomatology, other salient points in history-taking include a detailed drug history. Eczema may present at the flexures, while classical lichen planus tends to affect the volar aspects of wrists and ankles as well as the anterior aspects of the knees. As for scabies, areas affected include the interdigital web space of the fingers and the sides of the hands. The wrists, elbows, axillae, groin, breasts and feet are the other commonly affected sites (Fig. 3). A skin scrape can be taken at non-excoriated areas or non-inflamed areas where there are burrows and a pimple-like rash.

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Fig. 1 Photograph shows numerous erythematous papules on (a) the fingers and web spaces and (b) axilla of a patient with classic scabies.



Fig. 2 Photograph shows hyperkeratotic crusts on the fingers and palms in a nursing home patient with crusted scabies.



Fig. 3 Photomicrograph of an adult *Sarcoptes scabiei*.

Box 1. Principles of treatment in household, community and institution facilities:

1. Isolate the patient until the completion of treatment (Table I).
2. Clean the patient's room thoroughly.
3. Avoid direct skin-to-skin contact (using protective garments, e.g. gowns and gloves) and implement strict handwashing.
4. The patient's bedding and clothing should be machine-laundered separately using hot water of above 75°C, followed by hot dryer cycles.
5. Prophylactic topical malathion 0.5% lotion should be prescribed to all household contacts or healthcare workers caring for the patient.

Early recognition and treatment

When asking a patient about number of household members, physicians are reminded to specifically ask if there were domestic helpers or grandparents living together or staying intermittently up to six weeks prior to the presentation. Patient and family members should be informed that although scabies infestation is relatively benign, it is highly transmissible. Therefore, the principles of treatment (Box 1) should be carried out diligently. Table I shows the treatment regime for each patient group.^(7,8)

In nursing homes and institutions, early recognition of crusted scabies is essential to prevent outbreaks.⁽⁹⁾ Once an outbreak occurs, prompt control of the index patient and rapid tracing of contacts to identify secondary cases are necessary. When prolonged exposure to a case of crusted scabies results in multiple secondary cases, the most efficient strategy for terminating the outbreak is the institution of simultaneous mass prophylaxis, which can be implemented without ward closure.

It is important to recognise that itching may persist or even worsen for some time after applying the medication. These steps may give patients some relief from itching:⁽¹⁰⁾

1. Cool and soak the skin by using a cool, wet washcloth on irritated areas of the skin.
2. Apply a soothing lotion such as calamine lotion.
3. If the itching is severe, consider antihistamines to relieve the itching and skin irritation. Non-sedative antihistamines appear to be as effective as sedating histamines.
4. After eradication of mites, medium-potency topical corticosteroids (in age-appropriate patients) can also be used to control itching for 1–2 weeks, especially for scabetic nodules.⁽⁵⁾

Table I. Medical treatment for scabies.^(7,8)

Category	Medication	Instructions
Adults and children aged 6 months and above	Topical permethrin 5% lotion OR	Apply on the entire body from neck down. Wash off after 8–14 hours. To repeat in 1 week.
	Topical malathion 0.5% lotion	Apply on the entire body from neck down. Wash off after 24 hours. To repeat in 1 week to kill any mites emerging from eggs that survived the first application.
Infants aged more than 2 months and less than 6 months*	1st line: Topical permethrin 5% lotion	Apply on the entire body from neck down. Wash off after 8–14 hours. To repeat in 1 week.
	2nd line: Refer to National Skin Centre for 6% sulphur in petrolatum	Apply before bedtime and wash off the following morning. Repeat for 5 days.
Infants aged 2 months and below*	Refer the patient to National Skin Center for 6% sulphur in petrolatum	Apply before bedtime and wash off the following morning. Repeat for 5 days.
Pregnancy	1st line (as for adults): Topical permethrin 5% lotion OR	Apply on the entire body from neck down. Wash off after 8–14 hours. To repeat in 1 week.
	Topical malathion 0.5% lotion	Apply on the entire body from neck down. Wash off after 24 hours. To repeat in 1 week to kill any mites emerging from eggs that survived the first application.
	2nd line: Refer the patient to National Skin Center for 6% sulphur in petrolatum	Apply before bedtime and wash off the following morning. Repeat for 5 days.
Crusted scabies*	Topical permethrin 5% lotion AND	Apply on the entire body from neck down. Wash off after 8–14 hours. To repeat in 1 week.
	Oral ivermectin 2 doses (200 µg/kg/dose) 1 week apart	Oral ivermectin should be taken with food. Patients should be reviewed after completion of the 2nd dose.

*Dermatology consult is advisable.

Scabies may result in secondary skin infections leading to boils, cellulitis or lymphangitis due to *Streptococcus pyogenes* (*S. pyogenes*). Streptococci and staphylococci have been isolated from skin burrows as well as mite faecal pellets, suggesting that the mites themselves may contribute to the spread of pathogenic bacteria.⁽¹¹⁾ Secondary infection of scabies with *S. pyogenes* is a major precipitant of acute post-streptococcal glomerulonephritis and possibly rheumatic fever.⁽¹²⁾

TAKE HOME MESSAGES

- Scabies is a common infestation affecting individuals of any age and socioeconomic status.
- In Singapore, scabies is more common in institutions than at home.
- All household contacts of the patient need to be prophylactically treated and practise contact precautions.
- Once an outbreak occurs, prompt control of the index patient and rapid tracing of contacts to identify secondary cases are necessary.
- For adults, treatment for scabies comprises of two applications of topical malathion 0.5% or permethrin 5%, spaced one week apart.
- For adults, the prophylaxis of scabies also comprises of two applications of topical malathion 0.5%, spaced one week

- apart, preferably both on the same days as the patient's treatment.
- It is advisable to refer patients with suspected crusted scabies to the dermatologist for further evaluation and management.

You treated Mdm Lee for suspected classic scabies and instituted contact precautions immediately. She was nursed in an isolation cubicle inside the nursing home. The chief nurse and management were informed of the outbreak. Mdm Lee's linen, surroundings and bed were thoroughly washed and disinfected. Mdm Lee, along with the patients in the same cubicle and the nurses attending to her, were given two courses of malathion 0.5% lotion one week apart. Her daughter was also treated with an application of malathion 0.5% lotion one week apart, as she had been in close contact with her mother during her visits to the nursing home. By the end of the second week, Mdm Lee was feeling better and had no further evidence of scabies. No new cases of scabies were reported in the nursing home.

ABSTRACT Scabies is a common infestation worldwide, affecting persons of any age and socioeconomic status. In Singapore, it is more common in institutions rather than in homes. The two variants are classic scabies and crusted scabies, with the latter having a significantly higher mite burden. Early identification, isolation of index patients and prophylactic treatment of contacts are essential in dealing with the outbreak. Locally, most primary care practitioners make the diagnosis based on visual inspection and clinical examination. A skin scrape is done to confirm the diagnosis, especially in atypical presentations. Scabietic mites, eggs or faeces can be seen on microscopy. The usual treatment for adult scabies in Singapore is the use of topical malathion or permethrin. A combination of topical permethrin and oral ivermectin is used for crusted scabies.

Keywords: mites, sarcoptes, scabies

REFERENCES

- Fuller LC. Epidemiology of scabies. *Curr Opin Infect Dis* 2013; 26:123-6.
- Lim JT, Thirumoorthy T. The changing patterns of scabies among in-patients in Singapore (1982-1989). *Singapore Med J* 1991; 32:121-2.
- Késmárczky R, Jakkal A, Szabó G. Dermatological aspects of a humanitarian mission. *J Allergy Ther* 2016; 7:228.
- Goldstein BG, Goldstein AO. Scabies: epidemiology, clinical features, and diagnosis. Available at: <https://www.uptodate.com/contents/scabies-epidemiology-clinical-features-and-diagnosis>. Accessed May 2, 2019.
- Ministry of Health, Malaysia. Guideline for management of scabies in adults and children. February 2015. Available at: http://www.moh.gov.my/index.php/file_manager/dl_item/5232467961584d67554746755a485668626942515a573535595774706443394864576c6b5a577870626d5567526d397949453168626d466e5a57316c626e51675432596755324e68596d6c6c6379424a626942425a48567364484d675157356b49454e6f6157786b636d56754c6e426b5a673d3d. Accessed May 2, 2019.
- Usatine RP, Smith MA, Mayeaux EJR, Chumley H. The colour atlas of family medicine. 1st ed. New York; McGraw-Hill Education, 2008: 575-80.
- Centers for Disease Control and Prevention. Scabies. Available at: <https://www.cdc.gov/parasites/scabies/index.html>. Accessed May 2, 2019.
- SingHealth. Scabies Medication -Available at: <https://www.singhealth.com.sg/patient-care/medicine/scabies/dosage>. Accessed May 2, 2019.
- Khan A, O'Grady S, Muller MP. Rapid control of a scabies outbreak at a tertiary care hospital without ward closure. *Am J Infect Control* 2012; 40:451-5.
- Baldwin A, Hjelde N, Goumalatsou C, Myers C, eds. *Oxford Handbook of Clinical Specialties*. 10th Edition. Oxford: Oxford University Press, 2016: 608.
- Currie BJ, Carapetis JR. Skin infections and infestations in Aboriginal communities in northern Australia. *Australas J Dermatol* 2000; 41:139-43.
- Hersch C. Acute glomerulonephritis due to skin disease, with special reference to scabies. *S Afr Med J* 1967; 41:29-34.

SINGAPORE MEDICAL COUNCIL CATEGORY 3B CME PROGRAMME

(Code SMJ 201906A)

	True	False
1. Scabies is a common infection affecting young individuals and people of lower socioeconomic status.	<input type="checkbox"/>	<input type="checkbox"/>
2. The incidence of scabies in Singapore is approximately equal among residents in institutions and those staying in their own homes.	<input type="checkbox"/>	<input type="checkbox"/>
3. There are three major clinical variants of scabies: classic scabies, crusted scabies and Norwegian scabies.	<input type="checkbox"/>	<input type="checkbox"/>
4. Scabies symptoms appear 2–6 weeks after infestation.	<input type="checkbox"/>	<input type="checkbox"/>
5. The number of mites on the body in classic scabies is more than a thousand times that of crusted scabies.	<input type="checkbox"/>	<input type="checkbox"/>
6. Crusted scabies usually occurs in older adults or immunocompromised individuals.	<input type="checkbox"/>	<input type="checkbox"/>
7. Classic scabies infestations often present as generalised dermatitis with crusted hyperkeratoses on the palms, soles, under the fingernails, and on the ears, trunk and extremities.	<input type="checkbox"/>	<input type="checkbox"/>
8. Salient features of classic scabies are intense itch, erythematous papules and excoriations.	<input type="checkbox"/>	<input type="checkbox"/>
9. Skin scraping, with the positive finding of mites, is necessary to diagnose scabies infestation.	<input type="checkbox"/>	<input type="checkbox"/>
10. Differential diagnoses of scabies infestation include eczema, hemiptera (bedbug) infestation, other arthropod reactions, lichen planus and drug eruptions.	<input type="checkbox"/>	<input type="checkbox"/>
11. Skin scrapings from the non-excoriated or non-inflamed areas, where there are burrows and a pimple-like rash, are more likely to yield mites.	<input type="checkbox"/>	<input type="checkbox"/>
12. Once an outbreak occurs, prompt control of the index patient and rapid tracing of contacts to identify secondary cases are necessary.	<input type="checkbox"/>	<input type="checkbox"/>
13. Topical malathion treatment of all close personal contacts should be done to avoid a cycle of transmission.	<input type="checkbox"/>	<input type="checkbox"/>
14. When identifying close personal contacts of scabies patients, do not include domestic helpers or grandparents who are living together with them.	<input type="checkbox"/>	<input type="checkbox"/>
15. When prolonged exposure to a case of crusted scabies results in multiple secondary cases in a nursing home, simultaneous mass topical treatment is the most efficient strategy for terminating the outbreak and can be implemented without ward closure.	<input type="checkbox"/>	<input type="checkbox"/>
16. The recommended treatment for classic scabies in children aged less than six months is malathion 0.5% lotion applied to all areas of the body from the neck down and left for 24 hours before washing off.	<input type="checkbox"/>	<input type="checkbox"/>
17. Itching may persist or even worsen for some time after applying the medication and topical calamine lotion or oral antihistamines and medium-potency topical steroids are recommended for scabetic nodules.	<input type="checkbox"/>	<input type="checkbox"/>
18. Scabies can cause secondary skin infections leading to boils, cellulitis or lymphangitis due to <i>Streptococcal pyogenes</i> . These infections are a major precipitant of acute post-streptococcal glomerulonephritis and possibly rheumatic fever.	<input type="checkbox"/>	<input type="checkbox"/>
19. When malathion 0.5% or permethrin 5% is used, treatment should be repeated in one week to kill any mites emerging from eggs that survived the first application.	<input type="checkbox"/>	<input type="checkbox"/>
20. Patients with crusted scabies should be referred to a dermatologist for assessment and appropriate management.	<input type="checkbox"/>	<input type="checkbox"/>

Doctor's particulars:

Name in full: _____ MCR no.: _____
 Specialty: _____ Email: _____

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RESULTS:

(1) Answers will be published online in the SMJ August 2019 issue. (2) The MCR numbers of successful candidates will be posted online at the SMJ website by 8 August 2019. (3) Passing mark is 60%. No mark will be deducted for incorrect answers. (4) The SMJ editorial office will submit the list of successful candidates to the Singapore Medical Council. (5) One CME point is awarded for successful candidates. (6) SMC credits CME points according to the month of publication of the CME article (i.e. points awarded for a quiz published in the December 2017 issue will be credited for the month of December 2017, even if the deadline is in January 2018).

Deadline for submission (June 2019 SMJ 3B CME programme): 12 noon, 1 August 2019.