

Scabies

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Scabies is a contagious skin infestation caused by a mite. It causes significant global morbidity, with an estimated 300 million cases annually. Although it can affect individuals at any socioeconomic level, individuals who live in poverty or in overcrowded conditions are at much higher risk for scabies. Lack of local expertise can result in failure to recognize scabies, leading to delayed diagnosis and inadequate treatment of cases and contacts. Scabies disproportionately affects many Indigenous (First Nations, Inuit, Métis) communities where risk factors are present. Scabies risk is also higher in young children, the elderly and immunocompromised individuals. Institutional outbreaks of scabies have also been reported. Apart from a very itchy rash, scabies can lead to secondary bacterial infections and related complications, as well as to stigmatization, depression, insomnia and significant financial costs. Topical antiscabies lotions are still the mainstay of treatment, but oral ivermectin has also proven effective under certain circumstances. Asymptomatic and symptomatic household members should all be treated at the same time. In Canada and globally, the presence of scabies is usually a symptom of poor living conditions and a sign that basic necessities need improvement. Clinicians who work with Indigenous communities can improve their ability to diagnose and treat scabies, and should advocate for better living conditions where scabies is prevalent.

Key Words: Crusted scabies; Indigenous communities; Infestations; Norwegian scabies; Oral; Poverty; Pruritus

Scabies is a contagious skin infestation that affects an estimated 300 million people around the world every year.⁽¹⁾ While scabies can affect people at all socioeconomic levels, individuals who are young, elderly, immunocompromised or developmentally delayed are at significantly higher risk for scabies and related complications.^(2,3) Community-wide and institutional outbreaks^(2,4) have occurred in child care settings, long-term care facilities and prisons. Because scabies is associated with poverty, overcrowding, malnutrition and reduced access to health care,⁽³⁾ some Indigenous and resource-poor communities are disproportionately impacted.^(5,6) In some remote Australian Indigenous communities, the point prevalence of scabies approached 50%.⁽⁷⁾

Because scabies is not a reportable disease in Canada, the epidemiology and real prevalence of this condition among Indigenous populations is not known. However, in the experience of health professionals working with Indigenous communities, scabies results in significant and under-recognized morbidity. Poverty, overcrowding, bed-sharing and families with many children are all factors that increase the risk of scabies spreading in some Indigenous communities. A lack of local expertise can lead to failure to recognize

La gale

La gale est une infestation cutanée contagieuse causée par un acarien. Elle est responsable d'une morbidité importante dans le monde, puisqu'environ 300 millions de nouveaux cas se déclarent chaque année. Même si elle touche des individus de tous les milieux socioéconomiques, les personnes qui vivent dans la pauvreté ou qui habitent dans des logements surpeuplés y sont beaucoup plus vulnérables. À cause de l'absence de compétences locales, la gale risque de passer inaperçue, ce qui peut entraîner un retard de diagnostic et un traitement inadéquat des cas et des contacts. La gale est présente dans un nombre disproportionné de communautés autochtones (Premières nations, Inuits, Métis) où interviennent des facteurs de risque. Le risque de gale est également plus élevé chez les jeunes enfants, les personnes âgées et les personnes immunodéprimées. Des éclosions de gale se produisent également dans des établissements fermés. À part un prurit intense, la gale peut susciter des infections bactériennes secondaires et des complications connexes, de même que des préjugés, une dépression, de l'insomnie et des coûts financiers importants. Les lotions topiques contre la gale demeurent le pilier du traitement, mais l'ivermectine par voie orale s'est révélée efficace dans certaines situations. Les membres asymptomatiques et symptomatiques du ménage doivent tous être traités en même temps. Au Canada et dans le monde, la gale est généralement révélatrice de pauvreté et de manque d'accès aux besoins de première nécessité. Les cliniciens qui travaillent auprès des communautés autochtones peuvent améliorer leur capacité de diagnostiquer et de traiter la gale et doivent préconiser de meilleures conditions de vie dans les milieux où la gale est répandue.

scabies, delays in diagnosis and inadequate treatment of cases and their contacts. A lack of clean running water may contribute to secondary skin infections and related complications. Improving living conditions and enhancing local health expertise will help reduce the burden of scabies in Indigenous communities.

TRANSMISSION AND DISEASE

Scabies is the result of an infestation with a mite, *Sarcoptes scabiei*, that is transmitted by direct skin-to-skin contact.⁽²⁾ Because the mite can only live away from human skin for a brief time (typically 24 h to 36 h),⁽⁸⁾ only limited transmission occurs through fomites, such as clothing and bed linen. The female adult mite burrows into the epidermis, depositing eggs over several days. The larvae hatch in approximately two to four days and take approximately 10 to 14 days to mature into adult mites.^(3,8) The infected individual develops a hypersensitive reaction to the mite, its eggs or its feces, which usually occurs approximately three weeks after the first exposure. With reinfestations, the immune response can be brisk, even as soon as the day after reinfection.⁽⁸⁾ The average adult infestation is approximately 10 to 15 adult female mites.⁽³⁾

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The classic presentation of scabies includes burrows, erythematous papules and generalized pruritus that is typically worse at night. Burrows are usually located between the fingers, in the flexure of the wrist, elbows or armpits, or on the genitals or breasts; however, they can sometimes be difficult to find.⁽³⁾ In infants and elderly individuals, burrows may be found on the head and neck, and can manifest as vesicles, pustules or nodules.

Scabies is often confused with other pruritic rashes such as eczema, impetigo, tinea corporis (ringworm) and psoriasis.⁽³⁾ For example, according to one study from Brazil,⁽⁹⁾ 18% to 43% of children diagnosed with eczema actually had scabies. Scratching frequently leads to secondary bacterial infections such as impetigo, pyoderma with *Staphylococcus aureus* and group A streptococcus. Complications of bacterial infections include poststreptococcal glomerulonephritis⁽¹⁰⁾ and cardiac disease.⁽¹¹⁾ Furthermore, scabies can lead to stigmatization, depression, insomnia, and significant direct and indirect financial costs.^(5,8,12)

Crusted scabies (Norwegian scabies) is a rare condition caused by the host response to control the mite, resulting in hyperinfestation with millions of mites, severe inflammation and hyperkeratotic reaction.⁽¹³⁾ Approximately one-half of patients with crusted scabies do not report itching. Crusted scabies can occur in immunologically normal hosts,⁽¹³⁾ although it is more often associated with immunodeficiencies such as individuals with HIV, human T-lymphotropic virus 1, leukemia, T-cell lymphoma or autoimmune disease, as well as developmental delay and malnutrition.⁽¹³⁾ Crusted scabies is commonly misdiagnosed as psoriasis or eczema, especially when a topical steroid has already been used,⁽¹⁴⁾ and is more difficult to treat than classic scabies. Because of the burden of mites (potentially millions),⁽¹⁵⁾ crusted scabies is also more contagious than classic scabies and can cause significant outbreaks.⁽¹⁶⁾

DIAGNOSIS

The clinical diagnosis of scabies is usually based on a history of pruritic rash that is typically worse at night and present in characteristic locations, especially with similar symptoms occurring in other household members. Although the presence of burrows often helps to establish the diagnosis, these are infrequently seen. Other ways to make a definitive diagnosis for scabies include:

- skin scraping (scraping an oil-covered scalpel blade across a burrow and examining the sample microscopically),
- a burrow ink test (covering a lesion with ink and removing it with alcohol leaves ink tracking in the burrows),
- dermatoscopy (direct visualization of magnified skin). This option is not practical in many locations, especially remote communities.⁽³⁾

TREATMENT

All household contacts, even those without symptoms, must be treated simultaneously to avoid reinfestation and transmission. The main reason for treatment of household contacts is that scabies symptoms can take several weeks to appear, especially in new cases. In community-wide or institutional outbreaks, mass treatment should be considered. Typical treatment options for scabies are outlined in Table 1. Topical lotions are the mainstay of scabies treatment, although oral ivermectin has been used more recently in special circumstances.⁽¹⁷⁾ First-line treatment continues to be 5% permethrin cream or lotion, which is applied to the skin from neck to toes, usually for several hours – often overnight – then washed off. For infants, apply lotion to the face as well. Some products need to be reapplied after an interval of one to two weeks because they do not kill the mites' eggs.⁽¹⁷⁾ In general, a retreatment in seven days improves efficacy. It is important to note that

due to hypersensitivity, itching may persist or even increase over several weeks despite killing the mites and is not by itself evidence of persistent infection. However, the appearance of new lesions should be considered as a sign of persistent infection and a signal to retreat. Patients and their families should be warned of the possibility of persistent itching and an antihistamine or steroid may be considered as an adjunct to help relieve pruritus.⁽¹⁷⁾ Secondary bacterial infections need to be treated with topical or oral antibiotics, depending on severity.

Topical creams or lotions with 5% permethrin have low toxicity and excellent results but are relatively expensive compared with other treatments. A second treatment is usually given one week later to eliminate recently hatched eggs. Benzyl benzoate (28% for adults, and 10% to 12.5% for children) has high efficacy and a lower cost and is widely used outside of North America; it sometimes causes immediate skin irritation. Lindane (gamma benzene hexachloride), an organochloride that has been withdrawn from the market in many parts of the world because of neurotoxicity concerns,⁽¹⁸⁾ is only considered when other therapies have failed. Sulphur precipitated in petroleum jelly has been used safely in young children and pregnant women, although its odour and messy application can compromise adherence to treatment.

While oral ivermectin has been shown to be effective in circumstances described below, this medication is not available in Canada except through Health Canada's Special Access Programme. Ivermectin is a synthetic drug, which was discovered incidentally to have an impact on scabies during mass treatments for strongyloides and filariasis. Although 5% permethrin continues to have higher efficacy according to studies,⁽¹⁹⁾ ivermectin has the advantage of being administered orally as a single dose, making treatment easier in some settings. Oral ivermectin has proven effective in managing institutional or community outbreaks, with rapid reduction of scabies symptoms.⁽²⁰⁾ It has also been used very effectively in managing crusted scabies, especially with recurrent disease, and often in combination with keratolytics (to break down the keratin in the scales) or with topical 5% permethrin.⁽²¹⁾ Ivermectin's use for scabies remains off-label but can be requested under Health Canada's Special Access Programme (www.hc-sc.gc.ca/dhp-mps/acces/drugs-drogues/index-eng.php) for controlling outbreaks and crusted scabies therapy. Ivermectin is not approved for use in children weighing <15 kg, or in women who are pregnant or breastfeeding. Topical ivermectin may become a future treatment option but is not licensed for scabies management at this time.

SCABIES CONTROL MEASURES

- Treat all symptomatic and asymptomatic household members and close contacts with one of the therapies described in Table 1.
- To prevent reinfection, treat all household members and close contacts at the same time as the known case.
- All bed linen (sheets, pillowcases, blankets) and clothing worn next to the skin (underwear, T-shirts, socks, pants) should be laundered using a hot cycle wash and a hot drying cycle.
- If hot water is not available, put all linen and clothing into sealed plastic bags and store them away from household members and close contacts for five to seven days. The mite cannot survive beyond four days without contact with human skin.
- Children may return to child care or school the day after completing their initial treatment series.
- By improving living conditions and building local expertise in Indigenous communities, individual morbidity and the risk of scabies spread can be reduced.

TABLE 1
Scabies management in Canada

Treatment	Application period	Repeat	Age restrictions	Caution(s)	Other comments
5% permethrin cream (Nix Dermal Cream*, Kwellada-P Lotion†)	Leave on for 12–14 h, followed by bathing	7 days	>3 months of age		Consider as first-line treatment
10% crotamiton lotion/cream (Eurax Cream)	24 h	May be repeated in 24 h; wash off 48 h after last application		Skin irritation and contact dermatitis	Consider as second-line treatment
Sulphur (8%–10%) precipitated in petroleum jelly (compounded)	Daily for 3 consecutive days	No	Safe in pregnancy and for infants		Effective but not commonly used due to messy application and odour
Benzyl benzoate 28% in adults, 10%–12.5% in children	24 h	May be repeated 1 day apart	Caution in pregnancy		Not available in North America but widely available elsewhere
1% Lindane cream	Apply 8–12 h for adults, 6–8 h for children, followed by bathing	Only if new mites or papules after 7 days of treatment	Use with caution in small children	Associated with neurotoxicity, ataxia, tremors and bone marrow suppression	Consider as second-line treatment only
Ivermectin (oral) for outbreak (Stromectol, Mectizan‡)	Single dose oral 200 mcg/kg	May need to be repeated in 2 weeks	Safety not established in infants <15 kg, pregnant or lactating women		Not licensed in Canada§
Ivermectin (oral) for crusted scabies (Stromectol, Mectizan‡)	Single dose oral 200 mcg/kg	Multiple repeat doses with keratolytics¶ and consider combination with 5% permethrin	Safety not established in infants <15 kg, pregnant or lactating women		Not licensed in Canada§

Read the product monographs before prescribing or applying any of these products. For information on coverage under Non-Insured Health Benefits Program, see <<http://www.drugcoverage.ca/en-ca/Federal-Plans/non-insured-health-benefits>>. *GlaxoSmithKline, USA. †MedTech Products, USA. ‡Merck and Co, USA. §Need to request through Health Canada's Special Access Programme <www.hc-sc.gc.ca/dhp-mps/acces/drugs-drogues/index-eng.php>. ¶Keratolytics help remove keratin to allow better penetration of topical medications

OTHER CONSIDERATIONS

Scabies management must be clearly discussed with patients, their family and close contacts, as appropriate. Written instructions can be helpful, especially when provided in a family's native language. Be sure to inform the family that even with appropriate treatment, symptoms may persist for several weeks. For an asymptomatic contact, explain that there may be a delay of three weeks between infestation and the appearance of symptoms, making whole-family/household treatment necessary to prevent further infection and spread.

FUTURE MEASURES

The WHO considers scabies to be a neglected tropical disease with considerable disease burden worldwide.(3,11) This designation may result in more research investigating scabies prevalence and control. In Canada, addressing underlying risk factors, such as poverty, overcrowding and lack of access to clean water, while improving access to health care, should help to reduce the burden of this disease in Indigenous communities. Plant derivatives may hold some promise as future scabies treatments, but have yet to be evaluated.(3)

RECOMMENDATIONS

Scabies is a condition that disproportionately affects Indigenous communities in Canada, largely because of underlying living conditions. The Canadian Paediatric Society recommends that health professionals working with Indigenous communities:

- Thoroughly inform themselves concerning the signs and symptoms of scabies, current diagnostic measures and treatment options.
- Engage in advocacy efforts to raise awareness of the link between scabies and substandard living conditions, and press for improvements to basic living standards. For more information,

see the Canadian Paediatric Society position statement "Housing need in Canada: Healthy lives start at home".

- Help to lower infection rates through advocacy and education, because scabies should be a relatively infrequent health problem in a country such as Canada.

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