Scabies is an infectious disease of the skin caused by a mite whose penetration is visible as papules or vesicles, or as tiny linear burrows containing mites and their eggs. It occurs worldwide and specifically in institutions where hygiene procedures are suspect. It is also associated with overcrowding and poor hygiene. Scabies can be endemic.

Lesions are prominent around the webs; anterior surfaces or wrists and elbows; anterior axillary folds; belt line; thighs and external genitalia in men; and nipples, abdomen, and lower portion of buttocks in women. In infants, the head, neck, palms, and soles may be involved. These areas are generally spared in older individuals.

Itching is intense, especially at night, but complications are limited to lesions secondarily infected from scratching.

Infestation with *Sarcoptes scabiei* var. *hominis*, a mite, causes scabies.
**Immunosuppressed and Older Patients**

In immunodeficient individuals and in elderly patients, infestation often appears as a generalized dermatitis more widely distributed than burrows, with extensive scaling and sometimes vesiculation and crusting.

**Transmission**

Transfer of parasites is by direct contact only (skin-to-skin). Transfer from undergarment or bedclothes may occur only if these have been contaminated by infected persons immediately beforehand. Scabies can be transmitted sexually. Mites can burrow beneath the skin surface in 2.5 minutes. Norwegian scabies is highly infectious due to large numbers of mites in the exfoliating scales.

**Reservoir**

Humans are the most common reservoir for scabies infestation.

**Incubation Period**

Incubation period is 2–6 weeks before onset of itching in persons with previous exposure. Persons who have been previously infested may develop symptoms in 1–4 days after re-exposure.

**Period of Communicability**

A person remains communicable until mites and eggs are destroyed by effective treatment.

**Complications**

Persistent pruritus caused by secondary mite sensitization is a complication of scabies. Intense scratching can lead to severe excoriation, tissue trauma, and secondary bacterial infections, e.g., *Staphylococcus aureus, Streptococcus pyogenes*.

**Diagnostic Tests**

Potassium hydroxide wet mounts of burrow scraping may reveal adults, larvae, and eggs. For optimal results, a dermatologist or microbiologist/technologist should perform the tests on site.

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**Equipment Needed for Skin Scraping:**

1. Gloves
2. Magnifying glass
3. Gooseneck lamp or flashlight (bright)
4. Felt tip pen-green or blue washable ink
5. Alcohol swabs
6. Number 15 scalpel blades, glass slides for scraping, or curettes
7. Scalpel holder
8. Kelly clamp or other forceps
9. Slides and cover slips
10. Mineral oil
11. Requisition form, if slides are being sent to a clinical lab (private, hospital, state)
12. Sharps container

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**Procedures for Skin Scrapings**

*From the Kentucky Department of Health Services, Communicable Disease Branch - 1996*

Establish and confirm the diagnosis by skin scraping and microscopic identification of mites, eggs, or scybala (fecal pellets). A nurse from the facility can be taught this procedure by a dermatologist, the consulting physician, or by a nurse or technician who has had professional training in doing the procedure.

Mass treatment should not be initiated unless a definite diagnosis has been made in at least one of the symptomatic cases.

1. Scrape those persons with the most severe rash first. The elderly may present with severe urticaria and bullous lesions.

2. Shoulders, back, and abdomen are choice areas for scraping in the elderly. Other sites include hands, wrists, elbows, feet, ankles, buttocks, axillae, knees, thighs, and breasts.

3. Use a hand magnifying lens to identify recent burrows or papules. A bright light and magnifying glass will assist in visualizing the tiny dark speck (the mite) at the end of the burrow.
4. Identify these high yield lesions by applying mineral oil (best used over dry scaly areas) or by applying the burrow ink test to possible burrows. The burrow ink test is done by using a wide felt tip pen (blue or green are best) over burrows and then wiping off with an alcohol swab. The alcohol will remove most of the surface ink, but will not remove the ink taken up by the burrow, thus leaving a dark irregular line.

5. Apply mineral oil or, preferably, microscope immersion oil to lesions, scalpel blade, and glass slides.

6. Scrape non-excoriated, non-inflamed areas (burrows and papules) vigorously with a #15 scalpel blade or glass slide held at a 90° angle to the skin, while holding the skin taut, until the stratum corneum is removed. (Vigorous scraping appropriately results in a few red blood cells visible under the microscope, but there should not be frank bleeding.) Some practitioners prefer using a small curette. Change blades or curettes between scraping on different persons. Blades can be placed and removed from the handle with forceps. Used blades must be placed in a sharps container.

7. Transfer skin scrapings from 6 different sites to a single slide or to 6 different slides per patient. These scrapings can be pushed onto the slide edge and then moved to the center of the slide.

8. Place the cover slip over the slide.

9. Examine entire slide methodically under low power at 25−50x magnification for at least 5 minutes. Low power (1.5−4x) is useful initially. The microscope should be taken to the facility; however, if the practitioner is not trained in reading the slides, the cover slip should be secured to the slide at all edges with clear nail polish and transported personally, by courier, or by mail (in a secure mailer) to a hospital, rural clinic laboratory, or a physician’s office with pre-arrangements.

**Method of Control**

1. **Preventive measures:** Education of the public, healthcare workers, patients/residents, and immediate families on modes of transmission and treatment should be performed on a regular schedule.

2. **Control of patient:** The use of Standard Precautions (formerly called Universal Precautions) is satisfactory. If the patient is unable to be taught and is a threat to other patients, a private room should be considered for 24 hours after start of medication.

3. **Laundering:** Normal laundering procedures at temperatures of 140°F is more than adequate to destroy the mite and their eggs. There is no need to bag items of clothing or linens for 48 hours or longer prior to washing.

4. **Search for contacts:** Search for unreported or unrecognized cases among companions or household members. Treat persons prophylactically who had skin-to-skin or sexual contact with infested person. Check with medical staff of the possibility of infestation. If a staff member has become infested by a patient and is treated, an OSHA 200 form must be completed.

5. **Treatment**

   a. Pennethrin 5% cream (Elimite)−Thoroughly massage into skin covering the entire body (except the head) from the soles of the feet to the neck. For infants, young toddlers, and geriatric patients, it should be applied to the entire body including the scalp, neck, temples, and forehead, because the mite often infests these areas in those age groups.

   After 8−14 hours, shower to remove. Contact with eyes and mouth should be avoided. One application is almost curative.

   *Note from the Kentucky Department of Health Services: Elimite is still considered the drug of choice by several authorities, including the 1997 American Academy of Pediatrics “Red Book” and the Medical Letter, January 2, 1998. Both references recommend alternative drugs, ivermectin and 10% crotamiton (Eurax).*
b. Crotamiton 10% (Eurax)—Apply from neck down. Cream must be thoroughly massaged into skin. Apply twice a day for 5 days.

c. Lindane 1% (gamma benzene hexachloride/Kwell cream)—Apply to all areas from neck down. Wash off after 8 hours. Repeat after one week if no improvement.

Note: Pruritus and rash may persist for 1 to 4 weeks after treatment. Pruritus and residual rash should not be considered treatment failure until one month after last treatment. To prevent or lessen the possibility of these signs and symptoms, some dermatologists use 1% hydrocortisone cream or triamcinolone cream (0.1%–0.025%) applied to the most intense rash, and a lubricating agent or emollient to the lesser rash for children. A 1% hydrocortisone cream or triamcinolone cream (0.1%) can be used on adults. Steroid creams should not be applied until after the first scabicide treatment. Overtreatment is common and should be avoided because of toxicity, especially with Lindane. Close supervision of treatment, including bathing, is necessary of residents in a long-term care to prevent toxicity because of poor application.

**Reasons for Treatment Failures**

1. Infected or crusted lesions did not allow penetration of scabicide. Need to soften scaliness.
2. Re-infestation from untreated contacts.
4. Resistance or mites to the scabicide.

**Nursing Interventions**

1. Have the patient's fingernails cut short to minimize skin breaks from scratching, which may lead to bacterial infections.
2. Suggest that the patient's/resident's family and other close personal contacts be checked for symptoms.
3. Have the patient notify sexual contact(s).
4. If the patient is a school child, notify the school of his/her condition.
6. Encourage the patient/resident to verbalize his/her feels about the infestation, including embarrassment, fear of rejection by others, and body image disturbance.

**Patient Teaching**

1. Teach the patient and his/her family to identify the characteristic lesions and the modes of transmission.
2. Assure the patient and his/her family that the infestation can be treated successfully with good hygiene and the use of pediculicides.
3. Stress the importance of meticulous hand washing to prevent the infection's spread and recurrence.
4. Show patient/resident the manner of application for the pediculicide.
5. Teach the patient/resident the signs of skin irritation and hypersensitivity reactions.
6. Advise the patient/resident to report to the nurse or physician immediately if these signs develop.

**Scabies: Effects, Treatment, and Prevention**

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