Scabies

Rick Lin, DO MPH
Texas Division
KCOM Dermatology
Residency Program
Scabies is an intensely pruritic, highly contagious infestation of the skin arachnid mite *Sarcoptes scabiei*, variety *hominis*.

Originally, scabies was a term used by the Romans to denote any pruritic skin disease.

In the 17th century, Giovanni Cosimo Bonomo identified the mite as one cause of scabies.
Background

- The name *Sarcoptes scabiei* is derived from the Greek words
  - *sarx* (the flesh)
  - *koptein* (to smite or cut) and the
  - Latin *scabere* (to scratch). Today, the term scabies refers to the skin lesions produced by this mite.
Background

- It has played an important role in world history, with epidemics partially coinciding with military activities and major social upheavals.
- Scabies has been recognized as a disease for approximately 2500 years.
- It was historically treated with topical sulfur, a treatment still in use today.
Background

- Like syphilis, scabies has come to be known as the great imitator.
- Its spectrum of clinical manifestations may lead the practitioner to the wrong diagnosis.
- The phrase "7 year itch" was first used with reference to persistent, undiagnosed infestation with scabies, not as a movie title.
Pathophysiology

- The mite, *S. scabiei* spreads disease through direct and prolonged contact between hosts.
- The mite remains viable for 2-5 days on inanimate objects; therefore, transmission through for mites, such as infected bedding or clothing, is possible, but less likely.
- Once bound to their host, 10-15 mites mate on the surface of the skin.
Pathophysiology

- After mating, the male mite dies.
- The female mite burrows into the epidermis of the host using her jaws and front legs, where she lays up to 3 eggs per day for the duration of her 30-60 day lifetime.
- An affected host harbors approximately 11 adult female mites during a typical infestation. The eggs hatch in 3-4 days.
- The larvae leave the burrow to mature on the skin. Fewer than 10% of the eggs laid result in mature mites.
Pathophysiology

- A delayed type IV hypersensitivity reaction to the mites, their eggs, or scybala (packets of feces) occurs approximately 30 days after infestation.
- This reaction is responsible for the intense pruritis, which is the hallmark of the disease.
- Individuals who already are sensitized from a prior infestation can develop symptoms within hours.
Pathophysiology

- Scabies usually is transmitted by direct contact with an affected individual.
- Although it has been disputed, it is believed possible to become infested by indirect contact with the personal items or clothing of an affected person because the mite can survive away from the skin for 2-5 days.
Diagnosis

- Definitive diagnosis of scabies is made by direct visualization of the mite, eggs, or feces.
- Mineral oil should be placed on the end of a burrow, preferably where a black dot is visible.
- The area should then be scraped with a number 5 scalpel blade and the scrapings shed onto a slide.
Norwegian Scabies

- In 1848, the Norwegians Danielssen and Boeck described a highly contagious variant of scabies that occurs in immunocompromised patients.
- Crusted or hyperkeratotic scabies, as it has come to be known, is an overwhelming scabies infestation.
Norwegian Scabies

- This rare form of scabies occurs in elderly or mentally incompetent patients. Because of an impaired antibody response, these individuals can be infested with thousands to a couple million mites.
Incidence

- **Frequency In the US:** In developed countries, scabies epidemics seem to occur in 15-year cycles; however, the most recent epidemic began in the late 1960s and for some unknown reason continues today.

- **Internationally:** In undeveloped countries, scabies infestation is endemic with millions affected worldwide.
Mortality/Morbidity:

- Scabies is unlikely to cause a long-term disease state in healthy individuals.
- Lesions and associated pruritus may last for weeks to months without adequate treatment.
- The immunocompromised are likely to develop crusted scabies, which may be impossible to fully eradicate.
History:

- Main presenting features include rash and intense itching.
- In young infants, pruritus may be difficult to detect. Irritability, especially during sleep, may be the only symptom.
- History of involvement of other family members and contacts is often present and helps in establishing the diagnosis.
Physical Exam

- Primary and secondary lesions
- The classic rash of scabies includes primary and secondary lesions.
- The primary lesions include burrows, papules, vesicles, and pustules.
- The secondary lesions occur from scratching and include excoriated papules and crusted areas.
Physical Exam

- Rash distribution
- In infants, the most commonly affected areas are the palms, soles, axillae, and scalp.
- Involvement of the face is uncommon in people older than 5 years.
Physical Exam

- In older children and adults, lesions are usually confined below the neck and involve the web spaces between the fingers, flexor surfaces of the arms, wrists, axillae, and the waistline. The umbilicus, nipples, penis, and scrotum may also be affected.
Norwegian (crusted) scabies

- Norwegian scabies is characterized by crusted lesions and scaly plaques located mainly on the hands, feet, scalp, and other pressure-bearing areas.
- These may sometimes generalize. Hyperkeratosis may occur in these lesions.
- Patients with Norwegian scabies can be infected with hundreds to millions of adult female mites. As a result, this type of scabies is highly contagious and may spread rapidly through patients in an institutionalized setting.
Norwegian (crusted) scabies

- Nodular scabies: Orange-red nodules located in the axillae and groin define nodular scabies. These nodules are pathognomonic of scabies infection.
Permethrin 5% (Elimite, Nix)

- Permethrin is a neurotoxin that causes paralysis and death in ectoparasites.
- It is the most common treatment used today for scabies.
- Particularly for infants, young children, and pregnant or breastfeeding women.
- The lotion should be applied over the entire body, including the face and scalp in infants. It should be left on for 8-12 hours and then rinsed.
Permethrin 5% (Elimite, Nix)

- Reapplication one week later is advised; however, no controlled studies exist that show that 2 applications are better than one. No cases of scabies resistant to permethrin have been documented.
- Infants >2 months: Apply as in adults and also on hairline, neck, scalp, temple, and forehead
  Children: Apply as in adults if hair not infested
Precipitated sulfur 6% in petrolatum

- This is the oldest known treatment of scabies.
- It is safe and effective and the treatment of choice in infants <2 mo and pregnant or lactating women.
- Sulfur is less acceptable to patients secondary to its odor and messy application.
- Apply topically to entire trunk and extremities hs for 3 consecutive nights
- C - Safety for use during pregnancy has not been established.
Lindane 1%

- Previous standard treatment for scabies, but it is not very safe in children because of transcutaneous absorption leading to neurotoxicity. Overall, permethrin is a safer choice.

- Apply thin film topically over entire body below the head, leave on 8-12 h before washing off with water; may repeat in 1 wk if necessary; not to exceed 30 g/application