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NON-CIRCULATING

# Texas Preventable Disease

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# NEWS

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TEXAS STATE DOCUMENTS  
COLLECTION

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## SCABIES

A recent outbreak of the human scabies mite (*Sarcoptes scabiei* var *hominis*) at a central Texas hospital has once again brought to mind the importance of this mite's ability to cause a contagious skin disease in humans. Knowledge of the biology, life cycle, and modes of transmission of this arthropod is important in formulating effective control measures.

Since antiquity, this mite has been reported as the causative agent of the "seven-year itch." Actually, endemic peaks seem to occur in roughly 15-year cycles.<sup>1-3</sup> Although other mites (eg, chigger, bird, rat, and straw itch mites) will cause itching, they do not spend their entire life cycle on or in the skin of humans as does the human scabies mite. However, several other varieties of scabies mites such as those found on canines and swine can infest humans.<sup>2,4</sup>

Adult scabies mites average 0.3 mm to 0.5 mm in length. They have short legs, the posterior pair not extending beyond the margin of their nearly circular bodies. The mites hold onto the host's skin by means of suckers located on their anterior legs. The long bristles on their posterior legs are used to lift their hindquarters, as their mouthparts penetrate the host's skin.<sup>1</sup> In recent studies, no digging or cutting with legs or mouthparts was observed.<sup>5</sup> The mite apparently produces secretions that lyse the host epidermis. It then propels itself forward with its appendages, as the host tissue around the anterior body of the mite is dissolved.<sup>2,5</sup> This forms the characteristic tunnel-like burrow.

Lowered environmental humidity may compel these mites to move to regions of higher humidity on the body, such as around the axillae, groin, nipples, elbows, umbilicus, interdigital areas, inner thighs, and lower legs.<sup>1,6,7</sup> The most commonly affected areas on the adult host are the hands, wrists, and waist. On children, infestations may also involve the face and head; on infants, the soles, palms, and head.<sup>2,6</sup> To some degree, this distribution may be temperature-related, although an inverse relationship to sebaceous gland activity has been postulated. Those at high risk for exposure to scabies are sex partners, family members of an infested person, hospitalized or institutionalized persons, and hospital staff who handle infested patients.<sup>1-3,8</sup> Hospital staff who have had contact with an infested patient may experience an infestation on the trunk and arms.<sup>2</sup>

Although investigations have been limited, off-host survival time for *S. scabiei* var *hominis* is similar to that of *S. scabiei* var *canis* which can survive for 24 to 36 hours under normal room conditions (21°C, 40% to 80% relative humidity [RH]) when dislodged from the host.<sup>5</sup> These studies have indicated that high RH and cool temperatures (above freezing) favor survival, whereas warmer temperatures and low RH can produce earlier dehydration and death. Scabies mites actively seek a host when separated from it and will begin penetration of the skin within a very short period of time. Factors that contribute to potential transmission of scabies include this mite's ability to survive for substantial periods of time off the host, to retain infestivity when dislodged from the host, and to penetrate efficiently when in contact with a host.<sup>5</sup>

The itching that results from a scabies infestation is produced by a localized reaction to the mites and their byproducts found in the burrow.<sup>1,9</sup> Many investigators now believe that scratching in response to the itching actually eliminates some of the mites. However, the incubation period between the time of exposure and the manifestation of the typical itch syndrome may be as short as several days in a previously infested person or as long as several



weeks in a person not previously infested.<sup>10</sup> Therefore, even asymptomatic contacts may carry and transmit the mites and should be treated along with symptomatic individuals.<sup>2,7</sup>

An individual with scabies is normally infested with an average of ten to 12 mites.<sup>2,6</sup> However, a condition known as Norwegian (or "crusted") scabies may develop in some individuals, especially in those who are immunocompromised or unable to scratch areas of skin containing mites.<sup>2,9</sup> This is a highly infectious form of scabies in which large numbers of mites are contained in exfoliating scales from the patient's skin. It is important to note that symptoms resulting from scabies may resemble those of eczema or psoriasis;<sup>2,3</sup> therefore, to diagnose scabies correctly, skin scrapings of the infested area should be taken.<sup>2,7</sup>

Institutions that experience an outbreak of scabies should implement control measures promptly and coordinate treatment of all contacts (See accompanying article.). Contacts include the patient's family and persons who have had direct contact with the patient or his/her bed linen, clothing, or towels. All contacts should be treated at the same time to assure eradication of scabies from the household and institution.<sup>7,8</sup> Because symptoms may not develop for days or even weeks following exposure, asymptomatic contacts as well as symptomatic individuals should be treated.<sup>2,7</sup>

The medication of choice is 1.0% lindane, although its duration of effectiveness is limited by the short time of application (8 to 12 hours) which is recommended.<sup>6,7</sup> In adults and children, 1.0% lindane should be applied to all areas of the skin from the neck down to the soles of the feet. The lotion should be left on for 8 to 12 hours and then removed by thorough washing. Infants should not be treated with lindane, but may be treated with crotamiton. Itching may continue for two to three weeks after treatment due to hypersensitization to the foreign matter still present in the skin burrows. Supportive care with applications of topical anti-inflammatory agents, such as hydrocortisone, may be needed after miticide treatment to reduce the itching.<sup>2</sup>

Although casual contact does not usually result in scabies transmission, exposure through contaminated articles such as bed linen, towels, and clothes can occur.<sup>6</sup> Such articles can be decontaminated by washing in hot water (60°C, 140°F) and/or drying in a hot air dryer. Items that cannot be washed or dried should be placed in a plastic bag, sealed, and stored for two weeks. Even under ideal conditions, scabies mites can survive for only short periods without a host.

Any delay in making a correct diagnosis may allow for widespread physical contact with an infested patient, especially in cases of Norwegian scabies. Developing a coordinated program to insure proper treatment and proper management of infested persons and their contacts is the key element in limiting the scope of a scabies outbreak.

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This report was prepared by entomologist CPT Nelson R. Powers, PhD, US Army Medical Service Corps, Fort Hood, TX, Paul V. Fournier, MPH, RPE, Supervisor, Parasitology-Entomology Branch, TDH, and Thomas G. Betz, MD, Chief, Bureau of Communicable Disease Control, TDH. The opinions expressed herein are those of the authors and not necessarily those of the Department of the Army or the Department of Defense (AR 360-5).

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## CONTROLLING SCABIES IN HEALTH CARE FACILITIES\*

1. A dermatologist should verify the diagnosis in at least one patient by identifying the mite microscopically in a skin scraping.
2. Once the diagnosis is made, treating the patient and all close contacts (ie, staff, roommates, family members), laundering of clothing and bedding, and environmental cleaning should occur simultaneously. Because of the long incubation period, even asymptomatic close contacts should be treated.
3. Patients should not be transferred to other units of the facility during outbreaks. If a patient must be transferred out of the hospital, the accepting facility must be notified of the scabies outbreak.
4. All patients should have their skin checked visually each day by a staff person.
5. Employees should check their skin daily. Staff in charge may wish to check the exposed surfaces of the skin on employees at least weekly. Those with suspicious lesions should be seen by their private physician or the health center for diagnosis and treatment (if necessary) before being allowed to return in work.
6. Staff should not be floated to other areas of the facility during an outbreak.
7. Staff who work in more than one facility should be instructed to bathe and put on a clean uniform before working at each facility. Dirty uniforms must be machine washed and dried using soap and the hot cycles (at least 140°F) of both the washer and dryer.
8. Staff handling dirty laundry at the facility should wear a gown and gloves. Clothing and bedding used by patients in the 96 hours before treatment should be machine washed and dried at a temperature of at least 140°F. Before handling clean linen, laundry workers should remove the gown and gloves and wash their hands thoroughly.
9. Notify visitors of the outbreak and encourage them to seek medical attention if signs of scabies appear.

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\* Adapted from: Los Angeles County Dept of Health Services. Scabies in health care facilities. Public Health Letter 1987;9(1):1-2.

**VIRAL ISOLATES FOR APRIL 1987**

<u>Virus</u>	<u>County of Residence of Patient(s)</u> <u>(Number of Isolates)</u>
Adenovirus	Bell (1), Dallas (2), Harris (1), Jefferson (1)
Cytomegalovirus	Dallas (23), Galveston (1)
Echovirus 7	Harris (1)
Echovirus 9	Hidalgo (1)
Echovirus 11	Harris (3)
Parainfluenza 3	Galveston (1)
Rotavirus	Bell (3), Dallas (1)
Respiratory Syncytial Virus	Bell (2), Dallas (1)
Varicella/Zoster	Bell (1)
<i>Chlamydia trachomatis</i>	Bell (20), Travis (8)

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