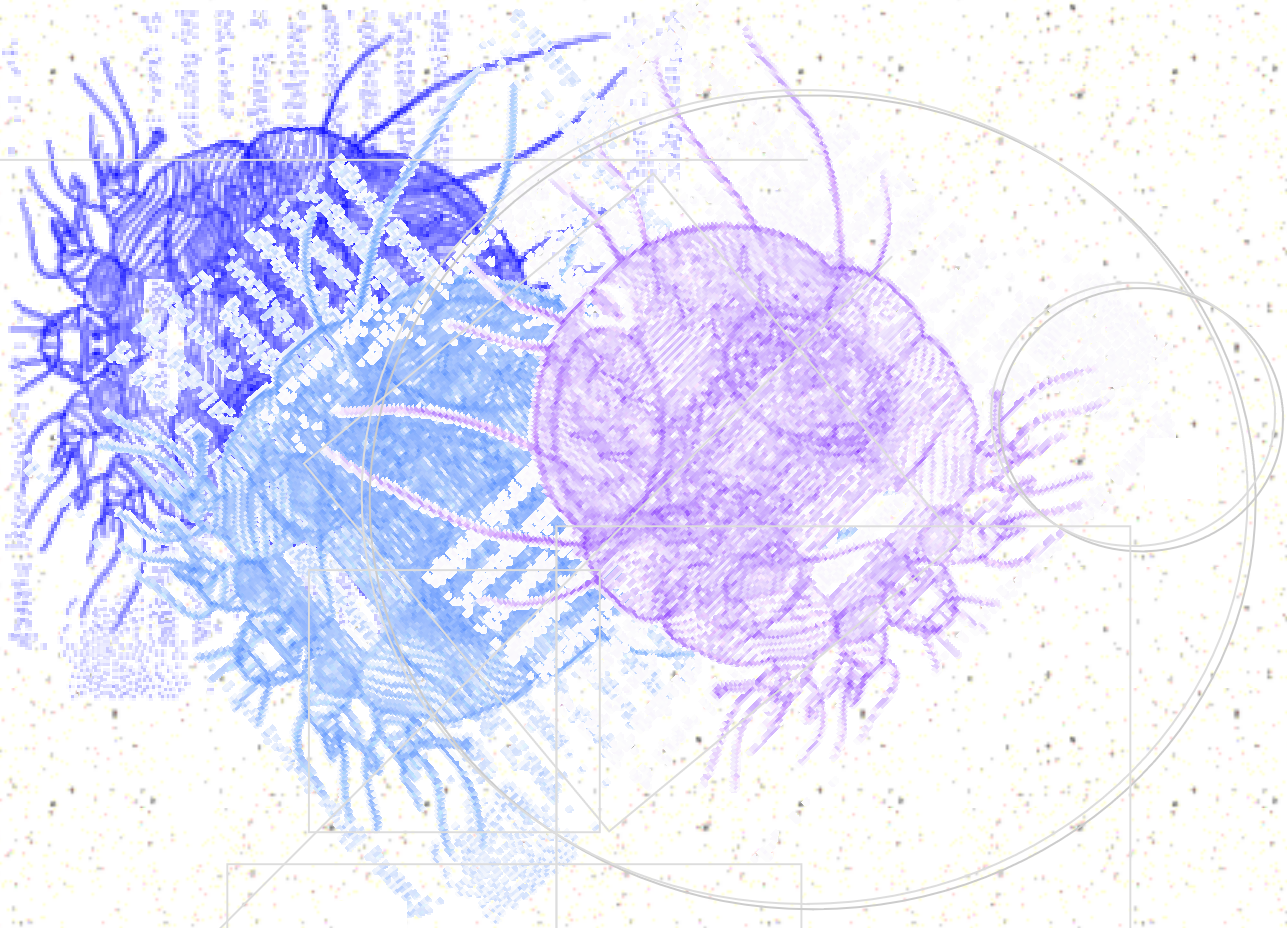

Michigan Department of Community Health

Scabies Prevention and Control Manual

Michigan Department of Community Health

MDCH

Jennifer M. Granholm, Governor
Janet Olszewski, Director

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Table of Contents

1. Introduction 3
2. Scabies Biology 4
3. Clinical Presentation..... 9
4. Specimen Collection..... 14
5. Scabies Control Measures 17
6. Medications to Treat Scabies..... 20
7. Environment of Care 27
8. Scabies Education 29
9. Outbreak Investigation 35
10. Control Measure Evaluation 44
11. Measures for Scabies Prevention .. 46
12. Child Populations..... 49
13. Scabies Reporting 52
14. References 55
15. Acknowledgements 57

Introduction

Sarcoptes scabiei, commonly known as scabies, is a parasitic mite that causes intense pruritius (itching), rashes, and lesions. Although infestation is not life-threatening, scabies is a nuisance disease that is commonly found in health care facilities and can result in crisis, fear, and panic. Scabies outbreaks can be costly to control and may easily reoccur if not properly contained and treated.

This manual has been created to provide sensible recommendations to health care agencies (including but not limited to acute care, long-term care, assisted living, and homes for the aged) by addressing scabies biology, diagnosis, treatment, prevention, and outbreak management. Additionally, this information is appropriate for institutions such as child and adult day cares, foster care homes, homeless shelters, schools, prisons, and any other institutions that may be affected by scabies. The recommendations in this manual are intended to supplement specific institutional scabies policies and protocols.

The *Michigan Department of Community Health Scabies Prevention and Control Manual* was developed by a committee comprised of epidemiologists, laboratorians, public health nurses, infection control professionals, entomologists, nursing home managers, state regulatory staff, and physicians. The committee identified the need for a document that is user-friendly, comprehensive, and concise, to assist institutions in developing rational responses to either a single case of scabies or a scabies outbreak. The information provided in this manual is based on best practices and current research.

Scabies Biology

General Information

The causative agent of human scabies is the mite, *Scarcoptes scabiei* (Figure 1). Mites are tiny arthropods related to spiders and ticks. They share with these organisms the feature of eight-jointed legs in the adult stage. Although mites in general are very diverse in terms of what they feed upon and where they live, the scabies mite is an obligate **ectoparasite** which must live on the outside of a mammal host to survive. The scabies mites are thought to be a single species, but with several physiological varieties or subspecies. The many variants of this species are generally considered to be very host-specific. Therefore, *S. scabiei* var. *hominis,* found on humans, can only develop and reproduce on a human host. The human scabies mite tends to prefer areas of folded skin (e.g., web between fingers, under buttocks, elbow and wrist area, around genitals, etc.) for burrowing.

Figure 1

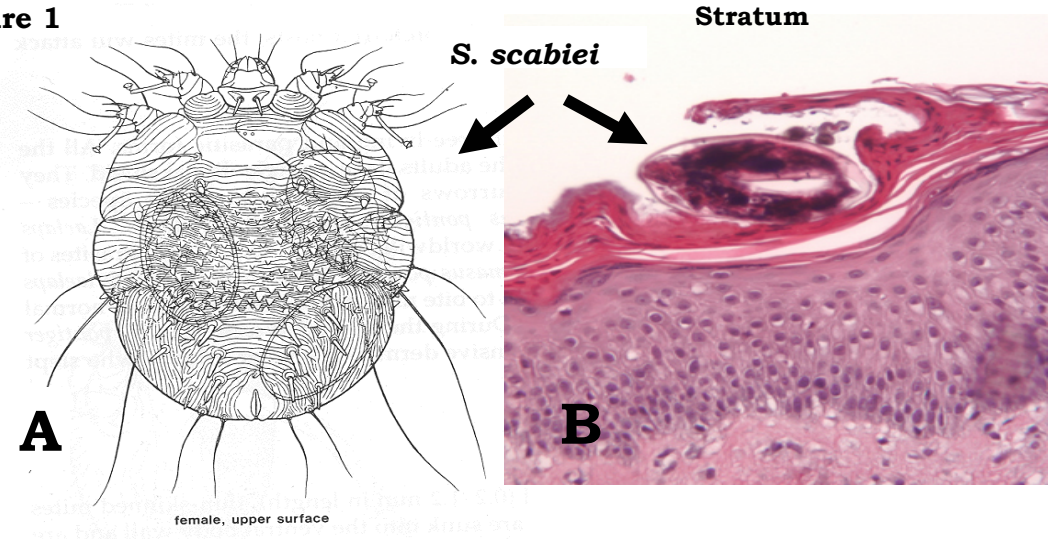


Figure 1. **A**. Adult female *S. scabiae*, ventral (stomach) view, with internal eggs (approximately 150X magnification). **B**. Adult scabies mite (cross-section) in outer layer of skin (*stratum corneum*) (approximately 100X magnification).

Note: Pictures courtesy of Michigan State University's Medical Entomology teaching slide collection

Human scabies mites are small (0.1 - 0.5 mm), eyeless, round or oval in shape, and flattened ventrally (stomach side) but convex dorsally (like a turtle) (Figure 1-A). They are generally white or colorless and because of their small size, can only be identified positively through the use of a microscope. Scabies mites do not transmit disease; however, their burrowing and feeding activities (Figure 1-B) create the irritation and allergen responses symptomatic of the infestation. The mites' activities and the associated itching and scratching may also lead to secondary bacterial infections.

Feeding

Mites feed by using their mouthparts and front legs to dig into the *stratum corneum* (outer epidermal layer) of the skin. They ingest tissue as they burrow and also feed on lymph fluids secreted by underlying skin layers to meet their growth requirements. Feeding activity and host immune system response to mite secretions and fecal matter are the sources of irritation that lead to scratching, scabbing, and subsequent secondary infections. As they feed within the skin layer, they lengthen their burrows horizontally – up to one body length (0.5 mm) per day to as much as one centimeter or more during their life span.

Life cycle

The entire life cycle of the human scabies mite (Figure 2), from egg to adult capable of reproduction, typically occurs in about 10 days for males and 14 days for females. Females typically live for 30 days or more after reaching sexual maturity. Males do not live as long as females, but longevity data are unavailable.

Eggs are laid in a permanent burrow in the skin occupied by the female. The **larvae**, which has only 6 legs, hatches from the eggs in 3 - 4 days. Larvae remain in the female's burrow for up to one day and then crawl away to excavate their own shallow burrows. Larvae molt (shed exoskeleton) into a **protonymph** stage after 2 - 3 days and into a **tritonymph** stage 2 - 3 days after that. Each molt to a new nymphal stage is often accompanied by movement to a new site and

subsequent burrow (molting pouch) construction. In 2 - 3 days, the tritonymphs molt into the **adult** stage where reproductive maturation takes place. A mature female will excavate a shallow burrow and wait for a wandering male to find her and initiate mating. Afterwards, she may expand the molting pouch into a permanent burrow or seek out a new site to excavate and lay eggs. She can lay 2 - 3 eggs per day for the duration of her life (up to 30 days).

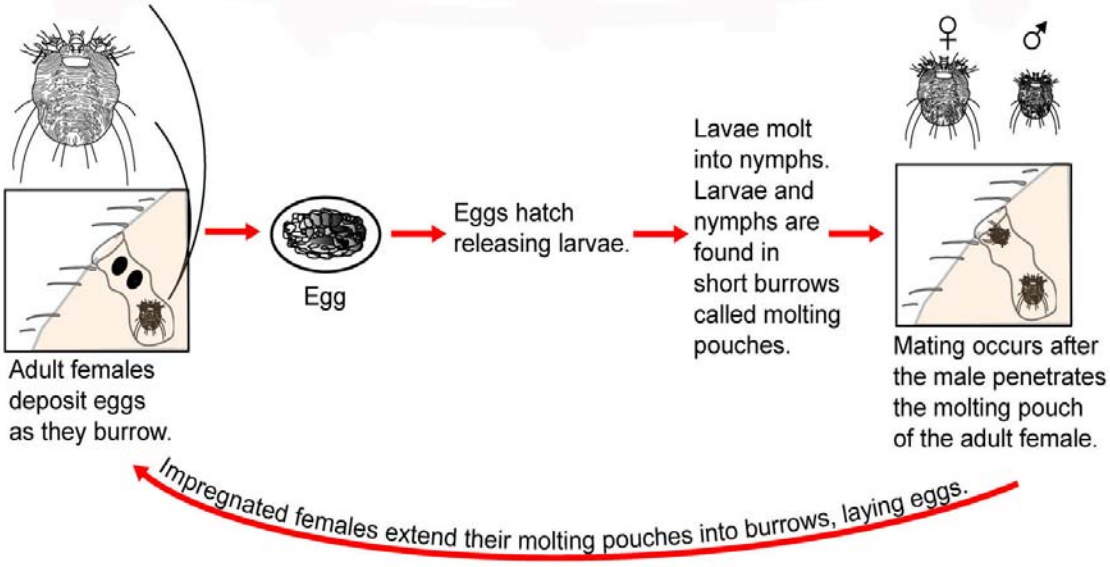


Figure 2. Life cycle of the scabies mite. All stages take place on the host.
Note: Drawing from the CDC website: www.dpd.cdc.gov/dpdx/HTML/Scabies.htm

Direct Transmission

The primary mode of transmission of the human scabies mite is direct skin contact between two individuals. Mites are good crawlers and can crawl up to 2.5 cm ~ 1 inch per minute on the surface of the skin. Although mites cannot jump, they can readily move to a new individual when skin-to-skin contact is made. Once on a new host individual, the mites can start to burrow within minutes. Currently, there are no published studies that have determined the minimum contact time necessary for the mites to transfer from person to person. Therefore, any person who has direct contact with someone who has scabies may be at risk for infestation.

Environmental Transmission

The role of **fomites** (inanimate objects) in transmission is uncertain, but the mites

can survive away from the host for short periods of time. It is assumed that they can infest new hosts through shared clothing and bedding, carpets, and furniture. Mites are susceptible to dehydration and their survival time is dependent on humidity and temperature. Several studies have shown that mites can survive 2 - 5 days at normal indoor (heated) room temperatures and humidity. Larvae can hatch from eggs deposited off of the host in 7 days, if humidity is sufficiently high. In general, a combination of low temperature (10° C or ~50°F) and high humidity (90%) is optimal for survival. The few studies examining the home environments of scabies patients have found live mites in vacuum-collected samples, yet a study of a nursing home with scabies-infested patients showed very few living mites in dust samples. It is likely that frequent bedding changes and cleaning, possibly coupled with higher temperatures and drier conditions, reduced fomite-associated scabies mites in the nursing home environment. Although it has been shown that the scabies mites can stay alive off-host for various periods of time, depending on temperature and humidity, the longer they are away from the host skin environment, the less likely they will be able to initiate burrowing and be a source of infestation. Therefore, a mite surviving 2 - 5 days off the human host at typical room conditions is potentially re-infestive for only the first 1 - 2 days away from the host.

Zoonotic Transmission (Animal to Human)

It is unlikely that domestic animals are reservoirs of human scabies. Although it has been shown that canine scabies mites are capable of burrowing and producing eggs in human skin tissue, these infestations are non-sustainable. Similarly, human scabies mites would not find pets to be suitable hosts.

Transmission Prevention

Treatment of scabies on individuals and reduction of skin-to-skin contact with infested individuals is recommended as the primary means of eliminating the infestation. Although transmission via fomites is possible, regular housekeeping and hygienic measures such as changing and washing of bedding in hot water followed by drying materials in a mechanical dryer at the highest temperature setting (preferably 120° F or hotter) should be adequate to prevent further spread.

Additional information regarding environmental cleaning is found in the **Environment of Care** section of this manual.

Clinical Presentation

Scabies symptoms in persons without previous exposure usually develop in four to six weeks, but have been shown to develop as early as one week and as late as one year. Sensitized persons, who were previously infected with scabies, will usually develop symptoms in one to four days post exposure. Clinical presentation may vary greatly with host age. Infestation may present in three ways: classical, atypical, and crusted.

Classical Scabies

Classical presentation is the most common form of scabies symptoms.

- The primary symptom of scabies is intense pruritus (itching), which often intensifies at night or after a hot shower. Pruritus is not caused directly by the scabies mite but is the result of a systemic allergic reaction to the mite, its eggs, and excreta (fecal pellets). (Figure 3)

Courtesy of John Bezzant, MD
University of Utah

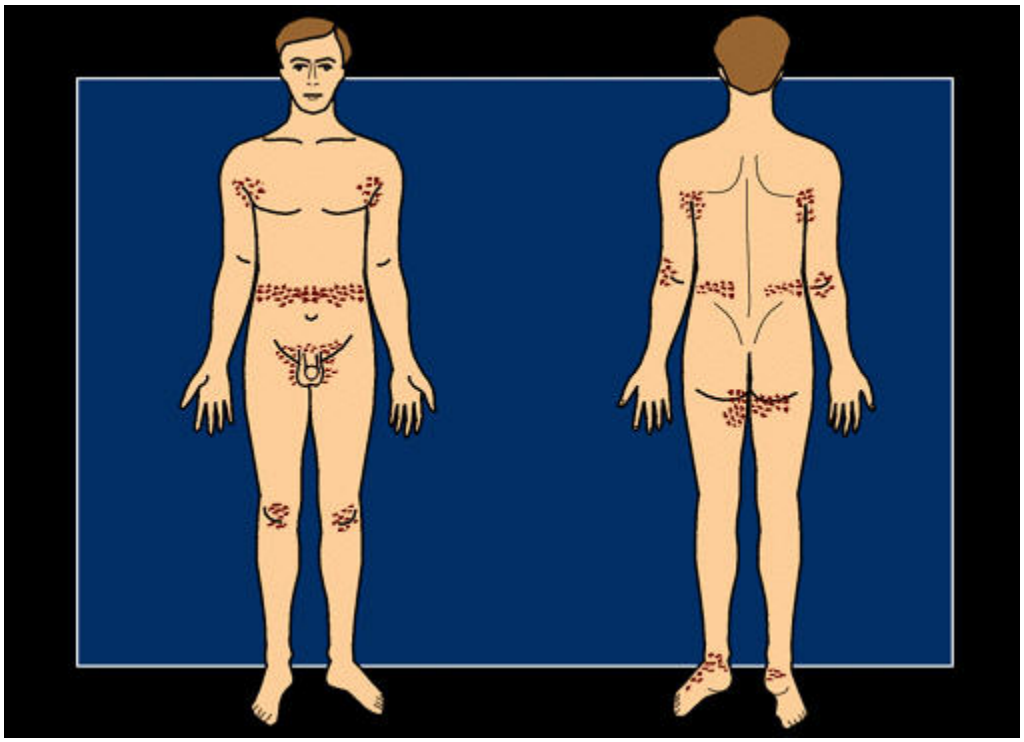
Figure 3: **A**. Pruritic red papules present in the axilla of an adult.
B. Pruritic red papules present on the torso of a child.

- Other symptoms include erythematous (red rash) and papular (bumpy) eruptions, pustules (pus-filled lesions), and nodules.
- The intensity or level of the discomfort experienced is not related to the number of mites infesting the host.

- Round, symmetrical, 2 - 3 mm diameter papulovasicular (bumpy, fluid-filled) lesions are often present on the body.

- Symptom presentation may also include 3 - 15 mm (approximately 1/8" to 1/2") fine, colored, and irregular burrows, which are often difficult to see.

- Affected areas of the body include flexor (inside) wrist surfaces, interdigital spaces (web of fingers), breasts, areolas (nipples), umbilicus (belly button), belt line, navel, abdomen, intergluteal cleft (area between buttocks), buttocks, thighs, penis, scrotum, elbows, feet, ankles, and anterior axillary (underarm) folds. (Figure 4) (Affected areas on healthcare workers typically include the forearms, chest, thighs, and abdomen.)



Courtesy of John Bezzant, MD
University of Utah

Figure 4: Typical distribution of inflammatory papules in adults who contract scabies.

- The hands and feet usually have a less intense reaction when compared to the softer parts of the body.

- Young children and infants may develop bullous (blister) lesions on any body surface, including the scalp, neck, palms, and soles of the feet.

- Rash distribution is not dependent on the mite and burrow locations.

Atypical Scabies

Atypical scabies presentation is uncommon. Classical presentation may accompany atypical signs and symptoms.

- Patients with atypical presentation include the very young, elderly, debilitated, and immune-compromised.
- Symptoms may include excessive hyperpigmentation (skin coloring), scaly rash, and pyoderma (infection of the skin).
- Pruritus and eruptions not be present.
- Young children may experience eczematous changes and vesicular eruptions on the head, behind the ears, on the neck, on palms of the hand, and on the soles of the feet.
- The elderly may experience symptoms on the scalp where hair is thinning.
- The elderly, who usually have diminished immune competency, may also experience a diminished inflammatory or sensitization response resulting from infestation. The immune system does not recognize the presence of the scabies mite and therefore does not trigger an immunological response to the mite.

Crusted or Norwegian Scabies

Crusted scabies is a rare, highly contagious infestation of mites.

- Large numbers of mites (millions) are shed in thick, crusted, scaling plaques from the body because of a mite population explosion.
- Topical agents may be less effective as medication may not be able to penetrate the skin.
- The elderly and immune-compromised are mainly affected.
- Erythema (red rash), hyperkeratosis (thickening of the skin), alopecia (hair loss), hyperpigmentation (excessive skin coloring), pyoderma (skin infection), and eosinophilia (increase of white blood cells usually related to allergic response or parasitic infection) may be present.
- Presentation may occur under and around the nail beds.
- General scaly rashes or localized rashes may appear.
- Pruritus may not be present.
- The surrounding environment of the patient is highly contaminated with mites.

- This condition can be the cause of large epidemics of conventional scabies in long-term care and other facilities.

Secondary Infections

Excoriated skin lesions may become infected with secondary microorganisms.

Such organisms include *Staphylococcus aureus and Streptococcus pyogenes.*

Differential Diagnoses

The following diseases and conditions may have signs and symptoms similar to scabies.

- Acute urticaria: eruption of itching papules, usually systemic
- Allergies: hypersensitive reaction induced by allergen exposure
- Atopic dermatitis: inflammation of skin resulting from a genetically-determined state of hypersensitivity
- Contact dermatitis: inflammation of skin resulting from direct allergen or irritant contact
- Dermatitis herpetiformis: reoccurring and chronic itching of vesicles and/or papule eruptions caused by Duhring's disease
- Eczema: generic term for inflammatory conditions of the skin
- Folliculitis: inflammation of hair follicles
- Fungal infections: unusual multiplication of molds and/or yeast organisms in or on the body
- Impetigo: bacterial infection of the skin resulting in tiny blisters
- Insect bites: itchy bumps resulting from the bite of an insect
- Lupus "rash": red or purple lesions of the skin
- Mycosis fungoides: cutaneous T-cell lymphoma affecting the skin
- Neurodermatitis: chronic form of scaly and/or itchy skin
- Pityriasis: large, scaly, pink skin patches of rash-like appearance
- Psoriasis: itchy, dry, cracked, and/or blistering of skin caused by a chronic autoimmune disease

- Pyoderma: infection of the skin
- Syphilis: rough, red, or reddish-brown spots or rash resulting from the secondary stage of syphilis infection
- Tinea: inflamed, scaly skin caused by a fungal infection; “ringworm”
- Vasculitis: red or purple lumps and/or rash caused by inflammation of blood vessels

Specimen Collection

And Laboratory Methods to Demonstrate Scabies via Skin Scraping

Clinical identification of scabies is necessary to confirm scabies infestation. Skin scrapings should be obtained from at least one symptomatic patient. Additional specimens can be obtained from health care workers, volunteers, and/or visitors. The following methods should be followed in order to obtain sufficient samples for scabies diagnosis.

Equipment and Supplies

- Disposable gloves (latex-free when needed for health care worker or patient)
- 4 - 6 glass slides (3 inch x 1 inch), and 4 - 6 cover slips (22 mm) per patient
- Slide carriers
- Magnifying lens and light source such as goose neck lamp or high intensity lamp
- Alcohol wipes
- Felt tip pen (green or blue)
- Clear nail polish
- Mineral oil and dropper
- Applicator sticks
- Disposable needles (18 - 20 gauge x 1.5 - 2.0 inches)
- Sterile surgical blades #15 and handle
- Sharps container
- 10% potassium hydroxide solution

Procedure

1. Ask about latex allergy; use powder-free gloves if history of sensitivity exists.

2. Plan to obtain at least 4 - 6 scrapings per patient from separate locations on the body. Use a separate slide and cover slip for each scraping.

3. It is critical to do a thorough examination of the patient's skin. The use of a hand-held magnification lens and good lighting are often required for identifying lesions to be sampled. Although 80% of mites are found in the webbing between the fingers on the hands, and on the folds of wrists, they can also be found on the shoulders, back, abdomen, elbows, buttocks, axillae, under the breasts, behind the knees, and on the thighs. The mites burrow into the skin, but never below the outer layer of the epidermis, the stratum corneum. Look for burrows, which will appear as serpentine, red-line marking tunnels in the skin up to several centimeters long and unexcoriated papules (unscratched bumps) that suggest site of active mites.

These tunnels may be made more visible by rubbing a felt tip pen over the area of the burrow and immediately wiping with an alcohol wipe gently to remove excess ink. The remaining ink will penetrate the stratum corneum (outer layer of skin) and stain the tunnel that will appear as a zigzag line. This may be an insensitive method of locating fresh burrows and may only be helpful for a few days following the onset of signs and symptoms. The mites will not be easily demonstrated in excoriated, scabbed, or infected skin.

4. Sample should be taken from unexcorated burrows, or intact papules.

5. Label several slides with the patient identifiers and place a small drop of mineral oil in the center of the slides.

6. Place a drop of mineral oil on the lesions to be scraped. Evenly spread the oil over the area to be sampled. A surgical blade or hypodermic needle may be used to collect the scraping. **CAUTION:** never re-enter the mineral oil container with any instrument that has been used to collect scrapings.

7. Pull the skin taut. Apply slight pressure while making several scraping passes over the lesion. If using a needle, best results are obtained when the needle is held at a 5-degree to 10-degree angle to the skin surface. A surgical blade may also be used to collect samples. Hold the blade at 90-degrees to the skin surface and lightly scrape the area to be sampled. A small amount of bleeding may occur but will not interfere with the examination.

8. Transfer the skin scrapings from the needle/blade to prepared slides and place one cover slip on each slide.

9. When specimen collection is complete, wipe each area where a scraping was conducted with an alcohol wipe.

10. If the slides will not be evaluated on site, secure (but do not completely seal) the cover slips by placing one small drop of nail polish on each edge of the cover slip. Place in a cardboard slide mailer labeled with patient identification, and transport to the laboratory.*

    *Alternative mechanisms of transporting specimens may be developed in advance with the laboratory performing the microscopic evaluation. To reduce the risk of specimen loss due to breakage in transit, scrapings may be suspended in a few drops of mineral oil placed in a clean, sealable container.

11. In the laboratory, apply 10% potassium hydroxide solution beneath the edge of cover slip until the entire area under the cover slip is filled. This will aid in clearing the thick layers of skin cells. Examine the specimen after an hour to see if sufficient clearing has taken place to allow easy recognition of evidence of infestation. Thick specimens may require additional time to clear. Examine the entire slide microscopically (using low power) for the presence of adults, nymphs, eggs, or fecal pellets.

Negative findings **do not** rule out the presence of scabies. Skin scrapings are often negative in classical cases of scabies, but properly collected and prepared specimens will almost always be positive in those with atypical or crusted (Norwegian) scabies.

Note: An alternative method to obtain specimens:

1) Prior to bathing, closely trim fingernails of case.
2) Place nail clippings into a clean, sealable container.
3) Immediately process specimen consistent with the skin scrapings.

Scabies Control Measures

These control measures are applicable to any situation where scabies infestation is diagnosed, whether it is a single case or an outbreak.

Investigation
Verification of scabies infestation should be attempted prior to treatment. Information regarding appropriate treatment recipients, methods, and recommendations can be found in the "Medications to Treat Scabies" section.

Treatment Considerations
Timing of treatment should coincide with resource availability, such as sufficient quantity of medication and additional staffing, so that treatment can be completed within a 24-hour time period and proper cleaning of the environment can occur.

Consider timing treatment to coincide with patient bedtime to reduce risk of medication being washed off so that the treatment administration does not disrupt daily activities.

Treatment of an entire facility should be considered when scabies cases are identified on multiple floors and/or units or if scabies transmission was not controlled during the initial treatment initiative and new cases have been identified.

Patients, visitors, health care workers, families, and volunteers should all be treated within the same 24-hour time period.

Standard Precautions
Gowns and gloves should be worn by all facility personnel who have direct contact with suspected or confirmed scabies patients, until completion of treatment, or until scabies has been ruled out.

Restrict both patient and roommate(s) to their room for duration of therapy. Do not restrict patient to his/her room if the entire unit is undergoing treatment, but do restrict movement to within the nursing unit.

Post signs to alert health care workers, visitors, and volunteers of precautions being observed.

Food service may serve and prepare meals as usual. Disposable dishes and utensils are not necessary.

Any specific isolation precautions beyond standard precautions should be discontinued after treatment has been completed.

Environmental Cleaning

The environment of the case must be thoroughly cleaned to prevent scabies re-infestation. Information regarding appropriate cleaning methods and recommendations can be found in the "Environment of Care " section.

Education

Refer to the "Scabies Education" section for information that may be distributed to patients, families, volunteers, health care workers, and visitors.

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10 Ways to STOP the Spread of Scabies

1. Isolate all suspected & confirmed scabies patients unless the entire population of the nursing unit, floor, or facility area has scabies.

2. Be proactive! Convene an outbreak team to determine appropriate course of action.

3. Conduct contact investigations to identify additional cases to limit the spread of scabies in your facility.

4. Limit rotation of employees between nursing units unless all of the units have symptomatic patients.

5. Assign multiple patient use items (e.g. blood pressure cuffs, transfer belts) to the symptomatic patient(s) or disinfect equipment before use with non-symptomatic patients.

6. Treat all symptomatic staff, patients, & personal care workers with a scabicide within a 24-hour period once an outbreak has been determined.

7. Change & launder all used patient linens before & after scabicide treatment has been completed.

8. Seal non-washable items in a plastic bag & place in a hot dryer for 20 minutes or leave (in sealed bag) at room temperature for seven days. Furniture should be cleaned & disinfected before use.

9. Monitor patients for symptom resolution weekly. Reconsider scabies diagnosis and/or treatment failure if symptom severity does not lessen after two weeks.

10. Regularly conduct outbreak team meetings to identify & address continuing concerns.

Medications To Treat Scabies

Medications

Reference materials for scabies medications can be found in the Physicians' Desk Reference (PDR).

Prompt treatment should be initiated for patients who have been diagnosed with scabies. The following information is intended to supplement, not replace, package inserts or physician orders. Laboratory and other diagnostic testing and monitoring should be done at the physician's discretion, taking into account the individual resident's medical and neuropsychiatric conditions, his or her wishes (or those of surrogate decision makers), and the advance care directive.

Cases

All patients identified as symptomatic and their immediate contacts including roommates must be treated with a scabicide.

Contacts

All symptomatic contacts must be treated for scabies. Contacts may include health care workers, visitors, and/or volunteers. If contact is substantial, such as bed making or physical assessment, then asymptomatic persons should be treated with one application of scabicide. Health care workers who are treated with permethrin cream may return to work after the treatment period. Additional treatment is not indicated unless there is re-exposure or symptom resolution does not occur.

If no contact is substantiated or if contact is minimal, such as delivering food trays, newspapers, or flowers, then no treatment is recommended. However, one application of scabicide should be granted if requested.

Prescription Scabicides

5% Permethrin Cream (Elimite)

Currently, 5% permethrin cream is the recommended treatment for scabies infestation. Permethrin is a synthetic pyrethroid that paralyzes the scabies mite,

eventually causing death. Permethrin is currently available from Allergan, Inc., as Elimite, and from Bertek Pharmaceuticals Inc., as Acticin. Patients should be advised that itching, burning, and/or stinging may occur after permethrin is applied to the skin. However, these symptoms do not indicate treatment failure.

Research estimates permethirin to be over 90% effective when applied correctly. The following steps should be followed during the application process of permethrin.

- All cases and their immediate contacts should be treated within the same 24-hour period.
- Bathe and thoroughly dry the patient. Wash hair and clip/clean fingernails and toenails. Ensure fingernail and toenail care of patients is performed consistent with facility policy.
- Health care workers must wear gloves and disposable fluid-resistant gowns during the patient's shower and treatment application. Cuffs of the gown should go under the gloves.
- Apply the cream to every surface of the body from the neck to the soles of the feet (including the groin). Pay particular attention to skin folds and webs of fingers and toes. Massage medication under fingernails and toenails using a soft brush, such as a toothbrush, if necessary.
- Remove the gloves and gown after treatment application and dispose of gloves and gown immediately. Tightly seal the trash bag and dispose of bag as normal trash.
- Health care workers should then wash their hands, wrists, and lower arms.
- Leave the cream on the patient for the recommended time period of 8-14 hours.
- Reapply medication if the patient is incontinent, washes hands, puts feet on the floor, or if any other activity occurs that may remove the cream prematurely.
- Remove the cream by thoroughly washing the patient (e.g., shower) after the treatment period has concluded.
- Re-examine the patient every week for four weeks for symptom resolution. Reapplication should be considered if symptoms do not subside.

Note: Rash may remain several weeks after treatment but symptoms should subside.

Ivermectin (Stromectol)

Ivermectin is an antiparasitic agent that is available as Stromectol from Merck & Co., Inc. This drug has yet to receive approval from the United States Food and Drug Administration for the use in the treatment of scabies infestations; however, recent research has demonstrated that ivermectin is 90% - 95% effective with one dose (200 ug/kg). Questions about dosing this medication should be directed to the facility's pharmacy. It is administered orally, with 8 ounces of water and should be taken one hour before breakfast on an empty stomach. The effectiveness increases to 95% for atypical scabies after two doses.

Pruritus and rash may worsen within the first few days following treatment. Side effects may include cutaneous and/or systemic reactions.

Usage of ivermectin is recommended only for patients in which total body application of other ointments and creams cannot be accomplished (e.g., patients with ventilators, severe contractures, and/or open skin and/or soft tissue lesions, etc.). One dose of ivermectin can be administered in conjunction with a karyolitic agent for treatment of severe crusted scabies. Additional doses at two-week intervals may be needed for immunocompromised patients with crusted scabies.

10 % Crotamiton (Eurax)

Crotamiton lotion (Eurax, Westwood-Squibb Pharmaceuticals, Inc.) is approximately 50% - 70% effective in the treatment of scabies. The cream should be massaged into the skin of the whole body. A second application is recommended 24 hours after the first treatment. The body should be washed 48 hours after the last application.

Side effects may include skin irritation, itching, burning, stinging, and rash. The safety and effectiveness in children has not been established. Allergic and irritant dermatitis may occur in some persons. The product should not be used on acutely inflamed or open skin lesions. There are no human or animal data on the safety of this product during pregnancy.

1% Lindane (Kwell)

The Michigan Department of Community Health does not recommend the use of Lindane to treat scabies patients. Previously, 1% Lindane (Kwell, Alpharma USPD Inc.) was the standard treatment for scabies infestations. Lindane is no longer recommended for use due to recent concerns of drug resistance and severe adverse

reactions, including death.

Over-the-Counter Methods

5% - 10 % Sulfur Ointment

The scabies mite can be killed with a 5% - 10% sulfur-based ointment. Sulfur is mixed with petroleum jelly or a cold cream. The mixture is applied to the skin nightly for three nights. The ointment should be thoroughly washed off 24 hours after the last treatment.

The sulfur ointment is an alternative to the previously cited treatments when the other medications cannot be used. Typically, infants less than 2 months old, pregnant women, and nursing mothers cannot use the previously cited treatments.

Side effects can include dry skin and irritation. Persons with hypersensitivity to sulfonamides should not use the ointment.

Benzyl Benzoate

Benzyl benzoate is topical cream that is applied to the skin for 24 hours. After the 24-hour treatment period, the cream should be removed with soap and water. For severe infestation, the cream can be re-applied 24 hours after the initial treatment period. Re-application should occur within five days for the initial treatment. Side effects of this medication include itching and burning.

Post-Treatment Assessment

Symptoms may persist and/or intensify after treatment has been administered due to hypersensitivity to the dying mite. Antihistamines and topical steroid creams (applied after the scabicide has been removed) may be used to alleviate symptoms. Symptoms should gradually improve within 7 to 14 days. Symptoms which persist after this time period may indicate that treatment failure has occurred. Additional treatment efforts should be considered.

Treatment failure leading to persistent scabies infestations may result from any of the following:

- Poor application of scabicide cream
- Failure to identify and treat all scabies cases (including patients, health care workers, volunteers, family, and visitors)

- Continued exposure to person(s) with scabies
- Ineffective environmental cleaning
- Failure to report symptom persistence post-treatment
- Lack of surveillance for additional scabies cases after treatment
- Failure to respond to scabicide due to immunosuppressive diseases
- Use of steroid creams during the treatment period
- Scabicidal resistance

Available Treatment Options for Scabies

Drug Name	Manufacturer	Active Ingredient	Form/Supplied	Availability	Dosage/Application
Elimite	Allergen, Inc.	5% Permethrin	Topical Cream 60 g tube	Prescription	~ 30 grams / One time, may repeat if needed
				Efficacy	>90%
Acticin	Bertek Pharm, Inc.	5% Permethrin	Topical Cream 60 g tube	Prescription	~ 30 grams / One time, may repeat if needed
				Efficacy	>90%
Stromectol	Merck & CO., Inc.	Ivermectin	Oral pill 3 mg, 6 mg tablets	Prescription	200 ug/kg / One time, may repeat if needed
				Efficacy	>90%
Eurax	Westwood-Squibb Pharm, Inc.	10% Crotamiton	Topical Cream 60 g tube	Prescription	~ 30 grams / 2 consecutive nights recommended
				Efficacy	50% - 70%
			Topical Lotion 2 oz, 16 oz	Prescription	~2 ounces / 2 consecutive nights recommended
				Efficacy	50% - 70%
Kwell*	Alpharma USPD Inc.	1% Lindane	Topical Lotion 1 oz, 2 oz, 473 ml bottles	Prescription	~ 2 ounces / One time ONLY
*** KWELL IS NOT RECOMMENDED FOR USE**				**Efficacy**	>95%
5% - 10% Sulfur	Prepared by Pharmacy		Topical Cream Varies	Over-the-Counter	~ 2 ounces / 3 consecutive nights
				Efficacy	~ 65%
Benzyl Benzoate	Prepared by Pharmacy		Topical Cream Varies	Over-the-Counter	~ 2 ounces / Once, may repeat within 5 days
				Efficacy	~ 50%

Suggested Scabies Medications for Special Populations

The Use of Lindane (Kwell™) is **NOT** Recommended Due to Resistance and Neurotoxicity

Immunocompetant and Chemotherapy Patients		HIV Patients Usually Atypical (Crusted/Norwegian)	Pediatric Patients	Pregnant Patient and Children less than 2 months of Age
Classical (Typical)	Atypical (Crusted/Norwegian)			
Permethrin (Elimite™) Apply Once	Permethrin (Elimite™) 5% Apply once and repeat dose in 3-7 days	Ivermectin (Stromectol™) 200 mcg/kg orally and repeat dose in 7 days	For children greater than 2 months of age Permethrin (Elimite™) 5% Apply once	Sulfur 10% in white petrolatum Apply daily for 3 days
Ivermectin (Stromectol™) 200 mcg/kg orally as a single dose	Ivermectin (Stromectol™) 200 mcg/kg orally and repeat dose in 14 days	Ivermectin (Stromectol™) 200 mcg/kg orally as a single dose & Permethrin (Elimite™) applied as a single application	For children 12 years of age and older Ivermectin (Stromectol™) 200 mcg/kg orally as a single dose	
Crotamiton (Eurax™) 10% applied daily for two consecutive days	Ivermectin (Stromectol™) 200 mcg/kg orally as a single dose & Permethrin (Elimite™) 5% applied as a single application	Ivermectin (Stromectol™) 200 mcg/kg orally as a single dose & Benzyl benzoate 15% solution applied as a single application	Crotamiton (Eurax™) 10% applied daily for two consecutive days	

Patients receiving ivermectin (Stromectol™) should have a pregnancy test as well as baseline CBC, LFTs, SCr, and BUN prior to initiating therapy
Use of ivermectin (Stromectol™) in patients less than 12 years of age has not been determined

Provided by: James Sunstrum, MD, Rose Lebbon, RN, BSN, CIC, and Mark Szlacsky, PharmD

Environment of Care

Cleaning of the environment is a key component of scabies control. Research has demonstrated that scabies mites can survive off of the human host for 2 to 5 days. Therefore, disinfecting the surrounding environment of a scabies case can prevent potential re-infestation and transmission. When cleaning the immediate environment of a patient with scabies, it is always advised that gloves and gowns be worn.

Bedding and Linens

- All bed linens, including pillowcases, sheets, blankets, and bedspreads must be changed and laundered during or immediately after the scabicide has been administered to the patient.
- All used towels and washcloths must be laundered.
- Repeat the above steps after scabicide treatment is completed.

Clothing and Personal Items

- All washable personal items and clothing worn in the past week by the case must be laundered. If laundry is sent home with family, it is recommend that the wash load is separate from other family materials and is handled with gloves (preferably disposable or washable). Wash water temperature should be 120 °F or 50 °C (hottest possible setting) for at least 10 minutes.
- Clothing and personal items that are contained in a closet or drawer and have not touched other items worn or handled by the symptomatic case in the past week do not need to be laundered or disinfected.
- All non-washable items such as shoes, coats, and stuffed animals worn or touched in the last week by the scabies case should be placed in a plastic bag for transport. Place materials in a hot dryer for 20 minutes or seal the materials in a plastic bag for one week (7 days) at room temperature or hotter. An alternate method is to seal materials in a bag and freeze at –20 °C for 12 hours.
- Discard any topical creams, ointments, or lotions used by the symptomatic case unless the products were dispensed by facility personnel from original containers to a dispensing cup before administration. Seal cosmetics in a

plastic bag for two weeks at room temperature or hotter before future use.

Furniture and Living Environment

Use the facility-approved cleaning and disinfection products according to the manufacturer's directions.

- All washable items should be cleaned prior to disinfection.

- **While certain insecticides are registered for in-home and facility use, insecticides and fumigation are <u>not</u> necessary or recommended for control of mites in the environment.**

- Mattresses, pillow covers, curtains, bedside equipment, non-carpeted floors, and other such materials touched by the scabies patient should be cleaned after the scabicide has been removed from the patient.

- Multiple patient use items, such as walking or transfer belts, wheelchairs, and blood pressure cuffs must be disinfected after scabicide removal if they have been used by the symptomatic case. It is advisable that these materials are individually assigned or disinfected after each patient diagnosed with scabies has used the equipment.

- Vacuum carpeted floors and upholstered furniture if it is in the case's room or any common area where the scabies case has visited. During scabicide treatment, any furniture that is to be used by the patient should be covered with a sheet.

- Vacuum carpeted floors and upholstered furniture in patient's room, or any common area the patient has visited. During scabicide treatment, any furniture that is to be used by the patient should be covered with a sheet. Discard vacuum bag or empty contents into a receptacle at task completion.

- Upholstered furniture should be vacuumed and covered in plastic for 7 days.

Scabies Education

All scabies control plans should address educational needs and training of direct care staff (such as nurses, physicians, and health care students). General information should also be provided for residents, families, volunteers, and/or other visitors. Adequate and accurate knowledge about scabies treatment and control will improve understanding, reduce anxiety, and facilitate outbreak control. Included in this section are informational materials for staff, patients, families, and visitors.

During a scabies outbreak, information should be provided to all affected individuals, including staff, patients, families, and visitors. Preparing as much information as possible prior to an outbreak will save valuable time if an outbreak occurs and control measures need to be put into place. Frequently asked questions include:

- What is scabies?
- How is scabies transmitted?
- What is the scope of the outbreak?
- When did the outbreak begin?
- What methods are being used to control the outbreak?
- What medications are being used to treat the outbreak?
- Who is the contact liaison for additional information regarding the outbreak?
- To whom should additional scabies cases be reported?

Additional information is available through the Centers for Disease Control and Prevention web site at:

http://www.cdc.gov/ncidod/dpd/parasites/scabies/factsht_scabies.htm

Scabies Fact Sheet

For Patients, Family, and Visitors

What is scabies?

Scabies is a fairly common infestation of the skin caused by a mite. Scabies mites burrow into the skin producing pimple-like irritations or burrows.

Who gets scabies?

Scabies infestations can affect people from all socioeconomic levels without regard to age, sex, race or standards of personal hygiene. Clusters of cases, or outbreaks, are occasionally seen in health care facilities, institutions, and child care centers.

How is scabies spread?

Scabies mites are transferred by any direct skin-to-skin contact. Indirect transfer from undergarments or bedding can occur only when these items have been in contact with an infected person immediately beforehand. Scabies can also be transmitted during sexual contact.

What are the symptoms of scabies?

The most prominent symptom of scabies is intense itching, particularly at night. The areas of the skin most effected by scabies include the webs and sides of the fingers, around the wrists, elbows and armpits, waist, thighs, genitalia, nipples, breasts, and lower buttocks.

How soon do symptoms appear?

Symptoms may appear two to six weeks after contact with the mite in people who have not previously been exposed to scabies infestations. People who have been previously infested with scabies mites may show symptoms within one to four days after re-exposure.

When and for how long is a person able to spread scabies?

A person is able to spread scabies until mites and eggs are destroyed by treatment.

What is the treatment for scabies?

The currently recommended treatment for scabies is 5% permethrin cream (Elimite) and is available through a physician's prescription. The lotion is applied to the whole body except the head and neck. When applied as directed, this product is approximately 90% effective after one application. All persons who have had skin contact with an infested person (including family members, roommates, direct care providers and sexual contacts) should also be treated.

How soon after treatment will symptoms resolve?

Itching may continue for 2 - 3 weeks, and does not mean that you are still infested. Health care providers may prescribe additional medication for the itching if it is severe. No new burrows or rashes should appear 24-48 hours after effective treatment.

What can be done to prevent the spread of scabies?

Avoid physical contact with infested individuals and their belongings, especially clothing and bedding. Health education on the biology of scabies, proper treatment and the need for early recognition, diagnosis, and treatment of infested individuals and contacts is extremely important.

For more information:

Contact your local health department.

Additional information is also available on the web at:

http://www.cdc.gov/ncidod/dpd/parasites/scabies/factsht_scabies.htm

Scabies Fact Sheet

For Staff

Clinical characteristics and epidemiology:

Scabies is a fairly common infestation of the skin caused by a mite, *Sarcoptes scabiei*. Scabies infestations can affect people from all socioeconomic levels without regard to age, sex, race or standards of personal hygiene. Clusters of cases, or outbreaks, are occasionally seen in health care facilities, institutions, and child care centers.

Scabies transmission:

Scabies mites are transferred by any direct skin-to-skin contact. Indirect transfer from clothing or bedding can occur only when these items have been in contact with an infected person immediately beforehand. Scabies can also be transmitted during sexual contact.

Symptoms of scabies:

Scabies appears as papules, vesicles, or tiny linear lesions, which contain the mites and their eggs. The most prominent symptom of scabies is intense itching, particularly at night. The areas of the skin most affected by scabies include the webs and sides of the fingers, around the wrists, elbows and armpits, waist, thighs, genitalia, nipples, breasts, and lower buttocks.

Norwegian or crusted scabies is an unusual clinical presentation involving crusting of the skin. Its "scaly skin" appearance is frequently misdiagnosed as psoriasis.

Incubation period:

Symptoms may appear two to six weeks after contact in people who have not

previously been exposed to scabies infestations. People who have had a previous bout with scabies mites may show symptoms within one to four days after subsequent re-exposures. A person is able to spread scabies until mites and eggs are destroyed by treatment.

Treatment:

Currently, the recommended treatment for scabies is 5% permethrin cream (Elimite) and is available through a physician's prescription. The lotion is applied to the whole body except the head and neck. When applied as directed, this product is approximately 90% effective after one application. All persons who have had skin contact with an infested person (including family members, roommates, direct care providers, and sexual contacts) should also be treated.

Length of symptoms:

Itching may continue for 2-3 weeks, and does not mean that infestation is still present. Health care providers may prescribe additional medication for the itching if it is severe. No new burrows or rashes should appear 24-48 hours after effective treatment.

Preventing the spread of scabies:

Prompt identification of scabies infestation and appropriate treatment are essential in preventing ongoing transmission. New rashes or change in skin condition of patients should be reported and investigated. Gowns and gloves must be worn by all facility personnel who have direct contact with suspected or confirmed scabies patients until completion of effective treatment, or until scabies has been ruled out. Good hand hygiene techniques must be used before and after gloves are worn and between all patient contacts. Dispose of gloves immediately after use. Contact your infection control professional for additional information.

Care of clothing and bedding:

All clothing recently worn and soiled bedding should be laundered in hot water and dried in a hot dryer. Wash water temperature should be 120 degrees Fahrenheit or 50 degrees Celsius for at least 10 minutes. Place materials in the dryer on the hottest setting for 20 minutes. Non-washable clothing such as shoes, coats, jackets, and scarves worn during the last week should be sealed in a plastic bag. Place the materials in a hot dryer for 20 minutes, or store the materials in a sealed plastic bag for one week (7 days) at room temperature or hotter. An alternative method is to seal materials in a bag and freeze at -20 degrees Celsius for 12 hours.

Reporting scabies at the workplace:

All employees should immediately report any rash, illness, or complaints of intense itching of both patients, residents and employees to the facility's infection control professional. Appearance of a rash should also be documented in the patient's record and reported.

For more information:

Contact your local health department. Additional information is also available on the web at:

http://www.cdc.gov/ncidod/dpd/parasites/scabies/factsht_scabies.htm

This fact sheet is for information only and is not meant to be used for self-diagnosis or as a substitute for consultation with a healthcare provider. If you have any questions about the disease described above or think that you may have a parasitic infection, consult a health care provider.

Outbreak Investigation

An outbreak is defined as an unusual increase of disease within a population within a specific time and location. The baseline or expected number of scabies cases routinely present within a facility should be zero.

The purpose of a scabies outbreak investigation is to first determine and confirm the causative agent of the outbreak; establish epidemiological associations between persons, place, and time; implement control measures; and identify measures to prevent future outbreaks.

Definition of an "outbreak of scabies"

The optimal definition of a scabies outbreak in a health care facility is one or more laboratory confirmed (via positive skin scraping) case of scabies and at least one or more suspected scabies case in patients, health care providers, visitors, and/or volunteers within a four week period of time.

If clinical suspicion for scabies infestation is high, but lab confirmation cannot be obtained, investigation should continue and a decision to proceed with treatment should be considered.

Outbreak Team

Assemble an outbreak team of key personnel including infection control professionals, the medical director, housekeeping, administration, nursing, employee health (if available), and other departments as needed. The team will be responsible for assessing the scope of the outbreak and determining an appropriate course of action.

A member of the outbreak team should be designated to communicate outbreak information to the local health department.

The team should meet on a regular basis to share outbreak investigation information and plan for additional interventions.

Verify the Diagnosis

Laboratory confirmation of scabies infestation should be attempted immediately upon identifying potential scabies cases. Follow the procedures in the "Specimen Collection and Laboratory Methods to Demonstrate Scabies" section to verify scabies infestation.

Negative skin scrapings may occur in cases during a real scabies outbreak due to the typically small number of mites that are present. Clinical presentation and exposure history should considered when diagnosing scabies if this occurs. Proper collection technique should be reviewed.

An alternative diagnosis should be considered if multiple patients have negative skin scrapings and response to treatment is minimal after two weeks.

Search for Additional Scabies Cases

Perform routine surveillance for additional cases.

Designate a staff member, such as the infection control professional or nursing supervisor, to receive additional scabies reports and serve as the outbreak coordinator. Request that staff inform the designated person if they notice patients with signs or symptoms typical of scabies infestation.

Any employee (including contract workers or volunteers) experiencing rash, itching, or skin lesions should be restricted from work until scabies has been ruled out or until treatment of scabies has been administered. Treated persons can return to work after the treatment period is complete.

Facilities should consider policies and procedures to address specific employee issues with scabies.

Data Collection Tools
Data collection tools are extremely helpful in recognizing the distribution of scabies cases throughout a facility. In addition, data collections tools are useful in monitoring contacts of scabies cases for the development of symptoms. Sample collection tools can be found at the end of this section.

Case management logs should be developed and used to monitor symptomatic patients, visitors, health care providers, and other infested persons. The following information should be collected:

- Name
- Location (unit or floor) of admission, work, or visit
- Date(s) of admission, work, or visit(s)
- Symptom onset date
- Date and result of skin scraping (if obtained)
- Date of initial treatment
- Date of symptom resolution
- Date of second treatment if needed
- Date of symptom resolution after second treatment

- Type of scabies infestation
- Method of treatment
- Other pertinent information
  (e.g., risk factors for developing atypical scabies)

Additional information to collect on symptomatic patients include:

- Date of admission
- Other health care facilities visited in the past month
- Other nursing floors or units where admitted within the current facility
- Diagnostic and therapeutic procedures received
- Communal areas visited
- Places of visit if day or weekend pass has been issued in the past month

A list of contacts should be developed for each scabies case. The following information should be collected:

- Name and designation of resident, staff, visitor, or volunteer
- Source of exposure
- Date of exposure
- Symptom status
- Symptom onset
- Date of symptom resolution
- Dates of symptom evaluations
- Other pertinent information

Notification
Health care providers, visitors, volunteers, families, personal care workers, and others who have had contact with a scabies case should be notified immediately and assessed for symptoms. A scabies fact sheet and notification letter, which includes information about the scope of the outbreak and strategies that are being implemented to control the outbreak and prevent future cases, should be distributed to the above groups.

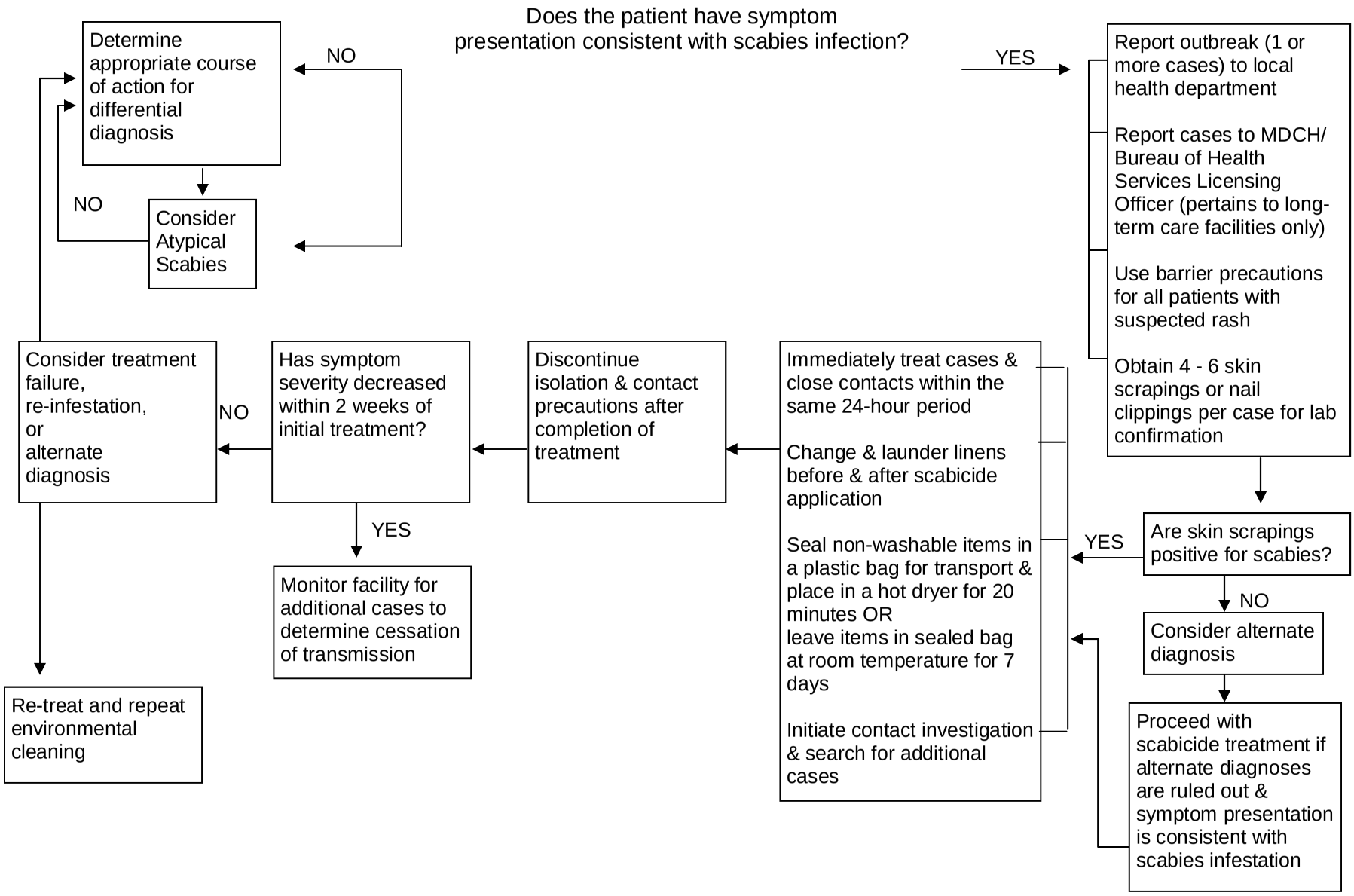
Additional persons to notify if contact with the case occurred in the past month include:

- Previous health care facility in which the person resided
- Transport workers such as EMTs and paramedics
- Roommates of the case who have been discharged or relocated to another unit, floor, or facility
- Visiting diagnostic and/or therapeutic workers
- Sexual partners, family members, and roommates of health care providers, volunteers, visitors, and personal care workers

The local health department and the Michigan Department of Community Health/Bureau of Health Services should be notified immediately of a facility outbreak. Information regarding scabies reporting can be found in the "Scabies Reporting" section.

Develop a summary report for dissemination which includes the location, number of cases, action plan, treatments, duration of outbreak, effectiveness of the plan, treatment modalities, and any follow-up measures that are being implemented.

Protocol for Scabies Investigation



Contact Identification List

Residents, Health Care Workers, Volunteers, and/or Visitors

Primary Case: (Patient's Name)_____ **Room:**_____

Contact Name	Type of Contact * RES HCW VOL VIS	Symptom Onset Date	Scraping Results (+, -, not done)	Treatment Date	Symptoms Resolved (Y/N, DATE)	2nd Treatment Date	Comments

* Resident = RES; Health Care Worker = HCW; Volunteer = VOL; Visitor = VIS

Case Management Log for Symptomatic Patients

FLOOR or UNIT	Patient Name	Symptom Onset Date	DATE & Scraping Results (+, -, not done)		Treatment #1 Date	Symptoms Resolved (Y/N, DATE)	Treatment #2 Date	Symptoms Resolved (Y/N, DATE)
Comments:			Treatment:					
FLOOR or UNIT	Patient Name	Symptom Onset Date	DATE & Scraping Results (+, -, not done)		Treatment #1 Date	Symptoms Resolved (Y/N, DATE)	Treatment #2 Date	Symptoms Resolved (Y/N, DATE)
Comments:			Treatment:					
FLOOR or UNIT	Patient Name	Symptom Onset Date	DATE & Scraping Results (+, -, not done)		Treatment #1 Date	Symptoms Resolved (Y/N, DATE)	Treatment #2 Date	Symptoms Resolved (Y/N ,DATE)
Comments:			Treatment:					
FLOOR or UNIT	Patient Name	Symptom Onset Date	DATE & Scraping Results (+, -, not done)		Treatment #1 Date	Symptoms Resolved (Y/N, DATE)	Treatment #2 Date	Symptoms Resolved (Y/N, DATE)
Comments:			Treatment:					

Case Management Log for Symptomatic Staff

FLOOR or UNIT WORKED	Staff Name	Symptom Onset Date	DATE & Scraping Results (+, -, not done)		Treatment #1 Date	Symptoms Resolved (Y/N, DATE)	Treatment #2 Date	Symptoms Resolved (Y/N, DATE)
Comments:			Treatment:					
FLOOR or UNIT WORKED	Staff Name	Symptom Onset Date	DATE & Scraping Results (+, -, not done)		Treatment #1 Date	Symptoms Resolved (Y/N, DATE)	Treatment #2 Date	Symptoms Resolved (Y/N, DATE)
Comments:			Treatment:					
FLOOR or UNIT WORKED	Staff Name	Symptom Onset Date	DATE & Scraping Results (+, -, not done)		Treatment #1 Date	Symptoms Resolved (Y/N, DATE)	Treatment #2 Date	Symptoms Resolved (Y/N ,DATE)
Comments:			Treatment:					
FLOOR or UNIT WORKED	Staff Name	Symptom Onset Date	DATE & Scraping Results (+, -, not done)		Treatment #1 Date	Symptoms Resolved (Y/N, DATE)	Treatment #2 Date	Symptoms Resolved (Y/N, DATE)
Comments:			Treatment:					

Case Management Log for Symptomatic Visitors

FLOOR or UNIT VISITED	Visitor Name	Symptom Onset Date	DATE & Scraping Results (+, -, not done)		Treatment #1 Date	Symptoms Resolved (Y/N, DATE)	Treatment #2 Date	Symptoms Resolved (Y/N, DATE)
Comments:			Treatment:					
FLOOR or UNIT VISITED	Visitor Name	Symptom Onset Date	DATE & Scraping Results (+, -, not done)		Treatment #1 Date	Symptoms Resolved (Y/N, DATE)	Treatment #2 Date	Symptoms Resolved (Y/N, DATE)
Comments:			Treatment:					
FLOOR or UNIT VISITED	Visitor Name	Symptom Onset Date	DATE & Scraping Results (+, -, not done)		Treatment #1 Date	Symptoms Resolved (Y/N, DATE)	Treatment #2 Date	Symptoms Resolved (Y/N ,DATE)
Comments:			Treatment:					
FLOOR or UNIT VISITED	Visitor Name	Symptom Onset Date	DATE & Scraping Results (+, -, not done)		Treatment #1 Date	Symptoms Resolved (Y/N, DATE)	Treatment #2 Date	Symptoms Resolved (Y/N, DATE)
Comments:			Treatment:					

Control Measure Evaluation

Patients, heath care workers, and personal care providers who were infested with scabies should be re-examined weekly for four weeks to assess treatment success or failure. Additional treatments should be considered if symptoms do not improve.

Untreated contacts of scabies cases should be re-examined every other day for four weeks to determine if the contact has developed symptoms consistent with scabies infestation. Treatment should be administered if symptoms appear.

Pruritis and rash should begin to subdue 7-14 days after medication has been administered. Treatment failure and/or re-infestation should be considered if scabies signs and symptoms persist or worsen after this time period.

Failure of Control Measures
The following reasons may attribute to the failure of control measures.

- Inadequate treatment application which includes failure to reapply medication after it has been removed from the body during the treatment period, failure to adhere to scabicide directions, use of topical steroids during the treatment period, and failure to apply treatment to the entire body
- Continued exposure to infested persons due to failure to identify cases
- Continued exposure to infested materials such as bedding, clothing, patient use items, and furniture
- Scabicidal resistance
- Health care providers, visitors, volunteers, and personal care staff re-infestation due to contact with infested family members, roommates, and/or sexual partners
- Supressed immune response to scabcide due to immunocompromised status
- Failure to identify and report symptomatic patients
- Failure to properly identify and monitor close contacts of cases

Any identified control measures that have not been adhered to should be corrected immediately. If any of the above reasons for control measure failure was identified, re-administration of scabicide may be necessary.

Measures
for Scabies Prevention

Scabies prevention policies, procedures, and protocols should be developed and utilized by health care agencies to address measures that can be taken to prevent scabies infestations within a facility. Scabies prevention plans should include the following approaches:

Skin Assessment

At Admission

Thorough head-to-toe skin examination for signs of pruritic rash, especially involving the webs of fingers, hands, wrists, and elbows should occur within 24 hours of admission for all patients.

Periodic

Thorough skin examination, as described above, should be accomplished and documented weekly of all residents.

All suspicious rashes should be reported immediately to the nursing supervisor, infection control professional, and/or the attending physician.

Standard precautions should be used with any patient with a suspicious rash until the cause of rash is determined. Standard precautions include use of personal protective equipment (PPE) for all contact with patient skin, body fluids, and/or clothing.

Standard (Universal) Precautions

Personal protective equipment such as gloves should be used by all facility personnel who have direct contact with non-intact skin (including rashes) of patients. Good hand hygiene techniques should be used before and after gloves are worn and between all patient contacts. Alcohol-based hand rubs may be used in place of soap and water if visible soiling is not present. Dispose of gloves immediately after use.

Routine Patient Care

Routine bathing intervals for patients should be at least weekly and more frequently as necessary. Clothing should be changed after bathing or showering. A skin assessment should be completed during the bathing process.

It is recommended that patient fingernails and toenails be kept short and clean.

Cleaning Considerations
Routine environmental cleaning schedules should be developed, implemented, and maintained.

Linen changes should occur at least weekly and more frequently as necessary.

Patient care equipment, such as transfer belts and blood pressure cuffs, should be laundered or disinfected regularly.

Staff Education
All employees should periodically (minimally at hire and annually) receive information about scabies. At a minimum, the in-service training should include biology, incubation period, transmission, signs and symptoms, treatment, prevention, and how to document and report a case of scabies.

Following a single case or outbreak of scabies, provide employees with an 'after action review' and action plan (performance improvement activity) to reduce risk of repeat occurrences.

Additional Considerations
Health care workers should be instructed to report exposure to scabies in the home or the community promptly to their supervisor.

When scabies is suspected, an immediate search for additional cases should be initiated. Reference the "Outbreak Investigation" section for more information.

Rotation of employees between units should be limited to reduce the risk of disease transmission.

Enforceable policies should be developed to include the wearing of fresh uniforms for each shift. Employees should be encouraged to shower or bathe and change into clean clothes as soon as possible following each work shift. Wearing of jewelry should be kept to a minimum while on duty.

It is recommended that fingernails of employees be kept short to prevent possible disease transmission.

Michigan Department of Community Health
MDCH
Jennifer M. Granholm, Governor
Janet Olszewski, Director

5 Ways to Prevent Scabies
In Your Facility

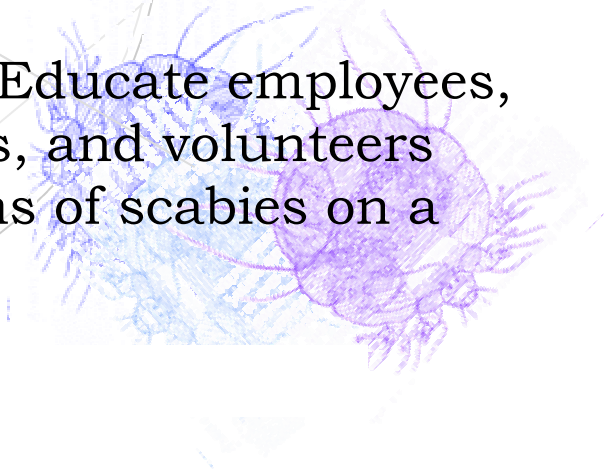
1. Know who is entering your facility. Perform skin assessment checks on all incoming patients within 24 hours of admission.

2. Know what is in your facility. Immediately report any suspicious rash to the nursing supervisor, physician, or infection control professional.

3. Institute standard precautions for patients with suspicious rash until scabies can be ruled out. Patients should be restricted to their rooms until scabies can be ruled out.

4. Adhere to routine cleaning schedules for patient equipment.

5. Educate. Educate. Educate. Educate employees, visiting personal care workers, and volunteers about the signs and symptoms of scabies on a regular basis.



Child Populations

Day cares, schools, and places of extracurricular activities for children can often have difficulties managing scabies in their facility. Children typically have direct contact with each other, which can increase the chance of transmission within the facility. Mass panic can easily occur in response to a potential case of scabies. The following information is intended to assist scabies control in child populations.

Facility Responsibilities

- Any child with a rash should be referred to a physician for evaluation and diagnosis. Scabies should be suspected when a child has a rash that causes intense itching, especially at night.

- Children suspected of having scabies on an area of their body that **is not** covered by their clothing should be excluded from contact with others until evaluated by a physician. Children suspected of having scabies on an area of their body that **is** covered by their clothing, can be sent home at the end of their school day. Children allowed to remain in school should be restricted from activities that could result in skin-to-skin contact, such as contact sports and recess.

- Children who have been diagnosed with scabies should be excluded from school and other extracurricular activities until treatment is complete. If a topical scabicide cream is used (which is applied overnight), children can be readmitted the following day, after treatment completion.

- Report any outbreak (1 or more children with scabies symptoms) to the local health department of the county in which the facility is located.

- A designated staff member should develop a contact list of the scabies case. The list should include the child's grade, age, whether symptoms have developed, when parents/guardians were notified, and if physician referral was made.

- Facility administration should inform parents/guardians who have children in the same classroom or who have children who have had direct contact with a confirmed scabies case, since scabies symptoms may develop as late as 6 weeks after exposure. ***Notice should not include the infested student's name.*** A sample parental notification letter can be found at the end of this section.

- A general meeting that addresses the current situation and what measures are being taken to prevent future spread with parents/guardians may assist with preventing mass panic.

Control of Transmission

- Coordinate with the local health department to identify and implement appropriate measures to cease scabies transmission.

- Cases must receive scabicide treatment and be followed until the rash is gone and no new lesions appear. If treatment with a scabicide has been effective, the intensity of itching and rash should gradually resolve over a 7-14 day period.

- If signs and symptoms persist, intensify, or if new lesions are identified within 7-14 days, treatment failure or an alternative diagnosis should be considered. Refer children to their physician for re-evaluation.

- Failure to properly treat close personal contacts and family members can cause re-infestation. Active surveillance for additional scabies cases should be conducted if re-infestation occurs.

Education for Child Population Settings

- Education for teachers, care providers, and other staff members about rash illnesses, including scabies, symptoms, treatment, and methods of prevention may reduce transmission risk by allowing for early identification of cases.

- In-service trainings for administrators, teachers, and other key staff should be a part of yearly continuing health education.

- Parents should receive information about scabies at the beginning of the school year. A fact sheet that addresses basic signs and symptoms, the person to whom parents/guardians should report possible cases at the facility, and appropriate physician follow-up should be included in the fact sheet.

Date

Dear Parent or Guardian,

Subject: Scabies Notification

Your child may have been exposed to scabies. Scabies is a disease of the skin caused by burrowing of the scabies mite. The mite is transmitted through direct skin-to-skin contact or through sharing of an infested person's personal items such as clothing or bedding.

Please observe your child for intense itching (especially at night) and rash. The rash can usually be seen in the following places:

- Between webs and sides of fingers
- wrists
- elbows
- armpits
- breasts
- waist
- thighs
- genitalia
- lower buttocks

Infants may experience rash on the:

- face
- scalp
- palms of the hands
- soles of the feet

Symptoms usually appear within **two to six weeks** after coming in contact with a person who has scabies. Persons who have had scabies before may have symptoms appear within one to four days.

Treatment Recommendations

If you are concerned that your child or anyone else in your family may have scabies, please see your family doctor. Your doctor will be able to prescribe medications that can kill the scabies mite. Usually one application of a prescription scabicide is adequate to treat scabies. It is recommended that if your child has scabies, the entire family should be treated. Please discuss this with your doctor.

Cleaning & Disinfecting

Washable items such as clothing, bedding, and towels can be disinfected by washing the items in hot water and detergent. Wash water temperature should be set to the highest temperature possible. Use the hot setting on the dryer to dry the items *for at least 20 minutes*.

Non-washable items such as shoes, coats, jackets, and scarves can be disinfected in one of three ways: 1) place the items in a dryer *for at least 20 minutes* on the hot setting; or 2) seal the items in a plastic bag *for one week (7 days)* at room temperature or hotter; or 3) seal the items in a plastic bag and *freeze them for 12 hours*.

Fumigating rooms and using insecticidal sprays on furniture, infant carriers, child car seats and carpets *are not recommended for cases of common scabies.* Thorough cleaning and vacuuming of these items is sufficient.

Attendance

Children who have scabies should be excluded from school and/or extracurricular activities until the treatment has been completed.

Please refer questions to your physician or local county health department.

Sincerely,

_____ _____

School or Day Care Manager Public Health Official

Phone:

Scabies Reporting

Under the Michigan Public Health Code of 1978, any unusual occurrence, outbreak, or epidemic of any disease, condition, or nosocomial infection must be reported within 24 hours of discovery or diagnosis. Upon discovery of a scabies outbreak, all Michigan physicians and health care providers are, therefore, required to report the scabies outbreak to their local county health department.

Importance of Reporting Scabies Outbreaks

- Outbreak control guidance, consultation, and information regarding treatment options are available through your **local county health department (LHD)**.
- Coordinating outbreak control efforts with your local county health department will improve the communication of important health information to concerned family members, employees, or volunteers.

Health Insurance Portability and Accountability Act (HIPAA)

In December 2000, the U.S. Department of Health and Human Services adopted regulations under the Health Insurance Portability and Accountability Act (HIPAA) to protect the privacy of individually-identifiable health information (Privacy Rule).

Questions have been raised about the impact of HIPAA on individually-identifiable health information that is provided to MDCH or LHD by entities that are covered by the Privacy Rule (covered entities) for disease prevention and control purposes. The Privacy Rule does allow a covered entity to disclose, without individual authorization, protected health information to a public health authority.

The Privacy Rule does not prevent covered entities (including hospitals, physicians, clinical laboratories, and other health care providers) from providing individually-identifiable health information to MDCH and to LHD for disease prevention and control activities pursuant to 45 CFR § 164.514(d) of the Privacy Rule.

Reporting to Local Health Departments

All scabies outbreaks should be reported to the local county health department in which the facility resides. The following rules from the Michigan Public Health Code of 1978 designate reporting requirements and investigative authorities:

- R 325.173 Details reporting requirements for health care providers, health care facilities, and clinical laboratories.
- R 325.174 Provides local and state public health officials the authority to investigate reported diseases, infections, epidemics, and situations with potential for causing diseases.
- R 325.20507 Details the responsibility of nursing homes and nursing care facilities to establish an infection control committee to develop and maintain policies and procedures relating to infection control.
  Rule 507 (e) establishes the requirement for nursing home and nursing care facilities to establish "effective communication with the local health department."
- See www.michigan.gov/orr for more information.

For additional information, questions, or concerns, please call your local health department or the Michigan Department of Community Health/Infectious Diseases Epidemiology Section at (517) 335-8165. A list of local health department contact information can be found at www.malph.org

Reporting to MDCH/Bureau of Health Systems formerly know as MDCIS

Although there is no federal regulation or State of Michigan rule, the Bureau of Health Systems has the expectation that long-term care facilities licensed through the bureau will report one or more cases of concurrent resident scabies to their licensing officer/survey monitor. Associated citations and complaint investigations are generally fueled by the lack of effective treatment or lack of appropriate containment measures, not the lack of reporting to the bureau. Effective communication with the licensing team helps to facilitate investigation strategy and reach appropriate treatment decisions. The licensing officer or survey monitor can provide consultation regarding outbreak management.

Scabies Report

The following information should be provide when a scabies outbreak is reported to the local health department:

- Facility name
- Complete facility address - including county
- Telephone number with area code
- Approximate number of cases
- DOB, age, sex, race, ethnic origin
- Diagnosis date
- Onset of symptoms
- Duration of symptoms
- Pertinent laboratory results
- Tally of suspect vs. confirmed cases
- Location of cases in facility
- Identity of reporting person with name, address, phone number

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