DERMATOLOGY IN THE ELDERLY II

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Learning objectives

- Understand the etiology, signs and symptoms, risk factors and complications of infectious skin conditions
- Understand the pharmacological and non-pharmacological management of these skin conditions
- Identify ways to prevent the development of these skin conditions

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Topics to cover:

- Common infectious skin conditions and their treatment
  * Fungal infections
  * Herpes Zoster
  * Scabies
- How to control and prevent cross infection of these conditions in the nursing home setting

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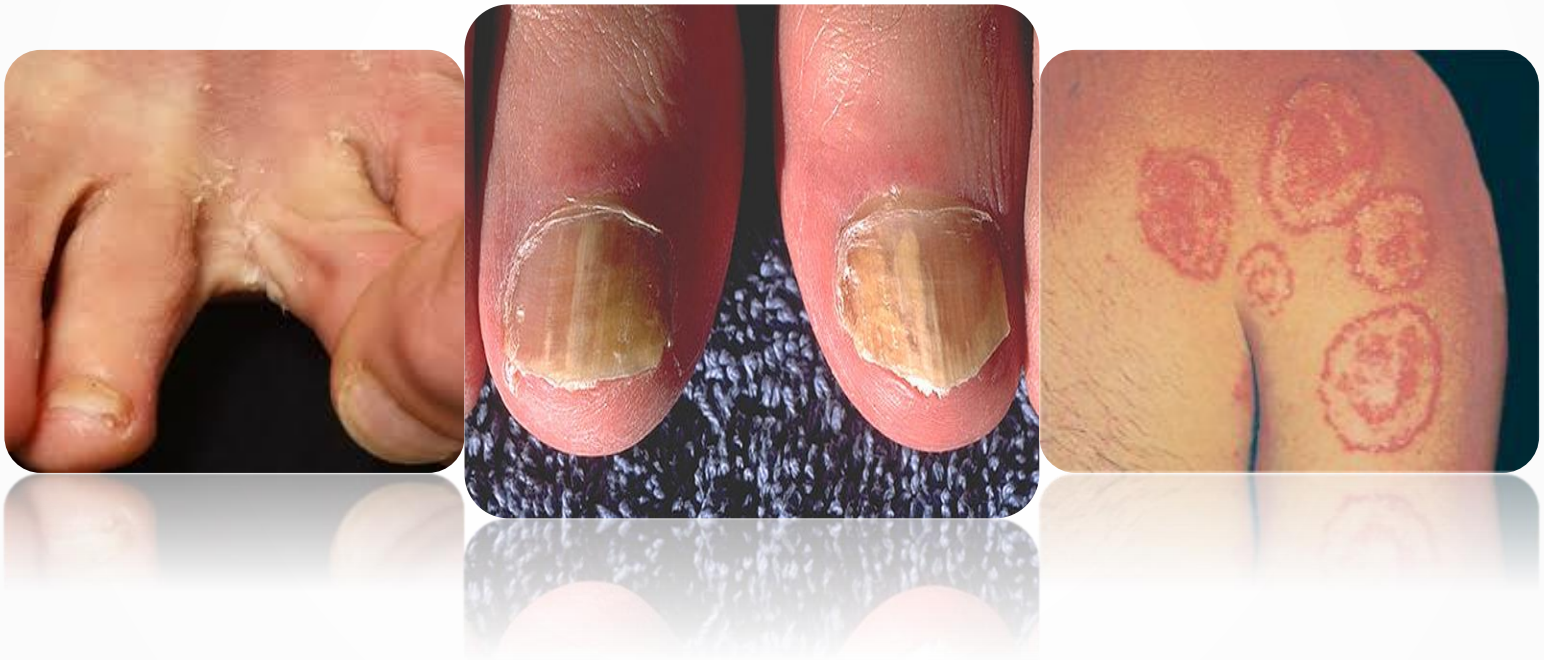
Fungal Infections



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Case Study- Fungal Infections

BP is a 51-year-old obese man who reports experiencing red, itchy, scaling lesions between the upper thigh and groin area of both of his legs for the past few days. BP has never experienced a rash like this before and reports noticing its onset since he began to go exercising every morning.

Medical history:

Dyslipidemia (Atorvastatin 20 mg ON),

Borderline high blood pressure (Diet & lifestyle modifications)

What recommendations would you make?

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Superficial Fungal Infections

- Fungal skin infections are also known as tineas
- Caused by fungi known as dermatophytes that invade keratinized tissues such as the skin, hair and nails
- They are found in the soil (geophilic fungi), animals (zoophilic fungi) and infected humans (anthropophilic fungi) and hence can be spread from person-to person, animal-to-person and soil-to-person
- Most infections are superficial and affect the stratum corneum , nails or hair follicles.
- Moist, warm conditions allow fungi proliferation
- Risk factors include obesity, diabetes, tropical climates and wearing tight fitting clothes

Fungal Infections – Tinea Pedis

Tinea Pedis (Athlete's foot/ Hongkong foot/ ringworm of the foot) can present as any of the following:

- Interdigital: occurs between the toes where the skin becomes red, peel and crack
- Moccasin : occurs on the sole and sides of the foot. The skin thickens and become dry and cracks at these areas
- Inflammatory: occurs at the bottom of the feet or between toes or on the heel. Fluid filled blisters are present.
- Moccasin form of Tinea Pedis

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Fungal Infections – Tinea Cruris

- Tinea Cruris (Jock Itch)
- Occurs in the groin area and on the upper, inner thighs and buttocks as scaling plaques with inflamed borders and reddish brown centres
- There is intense itch
- Pain can develop as sweat accumulates in skin folds and further macerates skin
- More common in men and typically spares the scrotum

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Fungal Infections – Tinea Capitis

- Tinea Capitis (fungal infection of the scalp)
- Circular patch of scaling skin with restricted area of hair loss
- Patient has dry, scaly, non inflammatory dermatosis with either patchy areas or total scalp involvement
- Common areas affected are the crown of the head, the occipital or parietal regions
- May notice black dots in affected areas that are actually infected hairs that have broken off at the shaft
- May involve the eyelashes, eyebrows and beard

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Fungal Infections – Tinea Capitis

- Patients may also have actively weeping and inflamed lesions known as kerions that produces a foul smelling and thick exudate that crusts
- Scalp affected by kerions usually scars and hair follicles in that area are usually unable to regenerate

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Fungal Infections – Tinea Corporis

- Tinea corporis (fungal infection of the body)
- Superficial fungal infections that usually occurs on smooth and bare skin. Refers to infections that do not affect the scalp, hands, feet, groin, ears or face
- Usually presents as an oval, scaly patch with an inflammatory border. The central skin may be normal, hypo pigmented or light brown in colour
- This gives rise to the name ringworm as it looks as if a worm has formed a ring within the skin
- A person can have only 1 lesion or up to 15- 20
- Adjacent lesions may coalesce to produce a single large lesion with overlapping inflammatory border
- Can spread to others who have contact with patient

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Fungal Infections – Tinea Unguium

- Tinea Unguium (fungal nail infection)
- Nails lose their shiny appearance and become opaque and yellow
- With progression of the disease, nails thicken due to build-up of waste products and the proliferation of stratum corneum.
- The nail becomes more brittle and crumbled and eventually gets lifted from the underlying living tissues and may finally get lost altogether

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Fungal Infection – Tinea Veriscolour

- Also known as white spots
- Causative fungus depigments skin by producing dicarboxylic acids
- Skin develops irregular blotches that changes colour with weather
- Areas affected are on the chest, abdomen, back and upper extremities

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Fungal Infection – Treatment

- Topical antifungal creams for limited superficial diseases (Tinea Pedis, Tinea Capitis and Tinea Cruris)
- Imidazole creams: Clotrimazole cream, ketoconazole cream, miconazole cream interfere with the synthesis of fungal cell membrane
- Should show improvement after 2- 4 weeks
- Common side effects are: burning, stinging or peeling
- To apply twice a day
- To continue use for 2 weeks after infection clears to prevent reinfection by spores

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Fungal Infection- Treatment

- Allyamine cream :Terbinafine decreases the ability of fungi to make ergosterols which results in fungal cell death
- Should show improvement in 1-2 weeks
- Common side effects are burning, redness or irritation at application site
- To apply once a day for athlete's foot and twice a day for skin candidiasis

Fungal Nail Infection- Topical Treatment

Fungal nail infections are hard to clear as the nails are difficult to penetrate and new tissues takes months to grow

Candazole lotion (clotrimazole 1%)
Wash and dry the affected area
Gently massage sufficient lotion onto the affected and surrounding areas of the skin
Apply twice daily

Loceryl (amorolfine 5%)
File down the affected nail using the provided nail file
Clean the nail with the provided cleaning pad
With one of the reusable applicators supplied, apply the nail lacquer to the entire surface of the affected nails and allow it to dry.
Use once or twice a week until the nails are regenerated

Fungal Infection – Oral Treatment

- Tinea Capitis must be treated systematically as topical treatments will not penetrate the hair shafts.
- However, using ketoconazole twice a week upon 2 weeks of infection, makes it less likely for the infection to spread to others as it kills the fungal spores
- Severe infection of other tinea conditions can be treated with oral agents if the condition proves resistant to topical therapy

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Fungal Infection – Oral Treatment

Drug	Dose	Side effects	Administration considerations
Itraconazole	Skin Infections: 200mg OD (2-4 weeks) Nail Infection: 200mg OD (6-16 weeks) *watch out for multiple drug interactions especially with chronic high blood and cholesterol medications	Nausea, rash, headache, abnormal liver function tests, flu like symptoms and abdominal pains	✓ Antacids, H2 antagonists (famotidine) or proton pump inhibitors (omeprazole)to be spaced 2 hours apart ✓ Interacts with simvastatin, lovastatin and atorvastatin that increases risk of myopathy ✓ Other drug interactions include: warfarin, digoxin, calcium channel blockers (amlodipine, nifedipine), sulphonylureas(glipizide, gliclazide), phenytoin and carbamazapine ✓ Administer after fatty meal with acidic drink like orange juice or coke for better absorption

Fungal Infection – Oral Treatment

Drug	Dose	Side effects	Administration considerations
Fluconazole	Skin infection: 150mg a week for 2 -6 weeks	Headache. Nausea, diarrhea, abdominal pain and rashes. Severe skin reactions (Stevens Johnson may occur) May lead to arrhythmia and liver toxicity	-Interacts with cisapride, clopidogrel and erythromycin -Avoid use in renal failure and liver failure
Terbinafine	Nail infection: 250mg OD for 6 -12 weeks Skin infection: 250mg OD for 2-6 weeks	Headache, rash and itch, nausea, diarrhea, taste disturbance and visual disturbance	-Can be taken with or without food -Interacts with Tricyclic antidepressants (amitriptyline, nortriptyline) , SSRIs (fluoxetine, escitalopram) and tamoxifen

Fungal Infection – Prevention of transmission

- When caring for patients with fungal infections, hand hygiene must be followed before and after patient contact. Wash with soap and water when hands are visibly dirty and use alcohol based sanitizers if washing is not viable.
- Do not share towels, clothing , shoes, combs and other personal care items between residents.
- Residents infected with foot fungi should wear wide, open footwear and have the skin between their toes dried after bathing. When entering toilets, they should not be bare footed but should wear slippers
- Residents infected with skin fungus should use a different towel to wash and dry the infected area to prevent its spread to other parts of the body

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Fungal Infection – Prevention

- If possible, residents should lose weight to prevent skin folds that traps sweat and humidity
- Residents should wear underclothing that does not allow moisture to retain at the groin area

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Herpes Zoster

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Case Study- Herpes Zoster

A 75-year-old male resident at a nursing home was referred to his doctor for complaints related to a 2-day history of an itching and burning sensation on the left side of his back and chest. These symptoms were accompanied by lethargy and fatigue. Two days prior to presentation, the patient experienced numbness and tingling in the same location.

Medical history: Dementia, depression, hypertension, coronary artery disease, COPD, diabetes mellitus, GERD, varicella zoster virus (VZV-chickenpox) infection during childhood

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Case Study- Herpes Zoster

- On examination, he was not in acute distress and was alert and oriented to person and place, but he was confused about the date. His blood pressure was 120/80 mm Hg; pulse, 65 beats per minute; respiratory rate, 16 breaths per minute; temperature, 97.8° F; and oxygen saturation, 96%.
- Physical examination of the skin showed clusters of confluent vesicles on the left side of the patient's chest and on his back and side along the sixth intercostal space without crossing the midline. Palpation caused some tenderness, with increased itching and burning.

- What is his diagnosis and how do we treat this?

Herpes Zoster

- Herpes Zoster (Shingles) is caused by the varicella-zoster virus that also causes chicken pox. The virus lies dormant in neve tissues near the spinal cord and brain after the chicken pox episode
- May be reactivated as shingles in later years possibly due to weakened immune system as one ages.
- Risk factors :

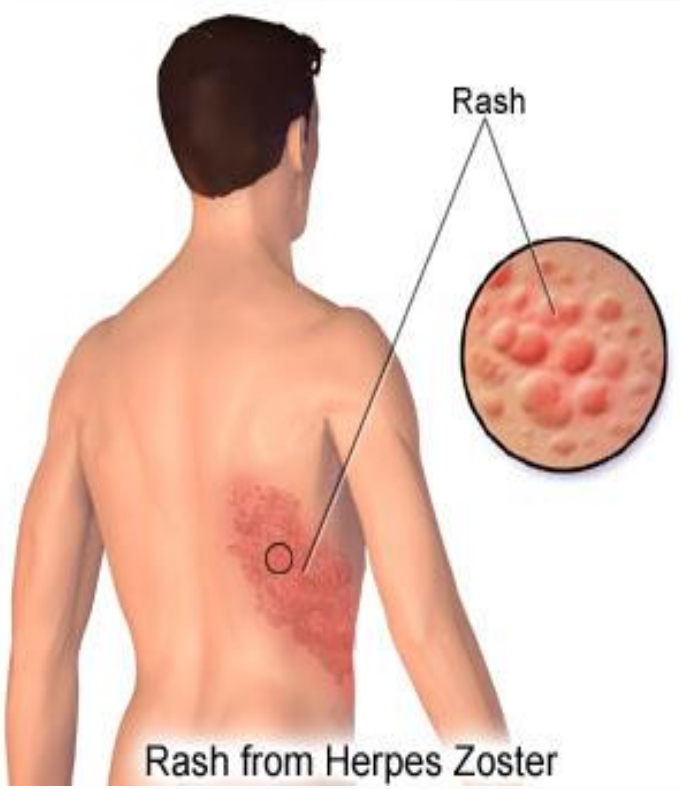
Above 60 years of age

Weakened immune system due to HIV/AIDS, steroid therapy, chemotherapy or radiation

A history of bone cancer

Herpes Zoster- Development

- **Prodromal stage** (before the rash appear)
  - Pain, burning, tingling and/or numbness occurs in the area around the affect nerves several days/weeks before a rash appear
  - Headache or photophobia may develop
  - Flu-like symptoms (usually w/o fever), such as chills, stomach ache, or diarrhea which may develop before or along with the rash.



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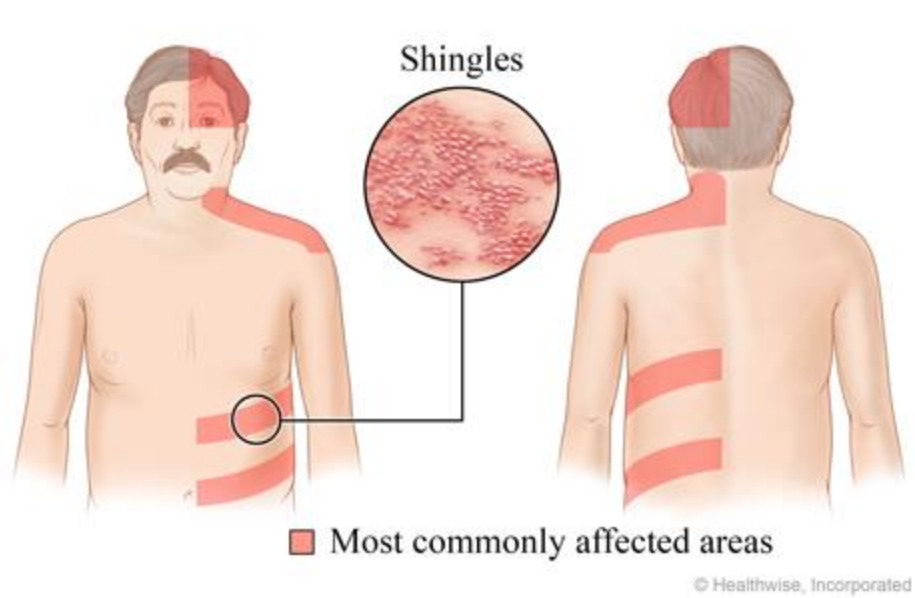
Herpes Zoster- Development

- **Active stage (rash and blisters appear**)
- Brand, strip or small area of rash appear, usually on one side of the body and does not cross the midline of the body.
- Pain and itch may occur along with the skin rash. The rashes will develop into clusters of blisters
- Blisters may break open, ooze and crust over in about 5 days. The rash heals in about 2-4 weeks, although some may develop scarring and pigmentation changes

Herpes Zoster



Shingles usually occur on one single strip on one side of the body or on one side of the face (localized herpes zoster)

In immunosuppressed patients, the rash can affect 3 or more areas leading to disseminated herpes zoster infection.

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Herpes Zoster- **Complications**

- **Postherpetic neuralgia** (PHN) is the most common complication of Herpes Zoster (shingles) . The pain lasts for more than 30 days after a herpes zoster infection and may continue for months or years, due to the damage of nerves by the infection.
- The pain can range from mild to very severe. It may continue, or come and go.
- Risk of developing PHN increases with age
- Examples: Burning pain in the area of the earlier shingles rash.Patients are very sensitive to touch (hyperesthesia) or temperature changes.

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Herpes Zoster – **Complications**

- **Herpes Zoster Opthalmicus** that can cause permanent eye problems such as drooping eyelids or blindness
- **Brain or spinal cord infection**. Signs and symptoms include painful forehead rash, severe ocular pain, marked eyelid edema, conjunctival, photophobia
- **Nerve damage** when the virus spread to the ear and face that can cause twitching and difficulty in moving the nerves in the face, difficulty in tasting and hearing
- **Bacterial superinfection** of the shingles lesions

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Herpes Zoster- Transmission Prevention

- The active herpes zoster lesions are infectious and can cause transmission through direct contact with the fluid in the blisters until they dry and crust over. The lesions should be covered and contact precautions taken to prevent spread in the nursing home
- If patient is immunocompromised, airborne precautions should also be taken to rule out disseminated herpes zoster.
- Patient must be advised to avoid touching or scratching the rash before it has dried
- Wash hands frequently
- Isolate patient from high risk individuals such as those with HIV, leukemia or lymphoma, had organ transplants or taking immunosuppressant drugs. These patients may develop a more severe form of the disease

Herpes Zoster- Transmission Prevention

- Healthcare workers who came into contact with infected patients should take the following steps:
- Vaccinated Staff : Do not need post exposure prophylaxis or work restrictions. If they have only 1 documented dose of varicella vaccine, they should receive the second dose within 3 to 5 days after exposure, as long as 4 weeks have elapsed since the first dose.
- Unvaccinated Staff: Considered infectious from days 8 to 21 after exposure and should be reassigned away from patient care during this period. Should receive post exposure vaccination.
- *Please refer to Vaccination CE module for more details
- Isolate patient from healthcare workers who are pregnant as it can be dangerous for the fetus

Herpes Zoster – **Pharmacological Treatment**

Antiviral therapy:

- Do not use antibiotics which treats bacteria instead of virus. It can irritate the skin and worsen the rash
- Best to start therapy within 72 hours of disease onset

Drug	Dosage	Considerations in elderly	Administration considerations
Acyclovir	800mg every 4 hourly (5 x a day) 7 to 10 days	Multiple dosing, may affect compliance Excreted In the kidneys, adjust dose in kidney decline Cheapest	- Drink lots of water and report decreased urine output. - Avoid alcohol - Do not get the vaccination while on antivirals
Famiclovir	500mg every 8 hourly (3 x a day) 7 days	Excreted In the kidneys, adjust dose in kidney impairment Better absorbed than acyclovir	
Valacyclovir	1000mg every 8 hourly (3 x a day) 7 days	Excreted In the kidneys, adjust dose in kidney decline Better absorbed than acyclovir	

Herpes Zoster – Pharmacological Treatment

- Side effects of antivirals: nausea, vomiting, headache, dizziness and tiredness. Rarely agitation and confusion may occur
- Interactions with other drugs:
- Aminoglycoside antibiotics (gentamicin, amikacin), antifungal agent (amphotericin B), probenecid, amoxicillin, anti-cancer drugs (carboplatin, cisplatin, oxaliplatin), NSAIDs (aspirin, diclofenac, celecoxib)

Herpes Zoster – **Pharmacological Treatment**

Pain relief : Paracetamol, NSAIDs or Opiods

To control pain and restore quality of life

Class of drug	Type of pain	Considerations in elderly	Administration considerations
Paracetamol	Mild	Safe	
NSAIDs (ibuprofen, diclofenac)	Mild to moderate	Increase risk of GI bleeding. Can add on gastro protective drug (famotidine) Contraindicated in heart failure and decreased kidney function May worsen hypertension	Not for long term use Take after food
Opiods (oxycodone, morphine)	Moderate to severe, affects sleep	Sedating and may increase fall risk Add on medications to prevent constipation (lactulose) Other side effects include : nausea , respiratory depression, urinary retention and confusion in the elderly	Not for long term use Avoid alcohol

Herpes Zoster – **Pharmacological Treatment**

Class of drug	Type of pain	Considerations in the elderly	Administration considerations
Tricyclic Antidepressants (Amitriptyline, nortriptyline)	Postherpatic neuropathic pain	Caution/ avoid in the elderly due to anticholinergic side effects of drowsiness, constipation and urinary retention and disorientation. May also cause orthostatic hypotension and stroke	Do not stop therapy abruptly To be taken daily to control the pain and not PRN
Anticonvulsant drugs (gabapentin, Pregabalin)	Postherpatic neuropathic pain	Adjust dose in kidney impairment May cause sedation, blurred vision and increased fall risk. Another common side effect is peripheral edema Monitor platelet count	

Scabies

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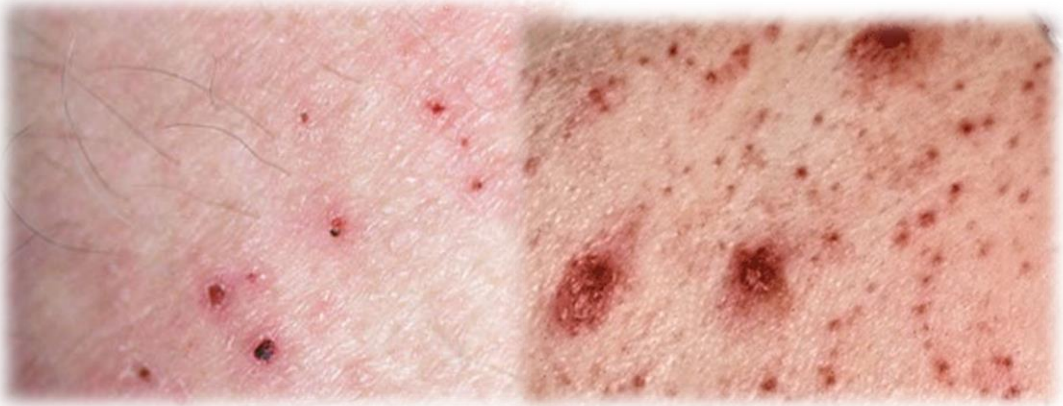
Case Study- Scabies

A 70-year old female patient was admitted in a hospital with a chief complaint of intense itching (especially at night) and extensive, erythematous, vesicular rash. Her history revealed that she has been staying in a nursing home for the past 6 months. About four weeks later, the patient developed the rash and continued to progress in other parts of her body.

What is the diagnosis and how do we treat this condition?



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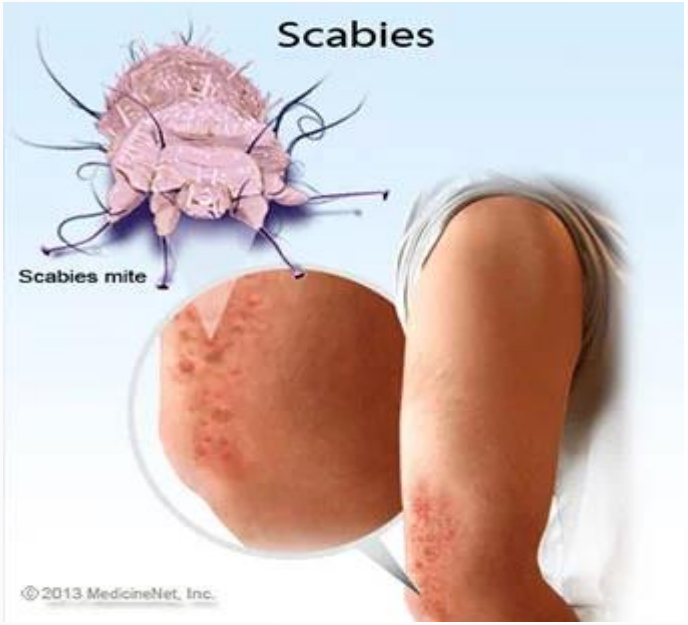
Scabies

- An itchy, highly contagious skin disease caused by an infestation by the human itch mite *Sarcoptes Scabiei.*
- *The mites burrow under the upper layer of the skin where they lay eggs, leading to lesions that may include short gray threadlike tracks with a vesicle at the end*



Scabies

- Can infect persons of any age or socioeconomical status
- Prevalence is higher in ILTC institutions than in private residences due to crowding and increase of travel and volunteering in developing countries by healthcare workers
- A person who gets infested for the first time will not show symptoms for 2-6 weeks after infestation. However, he can still spread the condition during this period
- A person who has been infested before will show symptoms 1-4 days after exposure.
- Mites are transmitted by direct and prolonged skin to skin contact with a infested person, even if he is asymptomatic. Not spread by animals
- On a person, scabies mites can live for as long as 1-2 months. Off a person, scabies mites usually do not survive more than 48-72 hours. Scabies mites will die if exposed to a temperature of 50°C for 10 minutes

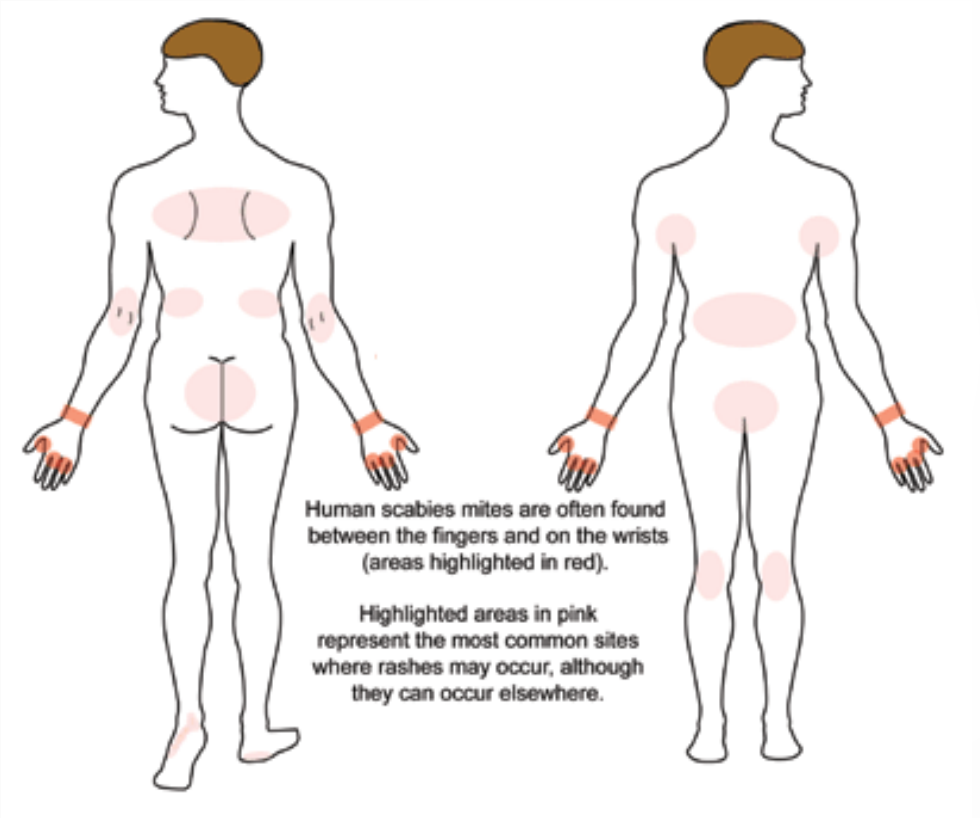
Scabies

	Classic Scabies	Crusted/ Norwegian scabies
	Most common form with 10-15 mites on the body	More severe form with up to 2 million mites on the body Elderly, immunocompromised and institutionalized patients are more prone to this form of scabies
Transmission	Less Contagious. Spread through direct skin to skin contact	More contagious. Spread through direct skin to skin contact as well as indirectly by dropping mites that contaminate clothing, bedding and furniture due to the large number of mites
Sign and symptoms	Include intense itch especially at night and red pimple- like rashes	Include vesicles and thick crusts over skin that can flake off and are filled with mites and eggs. Itching may be absent as host may have dementia and be unable to scratch

Classic scabies

Crusted Scabies

Scabies- Distribution



Usual sites of infestation are the webs between fingers, the inside of wrists and elbows.

Rashes may occur on the axillae, around the breasts and on the knees, buttocks and shoulder blade

Scabies – **Pharmacological Treatment**

- Common Scabies (Use one of the preparations)

1)Topical permethrin 5% lotion- synthetic pyrethroid similar to natural pyrethrins from the chrysanthemum flower. Kills scabies mites by disrupting the neuron function leading to the paralysis of their respiratory muscles.

- Apply to the entire body from neck down. Wash off after 8-14 hours. Repeat after 1 week to eliminate all mites
- Side effects: mild stinging and burning , itching, skin redness and swelling
- Cautions: May cause breathing difficulties or asthmatic attacks in patients with ragweed allergies and may cause increased itching and swelling initially when treatment is applied

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Scabies- Pharmacological Treatment

- 2) Topical malathion 0.5% lotion- inhibits cholinesterase that
- Apply to the entire body from neck down. Wash off after 24 hours. Repeat after 1 week to kill all mites emerging from eggs that survived in the first application.
- Side effects : skin irritation, stinging sensation, chemical burns and contact hypersensitivity

Scabies- Pharmacological treatment

- 3) Crotamiton Lotion 10% - Scabicidal agent
- Apply to the entire body from neck down and massage in. Do not wash off the first layer and apply a 2nd coat of medication over after 24 hours. 48 hours after the 2nd application, bath the body to remove the medication. Do not apply to inflamed raw skin
- Side effects: Itch, rash and warm sensation
- 4) 6% Sulphur in petrolatum
- Prescribed by the National Skin Centre for pregnant patients or infants

Scabies- Pharmacological Treatment

- Crusted scabies (topical permethrin and oral ivermectin)
- Ivermectin (Stromectol)- antiparasitic agent that kills the mites by increasing the permeability of their membrane to cause paralysis and death
- Usually, 2 doses of 200mcg/kg/ dose of ivermectin is to be given 1 week apart.
- In severe cases, ivermectin can be prescribed in 3 doses (Days 1, 2 and 8), 5 doses (Days 1,2,8,9 and 15) and 7 doses (Days 1,2,8,9,15,22 and 29)
- Take with food to increase bioavailability
- Contraindicated in people who weighs less than 15kg
- Common Side Effects: itch, muscular pain, dizziness and fever

Scabies- Treatment from itch

- Itching may continue or become worse in some cases after the application of medication.
- Non sedating oral anti histamines (loratadine, cetirizine, fexofenadine) can be used to relieve the itch.
- Topical corticosteroids can be used to control the itch after the mites have been eradicated

*Please refer to Dermatology I for more information regarding anti histamines and topical corticosteroids

Scabies – **Prevention and Control**

- Early detection and treatment is important to prevent scabies outbreak in nursing homes. Any suspicious undiagnosed skin rashes, new patients or employees can be screened through skin scrapings.
- Detected patient should be isolated until the eradication of mites and his room must be cleaned thoroughly
- Avoid direct skin-to-skin contact with an infested person or with items such as clothing or bedding used by an infested person. Use protective gowns and gloves and implement strict handwashing.

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Scabies- Prevention and control

- Use hot, soapy water of at least 50 °C to wash all clothing, towels and bedding used at least two days prior to treatment. Dry with high heat. Consider placing items you cannot wash in a sealed plastic bag for a couple of weeks.
- Prophylatic topical malathion treatment should be prescribed to all healthcare workers caring for the patient. 2 applications spaced one week apart should be prescribed. They should be treated at the same time as the infested person to prevent possible reexposure and reinfestation
- Contact tracing of all visitors and staff should be done and prophylactic treatment given as symptoms of scabies can take weeks to appear but the carriers can still spread the condition during this period

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