




# **Skin and soft tissue infections**

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# Diagnosis

1. Tissue: From center and/or border of lesions → Placed aseptically into sterile containers (Screw capped tube or anaerobic tube)
2. Wounds (abscess, pus): Aspiration with sterile needle and syringe into sterile containers (1-5ml of pus)
3. Exudates (transudates, drainage, ulcer): swab and then into transport medium or aspirates
4. Clinical: Look at the patient 
5. Biopsy
6. Blood: Blood culture

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# Impetigo

Impetigo is a bacterial infection that involves the superficial skin caused by *S. aureus* and *S. pyogenes* and it's highly contagious.

Which age group is mostly affected?

What is it treated with?



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# Erysipelas

Erysipelas is an infection typically with a skin rash, usually on any of the legs and toes, face, arms, and fingers. It is an infection of the upper dermis and superficial lymphatics.

What organisms cause this?

What is the treatment?



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# Cellulitis

Involves skin and deeper subcutaneous tissue and it's always bacterial (*S. pyogenes* and *S.aureus*).

Treatment?



## Scalded skin syndrome

- Induced by exotoxin **exfoliatin** → protease that breaks down desmoglein-1 (anchor between s. granulosum and s. spinosum) → desmosome breakdown → epidermal detachment.



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# Necrotizing fasciitis

Starts superficially and then spreads to deep subcutaneous tissues and along fascial planes.

Causes?

Treatment/Diagnosis?



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# Scarlet fever

- Reddening and swelling of tongue also called strawberry tongue.
- Occurs after pharyngitis.
- Widespread rash that may spare the face.
  
- Which organisms cause this?





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# Rickettsia

- 1. *R. prowazekii*: Rash starts centrally at trunk and spreads toward extremities, usually spares head, palms and soles.
- 2. *R. rickettsii*: Starts at wrists and ankles and then spreads to trunk, palms and soles.



## Other bacterial skin related infections

1. Cutaneous diphtheriae
2. Cutaneous anthrax: Painless papule which is surrounded by vesicles which then develops to an ulcer with a black eschar → uncommonly progresses to bacteremia and death
3. Lyme disease: In stage 1 we can see erythema migrans "Bulls eye"
4. Hematogenous spread to skin: Neisseria (petechia which indicates thrombocytopenia) and S.typhi (roseola)
5. Toxin: TSST1



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## Viral exanthems: Measles

Measles: caused by paramyxoviridae (Morbillivirus).

Confluent rash beginning at head and moving down.

Whats the name of the vaccine?

Recent outbreak?





## Viral exanthems:

1. Measles
2. Rubella: Pink macules and papules begins at head and move down, remain discrete—> fine desquamating truncal rash, with postauricular lymphadenopathy
3. Coxsackie and echovirus: Oval-shaped vesicles on palms and soles (Petechial/Purpura)
4. Parvovirus B19 (Erythema infectiosum): Also called fifth disease, the rash has a slapped cheek appearance
5. HHV-6: Roseola (Exanthema subitum): Asymptomatic rose-colored macules appears on body after several days of high fever(above 40 degrees) so it can also leads to febrile seizures
6. VZV (Chickenpox): Vesicular rash

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## Viral exanthems





- 1. Kaposi sarcoma: Kaposi's sarcoma is caused by a virus called the(HHV-8),  
The virus is thought to be spread during sex, through blood or saliva, or from a mother to her baby during birth. Associated with HIV
- 2. Bacillary angiomatosis: Causes by Bartonella.henslae. Associated with HIV



# Cutaneous mycoses

- Dermatophytes: can penetrate intact skin! Causes Tinea:
- 1. Tinea capitis
- 2. Tinea corporis
- 3. Tinea pedis
- 4. Tinea cruris
- 5. Tinea unguium
- Diagnosis: Branching septate hyphae visible on KOH preparation with blue fungal stain

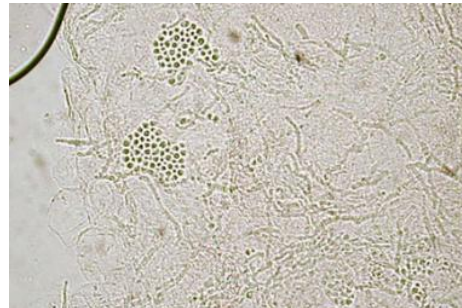






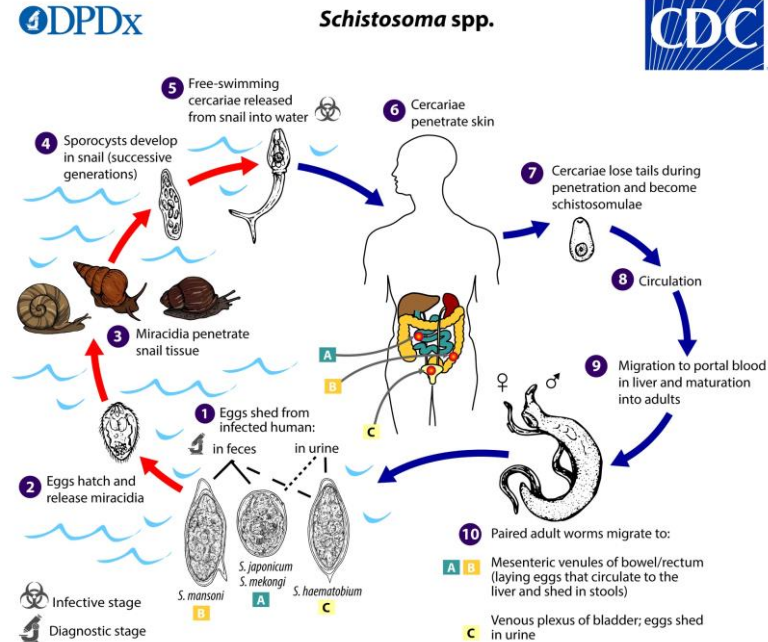
# Cutaneous mycoses

- *Malassezia* spp. (*Malassezia.furfur*)
- Causes Tinea.
- Pityriasis versicolor: It's a yeast like fungus which causes degradation of lipids → produces acids that inhibits tyrosinase → Hypopigmentation
- “Spaghetti and meatball” appearance on microscopy KOH



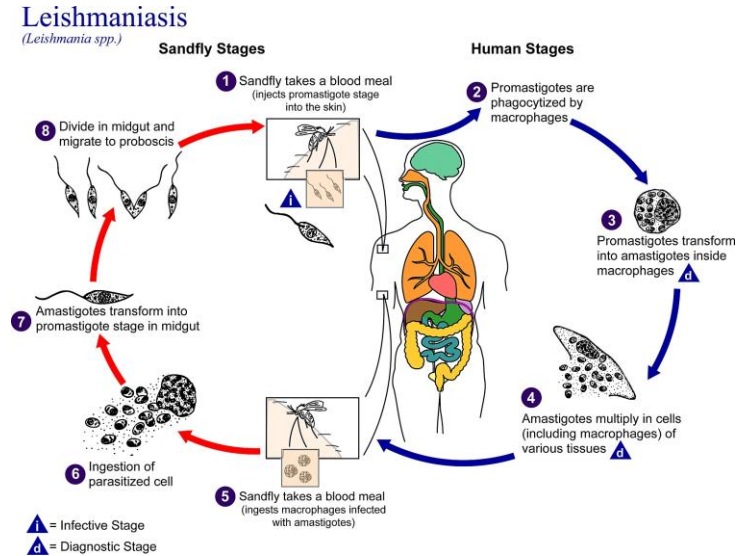
# Schistosoma

- One of the few organisms able to penetrate intact skin



# Leishmania spp

- Cutaneous Leishmaniasis



# Osteomyelitis

- Hematogenous, local infection extension, trauma, iatrogenic bone.
- Signs: acute systemic illness (malaise, fever, leukocytosis, localized pain) – can be only unexplained fever (infants) or localized pain (adults)
- Dx: characteristic radiologic finding (destructive lytic focus + edema + sclerotic rim), blood culture, biopsy/bone culture for definitive dx.
- Tx: ATBs + surgical drainage. Up to a quarter of cases do not resolve chronicity.
- Which organisms cause this?





# Osteomyelitis

1. Sexually active → *N. gonorrhoeae*
2. Sickle cell disease → *Salmonella* and *S.aureus*
3. Prosthetic joint replacement → *S.aureus* and *S. epidermidis*
4. Vertebral involvement → *M.tuberculosis*, *S.aureus*
5. Cat and dog bites → *Pasteurella multocida*
6. IV-drug abusers: *S.aureus*, also *Pseudomonas* and *candida*
7. Assume if no other information is available → *S.aureus* (most common overall)



# Arthritis

## Infectious Arthritis

- *S. aureus* (mcc in adults), streptococcus, *N. gonorrhoeae* (older adolescents, young adults), *H. influenzae* (mcc in children < 2 yrs).
- Hematogenous dissemination, direct inoculation, contiguous spread from osteomyelitis or soft tissue abscess.
- Sudden onset of pain, red/swollen joint, restricted motion, fever, leukocytosis. Gonococcal tends to be subacute.
- 90% of non-gonococcal involve just single joint (knee, hip, shoulder...)
- **Dx:** joint fluid aspiration, culture and gram staining.

## Reactive Arthritis (Reiter syndrome)

- AI but TRIGGERED by previous infection.
- Shigella, Salmonella, Yersinia, Campylobacter, Chlamydia, Gonorrhea.
- **Signs:** conjunctivitis and anterior uveitis, urethritis, arthritis.



# Sources

- 1. Murrays microbiology
- 2. Lippincotts microbiology