Infectious Diseases of the Skin

CLS 212: Medical Microbiology
Anatomy of the Normal Skin

- Hair shaft
- Sweat pore
- Epidermis
- Dermis
- Subcutaneous layer
- Sweat gland (produces perspiration)
- Adipose tissue (fat)
- Nerve
- Hair follicle
- Duct of sweat gland
- Blood vessels
- Oil gland (produces sebum)
- Hair erector muscle
- Stratum corneum
Anatomy of Normal Skin

• The skin is the largest organ covering the entire body.
• Functions of the skin is to protect the body against heat, light, and infection.

• The skin consist of 3 layers:

1. **Epidermis**: one part is the *stratum corneum*, contains the protein Keratin and skin pigment (melanin).
2. **Dermis**: contains blood vessels, nerves, lymph vessels, hair follicles, and sweat and oil glands.
3. **Subcutaneous**: contain lipid tissue that keeps the heat of the body.
Infectious Diseases of the Skin

**Bacteria**
- *Staphylococcus aureus.*
- *Streptococci pyogenes* (Group A)
- *Propionibacterium acnes.*
- *Clostridium spp.*

**Viruses**
- *Herpes viruses* (HSV-1 & HSV-2)
- *Varicella-zoster virus*
- *Measles virus*
- *Rubella virus*

**Fungi**
- *Candida spp.*
- *Tinea spp.* (Dermatophytes)
- *Piedra hortae* (Black Piedra)

**Parasites**
- Lice
- Scabies (mite)
- Hook worm
Staphylococcus aureus

- **Folliculitis**: Infection of hair follicles.
  - **Pimples**: superficial infection (red area).
  - **Furuncles**: localized region of pus (white) surrounded by inflamed tissue - red area).
  - **Carbuncles**: deep tissue damage.
- **Impetigo (school sores)**: a superficial skin infection It appears as small blisters or yellow honey-colored crusts.
- **Cellulitis**: redness of the skin, swelling, blistering, and abscess.
- **Ecthyma**: hard crusted sores over ulcer.
- **Staphylococcal Scalded Skin Syndrom (SSSS)**.
- **Toxic Shock Syndrome (TSS)**.
# Bacterial Skin Disease

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<th>Other Bacterial Disease of the Skin</th>
<th>Etiologic Agent</th>
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<td>Acne</td>
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<td>Necrotizing Fasciitis</td>
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<tr>
<td>Impetigo</td>
<td><em>Staphylococcus aureus</em> or <em>Streptococcus pyogenes</em></td>
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Viral Infections of the Skin

- **Warts:** caused by *Human Papilloma Virus (HPV)*.
  - Although warts themselves are invariably benign, papilloviruses have been associated with increased frequency of cervical and skin cancers, so removal of warts is usually recommended.

- **Chickenpox and shingles:** caused by *Varicella-Zoster Virus (VZV)*.
  - Chickenpox is transmitted by air-route, and the infection is localized in the skin. Most common in children.
  - After recovery, the virus remains dormant in the nervous system.
  - However, in old people it may become reactivated, causing shingles. Shingles is an infection of a nerve and the area of skin around it.
• **Measles:** caused by *Rubeola virus*, is a systemic infection characterized by a skin rash.
  - It is an endemic childhood disease, complications of measles infection can be quite serious (ear infection, respiratory tract infection).
  - There is no treatment for measles.

A vaccine has been available since 1963, and has had a dramatic effect on the incidence of measles in the developed world; unfortunately, the vaccine does not produce strong immunity in all individuals, and compliance remains a problem.

• **Rubella:** *(or German measles)* caused by *Rubella virus*.
  - Rubella infection in both children and adults is usually mild, infection starts with facial red rash then goes to the whole body. Infection will take about 3 days.
  - Infection of a woman during the first trimester of pregnancy can lead to **congenital rubella syndrome (CRS)**, with a high incidence of fetal damage.

• **Immunity to both diseases:** through MMR-Measles Mumps Rubella Vaccine. Given to 18 month babies.
Parasitic Infection of the Skin: Lice

1. Head Lice: (*Pediculus humanus capitis*)
   - **Symptoms:** include itching of the scalp, neck, and behind ears.
   - Most common in children.
   - **Transmission:** direct head-to-head contact or sharing hair stuff.

2. Body Lice: (*Pediculus humanus corporis*)
   - **Symptoms:** itching, bite marks on the body.
   - Most common in communities dealing with poverty, overcrowding, and poor personal hygiene.
   - **Transmission:** body lice live in clothing and affect the body.

3. Pubic Lice: (*Pthirus pubis*)
   - **Symptoms:** itching of the pubic area, Bluish colored sore.
   - **Transmission:** direct sexual contact. Not spread by toilet seats.