Skin and Body Membranes

- Disorders

Normal Skin Color Determinants

- Melanin
  - Yellow, brown, or black pigments
- Carotene
  - Orange-yellow pigment from some vegetables
- Hemoglobin
  - Red coloring from blood cells in dermal capillaries
  - Oxygen content determines the extent of red coloring

Melanin

- Pigment (melanin) produced by melanocytes
- Melanocytes are mostly in the stratum basale
- About 8% of cells regardless of skin color
- Color produced is yellow to brown to black
- Amount of melanin produced depends upon genetics and exposure to sunlight

Diagnostic significance of color

- Bluish color (Cyanosis)
  - Low oxygen content
  - Poor circulation (heart defect or other cause)
  - Poisoning
  - Colloidal Silver toxicity (argyria)
- Yellow color usually indicates liver disorder
- Orange color- certain vegetables or drugs
- Red skin
  - Blushing (embarrassment or anger)
  - Overheated
  - Carbon Monoxide poisoning

Argyria
Cyanosis

- Reynaud's syndrome
- Poor peripheral circulation.

Carbon Monoxide Poisoning

Jaundice

Hypercarotenemia

Skin Homeostatic Imbalances

- Infections
  - Athlete's foot (tinea pedis)
  - Caused by fungal infection
  - Related organism causes Jock itch
  - Treatment is miconazole

- Boils and carbuncles
  - Caused by bacterial infection
  - A boil is a single infection
  - Carbuncles are a cluster of several boils.
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Disorders of skin

- Cold sores
  - Caused by the Herpes simplex I virus
  - A nervous system disease with skin manifestations
  - Most of the population harbors the virus
  - Outbreaks vary from person to person
  - Known triggers
    - Sunlight
    - Trauma
    - Stress
    - Some suggestion that foods containing lots of arginine, e.g., peanuts, rice, gelatin, beer, peas and chocolate.

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Skin Homeostatic Imbalances

- Infections and allergies
  - Contact dermatitis
    - Exposures cause allergic reaction
  - Impetigo
    - Caused by bacterial infection
  - Psoriasis
    - Chronic condition
    - Immune system mediated
    - Cause is unknown
    - Triggered by trauma, infection, stress

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Skin Homeostatic Imbalances

Figure 4.10

(a) Cold sores  (b) Impetigo  (c) Psoriasis

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Herpetic Whitlow

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Skin Homeostatic Imbalances

- Burns
  - Tissue damage and cell death:
    - Heat, electricity, UV radiation, or chemicals
  - Associated dangers
    - Dehydration
    - Electrolyte imbalance
    - Circulatory shock
Rule of Nines

- Way to determine the extent of burns
- Body is divided into 11 areas for quick estimation
- Each area represents about 9% of total body surface area

Severity of Burns

- First-degree burns
  - Only epidermis is damaged
  - Skin is red and swollen
- Second-degree burns
  - Epidermis and upper dermis are damaged
  - Skin is red with blisters
- Third-degree burns
  - Destroys entire skin layer
  - Burn is gray-white or black

Critical Burns

- Burns are considered critical if
  - Over 25% of body has second-degree burns
  - Over 10% of the body has third-degree burns
  - There are third degree burns of the face, hands, or feet

Skin Cancer

- Cancer—an abnormal cell mass
- Classified two ways
  - Benign
    - Does not spread (encapsulated)
    - Benign does not mean “safe”
  - Malignant
    - Metastasized (moves) to other parts of the body
- Skin cancer is the most common type of cancer

Skin Cancer Types

- Basal cell carcinoma
  - Least malignant
  - Most common type
  - Arises from stratum basale
  - (a) Basal cell carcinoma
**Skin Cancer Types**

- **Squamous cell carcinoma**
  - Metastasizes to lymph nodes if not removed
  - Early removal allows a good chance of cure
  - Believed to be sun-induced
  - Can arise in mouth from tobacco and alcohol use

**Untreated oral Squamous Cell Carcinoma**

**Skin Cancer Types**

- **Malignant melanoma**
  - Most deadly of skin cancers
  - Cancer of melanocytes
  - Metastasizes rapidly to lymph and blood vessels
  - Detection uses ABCD rule

**ABCD Rule**

- **A = Asymmetry**
  - Two sides of pigmented mole do not match
- **B = Border irregularity**
  - Borders of mole are not smooth
- **C = Color**
  - Different colors in pigmented area
    - Scrambled egg appearance
- **D = Diameter**
  - Spot is larger than 6 mm in diameter