Integumentary System

Skin Review
Burns and Cancer
Did You Know the SKIN

• Weighs 9-11 lbs
• Primary Barrier against infection, heat loss, water loss
• On average, every square cm has
  – 70 cm of blood vessels
  – 100 sweat glands
  – 230 sensory receptors
Accessory Organs

- Skin
- Sweat Glands
- Oil Glands
- Hair
- Nails

- See Integumentary System WS
Two Main Regions of the Skin

• Epidermis –
  – Outermost layer
  – Thin
  – NOT vascular, nutrients reach by diffusion

• Dermis –
  – Bulk of Skin
  – Vascularized
Epidermis has 4 types of cells

- Keratinocytes: produce keratin (gives protection) that are pushed toward surface
  - New epidermis every 25-45 days
- Melanocytes: produce melanin pigment that shields nucleus from UV radiation
- Langerhan’s Cells: help activate immune system
- Merkel Cells: form sensory receptors
Layers of the Epidermis from deep to superficial

- **Stratum Basale**: attached to dermis
- **Stratum spinosum**: cells appear spiney
- **Stratum granulosum**: cells flatten, nuclei and organelles disintegrate, waterproof
- **Stratum lucidum**: thin translucent band
- **Stratum corneum**: thick with keratin for protection
Layers of the Dermis

Papillary Layer
- Creates epidermal ridges that aids in gripping and fingerprints
- “Dermal Papilla”

Reticular Layer
- 80% of Dermis
- Lots of collagen and elastin fibers to give strength and resiliency

Stretch Marks: white scars caused by dermal tears

Blisters: Epidermis and dermis become separated and filled with pockets of fluid
Skin Color and the Sun

• Melanocytes become more active upon sun exposure causing freckles and moles

• Effects of Excessive Sun Exposure
  – Clumping of elastin fibers (leathery skin)
  – Depression of Immune System
  – Alter DNA → Cancer

• Some chemicals can make skin more sensitive to light. (antibiotics, perfumes, detergents, etc.)
You got burned?

• 1\textsuperscript{st} Degree: only redness, least severe

• 2\textsuperscript{nd} Degree: produce blisters, moderately severe

• 3\textsuperscript{rd} Degree: tissue destroyed down to muscle/bone requiring skin graft to repair
  – Initial Dangers: loss of fluids; shock; organ failure
  – Later Dangers: infection
Rule of Nines

Calculate percentage of body affected by burns:

• Head = 9%
• Anterior Thoracic = 9%
• Posterior Thoracic = 9%
• Anterior Abdomen = 9%
• Posterior Abdomen = 9%
• Left Arm = 9%
• Right Arm = 9%
• Anterior Left Leg = 9%
• Posterior Left Leg = 9%
• Anterior Right Leg = 9%
• Posterior Right Leg = 9%
• Genitals = 1%
Skin Cancer

• Benign: Do not spread
  – Wart caused by virus

• Malignant: Cancerous and invades body

• Types of Skin Cancer
  – Basal Cell Carcinoma
  – Squamous Cell Carcinoma
  – Malignant Melanoma
ABCDE Rule

Used to recognize Malignant Melanoma

• A – Assymetry
• B – Border irregularity
• C – Color
• D – Diameter Larger than 6mm
• E - Elevation