

Medical-Surgical Nursing: An Integrated Approach, 2E

Chapter 21

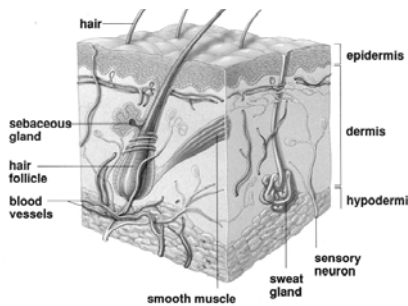
NURSING CARE OF THE CLIENT:
INTEGUMENTARY SYSTEM
NVOC 22C
Eliza Rivera-Mitu

The Skin

- As the external covering of the body, the skin performs the vital function of protecting internal body structures from harmful microorganisms and substances.

Structure of the Skin

- The skin is composed of three layers:
 - The *epidermis*.
 - The *dermis*.
 - The *subcuta* -neous fatty tissue.



Epidermis

- A layer of squamous epithelial cells.
- Most of these cells produce a tough, fibrous protein called *keratin*.
- The epidermis also produced specialized cells called *melanocytes*. These produce *melanin* (skin pigment). Aggregations of melanocytes are *nevi* (moles and birthmarks).

Dermis

- Dense, irregular connective tissue composed of collagen and elastic fibers, blood and lymph vessels, nerves, sweat, and sebaceous glands and hair roots.
- The sebaceous glands produce *sebum*, an oily substance that lubricates the skin.

Subcutaneous Tissue

- Primarily connective and adipose (fatty) tissue. Here the skin is anchored to muscle and bone.

Functions of the Skin

- **Protection.**
- **Temperature regulation.**
- **Sensory perception.**
- **Fluid and electrolyte balance.**

Hair: Structure

- **Hair is composed of dead epidermal cells that begin to grow and divide in the base of the hair follicle.**
- **As the cells are pushed toward the skin surface, they become keratinized and die.**
- **Hair color is genetically determined.**

Hair Growth and Replacement

- **Scalp hair grows for 2 to 5 years.**
- **Approximately 50 hairs are lost each day.**
- **Sustained hair loss of more than 100 hairs each day usually indicates that something is wrong.**

Hair: Function

- **Protects scalp from ultraviolet rays and cushions blows.**
- **Eyelashes, hair in nostrils and in ears keep particles from entering organ.**

Mucous Membranes

- **A loose connective tissue overlaid with epithelium. Specialized cells within the mucous membrane secrete mucus.**
- **The cavities and tubes that open to the outside of the body are lined with mucous membranes. These include the oral and nasal cavities and the tubes of the respiratory, gastrointestinal, urinary, and reproductive systems.**

Effects of Aging on the Skin

- **Skin vascularity and the number of sweat and sebaceous glands decrease, affecting thermoregulation.**
- **Inflammatory response and pain perception diminish.**
- **Thinning epidermis and prolonged wound healing make elderly more prone to injury and skin infections.**
- **Skin cancer more common.**

Assessment of Skin

There are seven parameters that should be examined in performing physical assessment of the skin:

- **Integrity.**
- **Color.**
- **Temperature and moisture.**
- **Texture.**
- **Turgor and mobility.**
- **Sensation.**
- **Vascularity.**

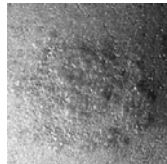
Assessment of Hair, Nails, and Mucous Membranes

- **Hair should be smooth, shiny, and resilient.**
- **Nails should be pink, smooth, and shiny, and feel firm yet flexible when palpated.**
- **Mucous membranes normally appear pink and moist.**

Common Diagnostic Tests for Integumentary Disorders

- **Biopsy.**
- **Patch Testing.**
- **Tzanck smear.**
- **Skin scrapings.**
- **Immuno-fluorescence**
- **Wood's light examination**
- **Culture and sensitivity.**

Patch Testing



Tzanck smear

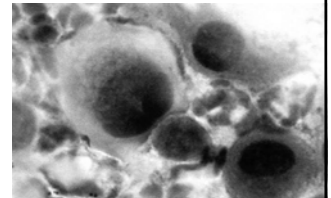
- **Tzanck preparation is a rapid test done to diagnose infections caused by herpesviruses. Cells are examined under a microscope for signs of infection.**

Description

- **The Tzanck preparation is done by smearing cells taken from a fresh blister or ulcer onto a microscope slide.**
- **The cells are stained with a special stain, such as Wright's stain, and then examined under a microscope for characteristic changes caused by a herpesvirus.**

Tzanck smear

- **Herpes causes giant cells with multiple nuclei.**
- **The shape of each nucleus appears molded to fit together with those adjacent.**
- **The background of the cell looks like ground glass and contains small dark spots called inclusion bodies.**



Tzanck smear

Preparation

- A fresh blister is opened with a scalpel or sterile needle.
- The physician scrapes the base of the blister with the scalpel, gathers as much cellular material as possible, and gently spreads it on a microscope slide.

Skin scrapings

Skin Scrapings for Fungal Culture

- Sterile container, sterile scalpel blade, adhesive tape and alcohol swab.

Preparation

- Wash the area of skin to be scraped with an alcohol swab.
- Remove any ointment or residual applications using soap and water.
- Ensure the skin surface is dry before proceeding with the scraping.

Skin scrapings

Specimen Collection

1. Stretching the skin, scrape the outer periphery of the lesion with the blade perpendicular to the skin surface.
2. Collect all of the skin material into a sterile container.
3. Remove adherent scrapings from the blade by rubbing against the edge of the dish. **Do not place the blade in the container with the scrapings.**

Skin scrapings

Specimens will not be processed if received in the laboratory with the blade remaining in the sterile container.

4. Secure the top of the sterile container firmly.
5. Label the sterile container with the patient's full name, date, time and site of collection.
6. Store the specimen at room temperature and deliver to the laboratory on the day of collection.

Wounds

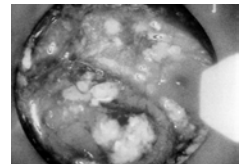
- A disruption in the integrity of the body.
- Three phases of healing:
 - Defensive (inflammatory) phase.
 - Reconstructive (proliferative) phase.
 - Maturation phase.

Wound Drainage: Types

- *Serous Exudate* (composed primarily of serum, the clear portion of blood; watery in appearance).

- *Purulent exudate* (also called pus; may vary in color).

- *Hemorrhagic exudate* (has a large component of RBCs; color depends on whether bleeding is old or fresh),



Factors Affecting Wound Healing

- Age.
- Oxygenation.
- Smoking
- Drug therapy.
- Diseases such as diabetes.
- Nutrition and diet.

Wound Classification Systems

- Cause of Wound (Intentional, e.g. surgical, or Unintentional, e.g. trauma or accident).
- Cleanliness of Wound (Clean; Clean-contaminated; Contaminated; Dirty and infected).
- Depth of Wound (Superficial; Partial-Thickness; Full-Thickness).

Assessment of Wounds: Criteria

- Location.
- Size.
- General Appearance and Drainage.
- Pain.
- Laboratory Data
 - WBC: ↑ = infectious process; ↓ at increased risk for developing an infection r/t decreased defense mechanisms
 - Albumin – measure of client's protein reserves; ↓ decreased resources for wound healing

Nursing Interventions: Wound Healing

- Emergency measures
 - Hemorrhage –
 - Dehiscence or evisceration
- Cleansing the wound.
- Dressing the wound.
- Monitoring drainage of wound.

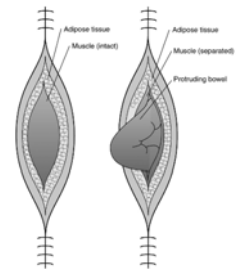


Figure 26-9 (A) Wound dehiscence, (B) wound evisceration.
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Burns: Major Causes

- Overexposure to sun.
- Burns associated with cigarette smoking and cooking.
- Industrial accidents.

Burns: Classification of Severity

- First-degree (involves only epidermis; skin is hot, red, painful).
- Second-degree (damage the dermis and epidermis; skin is red, hot, and painful, blisters may form).
- Third-degree (all dermal structures destroyed; not painful).
- Fourth-degree (skin charring; not painful).

First Degree

- **FIRST** (superficial)
- sunburn, scald, flash flame
- dry, no blisters, pink, painful
- Heals in 2-5 days with peeling, no scarring, may discolor



Second Degree

- **SECOND** (partial thickness)
- contact with hot liquids or solids, flash flame, chemical
- moist blisters, pink to cherry red, painful, superficial
- Heals in 5-21 days, no grafting. Deep-no infection, 21-35 days; if infected, converts to full thickness.



Third Degree

- **THIRD** (full thickness)
- contact with hot liquids or solids, flame, chemical, electrical
- dry and leathery until removed. Charred blood vessels visible under skin charred.
- Color: mixed white, waxy, pearly or dark khaki, mahogany



- no pain, nerve endings dead
- Healing: large areas may need months with skin grafting. Small areas may heal with grafting within weeks.

Fourth Degree

- **Fourth-degree burns** injure the tissues underlying the skin, such as the muscles or bones. In fourth-degree burns, the skin is irretrievably lost.
- **fifth-degree burns**, the muscle is also irretrievably lost.
- **sixth-degree burns**, the bone is also charred.

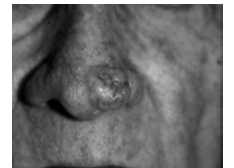


Neoplasms: Malignant

- Skin cancer is one of the most common malignant neoplasms in the United States and one of the most preventable.
- Three most common types are:
 - Basal Cell Carcinoma.
 - Squamous Cell Carcinoma.
 - Malignant Melanoma.

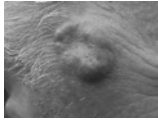
Basal Cell Carcinoma

- Most frequent type of skin cancer, arises from epidermis.
- Prolonged sun exposure, poor tanning ability, and previous therapy with x-rays for facial acne are associated with it.



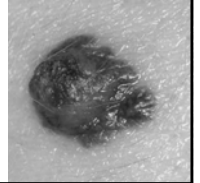
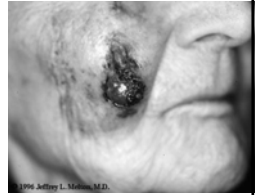
Squamous Cell Carcinoma

- Appears as a nodular lesion within the epidermis.
- Risk factors include prolonged sun exposure and exposure to gamma radiation and x-rays.
- Without treatment, it can metastasize and cause death.



Malignant Melanoma

- Moles have irregular shape and color.
- Malignant melanoma can metastasize to every organ in the body through the bloodstream and lymph system.



Mycosis Fungoides

- Also known as coetaneous T-cell lymphoma, it is a malignant disease with skin manifestations found in clients with AIDS.



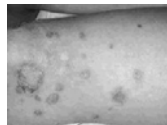
Neoplasms: Nonmalignant

- Benign tumor of the skin include:
 - Skin tags.
 - Lipomas (benign fatty tumors).
 - Keloids (abnormal growth of scar tissue).
 - Sebaceous cysts.
 - Nevi (moles).
 - Angiomas (birthmarks).

Common Infectious Skin Disorders

Bacterial Infections Impetigo, Carbuncle
Viral Infections Herpes Zoster (shingles), Herpes simplex type 1 (fever blisters, cold sores) and 2 (genital), Warts
Fungal Infections Tinea (ringworm), Tinea capitis (ringworm of the scalp), Tinea cruris (jock itch), Tinea pedis (athlete's foot)
Parasitic Infections Scabies, Pediculosis (lice)

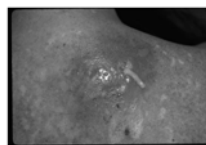
Impetigo

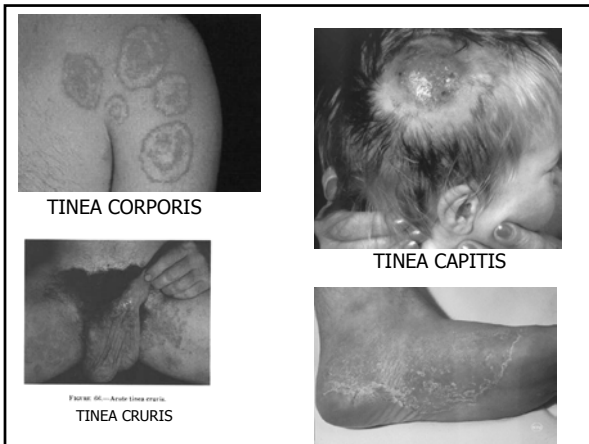


Shingles



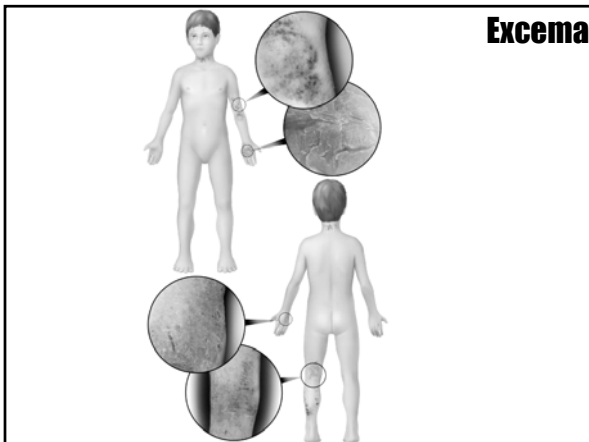
Carbuncle





Inflammatory Disorders of the Skin: Dermatitis/Eczema

- In current usage, eczema has almost become synonymous with dermatitis, although eczema tends to be used most often to refer to chronic forms of dermatitis.
- Eczema is an atopic dermatitis often associated with rhinitis and asthma. It is a chronic superficial inflammation that evolves into pruritic, red, weeping, crusted lesions.



Contact Dermatitis

- Skin reacts to external irritants like:
 - allergens (e.g. poison ivy or cosmetics).
 - harsh chemical substances (detergents, insecticides).
 - metals such as nickel.
 - mechanical irritations from wool or glass fibers.
 - body substances like urine or feces.

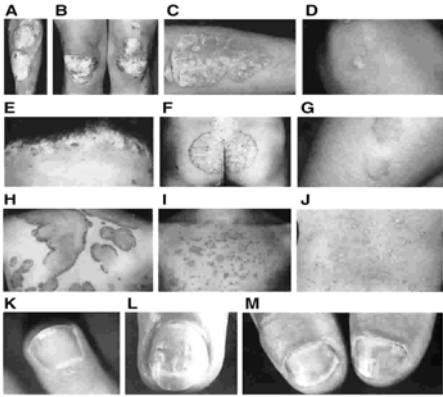
Exfoliative Dermatitis

- Inflammation of the skin gradually worsens.
- The entire body is affected. Chills, fever, and malaise set in.
- Cause unknown. Severe reactions to drugs such as penicillin may be causative.
- Exfoliative dermatitis can be fatal.

Psoriasis

- A chronic, inflammatory, noninfectious disease of the skin, affecting a fairly large segment of the population, particularly young adults.
- Exact cause unknown; not curable.

Psoriasis

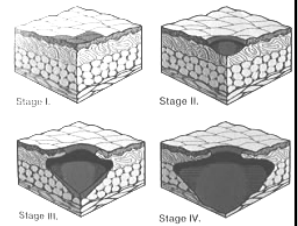


•Two most common types are:

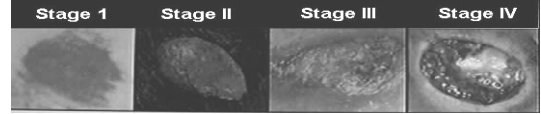
–*Stasis* (caused by poor circulation, especially in lower extremities).

–*Pressure* (bedsores or decubitus ulcers).

Skin Ulcers



Pictures Courtesy of Coloplast Corp.



Alopecia

•Partial or complete baldness or loss of hair.

•Can be caused by illness, malnutrition, effects of certain drugs such as those used in cancer therapy, hormonal imbalances, or diseases that affect the scalp.

