CHAPTER 19 Integumentary System

PHYSIOLOGY OF THE SKIN

A. Structure
   1. Epidermis – outermost layer.
   2. Dermis – connective tissue below epidermis; vascular; assists in body temperature and blood pressure regulation.
   3. Hypodermis (subcutaneous) – located below dermis; anchors the muscles and bones to the skin.
      a. Consists of a hard, transparent plate of keratin.
      b. Grows from the root, which lies under a thin fold of skin called the cuticle.
   5. Hair.
      a. Present over the entire body except for the palms of the hands and the soles of the feet.
      b. Piloerector response: contraction of the tiny erector muscles attached to the hair follicle that leads to hair “standing on end” or “gooseflesh.”
   6. Sebaceous glands: secrete sebum, which is an oily secretion that is emptied into the hair shaft.

B. Functions of the skin.
   1. Protection: primary function.
   2. Sensory: major receptor for general sensation.
      a. 600 to 900 mL of water is lost daily through insensible perspiration.
      b. Forms a barrier that prevents loss of water and electrolytes from the internal environment.
   4. Temperature regulation.
   5. Involved in the activation of vitamin D.
   6. Involved in wheal-and-flare reaction.
      a. Wheal: swelling.
      b. Flare: diffused redness.
      c. These responses are due to local edema.

System Assessment

A. Health history (Box 19-1).
   1. How long has the particular rash, lesion, or problem been present?
   2. Is there any itching, burning, or discomfort associated with the problem?
   3. Has the client been in contact with any irritants, sun, unusual cold, or unhygienic conditions?
   4. Has anyone in the family ever had this same type of problem with his or her skin?
   5. Is the client taking any medications?

B. Physical assessment.
   1. Inspection.
      a. Assess the skin for color: jaundice, cyanotic, flushed.
      b. Determine if there are areas of bruising, purpura, or petechiae.
      c. Determine if skin blanches on direct pressure.
      d. Assess lesions for type, color, size, distribution, and grouping; location and consistency.
      e. Assess for unusual odors, especially around lesions or areas (axilla, overhanging abdominal folds, and groin).
      f. Common dermatological lesions.
         (1) Macule: flat, circumscribed area of color change in the skin without surface elevation.
         (2) Papule: circumscribed, solid, and elevated lesion.
         (3) Nodule: raised, solid lesion that is larger and deeper than a papule.
         (4) Vesicle: small elevation in skin usually filled with serous fluid or blood; bulla: larger than a vesicle; pustule: vesicle or bulla filled with pus.
         (5) Wheal: elevation of the skin caused by edema of the dermis.
         (6) Cyst: mass of fluid-filled tissue that extends to the subcutaneous tissue or dermis.

BOX 19-1 OLDER ADULT CARE FOCUS

Differences in Skin Assessment

Skin
- Increased wrinkling and sagging, redundant flesh around eyes, slowness of skin to flatten when pinched together (tenting)
- Dry, flaking skin: excoriation from scratching
- Decreased rate of wound healing
- Evidence of bruising

Hair
- Graying, thinning, baldness; dry, scaly scalp

Nails
- Thick, brittle nails with diminished growth; ridging
- Prolonged return of blood with blanching
2. Palpation.
   a. Determine temperature (use back of hand), skin turgor (on older adults pinch skin on abdomen or forehead), and mobility.
   b. Evaluate moisture and texture.

**TEST ALERT:** Assess skin integrity and use measures to maintain client skin integrity.

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### Acne Vulgaris

*Acne is an inflammatory disorder of the sebaceous glands and their hair follicles.*

**Data Collection**

A. More common in teenagers; may persist into adulthood.
B. Under hormonal influence during puberty; affected by presence of androgen, which stimulates the sebaceous glands to secrete sebum.
C. Inflammatory lesions or pustules.
D. Cysts: deep nodules that may produce scarring.

**Treatment**

A. Medical: topical or systemic therapy.

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### Psoriasis

*Psoriasis is a chronic inflammatory disorder characterized by rapid turnover of epidermal cells.*

**Data Collection**

A. Silvery scaling, plaques on the elbows, scalp, knees, palms, soles, and fingernails.
B. If scales are scraped away, a dark red base of the lesion is seen, which will produce multiple bleeding points.
C. May improve but often recurs throughout life.
D. Bilateral symmetry of symptoms is common.

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### Atopic Dermatitis

*Atopic dermatitis (also called eczema) is a superficial, chronic inflammatory disorder associated with allergy with a hereditary tendency (atopy); condition usually occurs during infancy, usually between 2 and 6 months of age.*

**Data Collection**

A. Reddened lesions, occur on the cheeks, arms, and legs; antecubital and popliteal space in adults; may have oozing vesicles.
B. Intense itching (worse at night).
C. Infants with eczema are more likely to have allergies as children and adults and develop asthma.

**Treatment**

A. Pruritus is treated with Benadryl, topical steroids, and with immunomodulators.

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### Home Care

A. Teach parents about dietary restrictions; provide them with written guidelines.
B. Keep fingernails and toenails cut short.
C. Feed the child when he is well rested and is not itching.
D. Child should wear nonirritating clothing; wool and abrasive fabrics should be avoided.
E. Tepid bath with mild soap or a emulsifying oil followed immediately by application of an emollient; cool compresses to decrease itching.
Contact Dermatitis

* Contact dermatitis is an inflammatory skin reaction that results because the skin has come in contact with a specific irritant - diaper dermatitis, prolonged contact with urine, feces, ointments, soaps, friction or an allergen (allergic contact dermatitis, which is usually a symptom of delayed hypersensitivity).

Data Collection

A. Pruritus; hive-like papules, vesicles, and plaques (more chronic).
B. Sharply circumscribed areas (with occasional vesicle formation) that crust and ooze.

Treatment

A. Medical.
   1. Topical steroids; oral steroids for severe cases.
   2. Antihistamines, antipruritic agents, and antifungals (diaper dermatitis).
   3. Aveeno (oatmeal) baths and topical soaks.

Home Care

A. Teach importance of washing exposed skin with cool water and soap as soon as possible after exposure (within 15 minutes is best).
B. Provide cool, tepid bath; trim fingernails, and use measures to control itching.
C. Frequent diaper changes, keep skin dry, and use protective ointment (zinc oxide or petrolatum).

Pressure Ulcer

* A pressure ulcer (decubitus ulcer, bedsore) is localized injury to the skin and/or underlying tissue usually over a bony prominence, as a result of pressure, or pressure in combination with shear and/or friction.

✔ NURSING PRIORITY: Identify potential for skin breakdown: a pressure ulcer can be and should be prevented. Identify those clients at increased risk for ulcer development and begin preventative care as soon as possible. Do not wait for the reddened area to occur before preventative measures are initiated.

Assessment

A. Risk factors/etiology.
   1. Prolonged pressure caused by immobility.
   2. Malnutrition, hypoproteinemia, vitamin deficiency.
   3. Infection, advancing age.
   4. Skin dryness, maceration, excessive skin moisture.
   5. Equipment such as casts, restraints, traction devices, etc.

B. Clinical manifestations – see Figure 19-1.

Treatment

A. Medical and surgical.
   1. Debridement (initial care is to remove moist, devitalized tissue).
      a. Sharp debridement: use of a scalpel or other instrument; used primarily, especially with cellulitis or sepsis.

Figure 19-1: Stages of Pressure Ulcers

Suspected Deep Tissue Injury: Purple or maroon localized area of discolored intact skin or blood-filled blister due to damage of underlying soft tissue from pressure and/or shear. The area may be preceded by tissue that is painful, firm, mushy, boggy, warmer or cooler as compared to adjacent tissue.

Further description: Deep tissue injury may be difficult to detect in individuals with dark skin tones. Evolution may include a thin blister over a dark wound bed. The wound may further evolve and become covered by thin eschar. Evolution may be rapid exposing additional layers of tissue even with optimal treatment.

Stage I: Intact skin with non-blanchable redness of a localized area usually over a bony prominence. Darkly pigmented skin may not have visible blanching; its color may differ from the surrounding area.

Further description: The area may be painful, firm, soft, warmer or cooler as compared to adjacent tissue. Stage I may be difficult to detect in individuals with dark skin tones. May indicate “at risk” persons (a heralding sign of risk)

Stage II: Partial thickness loss of dermis presenting as a shallow open ulcer with a red pink wound bed, without slough. May also present as an intact or open/ruptured serum-filled blister.

Further description: Presents as a shiny or dry shallow ulcer without slough or bruising. * This stage should not be used to describe skin tears, tape burns, perineal dermatitis, maceration or excoriation.

*Bruising indicates suspected deep tissue injury

Stage III: Full thickness tissue loss. Subcutaneous fat may be visible but bone, tendon or muscle are not exposed. Slough may be present but does not obscure the depth of tissue loss. May include undermining and tunneling.

Further description: The depth of a stage III pressure ulcer varies by anatomical location. The bridge of the nose, ear, occiput and malleolus do not have subcutaneous tissue and stage III ulcers can be shallow. In contrast, areas of significant adiposity can develop extremely deep stage III pressure ulcers. Bone/tendon is not visible or directly palpable

Stage IV: Full thickness tissue loss with exposed bone, tendon or muscle. Slough or eschar may be present on some parts of the wound bed. Often include undermining and tunneling.

Further description: The depth of a stage IV pressure ulcer varies by anatomical location. The bridge of the nose, ear, occiput and malleolus do not have subcutaneous tissue and these ulcers can be shallow. Stage IV ulcers can extend into muscle and/or supporting structures (e.g., fascia, tendon or joint capsule) making osteomyelitis possible. Exposed bone/tendon is visible or directly palpable.

Unstageable: Full thickness tissue loss in which the base of the ulcer is covered by slough (yellow, tan, gray, green or brown) and/or eschar (tan, brown or black) in the wound bed.

Further description: Until enough slough and/or eschar is removed to expose the base of the wound, the true depth, and therefore stage, cannot be determined. Stable (dry, adherent, intact without erythema or fluctuance) eschar on the heels serves as “the body’s natural (biological) cover” and should not be removed.

b. Mechanical debridement: wet-to-dry dressings, hydrotherapy, wound irrigation, and dextranomers (small beads poured over secreting wounds to absorb exudate).

c. Enzymatic and autolytic debridement: use of enzymes or synthetic dressings that cover wound and self-digest devitalized tissue by the action of enzymes that are present in wound fluids.

2. Wound cleansing (use normal saline solution for most cases).

   a. Use minimal mechanical force when cleansing to avoid trauma to the wound bed.
   b. Avoid the use of antiseptics (e.g., Dakin’s solution, iodine, hydrogen peroxide).

3. Dressings (should protect wound, be biocompatible, and hydrate).

   a. Moistened gauze.
   b. Film (transparent).
   c. Hydrocolloid (moisture and oxygen retaining).

NURSING PRIORITY: Keep the ulcer tissue moist and the surrounding intact skin dry.

B. Dietary.

   1. Increased carbohydrates and protein.
   2. Increased vitamin C and zinc.

Nursing Intervention

- **Goal**: To prevent or relieve pressure and stimulate circulation.

A. Frequent change of position; turn client every 1 to 2 hours.

B. Special beds with mattresses that provide for a continuous change in pressure across the mattress.

C. Silicone gel pads placed under the buttocks of clients in wheelchairs.

D. Sheepskin pads to provide a soft surface to protect the skin from abrasion.

E. Eggcrate or foam mattress to allow circulation under the body and keep the area dry.

F. Active and passive exercises to promote circulation.

- **Goal**: To keep skin clean and healthy and prevent the occurrence of a pressure ulcer.

A. Wash skin with mild soap and blot completely dry with soft towel.

   1. Avoid hot water and excessive rubbing.
   2. Use lotion or protective moisturizer after bathing.

B. Inspect skin frequently, especially over bony prominences.

C. Remove any foreign material from the bed, because it may serve as a source of irritation; keep sheets tightly stretched on bed to prevent wrinkles.

- **Goal**: To promote healing of pressure ulcer.

A. Use methods discussed to decrease the pressure on the area in which the pressure ulcer is found.

   1. Air-fluidized beds - stage III or stage IV pressure ulcers.
   2. Static support surfaces (use of a pressure reducing device, e.g., foam overlay, cushion) - not recommended for Stage III or IV.

B. Keep the ulcer area dry.

   1. Minimize skin exposure to moisture caused by incontinence, perspiration, or wound drainage.
   2. Use only underpads or briefs that are made of materials that absorb moisture and provide a quick-drying surface next to the skin.
   3. Position the client with the ulcer exposed to air; may use light to increase drying and promote healing.

C. Use skin barriers to decrease contamination and increase healing of a noninfected ulcer.

D. Observe the ulcer for signs of infection. Infected ulcers will have to be debrided, if healing is to occur.

Impetigo

- *Impetigo* is a bacterial skin infection caused by invasion of the epidermis by pathogenic *Staphylococcus aureus* and/or group A beta-hemolytic streptococci.

Data Collection

A. Pustule-like lesions with moist honey-colored crusts surrounded by redness.

B. Pruritus; spreads to surrounding areas.

C. Appears more commonly on the face, especially around the mouth.

Treatment

A. Medical.

      a. Gentle washing two to three times a day to remove crusts.
      b. Topical mupirocin (*Bactroban*) antibiotic cream, if only a couple of lesions are found.
   2. Systemic antibiotic therapy is the treatment of choice with extensive lesions.
A. Teach the client and family the importance of good hand washing and that lesions heal without scarring.
B. Encourage adherence to therapeutic regimen, especially taking the full course of antibiotics.
C. Untreated impetigo may result in glomerulonephritis.

Cellulitis

Cellulitis is an inflammation of the subcutaneous tissues often following a break in the skin caused by Staphylococcus aureus, Streptococcus, or Haemophilus influenzae.

Data Collection
A. Intense redness, edema with diffuse border, and tenderness.
B. Chills, malaise, and fever.

Treatment
A. Medical.
1. Moist heat, immobilization, and elevation of part.
2. Systemic antibiotic therapy is the treatment of choice with extensive lesions.

Home Care
A. Teach the client and family the importance of good hand washing.
B. Encourage adherence to therapeutic regimen, especially taking the full course of antibiotics.

Fungal (Dermatophyte) Infections

Assessment
A. Types.
1. Tinea corporis (ringworm): temporary hair loss, if scalp is affected.
2. Tinea cruris (“jock itch”): small, red, scaly patches in the groin area.
3. Tinea pedis (athlete’s foot): scaling, maceration, erythema, blistering, and pruritus; usually found between the toes.
4. Tinea unguium (onychomycosis): thickened, crumbling nails (usually toes) with yellowish discoloration.
5. Candidiasis: caused by Candida albicans, known as moniliasis, may affect oral mucosa, groin, and moist areas; white plaques in mouth; diffuse red rash on skin.

Treatment
A. Topical antifungal cream (see Appendix 19-1).
B. Oral antifungal medication.
C. Systemic therapy: Griseofulvin; used primarily for extensive cases.

Home Care
A. To prevent athlete’s foot, client should be instructed to keep feet as dry as possible and wear socks made of absorbent cotton.
1. Talcum powder or antifungal powder may be used; Tinactin may be applied twice daily.
2. Encourage aeration of shoes to allow them to completely dry out.
B. Client should maintain hygienic measures to prevent the spread of fungal diseases, specifically ringworm of the scalp.
1. Family members should avoid using the same comb.
2. Scarves and hats should be washed thoroughly.
3. Examine family and household pets frequently for symptoms of the disease.
C. Client should avoid infection.
1. Any activity that allows heat, friction, and maceration to occur may lead to skin breakdown and infection.
2. Loose-fitting clothing and cotton underwear are to be encouraged.

Parasitic Infestations

A. Pediculosis.
1. Types.
   a. Pediculus humanus capitis: head lice.
   b. Pediculus humanus corporis: body lice.
   c. Phthirus pubis: pubic lice or crabs.
2. Clinical manifestations.
   a. Intense pruritus, which may lead to secondary excoriation and infection.
   b. Tiny, red, noninflammatory lesions.
   c. Eggs (nits) of both head and body lice are often attached to the hair shafts.
   d. Pubic lice are often spread by sexual contact.
B. Scabies: an infestation of the skin by itch mites.
1. Intense itching, especially at night.
2. Burrows are seen, especially between fingers, on the surfaces of wrists, and in axillary folds.
3. Redness, swelling, and vesicular formation may be noted.

Treatment
A. Pediculosis.
1. Permethrin 1% liquid (Nix): effective against nits and lice with just one application; shampoo hair first, leave Nix on hair for 10 minutes, rinse off; may repeat in 7 days.
2. Pyrethrin compounds (e.g., Rid) for pubic and head lice.
B. Scabies: Permethrin 5% cream (Elimite). Cream is applied to the skin from head to soles of feet and left on for 8 to 14 hours, then washed off; only one application needed.
Home Care

A. All family members and close contacts need to be treated for parasitic disorders; lice can survive up to 48 hours; nits can hatch in 7-10 days when shed in the environment.
B. Bedding and clothing that may have lice or nits should be washed or dry cleaned; furniture and rugs should be vacuumed or treated.
C. Nurses should wear gloves when examining scalp to prevent spread to others.
D. When shampooing hair, use a fine-tooth comb or tweezers to remove remaining nits.

Viral Infections

A. Herpes simplex virus (fever blister, cold sore): herpes virus type 1 (HSV-1).
   1. Painful, local reaction consisting of vesicles with an erythematous base; most often appears around the mouth.
   2. Contagious by direct contact; is recurrent (lesions appear in same place); there is no immunity.
   3. Not to be confused with HSV-2, which primarily occurs below the waist (genital herpes).
   4. It is possible for the HSV-1 to cause genital lesions and for HSV-2 to cause oral lesions (see Sexually Transmitted Diseases in Chapter 17).
B. Herpes zoster (shingles).
   1. Related to the chicken pox virus: varicella.
   2. Contagious to anyone who has not had chicken pox or who may be immunosuppressed.
   3. Linear patches of vesicles with an erythematous base are located along spinal and cranial nerve tracts.
   4. Often unilateral and appears on the trunk; however, may also appear on the face.
   5. Pain, burning, and neuralgia occur at the site before outbreak of vesicles.
   6. Often precipitated by the same factors as herpes simplex infection.
C. Herpetic whitlow: occurs on fingertips and around nail cuticles; often seen in medical personnel.

Treatment

A. Usually symptomatic; application of soothing moist compresses.
B. Analgesics; gabapentin (Neurontin) for postherpetic neuralgia.
C. Antiviral agents (see Appendix 19-1).
D. Zoster vaccine is recommended for adults over 60 years.

Data Collection

A. Risk factors
   1. Chronic UV exposure without protection or overexposure to artificial light (tanning bed).
   2. Fair skin, genetic (first degree relative).
   3. Has the highest mortality rate of any form of skin cancer.
      a. Often appears in preexisting moles in the skin.
      b. Common sites include back and legs (women); trunk, head, and neck (men).
      c. Sudden or progressive change or increase in size, color, or shape of a mole.
   4. Symptoms (Box 19-2).

BOX 19-2  MALIGNANT MELANOMA

Melanomas tend to have:
A. Asymmetry
B. Border Irregularity
C. Color Variegation
D. Diameter great than 6 mm
E. Evolving or changing in some way

Treatment

A. Surgical.
   2. Cryosurgery.
   3. Electrodesiccation and curettage.
B. Medical.
   1. Radiation therapy.
   2. Chemotherapy and biologic therapy.

Home Care

A. Teach the importance of avoiding unnecessary exposure to sunlight.
B. Apply protective sunscreen when outside.
C. Teach the warning signs of cancer.
Burns

A. Types of burns – thermal, electrical, chemical, smoke and inhalation.

B. Fluid shift considerations.
   1. Fluid shift and edema formation occur within 24 to 48 hours after burn injury.
   2. Fluid mobilization occurs within approximately 18 to 36 hours after burn injury.

Data Collection

A. Criteria suggesting pulmonary damage.
   1. History of burn injury occurring within a confined area.
   2. Burns around the face, neck or mouth or in the oral mucosa.

B. Circulatory status.
   1. Tachycardia and hypotension may occur early.
   2. Evaluate urine output.

C. Identify when client ate last; check gastrointestinal function.

D. Evaluate response to fluid therapy.

E. Evaluate circulatory status of the extremities.

NURSING PRIORITY: The client with burn injury is often awake, mentally alert, and cooperative at first. The level of consciousness may change as respiratory status changes or as the fluid shift occurs, precipitating hypovolemia. If the client is unconscious or confused, assess him or her for the possibility of a head injury.

F. Determine the severity of the burn injury (Box 19-3 and Figure 19-2).
   1. Neck and face burns may lead to mechanical occlusion of the airway due to edema.
   2. Circumferential burns (burns surrounding an entire extremity) may lead to impaired circulation from edema formation and lack of elasticity of the eschar, leading to compartmental syndrome.

BOX 19-3 DEPTH OF BURNS

- Superficial or first-degree burn: Area is reddened and blanches with pressure; no edema present; area is generally painful to touch.
- Partial-thickness or second-degree burn: Dermis and epidermis are affected; formation of large, thick-walled blisters; underlying skin is erythematous.
- Full-thickness or third and fourth-degree burn: All of the skin is destroyed; may have damage to the subcutaneous tissue and muscle; usually has a dry appearance, may be white or charred; will require skin grafting to cover area; underlying structures (fascia, tendons, and bones) are severely damaged, usually blackened.

FIGURE 19-2 Degree of Burn by Tissue Layer — (From Zerwekh J, Claborn J, Miller CJ: Memory notebook of nursing, vol 1, ed 4, Ingram, 2008, Nursing Education Consultants.)

3. Age.
   a. Infants have an immature immune system and poor body defense.
   b. Older adult clients heal slowly; more likely to have wound infection problems and pulmonary complications.

4. Presence of other health problems:
   a. Diabetes and peripheral vascular disease delay wound healing.
   b. Poor nutritional state.
   c. Chronic conditions that compromise immune system.

Treatment

A. Stabilization of airway, breathing, and circulation.

B. If the burn area is small, apply cold compresses or immerse injured area in cool water to decrease heat; ice should not be directly applied to the burn area.

C. Administer tetanus injection.

D. Fluid resuscitation; IV fluids.

E. NPO; may need a nasogastric tube.

F. Analgesics are given intravenously; intramuscularly, subcutaneously, orally administered medications may not absorb effectively.

G. Methods of wound care (area is cleaned and debrided of necrotic burned tissue).
   1. Open method (exposure): Burn is covered with a topical antibiotic cream, and no dressing is applied.
   2. Closed method of dressing: Fine mesh is used to cover the burned surface; may be impregnated with antibiotic ointment or ointment may be applied before the dressing is applied.
   3. Escharotomy: Procedure involves excision through the eschar to increase circulation to an extremity with circumferential burns.
      a. Enzymatic debriders: Collagenase, fibrinolysin, and Accuzyme may be used.
4. Wound grafting: As eschar is debrided and granulation tissue begins to form, grafts are used to protect the wound and to promote healing.

H. Nutritional support.
   1. Diet is high in calories and protein.
   2. In clients who have large burn surface areas, supplemental gastric tube feedings or parenteral nutrition may be used.
I. Clients with a burn surface area less than 20% usually do not experience serious fluid shifts and fluid loss.

**Nursing Intervention**

- **Goal:** To maintain patent airway and prevent hypoxia.
  - A. Assess circumstances surrounding the burn.
    1. Monitor for cardiac irregularities, if electrical burn.
    2. Rinse skin with water, if a chemical burn.
    3. Inhalation burns: immediate priority is airway.
  - B. As edema phase begins, evaluate respiratory status.
  - C. Endotracheal intubation or tracheotomy may be necessary.
  - D. Anticipate transfer to burn unit if burns cover more than 20% of body surface area.
  - E. Report to primary care provider (PCP) any significant changes in respiratory status.

- **Goal:** To evaluate fluid and circulatory status and adequacy of fluid replacement.
  - A. Obtain client’s weight on admission.
  - B. Assess status and time frame of fluid resuscitation.
  - C. Evaluate urine output.
  - D. Correlate vital signs with previous readings.
  - E. Monitor signs of adequate hydration.

- **Goal:** To prevent or decrease infection.
  - A. Implement infection control procedures to protect the client (e.g., sterile linen, gloves, cap, mask, and gown).
  - B. After eschar sloughs or is removed, assess wound for infection. Infection may be difficult to identify before eschar sloughs.

- **Goal:** To maintain comfort and homeostasis.
  - A. Maintain client’s body temperature as close to normal as possible; keep room temperature warm.

  - **Goal:** To maintain nutrition and promote positive nitrogen balance for healing.
    - A. Work with dietitian to maintain nutritional intake.
    - B. Provide tube feedings as indicated.
    - C. Monitor response to total parenteral nutrition.
    - D. Record daily weight.

- **Goal:** To prevent contractures and scarring.
  - A. Assist client to attempt mobilization and ambulation as soon as possible.
  - B. Passive and active range of motion should be initiated from the beginning of burn therapy and throughout therapy.
  - C. Position client to prevent flexion contractures; position of comfort for the client may increase contracture formation.
  - D. Use splints and exercises to prevent flexion contractures.
  - E. Use pressure dressings and garments to contour healing burn area to keep scars flat and prevent elevation and enlargement above the original burn injury area.

- **Goal:** To promote acceptance and adaptation to alterations in body image.
  - A. Maintain open communication and encourage expression of feelings.
  - B. Anticipate depression as a normal consequence of burn trauma; it should decrease as condition improves.

**NURSING PRIORITY:** It is important to recognize that the client’s anger is not a direct attack on the care provider; it is an expression of grief and sorrow.

**Home Care**

- A. Physical therapy.
- B. Continue high-calorie, high-protein diet.
- C. Wound care management.
- D. Avoid exposure of burn area to direct sunlight.
1. The nurse understands that pressure ulcers are most commonly caused by what problem?
   1. Muscles that are not being used in passive exercises.
   2. Poor nutrition, resulting in inadequate protein intake.
   3. Irritation of a bony prominence that is covered by infected skin.
   4. Pressure cutting off blood supply to the affected area of the skin.

2. In report, the nurse is told the client has a stage 1 pressure ulcer. What would the nurse expect to find on assessment of the area?
   1. A area of erythema that does not blanch with digital pressure.
   2. A moist area where the skin has sloughed.
   3. A well-circumscribed area that has a center crater in subcutaneous tissue.
   4. A reddened area of irritation and scaly plaques on the skin.

3. A client has a pressure ulcer that has necrosis in the subcutaneous level of tissue. There is undermining of the surrounding tissue. What is the nursing care for this stage of a pressure ulcer?
   1. Carefully clean the area with hydrogen peroxide and apply a dry dressing.
   2. Gently massage the area around the necrosis to stimulate healing.
   3. Apply a clean dressing and encourage an increased fluid intake.
   4. Keep pressure off the area and anticipate procedure for debridement.

4. Which of the following nursing interventions will assist in reducing pressure points that may lead to pressure ulcers?
   Select all that apply:
   1. Position the client directly on the trochanter when side-lying.
   2. Avoid the use of donut devices.
   3. Massage bony prominences.
   4. Elevate the head of the bed as little as possible.
   5. When side-lying use the 30° lateral inclined position.
   6. Avoid uninterrupted sitting in any chair or wheelchair.

5. What would the nurse teach an older adult client regarding how to care for her dry, itchy skin?
   1. Use a moisturizer on all dry skin areas.
   2. Wear clothes with 80% or more of cotton fibers.
   3. Shower twice a day with mild soap.
   4. Wear protective pads on dry skin areas.

6. A client has a third-degree circumferential burn on his left upper arm. Eschar has formed on the burn area. What is most important for the nurse to assess?
   1. Evaluate around the eschar for presence of infection.
   2. Status of circulation in the left hand.
   3. Presence of bilateral breath sounds.

7. What will be important for the nurse to tell the parents of a child who has a problem with head lice?
   1. Wash the child’s hair with a coal tar–based shampoo and rinse thoroughly.
   2. Thoroughly wash all of the child’s bedding and clothes.
   3. Use an anti-itch cream, but make sure the irritated areas do not get infected.
   4. Use an antibiotic ointment after shampooing with Permethrin 1% (Nix).

8. An older adult client in a long-term care facility has been diagnosed with herpes zoster. What is important nursing management for this client?
   1. Daily application of an antifungal cream to affected areas.
   2. Maintain client on standard precautions.
   3. Apply warm soaks to area of vesicles.
   4. Assist the client to deal with the neuralgia.

9. A client has been diagnosed with basal cell carcinoma and the area has been excised. What will be important for the nurse to explain to this patient?
   1. Pain, burning, and neuralgia may occur in the affected area.
   2. It is very important to use sunscreen any time you go outside.
   3. Use an antiinflammatory ointment to prevent a secondary infection in the area.
   4. Once the area has been excised, there should be no further problems.

10. A client has been diagnosed with psoriasis. What would be important for the nurse to discuss with this client?
    1. The use of topical steroids and ultraviolet light will help to control the problem.
    2. The area should be cleansed, scales removed, and then the antibiotic ointment applied.
    3. Warm, moist packs can be applied to the area to assist in the debriding of the lesion.
    4. The problem usually goes away with treatment, but the area may remain tender to the touch.

11. A child has scabies. What should the nurse explain to the mother?
    1. Carefully remove nits from area and then wash with alcohol.
    2. Spread Elimite cream all over body, leave on for 8 to 12 hours, and then wash off.
    3. Apply moist soaks of antifungal medication on burrowed skin lesions for 1 to 2 hours, then rinse.
    4. Encourage exposure to sunlight to dry the area and apply antibiotic ointment.

Answers and rationales to these questions are in the section at the end of the book titled Chapter Study Questions: Answers and Rationales.
Appendix 19-1 SKIN DIAGNOSTIC STUDIES

Skin testing
Purpose: confirm sensitivity to a specific allergen by placing antigen on or directly below skin (intradermal) to check for presence of antibodies.
1. Two methods –
   Allergen applied under the skin of the arms or back.
   • Cutaneous scratch test (also known as a tine or prick test)
   • Intracutaneous injection - high risk of severe allergic reaction
   Patch test – used to determine if client is allergic to testing material (small amount applied on back) – returns in 48 hours for evaluation.
2. Interpreting results.
   • Immediate reaction: appears within minutes after the injection; marked by erythema and a wheal; denotes a positive reaction.
   • Positive reaction: local wheal-and-flare response occurs.
   • Negative reaction: inconclusive; may indicate that antibodies have not formed yet or that antigen was deposited too deeply in skin (not an intradermal injection); may also indicate immunosuppression.
3. Complications: range from minor itching to anaphylaxis (see Chapter 5).

NURSING PRIORITY: Never leave client alone during skin testing due to risk of anaphylaxis. If a severe reaction occurs, anticipate antiinflammatory topical cream applied to skin site (scratch test) or a tourniquet applied to the arm (intracutaneous test) and possible epinephrine injection.

Biopsy
Types: punch, excisional, incisional, shave
1. Verify if informed consent is needed.
2. Apply dressing and give postprocedure instructions – watch for bleeding.

Skin Culture
Purpose: identify fungal, bacterial, and viral organisms.
1. Scrap or swab affected area; label specimen and send to lab.
## Appendix 19-2  MEDICATIONS USED IN SKIN DISORDERS

### GENERAL NURSING IMPLICATIONS

- Topical medications are used primarily for local effects when systemic absorption is undesirable.
- For topical application:
  - Apply after shower or bath for best absorption, because skin is hydrated.
  - Apply small amount of medication and rub in well.

<table>
<thead>
<tr>
<th>Medications</th>
<th>Side Effects</th>
<th>Nursing Implications</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ANTIFUNGAL:</strong> Inhibits or damages fungal cell membrane, either altering permeability or disrupting cell mitosis.</td>
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</tr>
<tr>
<td>Clotrimazole (<em>Lotrimin</em>): topical</td>
<td>Nausea, vomiting, abdominal pain.</td>
<td>1. Monitor hepatic function (when oral medication is given).</td>
</tr>
<tr>
<td>Nystatin (<em>Mycolog</em>): topical</td>
<td>Hypersensitivity reaction: rash, urticaria, pruritus.</td>
<td>2. Avoid alcohol because of potential liver problems.</td>
</tr>
<tr>
<td>Ketoconazole (<em>Nizoral</em>): PO, topical</td>
<td>Hepatotoxicity.</td>
<td>3. Check for local burning, irritation, or itching with topical application.</td>
</tr>
<tr>
<td>Griseofulvin (<em>Fulvicin</em>): PO</td>
<td>Gynecomastia (ketoconazole).</td>
<td>4. Prolonged therapy (weeks or months) is usually necessary, especially with griseofulvin (<em>Fulvicin</em>).</td>
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<td>5. Take griseofulvin (<em>Fulvicin</em>) with foods high in fat (e.g., milk, ice cream) to decrease GI upset and assist in absorption.</td>
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<td></td>
<td></td>
<td>6. <strong>Uses:</strong> tinea infections, fungal infections, candidiasis, diaper dermatitis.</td>
</tr>
<tr>
<td><strong>ANTIVIRAL:</strong> Reduces viral shedding, pain, and time to heal.</td>
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<tr>
<td>Acyclovir (<em>Zovirax</em>): topical, PO, IV.</td>
<td>IV: phlebitis, rash, hives. PO: nausea, vomiting.</td>
<td>1. Apply topically to affected area six times per day.</td>
</tr>
<tr>
<td>Vidarabine (<em>Ara-A, Vir-A</em>): IV, ophthalmic</td>
<td></td>
<td>3. Avoid sexual intercourse while genital lesions are present.</td>
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<td></td>
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<td>4. Drink adequate fluids.</td>
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<td></td>
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<td>5. Infuse IV preparations over 1 hour; use an infusion pump for accurate delivery.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>6. <strong>Uses:</strong> herpes infections.</td>
</tr>
<tr>
<td><strong>ANTIINFLAMMATORY:</strong> Decreases the inflammatory response.</td>
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<td></td>
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<tr>
<td>Triamcinolone acetonide (<em>Aristocort</em>): topical</td>
<td>Skin thinning, superficial dilated blood vessels (telangiectasis), acne-like eruptions, adrenal suppression.</td>
<td>1. Triamcinolone and hydrocortisone creams come in various strengths. Watch the percent strength.</td>
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<td></td>
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<td>2. Applied 2-3 times a day.</td>
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<td>3. Use an occlusive dressing only if ordered.</td>
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<td>4. Encourage client to use the least amount possible and for the shortest period of time.</td>
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<tr>
<td><strong>IMMUNOSUPPRESSANT:</strong> Suppresses T cells and decreases release of inflammatory mediators; alternative to glucocorticoids</td>
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<td></td>
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<tr>
<td>Pimecrolimus cream (<em>Elidel</em>): topical</td>
<td>Erythema, pruritus</td>
<td>1. Teach clients to use sunscreen, as makes client sensitized to UV light.</td>
</tr>
<tr>
<td>Tacrolimus ointment (<em>Protopic</em>): topical</td>
<td>Burning sensation at application site</td>
<td>2. Long term effects can lead to skin cancer and lymphoma.</td>
</tr>
</tbody>
</table>

*GI, Gastrointestinal; IV, intravenously; PO, by mouth (orally).*
### Appendix 19-3  TOPICAL ANTIBIOTICS FOR BURN TREATMENT

<table>
<thead>
<tr>
<th>Medications</th>
<th>Side Effects</th>
<th>Nursing Implications</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>TOPICAL ANTIBIOTICS: Prevent and treat infection at the burn site.</strong></td>
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</tbody>
</table>
| Silver sulfadiazine (Silvadene)    | Hypersensitivity: rash, itching, or burning sensation in unburned skin     | 1. Liberal amounts are spread topically with a sterile, gloved hand or on impregnated gauze rolls over the burned surface.  
2. If discoloration occurs in the Silvadene cream, do not use.  
3. A thin layer of cream is spread evenly over the entire burn surface area; reapplication is done every 12 hours.  
4. Client should be bathed or “tubbed” daily to aid in debridement.  
5. Medication does not penetrate eschar.  
6. For clients with extensive burns, monitor urine output and renal function; a significant amount of sulfa may be absorbed. |
| Mafenide acetate (Sulfamylon 10%)  | Pain, burning, or stinging at application sites; excessive loss of body water; excoriation of new tissue; may be systemically absorbed and cause metabolic acidosis. | 1. Bacteriostatic medication diffuses rapidly through burned skin and eschar and is effective against bacteria under the eschar.  
2. Dressings are not required but are frequently used. A thin layer of cream is spread evenly over the entire burn surface.  
3. Monitor renal function and possible acidosis, because medication is rapidly absorbed from the burn surface and eliminated via the kidneys.  
4. Pain occurs on application.  
5. Watch for hyperventilation, as a compensatory mechanism when acidosis occurs. |