Integumentary System

Objectives:

1. Differentiate among the types of decubitus ulcers and discuss appropriate treatment for each.
2. Describe the risk factors for formation of decubitus ulcers.
3. Describe specific assessments to be made during the physical examination of the skin and appendages.
4. Differentiate normal from common abnormal findings in a physical assessment of the integumentary system.
5. Explain the etiology, clinical manifestations, and nursing and collaborative care of common acute dermatologic problems.
6. Explain the etiology, clinical manifestations, and collaborative care related to benign dermatologic disorders.
7. Describe the burn injury classification system.
8. Describe the interventions that the nurse may use in the management of pain in the burn patient.
9. Explain the physiologic and psychosocial aspects of burn rehabilitation.

Readings:


Integumentary System

Basics of Wound Care:

- Epidermis is the outermost layer of skin, and consists of five layers for the protection of the internal structures of the body.
- Dermis is the connective tissue below the epidermis and consists of fibroblasts which synthesize and secrete the proteins, collagen and elastin.
- Subcutaneous tissue is composed of connective tissue, fat, blood, and lymphatic vessels and nerves.

Classification of wounds:

By cause – surgical vs non-surgical
By depth –
  - superficial
  - Partial thickness which involves the epidermis and/or dermis, but does not extend through the dermis.
  - Full thickness extends through the dermis and into underlying structure.

Pressure Ulcer Staging

  - Stage 1 – Non-blanchable erythema of intact skin
  - Stage 2 – Partial thickness skin loss of the epidermis and/or dermis
  - Stage 3 – Full thickness skin loss of subcutaneous tissue that may extend down to but not through underlying fascia.
  - Stage 4 – Full thickness skin loss with extensive destruction, tissue necrosis, or damage to muscle, bone, or supporting structures.

Limitation of staging system

  - A Stage 1 may be superficial or deep, depending upon the degree of underlying tissues damaged.
  - If the wound base is not visible (as in presence of eschar), the wound cannot be staged.
  - The wound cannot be reverse-staged. In other words you cannot document healing by staging in reverse order as it is not an accurate way to document.

Wound Healing Process

Inflammatory phase
  - Vasoconstriction occurs
  - Platelets collect and deposit fibrin to form a blood clot
  - Vasodilation, phagocytosis, and angiogenesis

Proliferative phase
  - Fibroblasts, stimulated by the action of growth factors secreted by macrophages, produce collagen
  - Collagen, along with new blood vessels and connective tissue, forms granulation tissue
  - Re-epitheliazation also occur

Maturation phase
  - Wound matures
  - In chronic wounds, this area is restored to approximately 80% of its former strength in 1 – 2 years
Wound Assessment

Location
- Describe by using the anatomical terms

Size
- Photographs using grids or anatomical drawings
- Length by width in centimeters or millimeters
- Measure wound depth by placing a sterile swab into wound at deepest point, making sure to measure and document any tunneling.

Tissue type and percentages
- Necrotic (eschar, dry, black – slough, wet, yellow, stringy)
- Fibrinous
- Granulation
- Epithelium

Wound edges and margins
- Dry, no exudates
- Moist, minimal to moderate
- Wet to heavy exudates

Surrounding skin
- Assess 4 cm of skin around the wound
- Note color, induration, edema, moisture, heat

Pain
- Assess pain at level of wound site
- Scale 0 – 10 at rest and during wound care

Infection vs colonization
- All chronic wounds are contaminated or colonized with bacteria
- Infection is defined as the presence of colonized bacterial growth greater than ten to the fifth per gram of tissue

Clinical signs of infection
- Erythema
- Induration
- Pain that is unexpected
- Fever
- Purulent drainage or increase in wound drainage
- Color changes – discolored or dull appearance
- Odor
- Delayed healing
- Friable granulation tissue, bleeds easily or gelatinous texture
Principals of the Wound Healing Process

- Debride Necrotic Tissue – necrotic tissue prolongs the inflammatory process and is a medium for bacterial growth.
- Prevent Premature Wound Closure – dead space should be reduced to decrease the risk of fluid accumulation, abscess formation, as well as to prevent premature wound closure
- Absorb Excess Exudate – surrounding skin can become macerated which delays wound healing
- Maintain Moist Environment – prevents desiccation of the wound surface and enhances granulation tissue formation and epithelialization
- Provide Insulation – maintaining normal tissue temperature improves blood flow which supports healing process
- Protect From Re-injury/contamination – trauma disturbs newly formed structures within a wound and open wounds are vulnerable to contamination
- Treat Infection – infection prolongs the inflammatory process and delays cellular repair. Culture a wound (culture a clean wound) if signs and symptoms of infection are present and treat accordingly to the cultured pathogen

Burns

- Thermal
- Chemical
- Smoke and Inhalation
- Electrical
- Cold Thermal Injury

Patient Risk Factors

- The older adult heals more slowly
- Preexisting cardiovascular, respiratory, or renal disease
- Physical debilitation from any chronic disease
- Fluid and Electrolyte shifts
- Immunologic changes

Burn Classification – Lewis, 7th ed., table 25-4, p. 487

Phases of Burn Management – see Lewis, 7th ed., ch. 25

- Wound care
- Drug therapy
- Nutritional therapy
● Fluid Therapy


Complications

● Infection
● Cardiovascular and Respiratory Systems
● Neurologic System
● Musculoskeletal System
● Gastrointestinal System
● Endocrine System

Revised 9/08, Lynn Paff, RN