SKIN INTEGRITY AND WOUND CARE
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SKIN INTEGRITY

- Skin is largest organ in body
- Influenced by internal factors such as genetics, age, underlying health; also by external factors such as activity, environment, meds

TYPES OF WOUNDS

- Intentional vs. unintentional
- Closed vs. open
- How acquired (K&E Table 34-1)
  - Incision, contusion, abrasion, puncture, laceration, penetrating
- Likelihood/degree of contamination
- Depth
  - Partial thickness
  - Full thickness

PRESSURE ULCERS

- Also called decubitus ulcers, pressure sores, bedsores
- Localized tissue destruction r/t prolonged pressure
- Most common sites – occipital bone, scapulae, elbows, sacrum, heels, ears, shoulders, greater trochanters, knees, ankles
- Incidence in hospital reported as high as 15%; SNF 23%

PRESSURE ULCERS
Etiology

- Localized ischemia/impaired circulation
  - Reactive hypereamia
- Friction
- Shearing force

PRESSURE ULCERS: Risk Factors

- Immobility & inactivity
- Poor nutrition
- Moisture
  - Incontinence, drainage, diaphoresis, etc.
- Decreased mental status
- Diminished sensation
- Elevated temp
- Advanced age
- Chronic medical conditions

STAGES of PRESSURE ULCER FORMATION

- **Stage I**: nonblanchable erythema of intact skin

- **Stage II:** partial-thickness skin loss involving epidermis, dermis, or both. Ulcer is superficial & presents clinically as an abrasion, blister, or shallow crater

- **Stage III**: full-thickness skin loss involving damage or necrosis of SQ tissue that may extend down to, but not thru, underlying fascia. Deep crater with/without undermining of adjacent tissue

- **Stage IV**: full-thickness skin loss with extensive destruction, tissue necrosis or damage to muscle, bone, or supporting structures. Undermining & sinus tracts may also be assoc. with stage IV ulcers.

TYPES OF WOUND HEALING

- Primary intention healing
  - Tissue surfaces approximated
  - Minimal or no tissue loss
  - Formation of minimal granulation tissue & scarring

- Secondary intention healing
  - Occurs in wound that is extensive, considerable tissue loss, edges non approximated
  - Repair time longer than primary
  - Scarring is greater
  - Susceptibility to infection is greater

PHASES OF WOUND HEALING

- Inflammatory
- Proliferative
- Maturation

PHASES OF WOUND HEALING: Inflammatory (Defensive)

- Begins immediately after injury & lasts 3-6 days.
- Hemostasis – cessation of bleeding
  - Vasoconstriction
  - Retraction of injured blood vessels
  - Fibrin deposition
  - Clot formation
  - Scab
  - Vascular/cellular response
- Phagocytosis
  - Macrophages engulf microorganisms & cell debris

PHASES OF WOUND HEALING: Proliferative (Reconstructive)

- Lasts from ~Day 3or 4 to ~day 21
  - Collagen
  - Capillaries grow over wound
  - Granulation tissue develops

PHASES OF WOUND HEALING: Maturation

- Begins ~day 21 & can extend 1 or 2 yrs
- Collagen continues
- Scar becomes stronger

KINDS OF WOUND DRAINAGE

- Exudate
  - Serous
    - Consists mainly of serum. Looks watery & has few cells.
  - Purulent
    - Thicker than serous b/c of presence of pus. Varies in color, some with green, blue, yellow, depending on causative organisms
  - Sanguineous
    - Consists of large amounts of RBC's. Frequently seen in open wounds. Bright exudate = fresh bleeding. Dark exudate = older bleeding
  - May also see combination of types of exudate

COMPLICATIONS OF WOUND HEALING - Hemorrhage

- Hemorrhage – persistent bleeding
- Internal hemorrhage – may be detected by swelling or distention in area of wound, & possible drainage.
- Hematoma – localized collection of blood underneath skin
- External hemorrhage – identified by blood on dressing
- Greatest risk first 48 h post op
- Hemorrhage is EMERGENCY!
  - Apply extra sterile pressure dressings
  - Monitor VS
  - May need to return to OR for intervention

COMPLICATIONS OF WOUND HEALING - Infection

- Can become infected at time of injury, during surgery, or postop.
- Surgical infection occurs most often apparent 2-11 days postop
- Redness, swelling, drainage, pain, fever, elevated WBC

COMPLICATIONS OF WOUND HEALING - Dehiscence

- Dehiscence – partial or total rupturing of sutured wound
  - Usually involves abdominal wound
- Evisceration – protrusion of internal viscera thru incision
- Risks: obesity, poor nutrition, multiple trauma, failure of suturing, excessive coughing, vomiting, & dehydration
- Most common 4-5 days postop

•Nurse should apply sterile dressings soaked in NaCl; monitor VS, place client in bed in position to decrease stress on wound, & notify surgeon immediately

FACTORS AFFECTING WOUND HEALING

- Nutrition
- Lifestyle
- Medications
- Contamination & infection
- Developmental considerations
- Co-existing illnesses

ASSESSMENT

- History & Physical
  - –See Practice Guidelines K&E p 863
- Risk Assessment Tools
  - –Braden Scale
- Sensory perception, moisture, activity, mobility, nutrition, friction, shear
  - –Norton's Pressure Area Risk Assessment
- Physical condition, mental state, activity, mobility, incontinence, meds

ASSESSMENT/INTERVENTION: Untreated Wounds

- Assess
  - –Size & severity of wound
  - –Inspect bleeding
  - –Inspect for foreign bodies
  - –Associated injuries
- Intervention
  - –Apply pressure & elevate extremity
  - –Flush with water; apply dressings
  - –Apply ice
  - –Assess s/s shock

ASSESSMENT OF WOUNDS

- Location of wound
- Size – length, width, depth
- Appearance – color of wound bed & location of any necrosis; wound margins
- Drainage – amount, type, odor
- Surrounding skin
- Swelling, redness, warmth, pain, odor
- Status of drains/tubes
- Stage of ulcer (pressure ulcers)

ASSESSMENT OF LAB DATA

- WBC
  - Decrease can delay healing & increase possibility of infection
- H/H
- PT/PTT
  - prolonged = excess blood loss;
  - shortened = clotting
- Serum protein analysis (albumin)
  - indication of body's nutritional reserves for rebuilding cells
- Wound culture & sensitivity (Procedure 34-1)
  - confirm or rule out presence of infection; sensitivity to antibiotics

NURSING PROCESS: Diagnosing

- Risk for impaired skin integrity
- Impaired skin integrity
- Risk for Infection
- Pain
- Anxiety
- Body image disturbance

NURSING PROCESS: Planning

- Patient will achieve/maintain:
  - Intact skin
  - Ulcers free of necrotic tissue/infection
  - Granulation tissue in ulcers
  - Smaller wound

NURSING PROCESS: Implementing

- Supporting wound healing
  - Nutrition & fluids
  - Preventing infection (K&E 34-3)
  - Positioning
- Preventing pressure ulcers!!!!
  - Position changes
  - Nutrition
  - Maintaining skin hygiene
  - Avoiding skin trauma
  - Providing supportive devices (K&E Table 34-4)
  - Client teaching
  - Wound care if ulcer present

TREATING PRESSURE ULCERS

- RYB Color Code
  - –Red – protect
  - –Yellow – cleanse
  - –Black – debride
- Reposition
- Clean & dress using sterile technique
- PUSH tool

DRESSING WOUNDS

- To protect wound from mechanical injury
- Protect wound from microbial contamination
- Protect or maintain high humidity of wound
- Provide thermal insulation
- Absorb drainage or debride a wound or both
- Prevent hemorrhage
- To splint or immobilize wound site & thereby facilitate healing & prevent injury
- Provide psychologic comfort

TYPE OF DRESSINGS

- Type of dressing used depends on:
  - –Location, size, & type of wound
  - –Amount of exudate
  - –Whether wound requires debridement, is infected, or has sinus tracts
  - –Frequency of dressing change, ease, or difficulty of dressing change, patient comfort, cost

TYPES OF DRESSINGS
See K&E Table 34-6

- Transparent adhesive films
- Impregnated nonadherent dressings
- Hydrocolloids
- Hydrogels
- Polyurethane foams
- Exudate absorbers

TYPES OF DRESSINGS: Transparent

- Often applied to ulcerated or burned skin
- Semipermeable, nonabsorbent
- Acts as temporary skin
- Leave in place for extended periods of time
- Can assess through them
- Promotes healing & reduces infection risk
- Can be placed over a joint b/c they are elastic
- Adhere only to skin & not to wound itself
- Allow client to shower
- Can remove without damaging wound tissues
- Op-site; tegaderm

TYPES OF DRESSINGS: Impregnated Nonadherent

- Impregnated with petroleum, saline, antimicrobials, or other agents
- Require secondary dressing to secure them in place & protect wound
- Often used over partial- & full-thickness wounds without exudate
- Ex: vaseline gauze, Xeroform

TYPES OF DRESSINGS: Hydrocolloid

- Waterproof adhesive wafers, pastes, powders
- Can be worn up to 7 days
- Do not need a "cover" dsg.
- Water resistant, so client can shower
- Can be molded to uneven body surfaces
- Temporary skin
- Decrease pain; absorb some drainage; contain wound odor
- Limits: opaque (hard to visualize wound); limited absorption; facilitate anaerobic bacterial growth; can soften/wrinkle with movement
- Don't use with infected wounds/ deep tract wounds
- Ex: Duoderm, Tegasorb

MODES OF APPLYING GAUZE DRESSING

- Dry-dry
  - Layer wide mesh cotton gauze next to wound; second layer dry absorbent cotton on top
  - Protects wound
  - Traps debris & exudate & removes when dsg. removed
- Wet-dry
  - Gauze saturated with saline or anitmicrobial solution & placed next to wound surface
  - Cover with absorbent material
  - Debrides wound; necrotic tissue softened by solution & removed when dressing is removed
- Wet-damp
  - Variation of wet-dry, but this dressing is removed before it is completely dry
  - Wound debrided when gauze is removed
  - Less likely to remove granulation tissue
- Wet-wet
  - Layer gauze saturated with antimicrobial solution lies next to wound surface. Above is second layer of absorbent material saturated with same solution. Entire dressing is kept moist.
  - Moisture dilutes thick exudate

SECURING

- Tape
- Montgomery straps
  - When frequent dsg changes needed
  - Prevents skin irritation

CLEANING WOUNDS

- Use physiologic solutions, such as isotonic saline or LR, to clean or irrigate wounds
- When possible, warm solution to body temperature before use.
- If wound is grossly contaminated, clean wound at every dressing change
- If wound is clean, has little exudate, & reveals healthy granulation tissue, avoid repeated cleaning.
- Use gauze squares; avoid cotton balls or products that shed fibers
- Clean superficial noninfected wounds by irrigating with normal saline.
- To retain wound moisture, avoid drying wound after cleaning it

WOUND IRRIGATION & PACKING

- Irrigation – washing or flushing out of an area.
- Piston syringe
- Sterile gauze packing
- Wound Vac

HEAT & COLD APPLICATIONS

- Heat
  - Vasodilation: increased blood flow
  - Decrease pain by relaxing muscles
  - Increases inflammatory process
  - Promotes soft tissue healing
  - Disadvantage: causes edema
  - Used with stiff joints, arthritis, contractures, low back pain
- Cold
  - Vasoconstriction: decreased blood flow, decreased O2, decreased edema; decreased waste removal, skin pallor, coolness
  - Decrease pain by numbing, slow impulses, inc. threshold
  - Control bleeding after injury
  - Prolonged = complications – lack of o2 & nutrients
  - Used with sports injuries to decrease swelling & bleeding

HEAT & COLD APPLICATIONS: Precautions

- Neurosensory impairment
- Impaired mental status
- Impaired circulation
- Immediately after injury or surgery
- Open wounds
- See “contraindications” Box 34-4

APPLYING HEAT & COLD: Nursing Guidelines

- Determine client's ability to tolerate tx
- ID conditions that might contraindicate tx
- Explain application to client
- Assess skin area to which heat will be applied
- Ask client to report any discomfort
- Return to client 15 minutes after starting the heat, & observe skin area
- Remove equipment at designated time, & dispose of appropriately; ~20-30 mins at a time to avoid rebound phenomenon
- Examine area to which heat was applied, & record client response

APPLYING HEAT & COLD: Methods

- Hot water bag
- Aquathermia bag
- Hot & cold packs
- Electric pads
- Ice bag, ice glove, ice collar
- Compresses
- Soak
- Sitz bath
- Cooling sponge bath
- Hyperthermia & hypothermia blankets

SUPPORTING & IMMOBILIZING WOUNDS

- Bandages & binders serve various purposes:
  - –Supporting wound
  - –Immobilizing wound
  - –Applying pressure
  - –Securing dressing
  - –Retaining warmth

ASSESSING BEFORE APPLYING BANDAGES/BINDERS

- Inspect & palpate area for swelling
- Inspect for presence of & status of wounds
- Note presence of drainage (amt., color, odor, viscosity)
- Inspect & palpate for adequacy of circulation.
- Ask client about any pain experienced
- Assess ability of client to reapply bandages or binder when needed
- Assess capabilities of client regarding ADL's & assess assistance required during convalescence period

BANDAGING: Clinical Guidelines

- When possible, bandage part in its normal position, with joint slightly flexed to avoid putting strain on ligaments & muscles of joint
- Pad b/t skin surfaces & over bony prominences to prevent friction from bandage & consequent abrasion of skin
- Always bandage body parts by working from distal to proximal end to aid return of venous blood
- Bandage with even pressure to prevent interference with blood flow
- Whenever possible, leave end of body part exposed so that you will be able to determine adequacy of blood circulation to extremity
- Cover dressings with bandages at least 5 cm (2 in) beyond edges of dressing to prevent dressing & wound from becoming contaminated
- Face client when applying bandage to maintain uniform tension & appropriate direction of bandage

NURSING PROCESS: Evaluating

- Have outcomes been met? If not, ask:
  - Has client physical condition changed?
  - Were risk factors correctly identified?
  - Were appropriate lifting devices & techniques used?
  - Did client fail to comply with instructions about moving & turning? Why?
  - Were appropriate pressure relieving devices used & were they applied correctly?
  - Was repositioning schedule adhered to?
  - Are client's nutritional & fluid intake adequate?
- Were appropriate measures used to control incontinence & protect skin?
- Was wound supported & immobilized effectively?
- Were stringent aseptic practices implemented when cleaning & changing dressings to prevent infection?
- Was client receiving anti-inflammatory medications that interfere with healing?
- Was appropriate dressing applied to keep wound moist or absorb exudate as needed?