Wound Care

Chapter 28

Fundamentals Nursing Skills and Concepts

Wounds

- Wound results from trauma
- Tissue trauma
  - Cuts
  - Blows
  - Poor circulation
  - Strong chemicals
  - Excessive heat or cold
- Open or closed wound

Wounds

- Open wound
  - Incision—clean separation of skin and tissue with smooth, even edges
  - Laceration—a separation of skin and tissue in which the edges are torn and irregular
  - Abrasion—a wound in which the surface layers of skin are scraped away
  - Avulsion—stripping away of large areas of skin and underlying tissue, leaving cartilage and bone exposed

Wounds

  - Ulceration—a shallow crater in which skin or mucous membrane is missing
  - Puncture—an opening of skin, underlying tissue, or mucous membrane caused by a narrow, sharp, pointed object
- Closed wound
  - Contusion—injury to soft tissue underlying the skin from the force of contact with a hard object, sometimes called a bruise

Wound Repair

- Natural response of body to immediately attempt to repair the injury
- Three phases of wound healing
    - Inflammation
    - Proliferation
    - Remodeling

Phases of Wound Healing

- Inflammatory phase
  - Initiated when skin integrity is impaired
  - 2 to 5 days—if healing proceeds in normal fashion
  - Hemostasis—blood vessels constrict, platelets aggregate, and bleeding stops
  - Inflammation—increased blood flow to wound—redness and edema—attracts WBC's and wound growth factors
  - WBC's arrive—consume pathogens, clean debris from wound
    - Neutrophils and macrophages
  - Swelling, redness, warmth, pain, and decreased function

Phases of Wound Healing

- Proliferative phase
  - New cells fill and seal wound
  - 2 days to 3 weeks after the inflammatory phase
  - Appearance of granulation tissue
    - New blood vessels
    - Fibroblasts
    - Epithelial cells
    - Bright pink to red
    - Grows from wound margin toward center
    - Fragile and easily disrupted

Proliferative Phase

- Fibroblasts produce collagen
- Tough and inelastic protein
- Strength to wound
- Wound contraction
- Epithelialization—wound closure

Phases of Wound Healing

- Remodeling Phase
  - Final healing stage
  - May continue for 6 months to 2 years
  - Remodeling of scar tissue to provide wound strength

Wound Healing

- Primary Intention
  - Edges of a clean surgical incision are sutured or stapled together
  - Tissue loss is minimal
  - Surgical site is not contaminated with microorganisms
  - Epidermal cells multiply
  - Epidermal layer is reestablished and restores protective function of skin

Wound Healing

- "Healing ridge"—palpable just under the intact incision—by the fifth post-operative day
- Absence of "healing ridge" indicates improper wound healing

Wound Healing

- Secondary Intention
  - Result of open traumatic wounds
  - Increased tissue loss
  - Wounds with high microorganism count—increased risk of infection
  - Not sutured closed
  - Heal from inside out—granulation tissue formation
  - Heal slower—need to replace tissue loss
  - Require ongoing wound care—protection and moist environment

Wound Healing

- Third intention
  - Wound edges separated
  - Later brought together with some type of closure material
  - Broad, deep scar

Surgical Wound Care

- Proper wound care promotes incisional healing resulting in an intact skin layer
- Factors affecting wound healing
- Age
    - Elderly—epidermal cell replacement diminishes
    - Dermis atrophies—slowing wound contraction—increasing possibility of dehiscence

Factors Affecting Wound Healing

- Nutrition
  - Inadequate nutrition slows wound healing
  - Inadequate proteins, carbohydrates, lipids, vitamins, and minerals
  - Delays tissue repair
  - Increases risk for infection

Factors Affecting Wound Healing

- Obesity
  - Less vascularization with excessive adipose tissue
  - Decreased transportation of nutrients and cellular elements needed for proper healing
  - Increases risk for wound infection
  - Increases risk for wound dehiscence or evisceration

Factors Affecting Wound Healing

- Decreased circulating oxygen levels
  - Hematocrit below 20% and hemoglobin below 10
  - Smoker
  - Decreased oxygen delivery to tissues has a negative impact on tissue repair

Factors Affecting Wound Healing

- Chronic illnesses
  - Respiratory, cardiac, diabetes…
  - Diabetics heal slowly
  - Decreased collagen
  - Decreased wound strength
  - Impaired white blood cell function

Factors Affecting Wound Healing

- Drug therapy
  - Long term steroid use
  - Chemotherapy
  - Immunosuppressive medications
  - Decrease the normal inflammatory response of the body and decrease healing potential

Factors Affecting Wound Healing

- Infection
  - Prolongs the inflammatory response
  - The microorganisms use the nutrients and oxygen that are necessary for tissue repair
- Wound environment
  - Open wound—heal best in a moist environment
  - Closed wound—keep dry and protected from microorganisms and stress

Dressings

- Dressings protect a wound from
  - Contamination
  - Heat loss
  - Further tissue injury
  - Spread of microorganisms
- Facilitate removal of dead tissue
- Increase patient comfort
- Control bleeding and drainage

Dressings

- Primary dressing
  - In direct contact with wound bed or incision
- Secondary dressing
  - Cover or secure the primary dressing in place

Dressings

- What dressing should I use?
- Physician order
- Large amount exudate—highly absorbent dressing
- Necrotic tissue—debriding qualities
- Bleeding wound—control bleeding—pressure and absorbtion
- Support or immobilize a body part

Dressing Change

- Clean technique vs sterile technique
- Sterile technique
  - New operative
  - Traumatic wounds
  - Require sterile gloves
- Clean technique
  - Clean gloves used rather than sterile gloves
  - Aseptic handling of all dressing material

Dry Dressing

- Protect wound from injury
- Prevent introduction and spread of bacteria
- Reduce discomfort
- Speed healing
- Not intended to debride a wound
- If sticks—moisten with sterile saline

Dry Gauze Dressings

- Gauze 4x4
  - Do not interact with wound tissues
  - Cause little wound irritation
- Telfa gauze
  - Shiny nonadherent surface
  - Does not stick to wound

Moist Dressings

- Used to provide moisture to a wound
- Moistened gauze increases the absorptive quality of the dressing to collect exudate and wound debris
- Normal saline or Lactated Ringer's
- Secondary dressing is dry—provides protection

Moist-to-Dry Dressing

- Form of debridement
- Non-selective form of debridement
- Moistened gauze increases the absorptive ability of the dressing to collect exudate and wound debris
- Moistened gauze dries and adheres to wound
- As gauze is removed wound is debrided

Moist-to-Dry Dressing

- Gauze material
- Moisten with sterile solution
- Squeeze out excess liquid
- DO NOT want gauze to be dripping wet
- Open and fluff the gauze if not on a roll

Moist-to-Dry Dressing

- Gently pack the wound—make sure all wound surfaces are in contact with moistened gauze
- DO NOT tightly pack the wound
- Make sure the gauze reaches the base of the wound
- Stop packing wound when gauze reaches skin level

Moist-to-Dry Dressing

- DO NOT place moistened gauze on periwound skin
- If wound has tunneling or undermining—BE SURE that they are filled with gauze—DO NOT allow any dead space
- Apply dry secondary dressing

Transparent Dressing

- Clear, adherent, nonabsorptive polyurethane, moisture and vapor permeable dressing
- Superficial, minimally draining wounds
- Laparoscopic surgery
- Protection over high friction areas

Transparent Dressing

- Dressing over intravenous site
- To protect duoderm from contamination
- Allows wound surface to “breathe”
- Moist exudate forms over wound surface—prevents tissue dehydration
- Leads to epithelial growth—rapid wound healing

Transparent Dressing

- Able to assess wound without removing dressing
- Wounds—clean, debrided without active bleeding
- If wound shows s/s of infection—remove dressing and obtain culture
  - Accumulation of fluid, white or opaque, with erythema of surrounding tissue

Transparent Dressing

- Remove old dressing
  - Pull back slowly in direction of hair growth, toward center, support skin
- Change gloves
- Cleanse area if needed or ordered
- Swab toward area of most exudate—reduce transmission of organisms from contaminated area to cleaner site

Transparent Dressing

- Inspect wound for color, odor, drainage
- Measure wound size
- Remove paper backing
- Place film smoothly over wound
- DO NOT stretch dressing
- Need to prevent wrinkling

Transparent Dressing

- What size should I use?
- Film dressing should allow for a 1 to 2 inch border around wound
- Label dressing with date, time, and initials

Hydrocolloid Dressing

- Adhesive dressing composed of gelatin, pectin, and absorbent ingredients
- Minimal to moderate exudating wounds
- Stage I to IV pressure ulcers

Hydrocolloid Dressing

- Would NOT use on
  - Infected wounds
  - Arterial or diabetic ulcers
  - Third degree burns
  - Ulcers with tendon or bone involvement
  - Ischemic wound with dry eschar

Hydrocolloid Dressing

- Advantages
  - Available in many sizes
  - Allows autolytic debridement
  - Impermeable to fluids/bacteria
  - Thermal insulator
  - Easy to apply

Hydrocolloid Dressing

- Potential for periwound maceration—if dressing left in place too long
- Normally in place 3 to 5 days
- Adhesive may be too aggressive for fragile skin
- Drainage is often mistaken for pus/infection

Hydrocolloid Dressing

- Remove paper backing
- Place over wound—allowing a 1 to 2 inch border of surrounding skin
- Apply gently pressure over dressing to allow for adhesion

Principles of Wound Care

- Select appropriate dressing
- Gauze pad
  - Wicking
  - Packing
  - Maintaining moist environment
  - Delivery of solutions to wound

Principles of Wound Care

- Transparent film dressing
  - Partial thickness wounds with minimal wound exudate
- Hydrogel
  - Maintains moist environment
  - Available in sheet or tube

Principles of Wound Care

- Hydrocolloid
  - Maintains moist environment
  - Protects wound base
- Alginate dressing
  - Highly absorbent
  - Copious wound exudate

Principles of Wound Care

- Foam dressing
  - Protective
  - Prevents wound dehydration
  - Absorbs small to moderate amount wound exudate
  - Maintains moist environment
- Silver impregnated dressing/gel
  - Controls bacterial burden in wound

Providing Surgical Wound Care

- Closely observe instructors demonstration
- Step by step illustration—Nursing Interventions and Clinical Skills—pg. 494
- Wash hands
- Gather supplies—check for tears and expiration date
- Explain procedure to patient
- Provide privacy

Providing Surgical Wound Care

- Waste receptacle—red bag
- Wash hands
- Apply clean gloves
- Carefully remove dressing—support skin—be sure dressing is not stuck—never tug at dressing to come off

Providing Surgical Wound Care

- Inspect dressing for drainage
  - Amount
  - Color
  - Consistency
  - odor
- Presence of some exudate is expected with epithelial cell growth

Wound Drainage

- Serous drainage
  - Clear, watery plasma
- Sanguineous
  - Bright red
  - Indicates active bleeding

Wound Drainage

- Serosanguineous
  - Pale, red, watery
  - Mixture of serous and sanguineous

- Purulent
  - Thick
  - Creamy yellow—Staphylococcus
  - Beige with fishy odor--Proteus

Wound Drainage

- Green-blue with fruity odor—Pseudomonas
- Brown with fecal odor--Bacteroides

Providing Surgical Wound Care

- If dressing sticks to incisional area
- Do not pull on dressing
- Pour small amount of sterile saline onto gauze
- Gently remove dressing

Providing Surgical Wound Care

- Dispose of dressing in red bag
- Inspect incision
  - Note any redness, inflammation, increased warmth, increased pain
  - After third post-op day increasing redness, inflammation, and warmth and increased temperature (37.7 C or 100 F), and with or without purulent drainage indicate possible wound infection

Providing Surgical Wound Care

- Intermittent high fever, shaking, chills, and diaphoresis suggest septicemia
- Source may be the surgical site, urinary tract, phlebitis, or peritonitis
- Notify physician
- Blood culture
- Wound culture

Providing Surgical Wound Care

- Inspect incision
  - Well approximated edges
  - Sutures intact
  - Note periwound area

Secure Dressing

- Tape
  - Adhesive
  - Paper
  - Medipore
- Montgomery Straps
  - Frequently changed dressings
- Gauze roll or elastic bandage
- Elastic net

Providing Surgical Wound Care

- Cleansing incision site (if ordered)
  - Five strokes—Clean swab for each stroke
  - First over incision
  - Next along side incision
  - Other side of incision
  - Further outside incision
  - Repeat on other side of incision

Providing Surgical Wound Care

- Set up sterile field
- Apply sterile gloves
- Apply dry, sterile dressing
- Secure with tape
- Dispose of waste receptacle
- Remove gloves
- Wash hands

Providing Surgical Wound Care

- Document
  - Procedure
  - Time
  - Information gathered during procedure
  - How patient tolerated procedure

Drainage Devices

- Removes drainage within and around surgical site
- Collects drainage
- Prevents skin breakdown

Drainage Devices

- Penrose drain
  - Rubber tube exiting stab wound along side incision
  - Used when minimal amounts of drainage expected (<100 ml/24 hr)
  - Drainage collects on wound dressing
  - No collection chamber

Drainage Devices

- Jackson Pratt
  - Bulb shaped receptacle
  - Self contained suction unit
  - Constant low pressure suction to remove drainage
  - Stab wound along side incision
  - Used when small amounts of drainage expected (100 to 200 ml/24 hr)
  - Empty when half full

Drainage Devices

- Hemovac
  - Self contained suction unit
  - Constant low pressure to remove drainage
  - Stab wound along side incision
  - Used when larger amounts of drainage expected (500 ml/24hr)
  - Empty when half full

Drainage Devices

- Emptying drainage device
  - Measuring container
  - Keep in patient's bathroom and label
  - Wash hands—apply clean gloves
  - Open plug away from you
  - Drain into measuring container
  - Cleanse plug with alcohol wipe
  - Compress drainage device—facing away from you—insert plug

Drainage Devices

- Attach drainage device to prevent pulling on incisional area
- Note color, amount, and consistency of drainage
- Document and add to I&O
- Always keep drain lower than incision in lying, standing, and sitting positions
- Instruct patient about drainage device

Providing Surgical Wound Care

- Cleansing Drain site
  - Three circular strokes—clean swab for each circular motion
  - Lift drain tubing with sterile gauze in nondominant hand
  - Closest to insertion site
  - Continue where left off—moving away from insertion site
  - Repeat—continue where left off—moving away from insertion site

Possible Complications with Drainage Devices

- Accidental advancement of drain
  - Penrose drain stuck to dressing
- Improper application of suction
  - Delayed emptying
  - Improper reestablishment of suction after emptying device
  - Drain higher than incision

Possible Complications with Drainage Devices

- Blocked tubing
  - Clot in tubing may block drainage
- Excessive amount of bright bloody drainage in short period of time
  - May indicate hemorrhage
  - Monitor vital signs and assess patient
  - Notify physician
  - Keep patient NPO

Sutures

- Criteria for determination of closure material
  - Patient's history of wound healing
  - Site of incision
  - Tissues involved
  - Purpose of the sutures

Sutures

- Available in
  - Silk
  - Steel
  - Cotton
  - Linen
  - Wire
  - Nylon
  - Dacron

Sutures

- Removable sutures
  - Interrupted
  - Continuous
- Retention sutures
  - Obese patient's with abdominal surgery
  - Sutures covered with rubber tubing to provide greater strength

Staples

- Benefits of staples
  - Quick to use
  - Provide ample strength
  - Made of stainless steel
  - Do not compress tissue if wound should swell
- Use
  - Abdominal incisions
  - Orthopedic surgery
  - When appearance of the incision is not critical

Suture and Staple Removal

- Generally removed in 7 to 10 days
- Retention sutures removed after14 or more days
- Steri-Strips can be applied after suture removal
  - Provide support to incisional area
  - Do not soak in water
  - Remove strips when half of the strip is no longer attached to the skin
  - Average length of time—5 to 7 days

Evaluation After Suture Removal

- Note approximation of wound edges
- Assess patient pain level—0 to 10
- Instruct patient on how to care for incision
- Document
  - Number of sutures and staples removed
  - Date and time
  - Patient's tolerance

Evaluation After Suture Removal

- Notify physician if
  - Suture line separation
  - Dehiscence
  - Evisceration
  - Bleeding
  - Purulent drainage

Binders and Bandages

- Provide protection and therapeutic benefits
  - Pressure
  - Immobilize body part
  - Support an incision
  - Reduce or prevent edema
  - Secure a splint
  - Secure a dressing

Bandages

- Bandages available in variety of widths and fabrics
- Width proportional to body area covered
- Available in
  - Elastic—conforms well, exert pressure
  - Gauze—lightweight, inexpensive

Bandages

- Flannel muslin—thicker than gauze, stronger for support or exert pressure, insulated/provide warmth

Bandage Turns

- Circular—anchor
  overlaps previous turn
  completely
- Spiral—each turn overlaps previous
  one by one-half width of the
  bandage

Bandage Turns

- Figure eight--oblique overlapping
  covers joints
- Spiral-reverse—turn requiring twist of
  bandage halfway
  through each turn
  cover cone shaped
  useful with
  nonstretching fabric

Bandage Turns

- Recurrent—first secured with two
  - circular turns
  - half turn perpendicular
  - from bandage edge
  - cross over
  - cover entire area
  - useful—head or stump

Proper Application

- Check physician's order
- Select proper bandage size
- Explain procedure to patient
- Wash hands
- Apply gloves if broken skin or drainage
- Elevate extremity

Proper Application

- Roll bandage prior to application
- Hold bandage in dominant hand
- Roll on top of bandage
- Wrap firmly, not tightly
- DO NOT STRETCH BANDAGE WHILE WRAPPING
- Overlap by one half

Evaluation and Assessment

- Assess CMS
  - Color
  - Motion
  - Sensitivity
- Temperature
- Capillary refill
- On application and q 2 hours
- Document findings

Binders

- Large piece of material specifically designed to fit specific body parts
- Types of binders
  - Abdominal binder—support abdominal incisions, facilitate movement, deep breathing, coughing—available in different sizes

Binders

- Breast binder—tight fitting sleeveless vest, support after breast surgery, minimize swelling
- T-binder—support perineal area, aid in application of ice, available male or female

Proper Application

- Check physician's order
- Explain purpose to patient
- Wash hands
- Select correct size
- Position patient properly
- Apply using landmarks

Nursing Observations

- Assess comfort level
- Assess respirations
- Assess effectiveness
- Inspect: skin/incision/dressings/drainage
- May delegate application
- Responsible for assessment

Wound Vacuum Assisted Closure

- Promotes wound closure
- Apply localized negative pressure
- Draws wound edges together

Wound VAC

- How does it work?
- Negative pressure
  - Stimulates tissue granulation
  - Reducing edema
  - Removes fluid from the area surrounding the wound
  - Improves circulation
  - After 3 to 4 days of therapy—bacterial counts in the wound drop

Wound VAC

- Results
  - Formation of granulation tissue
  - Collagen
  - Fibroblasts
  - Inflammatory cells
  - Completely close the wound or prepare wound for surgical intervention

Wound VAC

- What type of wounds can be treated with a Wound VAC?
  - Acute and traumatic wounds
  - Chronic wounds
    - Venous stasis ulcers
    - Diabetic ulcers
    - Pressure ulcers
    - Arterial insufficiency ulcers
  - Dehisced incisions

Wound VAC

- Use with caution in wounds
  - Active bleeding
  - Patients on anticoagulants
  - Difficult wound hemostasis

Wound VAC

- Contraindicated
  - Fistulas to organs or body cavities
  - Necrotic tissue with eschar
  - Osteomyelitis
  - Malignancy in the wound

Wound VAC

- Dressing changes
  - Clean wound—three times a week
  - Infected wound—every 12 to 24 hours if needed
- Black foam—most common
- White foam—used for tunneling and undermining, to restrict rapid growth of granulation tissue, or if too painful with black foam

Wound VAC

- If a new surgical wound sterile technique may be ordered
- Chronic wounds may use clean technique
- Measure wound
  - Initial
  - First dressing change
  - Weekly
  - End of therapy

Wound VAC

- Wound cultures
  - Routine protocol
  - If purulent drainage, change in amount or color, or drainage has foul odor
- Measure wound and select appropriate foam
- Cut foam with sterile scissors
- Foam must fit size of wound

Wound VAC

- Foam must be in contact with all wound edges
- If tunneling or undermining exist—fill in tunneling or undermining making sure that all foam edges are in contact with each other
- Apply tubing to foam
- Skin protectant

Wound VAC

- Apply occulsive dressing—one to two inches of surrounding skin
- No wrinkles—do not stretch
- Therapy on/off button
- Standard pressure—125 mm/Hg, pump will display pressure set
- Dressing will compress with activation of therapy

Wound VAC

- Check for any air leak
- If air leak—patch with pieces of transparent dressing
- Alarms
  - Canister is full
  - Tilted machine
  - Therapy not activated

Therapeutic Hot and Cold

- Promotes comfort
- Pain relief
- Reduce swelling
- Improve mobility
- Promote healing

Therapeutic Hot and Cold

- Therapeutic effects are achieved through changes in blood vessels
- Which affects the blood supply to the area
- Heat—vasodilatation
- Cold--vasoconstriction

Applications of Heat

- Improves blood flow to the injured body part
- Promotes delivery of nutrients and removal of wastes
- Improves circulation at the capillary level
- Promotes muscle relaxation
- Lessens venous congestion in injured tissues

Application of Heat

- Relieve edema
- Promote consolidation of exudate in a wound
- Provide comfort

Applications of Heat

- Inflamed or edematous body part
- New surgical wound
- Arthritis
- Degenerative joint disease
- Localized joint pain
- Muscle strains
- Low back pain

Applications of Heat

- Menstrual cramping
- Hemorrhoidal, perianal, or vaginal inflammation
- Local abscesses

Temperature Ranges

- HOT—37 to 41 C----98 to 105 F
- WARM—34 to 37 C----93 to 98 F
- TEPID—226 to 34 C----80 to 93 F

Application of Heat

- RISKS
  - Burns
  - Bleeding
  - Dehydration
  - Maceration
  - Hypotension

Increased Risk of Complications

- Young children
- Older adults
- Open wounds, broken skin, stomas
- Areas of edema or immature scar tissue
- Chronic illnesses—peripheral vascular disease, diabetes, arteriosclerosis
- Confusion

Increased Risk of Complications

- Unconsciousness
- Spinal cord injury
- Localized infection
- How can we prevent complications?
- LISTEN to your patient
- Assess area prior to application, after initial application, and following treatment

Application of Heat

- Moist
  - Moist compress
  - Basin, whirlpool, or sitz bath
- Dry
  - Aquathermia pad (Aqua K pad)
  - Heating pad

Moist Heat Application

- Penetrates quickly and deeply
- Increases temperature in subcutaneous tissue
- Moisture—excellent conductor of heat
- Greater risk of complications
  - Burns
  - Tissue maceration

Moist Heat Applications

- Moist compress
  - Sterile
  - Clean
  - If break in skin integrity—sterile
- Types
  - Warm solution—moisten compress
  - Immerse body part

Moist Heat Applications

  - Whirlpool
  - Sitz bath
- NEVER use a microwave to heat compress
- Unreliable temperature
- Uneven distribution of temperature
- Increase risk of complications

Moist Heat Applications

- Increase circulation
- Administration of medications
- Cleanse draining wounds
- Loosen crusted exudate

Moist Heat Applications

- Do not administer treatment
  - Bleeding
  - Red and edematous
  - Increased body temperature

Application

- Wash hands
- Prepare supplies
- Inform patient
- Provide privacy
- Position patient
- Only expose body part needed for treatment

Application

- Initial assessment of area
  - Intact skin
  - Surrounding skin
  - Wound
  - Temperature
  - Bruising
  - Edema
  - Pain

Application

- Inform patient treatment should feel warm
- Educate patient of s/s to notify nurse if develop
- Physician's order required
- Use heat for 20 to 30 minutes unless otherwise ordered
- Petroleum based gel may be ordered for surrounding skin

Application

- Careful consideration and observation
  - Elderly
  - Blood loss
  - Certain medications
- Apply compress slowly---allows patient time to inform you of how it feels
- Patient best judge of their comfort—if not impaired

Application

- Dry skin
- Assess treatment area or wound
- Apply dressing if ordered
- Document
  - Skin or wound appearance
  - Surrounding skin
  - Wound—size, drainage, type of tissue
  - Patient's tolerance of treatment

Expected Outcomes

- After several treatments
  - Wound size decreasing
  - Drainage decreasing
  - Skin remains intact

Dry Heat Application

- Aqua K pad
  - Treat muscle sprains
  - Inflammation
  - Reduce pain level

Dry Heat

- Penetrates superficial
- Maintain temperature changes longer than moist heat
- Not effective for deep joints—knees and hips
- Safer than electric heating pad---constant temperature control

Aqua K Pad Therapy

- Temperature preset at 105 degrees F
- Distilled water
- Disposable pad
- Cover with pillowcase
- Never lay directly on pad
- Observe for s/s of dehydration
- Assess site prior to, during, and after treatment

Ultrasound Heat Therapy

- Specially trained personnel
- Applies deep, penetrating heat
- Lubricating gel
- Ultrasound appliance
- Kept moving at all times to prevent burns

Expected Outcomes

- Decreased pain level
- Increased range of motion
- Skin remains intact, without excessive dryness or blister formation

Document

- Assessment of treatment site
- Type of treatment
- Length of treatment
- Patient tolerance

Benefits of Cold Therapy

- Decrease edema
- Decrease bleeding
- Reduce pain level
- APPLY AS SOON AS POSSIBLE AFTER ACUTE SOFT TISSUE INJURY

Risks of Cold Therapy

- Damage to underlying tissue
- Frostbite
- ALWAYS COVER ICE---NEVER PLACE IN DIRECT CONTACT WITH SKIN
- Thirty minutes on
- Thirty minutes off

Risks of Cold Therapy

- Areas with little body fat—knees and ankles—do not tolerate cold as well as fatty areas—thighs and buttocks
- Decrease time of cold applications for bony areas

Types of Cold Therapy

- Ice Pack
  - Assess
  - Time
  - Fill ½ to ¾ full---express air
  - Use cup to fill
  - Change when soiled
  - Keep patient warm
  - Elderly more sensitive to cold

Types of Cold Therapy

- Hypothermia blanket
  - Decrease temperature
  - Surgery
  - Monitor patient's temperature
  - Stop use before reaching normal temperature
- Electric cooling device

Types of Cold Therapy

- Cool humidity
  - Cool mist humidifier
  - Croup tent
  - Decrease swelling—open passages
  - Thin secretions

Types of Cold Therapy

- Cool compresses
  - Temperature elevation
  - Comfort level
  - Axillary area, groin area
  - Prevent shivering

Documentation

- Skin intact or broken
- Skin color
- Ecchymotic areas
- Measurement
- Check pulses
- Temperature
- Pain scale