Skin Integrity and Wound Care
CSULB School of Nursing
NRSG 200

Skin
Nurse function is to maintain skin integrity and promote wound healing
½ to 2 ½ yards. Largest organ of the body. 15% of body weight

Purpose
Protection from physical damage, UV radiation and biological invasion (microorganisms)

Absorption
Vitamin D synthesis- helps with hormone calcitriol, which allows us to absorb calcium

Excretion & secretion
Excretion is the removal of waste products
Example: Sudoriferous glands remove waste products through perspiration
Secretion is the release of substance with some type of function
Example: Sebaceous glands secrete sebum, which helps lubricate skin and offers water protection

Immune function
Skin is slightly acidic and helps deter bacteria. Langerhans cells help to ingest antigens on surface of our skin

Temperature regulation
Perspiration helps cool us. Arrector pili muscles constrict, which gives us our goose bumps, and helps keep us warm.

Sensation
We have 1000 nerve endings for every square inch of our skin. This helps with touch, pain, temperature

Identification and communication
The color of our skin is from melanin (we have 60,000 melanocytes per square inch of skin) and we all have the relatively same amount of melanin. Pale skin does not have gene to express melanin, unlike a person who has a darker complexion. Our vascular bud gives us a pink hue, if we are not oxygenating well then it gives us our blues hues, carotene in diet (eating yams, sweet potatoes, carrots) have more of the yellow, orange hue to them. Those are 3 ways we get our skin color. Being able to identify person by skin color

Layers of Skin

**Factors Affecting Skin Integrity**

**Genetics** are what we coded to express melanin in skin. Dark complexion skin is less light sensitive than pale skin. Plays role in allergies (prone to eczema or psoriasis or seasonal dermatitis) More prone to skin cancer (basal cell or squamous cell skin cancer)

**Age** – we get wrinkles, drier skin, thinner (decreased collagen production), decreased subcutaneous fat, decreased sebum protection (oil secreted in skin helps keep skin supple), healing time is prolonged and decreased blood supply to skin.

**Illness** – decrease oxygen supply to skin or tissues. You’ll see it on it on individuals more on lower extremities like the calves where skin is thin and shiny, usually taut and decreased hair growth. This is sign of PAD peripheral arterial disease

**Poor nutrition** – decrease weight, muscle atrophy and decrease SQ tissue. Increases risk for tissue breakdown and essential to get enough protein, carbohydrates and fluids to maintain skin integrity.

**Circulation** – do we have delivery of the oxygen and nutrients to the skin.

Do we have removal of these waste products as well?

**Pressure** – A major contributor of pressure ulcers is pressure. Individuals who are wheelchair bound or bed bound are more likely to suffer from pressure ulcers because of increase pressure to skin

**Medications** – photosensitive meds can cause burning of skin, stinging of skin, skin can be red or erythemic and blisters can develop as well. So for some medications it is important to educate clients that it is important to stay out of the sun, while receiving these medications (Retin A, cipro.

Amiodarone, lisinopril, birth control pills are photosensitives) Those taking steroids for long period of time (prednisone) you’ll notice on their forearms they are ecchymotic and dark appearance on there. You can tell by skin if they have taken prednisone for prolonged time because it also causes thinning of skin

**Skin Lesions**

**general terms.** Primary lesion is present at onset of illness. Secondary lesion is change in lesion due to the illness, progression of wound itself, manipulation of wound, scratching or clothes rubbing on skin or treatment.

- General term for a single area of skin tissue abnormality
- Caused by disease process or trauma
- Primary or secondary

**Assess**

1. **Location** – provides a clue to the cause. Does it follow a dermatome? Females with chest pain (classic chest pain, heaviness over chest) EKG is negative, CPK troponin, all negative. A period of time later with shingles or herpes zoster follows dermatome and you won’t get rash until 10 days- 2 weeks afterwards. It is important that when we look at lesions and see a cause, you ask if it follows a dermatome. Because it can be easily ruled out if we just ask the right questions. Example 1 lady has underwear and bra on. And the rash is where the undergarments were and she was allergic to the elastic. Also when Sharon was working on a cruise ship, a woman tried a face cream on her honeymoon and came down to the infirmary, they gave her steroids and Benadryl. Ultimately, think about the cause before anything else, in this case wondering if she puts anything on her face.

2. **Size** – measure in mm or cm. we use height, width and depth. Different ways: height (from head to toe or widest height and width). In the hospital, they take pictures, and with the picture you can use the ruler and easier document it and see progress

3. **Color** – if it is healing, we want a pink. Redness means that it is fresh and blood. Sloughy is yellow, brown, gray, devitalized tissue that needs to be removed in order for healing to take place. Black areas are necrotic areas that are eschar. We want to remove eschar to allow healing. In some individuals, the eschars are incredibly large and they end up with a very large wound. A lot of times, we just leave the eschar

4. **Exudate** – material that is deposited in the tissues and usually arises from blood vessels during inflammatory process. Variety of colors

   - Arrangement – linear, annular (ring-like), grouped, confluent (running together), reticular (net-like appearance), iris lesions (bulls-eye)

5. **Symptoms**

6. **Duration**
Healing by first intention - primary wound healing
- Wound closed by approximation of margins or wound created & closed in the OR
- First choice for clean, fresh well-vascularized wounds
- Indications: onset <24h, clean, viable tissue, approximation of skin edges is achievable
- Treated with: irrigation, débridement, margins approximated using simple methods
- Scar depends on: initial injury, amount of contamination, accuracy of closure
- Fastest healing & most cosmetically pleasing

Healing by second intention - secondary wound healing
- Wound is left open & closed by epithelialization & myofibroblasts
- Wound heals without surgical intervention
- Indicated in infected or contaminated wound
- Presence of granulation tissue
- Complications: wound contracture & hypertrophic scarring

Healing by third intention - tertiary wound healing
- For managing wounds that:
  - bacterial count contraindicates primary closure
  - subsequent repair of a wound initially left open or not previously treated
  - a crush component with tissue devitalized

Process of Wound Healing
1. Inflammatory Phase - starts immediately after injury and can last up to a week after.
2. Proliferative Phase - lasts 3 days - 3 weeks depending on size of wound.
3. Maturation Phase - continued re-epithelialization. Collagen fibers migrate in orderly fashion. Makes scar tissue. Scar tissue has 80% of strength as normal skin does. New scars are red, tender and pruritic. Once scar has healed, it tends to be lighter than individual's original skin color.
4. Hypertrophic scars - keloids - increased amount of collagen (red and thick).

Complications of Wound Healing
- Hemorrhage - increased risk from incision or wound. Within first 48 hours after initial wound has been made. External hemorrhage is when you see blood. Internal hemorrhage is from hematoma and a collection of blood underneath the skin and the problem with hematoma is that they tend to put pressure on the surrounding areas so depending on where that is, that could be a problem. Check coagulopathy, PT, PTT, reverse them after surgery. Don’t get heparin or lovenox. We don’t do this until 2 days after surgery.
- Hematoma - puts pressure on surrounding areas. Internal bleeding.
- Infection - post op infection develop from day 2-11 after surgery. By day 11 it is healed. You don’t see infection in first 48 hours. Infection= more than 100,000 microorganisms once we have done a culture.

Dehiscence - separation of wound edges

Terms Used
- Papule - circumscribed, elevated and < 10mm ex. Bug bite, Flee bite
- Plaque - raised, rough, > 10mm, ex. Psoriasis
- Nodule - palpable, enlarged or elevated, solid, and usually > 10mm. ex. Fat deposit- lipoma
- Vesicle - <10mm. same as bulla, aka blister. Circumcised, serous filled. > 10mm. we don’t want to pop blister otherwise we will have intact skin. Offload pressure instead (put pillow underneath heal) and allow the body to reabsorb the fluid.
- Bulla - > 10mm. same as vesicle, aka blister. Circumcised, serous filled. > 10mm. we don’t want to pop blister otherwise we will have intact skin. Offload pressure instead (put pillow underneath heal so the heals don’t touch the bed) and allow the body to reabsorb the fluid. So popping a blister and draining it is not the appropriate thing to do.
- Cyst - circumscribed, semi-solid Epidermoid cyst. Acne cyst. Cysts are encapsulated in sac. If you don’t want cyst to return it is important to remove sac they are in as well.
- Erosion - Partial skin. Wearing new shoes without socks on.
- Ulcer - Tissue loss usually from pressure, friction and local trauma.

Categories of Wound Healing
- Wound healing is a complex process of replacing devitalized tissue and missing cellular structures and the tissue layers as well.
- Primary - healing by first intention - this incurs when wound edges can be approximated. Wound edges need to be able to be close back together. Only for clean wounds and leaves a relatively fine scar. (top)
- Secondary - healing by secondary intention. Edges cannot be approximated. increased/prolonged inflammatory response and large amount of granulation tissue (bottom left) granulation tissue is new tissue laid down. A lot more phagocytosis, epithelialization, collagen deposits that happen in this area and we tend to have a larger scar as well because edges can’t be approximated.
- Tertiary - bottom right. Delayed primary closure. The wound that can’t heal by primary intention because edges cant be approximated. We clean wound. Give antibiotics to remove microorganisms. Decrease bacterial count and after 4-5 days we can close that wound.

Process of Wound Healing
- Inflammatory Phase - starts immediately after injury and can last up to a week after.
- Hemostasis - control and stop bleeding. Vasosonstraction to site. Fibrin starts to deposit and platelets go to this area to make a clot.
- Phagocytosis - once bleeding is under control and clot in place, we can phagocytose. We have increased blood flow to area, which helps deliver oxygen, remove nutrients and remove foreign substances. This is when exudate is made.
- Proliferative Phase - lasts 3 days - 3 weeks depending on size of wound.
- Angiogenesis - New blood vessel growth. We have 30 yo with stemi & MI and a 55 yo male with stemi. No other problems. The older fella is going to do better because of the angiogenesis. 30 yo has not had the time to develop angiogenesis. People who have heart attacks when you are young don’t do as well as those who have it when they are older.
- Epithelialization - granulation, fibroblasts lay down collagen
- Maturation Phase - continued re-epithelialization. Collagen fibers migrate in orderly fashion. Makes scar tissue. Scar tissue has 80% of strength as normal skin does. New scars are red, tender and pruritic. Once scar has healed, it tends to be lighter than individual's original skin color.
- Keloid - when scar does not stop growing. It continues to grow beyond original border. They tend to be raised, painful, firm, complain of pruritic, shiny and with all scars you won't have hair growth on the area where there is a scar.
- Collagen re-organize
wound vac on that to close it.

Fistula — abnormal passageways between two organs or between the organ and the skin. Example. Men's chief complaint is that I am urinating air. Men develop fistula between bladder and intestines. So now the air thru intestine will find an opening into the bladder, but we want to keep bladder sterile.

Evisceration — separation of surgical wound edges and organ protrusion. Seen more in abdomen, higher BMI or a lot of truncal obesity. Example in pic. This individual with an evisceration does not look fresh and looks like they are just going to hopefully keep it moist and second generation healing because you can't close the wound edges and the belly is protuberant so we need to get rid of the swelling and eventually we can put a wound vac on that to close it.

Types of Wound Exudate

Exudate aka drainage. Liquid produced in response to tissue damage. We need to manage exudate to promote wound healing.

- **Serous** — serum or plasma in area, clear or straw color and thin
- **Purulent** pus. Leukocytes, dead tissue, bacteria (dead or alive). Yellow or green color and thicker in nature.
- **Serosanguineous**- serum and RBCs, tends to be light red and moderately thin in nature.
- **Sanguineous** - Sanguineous means red, RBCs there. Dark, red, moderately thick and you might notice some blood clots on the dressing as well.
- **Pususanguineous**- combination of purulent, pus, leukocytes with blood. Pink color, thick. Make a judgment on how much exudate individual puts off. Is it scant, small, mild, moderate, severe or copious amount? Once I have taken dressing off, look at dressing itself and see how saturated the dressing is and from there you can make the judgment call.

Stages of Pressure Ulcers (NPUAP)

Pressure ulcers are localized injury to the skin and the underlying tissue. These usually occur over a bony prominence. They result from a pressure in combination with sheering and friction. There is normal capillary blood flow. These usually occur over bone prominences. They result from a pressure in combination with sheering and friction. There is normal capillary blood flow. These usually occur over bone prominences. They result from a pressure in combination with sheering and friction. There is normal capillary blood flow.

- **Stage I:** Intact skin with non-blanchable redness. Darkly pigmented skin may not have visible blanching. If we let this pressure build up. Eventually, if we don’t relieve the pressure we could have decreased blood flow to the area, leading to ischemia and eventually tissue death. But if we did relieve pressure before ischemia, we can save the tissue. After you remove the pressure, we have a vasodilation and hyperemia. Pink areas are where there has been too much pressure. Put your finger on it and push and remove it to see if you can blanch it (pink to white), that is still viable tissue. But if you put your finger on it and it stays pink, then it is a stage 1 pressure ulcer. Skin is intact, but you cannot blanch.
- **Stage II:** Partial thickness loss of dermis; shallow open ulcer, red pink wound bed, without slough. May present as intact or open/ruptured bulla
- **Stage III:** Full thickness tissue loss. Subcutaneous fat may be visible. Slough may be present. May include undermining & tunneling. Slough is the stringy looking debris (gray, white, yellow) and must be removed. Undermining is when you have a cliff. The area is overhanging and tunneling is when you take the cotton tip applicator (get it wet with sterile normal saline) and tunneling is if you can insert the applicator up. Meaning the skin is not attached to the tissue underneath.
- **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. May include undermining & tunneling

Unstageable/Unclassified: Full thickness tissue loss, cannot visualize wound base, wound is covered by slough or eschar depth is unknown. You have to see wound bed in order to stage it. In 6 things we can call a pressure ulcer. We can stage because we can see the wound bed. There are two other names (suspected deep tissue injury SDTI and unstageable/unclassified) we can call it, if we could not see the wound bed itself. In order to stage a pressure ulcer you have to see the wound bed. This one is unstageable because we cannot see what is underneath. This is eschar and if we were to remove the eschar, we will have a huge open wound and that would be really hard to heal. So that’s why sometimes we leave the eschar in place, because opening it up will be really difficult to heal.

Suspected Deep Tissue Injury-Depth Unknown: purple or maroon localized area of discolored intact skin or blood bulla caused by damage of soft tissue. We are suspecting that there is something going on, but we cannot see the wound bed nor can we stage it. If you have slough or eschar or maroon (blood blisters) These suspected deep tissue injuries in African American individuals are very difficult to see because there is not a huge change between the skin color and color of the injury.

Factors r/t tissue breakdown

Pressure intensity the higher the pressure intensity, especially if we are on a firm mattress. It is important to check the firmness, especially on air loss mattress. Those who cannot move, then order air loss mattress.

Pressure duration the longer the pressure is there, the more likely there is ischemia and possibly tissue death. Tissue tolerance- is the skin intact? How are the supporting structures. Is there enough subcutaneous tissue? How is nutrition? Are we managing moisture and incontinence? Recent study with control group (turned every 2 hours) experimental group (turned every 3 hours). Kept all individuals HOB 30 degrees. Control group had 3% develop pressure ulcers and the experimental group had 11% develop pressure ulcers. If an individual has a spinal cord injury, loss of sensation, parasthesia, it is important to turn those individuals more than 2 hours.

Risk Factors for Pressure Ulcers

Friction & shearing- friction is the force of two surfaces rubbing against each other example: skin and sheet the I is laying on. Shearing is a combination of friction and pressure... There are enough subcutaneous tissues against the stationary bones and muscles. This is a separation of the subcutaneous tissues and the muscles. This happens inside, which is why it is very important to lift pt with Angel slides or equipment we have to prevent dragging.

Immobility- like paralysis, ALOC, weakness is a higher risk factor of pressure ulcer.

Inadequate nutrition- we all need 1500 kilocalories of nutrition in a 24 hour period. Vitamin A, C, zinc, copper are important to maintain skin health.

Incontinence the more incontinent our pt is, the increased likelihood to break down skin. Even though we have tubes and drains, if any of the bile or acidic acids gets on pt skin, it will break down our skin FASTER than our own urine and stool. So be careful with drains and if all the contents aren’t going into the drain.

ALOC dementia, organic brain syndrome, or sedation are more likely to develop pressure ulcer.

Diminished sensation decreased ability to respond to their stimuli, the pressure/temperature, more likely to develop pressure ulcer.

Age decreased lean muscle mass, thinning skin, skin is not as strong because of decreased collage, decreased elasticity, decreased subcutaneous tissue, and also a diminished pain response.

Risk Assessment Tools

Major nursing priority is to notice those who may develop a pressure ulcer.

**Bradens Scale**

Barbara Braden developed this in 1980s. Looks at sensory perception, moisture, activity, mobility, nutrition, friction, and shear. The lower the score the higher the risk for the individual.

**Norton Scale**

Norton developed this in the 1960s. This looks at continence different than Braden scale. The lower the score the higher the risk for the individual.
Prevention of Pressure Ulcers
Skin care & management of incontinence
We need to have meticulous hygiene of their skin care. We want to keep skin clean, dry, moisturized. Different types of skin protection. Make sure water is not too warm and in the hospital, we are using the appropriate cleansers. Sensicare products do not need a physician order. They are in the pixus, Konrad prefers #2 over #2, put this over areas, where there may be incontinence or stool, so all over the perineal area if there is any leakage. #2 is more like a lotion that goes on relatively thick. #3 is like a toothpaste. If you have somebody with a catheter or fecal containment devices or rectal tubes, hopefully we can manage the waste products. #3 will make a wonderful barrier in between the waste and the pt skin. But 3 is extremely difficult to take off and to assess what is going on under the skin because it is such a thick paste. This is a nursing action so you do not need a physicians order!

Remove/reduce pressure
make sure you turn your pt at least q2h, float their heels, use pillow supports, remove wrinkles from their linen, do not have pt lay on their gown and pull gown from underneath them, keep HOB down, not all pt need their HOB at 30 degrees, so making sure we decrease HOB when appropriate, using the specialty mattresses, nurse needs to take SCDs and TEDs off every shift because those can make sores themselves, foley catheters laying across a thigh can make an indent and develop a pressure ulcer.

Educate Tell pt “You need to move q2h, if nobody comes in to move you, push the call bell and remind us to move you” Asking for a position, good nutrition, and to call if they are incontinent. Sometimes they feel like they are bothering us or are embarrassed, but it is definitely not an inconvenience for us nurses! These mepilex sacrum silicone protectors are for different areas of the body to prevent pressure ulcers and used to treat stage 1 and stage 2. If pt at high risk according to Braden score, put one of these on. When you are doing your assessment, peel it off and look at skin underneath. Just because there is a dressing, does not mean that you are not responsible for what is going on underneath. So pull it off, LOOK, and put it back on. Leave thesein place for 5 days unless they get soiled. If you are putting one on, put time, date and initials.

Stage these Pressure Ulcers Activity
1. Unstageable. 2. Stage 3 because you can see underlying tissue. 3. Stage 2 (partial skin loss) 4. Stage 3 (no bone, but has slough that needs to be cleaned) 5. Stage 1. 6 Stage 4 (see bone) we need good nutrition, wound vac, and antibiotics. If you come in with intact skin and you develop a pressure ulcer, the insurance will NOT pay for it. So get rid of the stringy sough, give good nutrition, do a culture (what organism is there) and we need to not put pressure here, so the pt must be turned, specially mattress, wound vac (but problem with this, is that it needs 100% tight seal) people can become septic and die from the complications of the ulcer.

Venous Ulcer (Stasis) vs. Arterial Ulcer (Insufficiency)
80% of ulcers are venous and the other 20% are arterial. Venous ulcers have a problem with venous blood flow. We can get blood there, but there is a problem with the removal of blood from area. So the Venous
- Ruddy color base- Santa clause
- Shallow wound
- Irregular margins
- Moderate to heavy exudate- good arterial blood flow
- Warm skin temperature- good arterial blood flow
- Minimal to severe pain
- Pedal pulses present- good arterial blood flow
- Medial- and lower extremities

Main reason we have venous ulcers is impaired venous valves. People with varicose veins also individual who can develop and emboli because they have emboli in venous system impeding blood flow. The picture is beefy red, irregular, minimal exudate, wound edges are irregular.

Arterial
- Pale base color when elevated- no good arterial blood flow
- Shiny, taut skin- feels light, decreased hair growth, no good nutrition and no good arterial blood flow
- Punched out appearance
- Minimal exudate- no good arterial blood flow
- Cool skin temperature – no good arterial blood flow
- Pain with rest & exercise
- Pedal pulses diminished or absent
- Lateral- and lower extremities, foot,

Main reason people develop arterial ulcers are from arterial sclerosis

Assessment of Wounds
Location always remember to document this
Type of wound abrasion, burn, pressure ulcer, venous ulcer, surgical wound?
Size length, width, depth, undermining, skin separation, tunneling?
Wound bed color, hopefully pink (healthy viable tissue), slough, necrosis
Exudate what type, amount
Odor foul or significant
Wound margins erythemic, swollen, edematous, pain
Pain nerve endings are gone and loss of sensation and a lot of times we don’t pre-medicate individuals when you do dressing change.

Cause try to determine the cause, especially if it is something in the environment (feet laying on end of bed)

Nursing Diagnoses for Integumentary Problems
Risk for impaired skin integrity r/t urinary or fecal incontinence. r/t decreased mobility

Impaired skin integrity r/t decreased nutritional intake, immobility AEB stage 2 pressure ulcer

Imbalance nutrition: less/more than body requirements r/t increased intake, decreased absorption AEB weight loss/gain

Risk for infection r/t a break in skin

Pain, Acute or Chronic pain r/t to the wound AEB by the patient’s complaint

Impaired physical mobility r/t increased BMI, decreased muscle tone, AEB decreased movement in bed

Ineffective tissue perfusion r/t decreased hemoglobin, hematocrit AEB cool extremities

Debridement of Wounds & Ulcers
Debridement is removal of foreign material and devitalized or dead tissue from the wound bed.
WOCN or physician would do a sharp debridement. Cut away necrotic tissue (no sensation to this tissue). Mechanical debridement is wet to dry (not best way to take care of wound) Nurse will do wet to dry dressing change until a WOCN to give appropriate orders. As generalist registered nurse, it is not necessary to know everything about wound care, just the basics. WCN and physicians help us to fill knowledge gaps. The reason why mechanical debridement is not the best because you take gauze saturated with normal saline and pack inside the wound. Ideally you want gauze touching every surface of wound bed. This dries out, we pull out the gauze (want to remove dead tissue) but you also pull our new granulated tissue. If wound bed has a lot of slough and full of bacteria then wet to dry is appropriate. But the healthier the wound is, the more you want to avoid the wet to dry because it is very non-specific as to what it pulls out when you take out the gauze. Chemical putting an ointment on wound bed itself, make sure you have gloves, a cotton tip applicator onto wound (do not bring it back to medication), put a 2x2 and put a dollop of that onto dressing -r/t decreased nutritional intake, immobility AEB weight loss/gain

Debridement Type Procedure Time Wound Type
Sharpc (conservative or surgical) Scapelf Quickest Remove necrotic tissue and thick eschar Stage IV ulcers

Mechanical Wet to dry dressings Wound irrigations Hydrotherapy Change every 4 to 6 hrs Remove stringy exudates Small to moderate wounds

Chemical Topical enzymatic agent Apply as directed Devitalized tissue

Autolytic Moisture-retentive dressing + enzymes Apply as directed Liquefy selective dead tissue
Taking Cultures

Follow hospital policy
Clean wound with NS prior to collection- when you remove dressing and you look at wound you might see a lot of exudate and purulent material, but do not culture this! These wounds has its own resident bacteria and not the true pathogen. Remove exudate with irrigation (drop NS in 60 mL syringe) Do not use bulb suction. If irrigation is not enough, take a 2x2 or 4x4 and wet it with NS and clean wound bed.

Collection: aerobic versus anaerobic organisms- collect once you’ve cleaned it and you’ve gotten down to pink tissue. Cotton tip swabs. Aerobic cultures are superficial. Anaerobic are for those deeper body cavities. When you rub the cotton tip applicators in wound, start in the middle of wound and work your way out. Do not be too gentle. Some textbooks say, put enough pressure to get bleeding because we want to get the bacteria that is in the wound bed.

Gram stains done to ensure timely treatment Danish bacteriologist done at the Berlin morgue. Gram stain gets results quicker than a culture. Cultures take up to 5 days to grow out. Purple color in gram stain it is C. dif, if it is gram negative you’ll see this more with e coli. A lot of times a physician will order a wound culture with a gram stain. Need to be labeled at the bedside in the biohazard bag, and then off to the laboratory.

Purposes of Dressings
- Protects wound from contamination and further injury
- Aids in homeostasis- especially applying pressure. Oozing blood from area, put pressure dressing
- Absorbs drainage & facilitates debridement
- Supports & splints the site
- Promotes thermal insulation- when we have dressing on area, it helps keep warmth. Warmer wound increases circulation and increased healing
- Provides a healing environment- keep wound bed moist to heal and helps to maintain proper pH
- Blocks visibility- more for the pt and visitors

Changing a Dressing
Frequency - routine order or pm. Make a judgment.
Treat pain & explain procedure- ask them if they experience any pain with dressing change and give them pain medication. If they are given NORCO or Percocet, give it a full hour before you do a dressing change. If I am giving something IV Diliaudid or morphine, after 15 minutes ask if it is effective because they have a quicker onset. Explain what you are going to do and what assistance you need from them (on their side for a period of time for example)

Gather & set up dressings/supplies wipe the bedside tables down with those saline sani wipes because bedside table as your workstation. They might have just had their meal there or urinal on this area so wipe it down and clear it off.
Don gloves remove old dressing, careful with tape, doff gloves, hand hygiene Don means to put on. Be careful when removing tape (pull down skin and pull off tape) then when you take the dressing off, look at the dressing to see how much exudate is off. Doff means to take off gloves and do hand hygiene, then assess wound.
Assess wound & skin- what is the wound base like. Is it nice and pink like you would expect. Is there slough, exudate, odor, granulation tissue. Assess undermining or tunneling.
Don gloves
Clean/irigate wound- with normal saline or a different type of irrigation like daken solution or LR. If you don’t have an order, we use normal saline
Medication application- use with cotton tip applicator (do not go back to container once they have been on pt wound)
Apply dressing & secure- Put date, time

Sutures, Staples & Steri-Strips
Sutures can be cotton, silk, nylon, dakon. Staples (steel) or steri-strips
(small pieces of tape that keep edges approximated). Sutures and staples left in place for about a week. Up to 10 days. Sometimes surgeons forget they’re there so we remind them they are still there. Steri strips fall off by themselves so once they are one we don’t take them off. Policies vary for removal. But nurse responsibility to remove staples and stitches. Usually surgeons do it, but they’ll also write an order so the nurse can do it. Depending on how many of these we have. If you are removing stitches, skip 2 or 3 sutures and then go on to the next one because some of these things can be long and make sure those edges stay closer together.

Especially someone with protuberant belly. When you remove stitches- you do not want to cut at top and pull it. Clip it close to skin instead because you don’t want part on the outside tunneling back through because it is dirty. Makes it much easier if you quickly remove the staples with staple remover from clean supplies. If some are in place for a period of time, there are scabs that form where there are stitches or sutures, it can be troublesome. Staples tend to bleed after you remove them, especially if they have been there for over a week and a half. Document how many you have removed. When you remove these, and if edges are not approximated, stop and call the surgeon that I’m in process and the wound edges are starting to separate, I’ve only removed 2 at this time. I went ahead and tried to close those edges up and tried to put those steri strips on there, is there anything else you would like me to do? After we remove sutures or staples, we put steri strips on to help keep edges approximated.
- Left in place for 7 days
- Some sutures are absorbable
- Steri-Strips left in place until they fall off
- Policies for removal varies
- MD order required to remove
- Clip suture as close to skin as possible to decrease infection
- Remove every 2 - 3 staples/sutures first, observe wound edges for approximation

Hydrocolloids- on the Mepilex. Waterproof adhesive barriers. Keep them in place for 5 days. Absorbent qualities. Good to manage small amount of exudate. Good for stage 1 and stage 2 pressure ulcers to prevent pressure ulcers over bony prominences Nurse applies without order

Hydrogels- looks like saran wrap. Waterproof. Absorb exudate. Non-adherent dressings. For pressure ulcers for stage 2 partial thickness pressure ulcers. Need order. WOCN does this

Polyurethane foams another different type of hydrocolloid. Absorbative properties. Small sponge. Need Order. WOCN does this

Alginate made of algae. These are for wounds with a lot of exudate because it absorbs a lot of fluid. Need Order. WOCN does this. Wound ostomy care nurse
**Other Wound Treatments**

NPWT-VAC - negative pressure wound therapy aka wound fac. Sub-atmospheric pressure. Helps close wound by using vacuum assistance. Creates suction. Need occlusive dressing in order to have this work. Manages exudate nicely. Increases blood flow to area and then we usually have increased healing and swelling. So you cut piece of foam to fit inside wound. Piece of tube one end must be where you put black sponge. There is a sheet of sticky saran wrap and you must put it across this dressing and it needs to be occlusive. Machine wont work unless it has a good seal on it. Even though WOCN orders this, we as nurses manage this. Machine has on or off, once there is a reading that there is no longer occlusive, take everything off and put another piece of this sticky saran wrap on there. Don’t just take it off and put wet to dry dressing and wait for WOCN to come back. Tubing comes down and into the machine. Connection between the 2. This is where the exudate will collect. If this is full, you don’t need to take dressing down to change the canister because you can just separate the tubing. The only thing that is bad about this is that you have to have it plugged in (no battery) or it prevents pt from ambulating. Example. Heroin addict inject into muscles instead of vein and got abscesses in legs so they used a wound vac to close it up.

HBOT - hyperbaric oxygen therapy. Breathe pure oxygen pressurized. 3x the atmospheric pressure. Used to treat the benz/needs decompression sickness. This is 100% oxygen under pressure. We force oxygen into tissues to help healing of wound. Hyperbaric oxygen treatment. 30 min twice a day for 5 days. Contraindicated for COPD pt and claustrophobia. Also pt who have any problems with their ears because there will be pressure in your ears.

**Working with Drains**

Often sutured in place - make sure no kinks in drain. Know where the end of the drain is located And up to us from rapport we are given or notes - we need to know end of drain location. Use caution when changing dressings because wound may not be sutured in place. Surgeon does dressing change at first and after that, nursing does dressing change. Do once a day. Pen rose will change every 2-4 hours. Put a lot of ABG and 4x4 gauze to catch this exudate so the exudate does not go on pt skin. Pen rose drain is Sharon’s least favorite because there is no collection on the end and then I need to manage my gauze. Surgeons like this because it is in his lung where the surgeon does not want us to put any suction. JP and hemovac. Note amount, color, odor of drainage with the JP, once you open up the cap of the suction, it has mm markings on there. Otherwise take a cup and measure amt in mL’s. If someone has more than one JP, label them. Usually the first nurse who receives pt from PACU they will label them. Surgeon takes them out once they decrease exudate. Make sure you document the amount and what is coming out. Empty Q shift, when half full or per order Empty once a shift or physician order to empty when it is half full MD will remove when no longer indicated.

**Indications for Heat**

Heat vasodilates area bringing blood flow to area. Increases cell metabolism of site and increase inflammatory process. Relaxes muscles and relieves pain. Heat is contraindicated in first 24 hours after injury because this is the time when we have hemostasis there. Our body will vasoconstrict to decrease blood flow and preserve blood in our body. But the heat will cause vasodilation. We don’t want to use heat if there is non-inflammatory edema. Pt with CHF or renal disease edema we don’t want to use heat. Tumor with malignancy do not use heat. Also if skin is not intact do not use heat. Do not have heat greater than 115 degrees because this causes burning and blistering to site. Be careful with heat if person has decreased sensation. After 30 minutes of heat, you will get rebound constriction. The opposite of what you’ve intended to do. So heat should only stay on for 20-30 minutes. Check site for every 10-15 minutes. Tell pt to report to you if it is too hot. In hospital we use heat in 2 ways. Break and shape the heat pads for 10 and 20 minutes. K pads with a black thing you need to put water in there. It wants a certain type of water, turn it on, needs to be plugged in, connect the two together, open up the clamps, heats up water, puts water thru tubes and circulates inside so there is moist heat with this. Joint stiffness from arthritis Contractures Low back pain

**Indications for Cold**

Cold vasoconstricts. Decreases cellular metabolism. Decreases inflammation. Relaxes muscle and slows nerve conduction. Contraindicated for open wounds and impaired circulation because they wont know if it gets too cold. With ice, we can go down to a bout 60 degrees F and that’s when we get that rebound vasodilation. Opposite of what you’ve intended Sprains Strains Fractures Post injury swelling & bleeding

**Evaluation**

Was skin integrity maintained. Appropriate wound healing. Treatment effective? Is pt eating. Do we need dietitian. Do we need to order a specialty mattress

- Evaluation of skin integrity & wound healing
- Treatment effective?
- Nursing therapies effective?
- Goal(s) achieved?
- Assess for new risk factors
- Are referrals needed? To wound ostomy care and dietitian.
Review Questions

After ABD surgery, the patient report a “pop” after coughing. Upon assessment the RN notes a loop of bowels & an open ABD incision. The RN: select all that apply

1. Allows the area to be exposed to air
2. Places cold packs over the open area
3. **Covers the area with sterile saline soaked gauze**
4. Covers the area with sterile gauze & applies an ABD binder **Abd pressure decreases pressure from incision site. But we don’t want this because we’ll put pressure on this and cause decreased blood flow to the area.**
5. **Calls the surgeon**
6. **Gives an additional dose of antibiotics no not unless we have an order for this**

Which description fits that of serous drainage from a wound?

1. Fresh bleeding
2. Thick & yellow
3. **Clear, watery plasma**
4. Brown & foul smelling
5. Mix of blood & plasma

Which one of the following is an indication for an ABD binder?

1. To assist with collection of would drainage **We want this dry**
2. Reduction of ABD swelling
3. **Decreased stress on the ABD incision**
4. To increase peristalsis from direct pressure
5. To relieve edema **same as 2**

Which action would be a priority in preventing a patient from developing a pressure ulcer?

1. Using waterproof materials on the bed
2. Massaging any reddened areas
3. Using an air-inflated ring to relieve pressure
4. **Using a mild cleansing agent when cleaning the skin**