Skin Assessment and Pressure injury best practices: Assessment, prevention and management

Nebraska Hospital Association

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Disclosures

- I am a consultant and on the speaker's bureau for Sage, a Stryker company
- I have no relationship with any other companies
- Product names and brands are mentioned as exemplars
- When products are mentioned by name today, whenever possible, competing products will be presented to avoid any commercial bias

A rose by any other name…

- Pressure ulcers are frequently now called pressure injuries
- The National Pressure Ulcer Advisory Panel (now called National Pressure Injury Advisory Panel- **NPIAP**) decided to rename them
- Not all wound societies have adopted the new name
- Europe did not adopt the new name
- The reason given by NPIAP is that a skin ulcer means a break in skin and Stage 1 has no break in the skin
- Europe does not use a Stage 1- they just call it non-blanchable erythema and use it as a warning sign

Our day

- This AM we'll discover tools to hone our:
  - Timely and accurate comprehensive skin assessments
  - Pressure injury risk assessment- Braden and beyond
  - Interventions for a care plan for those who are high risk
- After lunch we'll venture into:
  - Pressure injury staging (2016 Staging system)
  - Accurately identifying pressure injuries compared to incontinence associated dermatitis and other skin injuries
  - Utilization of the 2019 NPIAP prevention and treatment guidelines

Pressure injury

- We'll look at definitions this afternoon but for this morning just remember that every pressure injury is due to **ischemia!**
- It is like a heart attack or a stroke- but affects skin, subcutaneous tissue and sometimes muscle too
- It is considered a reflection of quality of care and has reimbursement repercussions- this is one reason skin assessment on admission is SO important! **You don't want to count one as nosocomial if it's not!**

DiVita MA, Granger CV, Goldstein R, Niewczyk PM, Freudenheim JL. Mandated Quality of Care Metrics for Medicare Patients: Examining New or Worsened Pressure Ulcers and Rehabilitation Outcomes in United States Inpatient Rehabilitation Facilities. Arch Phys Med Rehabil. 2018 Aug;99(8):1514-1524.e1.

FYI

- The NPIAP is working on Congress to get Medicare to recognize ‘unavoidable’ PIs in acute care, like they do in LTC

- Nevertheless- MOST are avoidable- and we work so hard to prevent them!!

Today – let’s work together to get even better at it!

Module 1: Skin assessment and the Braden Scale

- For skin assessments we'll talk about
  - "timely" and
  - "accurate"
- What do these mean- and how can we get there??

- For the Braden Scale we'll look at the subscales in more detail and match prevention interventions to each subscale level of risk

timely and accurate comprehensive skin assessment

- First question
  - Which admissions **need** to have every inch of skin viewed??
  - Clearly define this in your policy; make sure staff knows the answer

- If someone is alert (as far as you can tell on admission), independent with toileting and independently mobile- is there any reason to invade their privacy?
  - Sometimes we get surprises even with this category of patient, but at least we recorded that they denied any skin injuries, rashes etc
  - Be sure if their condition changes we get a good skin assessment

Timely

- What does TIMELY mean?
- ‘As soon as possible’ would never happen ☺
- But you don’t want to get TOO prescriptive- or you’re in trouble legally
- Each facility must set their own timeline- and then- **stick to it!!**
- One idea- if it’s possible for you- is ‘4 eyes within 4 hours’
  - 2 people for that initial assessment is a VERY good idea!
  - Deciding the goal is within 8 hours is probably fine too
- Great idea to do a quarterly audit (for the first year- then maybe q6 months)- was it timely? (according to your definition) AND accurate?

Accurate

- That means we did not miss any skin injuries or incisions (healed or not)

- Areas where injuries are often missed:
  - Perineal and between buttocks
  - Skin folds- especially for obese patients (pannus, under breasts, leg folds, neck folds, behind knees…)
  - Heels- especially posterior aspect
  - Toes- between and under
  - Skin under medical devices

Barriers

- Barriers to a comprehensive viewing
  - Patient in distress, family in distress
  - Patient in pain- doesn’t want to turn for viewing
  - Patient still fully dressed when you arrive- can be quite a process to undress

Solutions

- Whoever is admitting can call the second person when the patient and family have been calmed a bit and pain is improved- OR when the person has to use the bathroom/bedpan or get into bed from chair
- Explain that ‘We will be getting you (your loved one, etc) into a gown and with your permission will be taking a look at your skin for any rashes or sore spots we need to protect while you’re with us. This is very important and part of the excellent care you’re receiving while you are here.’

Other solutions?

- What other ideas have you found that might help your colleagues overcome barriers to a timely and comprehensive skin assessment on admission or with a change in condition?

Who wants to come up and write them down on the flip chart?

Gathering info

- Also ask the patient or family/significant other
  - What creams or lotions do you use at home?
  - Do you have any sore or itchy or tingly or numb areas of skin?
  - Do you have any trouble leaking a bit of urine now and then? (if yes, look at perineal area front and back and between legs carefully on exam)
    - If so, do you use a pad or a brief?
    - What do you use to help your skin if you get kind of raw?
  - Have you ever had a pressure ulcer or bedsore?
  - Have you had any surgeries- did you have any trouble with healing the incision?

Location terms

- Just a few tips -
  - Always compare left and right body parts to look for differences- especially important for legs and feet

  - Medial= toward the center of the body
  - Lateral= away from the center of the body
  - Proximal= closer to trunk or point of attachment to the body
  - Distal= farther from trunk or point of attachment to the body
  - Superior= towards the head
  - Inferior= towards the feet

  - Feet/toes- top is dorsal surface; bottom is plantar surface
  - Heels- bottom is plantar, back of the heel is posterior
  - Buttocks- L or R and each divided into 4 quadrants

Terms related to color

- Be sure to have good lighting (natural is best- fluorescent is worst ☹)
- Look for change to normal skin color- compare one side to the other
  - IE: R foot is redder than L foot; L 4th toe is red compared to other toes
- If there are red areas- note whether blanchable or not
  - Blanchable could be due to irritation, infection, abrasion, moisture injury…
  - Non-blanchable usually due to ischemia- sign of pressure injury
- Brownish discoloration
  - Hyperpigmentation- like moles/freckles/age spots
  - Hemosiderin deposits often due to chronic intermittent inflammation from stasis dermatitis on legs or frequent incontinence associated dermatitis on buttocks/cleft any moist area or areas of frequent friction

Temperature

- Use the back of your hand to assess temperature
- Cooler than their normal skin
  - Often both feet are cooler than legs
  - If one foot is cooler than other may be circulation issue
  - If over bony prominence may be a sign of death of tissue if an area is pale or dark and cooler than the opposite body part- ie: left heel dark over calcaneus bone and cooler than right heel
- Warmer than their normal
  - May be generalized due to fever
  - May be local and due to infection (will be blanchable red)
  - May be local and due to injury (if pressure will be non-blanchable; blanchable may be burn, stasis dermatitis, etc)

Terms related to Texture and turgor

- Scales- keratin plaque if waxy (often lower legs with chronic edema)
- Dry and flaky (often lower legs and especially heels; possibly forearms)
- Paper thin; atrophic skin (means really thin, transparent- especially for elderly- can see venules through it)
- Induration- when skin is pressed (not over bone) subcutaneous tissue feels hard, should be springy. This may be due to injury or soft tissue scarring. If at the edge of a wound it's considered a sign of localized edema.
- Thickened; callused; leathery; dry and cracked (heels)
- Tenting- when skin is pinched together (forearm or over clavicle) gently it stays tented (less elastic, often accompanies aging, dehydration or edema)

Terms related to edema

- One limb or two? How far up does it go- halfway to knee?
- Describe pitting or non-pitting (when tissue is hard)
- If pitting- press finger in for 5 seconds
  - 1+ mild- 2mm depression- immediate rebound
  - 2+ moderate- 4mm- takes a few seconds to rebound
  - 3+ severe- 6mm- takes 10-12 seconds to rebound
  - 4+ very severe- 8mm- more than 20 seconds to rebound

Next steps

- After you've done your admission assessment and comprehensive skin assessment and spoken to family/SO, you know your patient better
- At this point you can probably do a fairly accurate Braden Scale scoring to determine pressure injury risk
- You will still need to gather information from them or their family/significant others about their normal food intake and their recent intake for the nutrition sub-score

Lim E , Mordiffi Z, Chew HSJ, Lopez V. Using the Braden subscales to assess risk of pressure injuries in adult patients: A retrospective case-control study. Int Wound J. 2019 Jun;16(3):665-673.

Braden Scale- tool for scoring pressure injury risk

- Developed by Barbara Braden (retired from Creighton U CON) and Nancy Bergstrom (was at UNMC CON- now in Texas) published in 1987

- Total score is used to create categories of risk **(cutoff scores vary)**
- High Risk: Total Score 10-12
- Moderate Risk: Total Score 13-14
- Mild Risk: Total Score 15-18

Consider monofilament testing for diabetics

Sensory subscale

Sensory Perception (ability to respond meaningfully to pressure related discomfort)

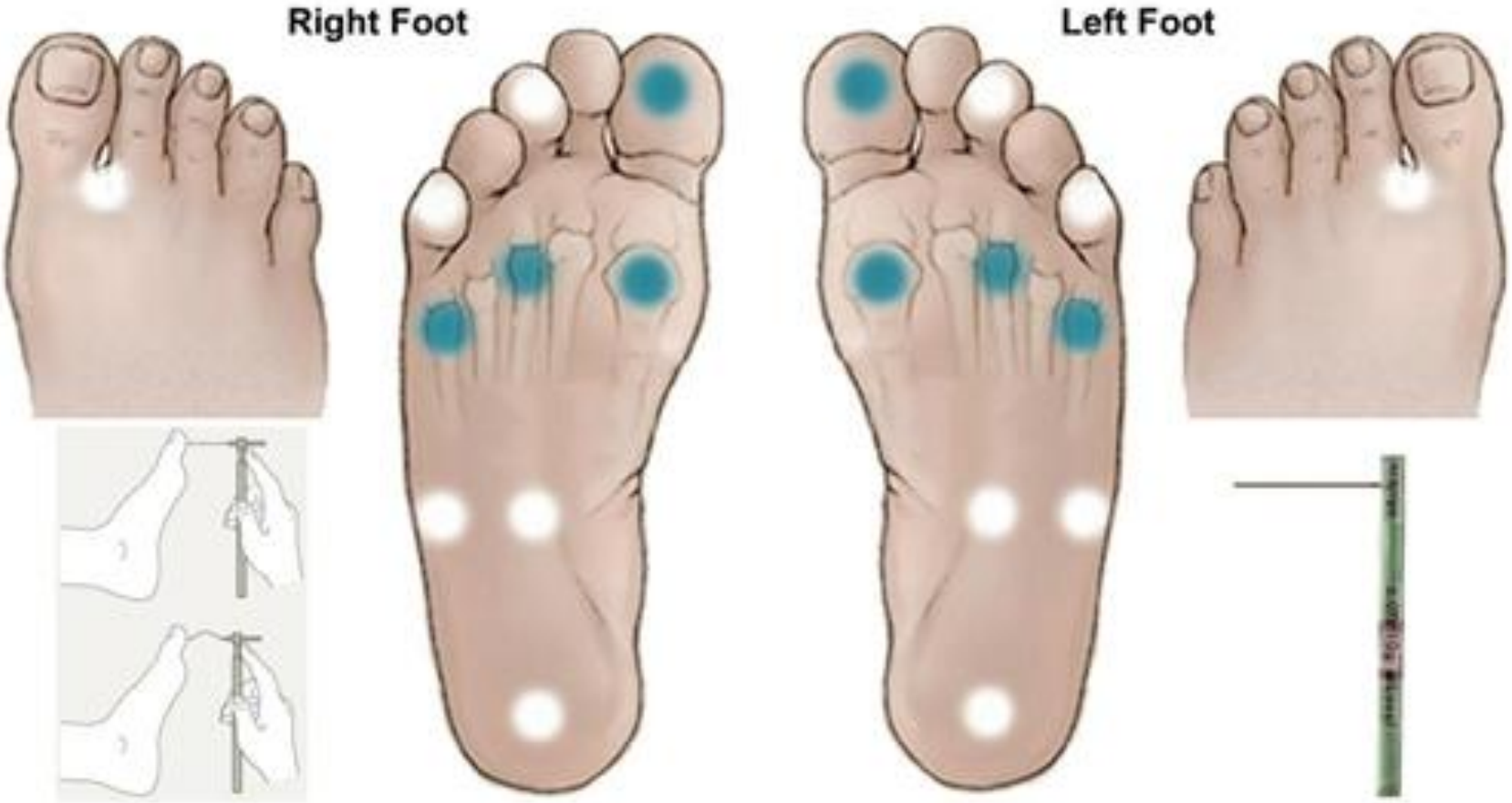
1. Completely Limited= Unresponsive (does not moan, flinch or grasp to painful stimuli) OR limited ability to feel pain over MOST of body

2. Very Limited = Responds only to painful stimuli. Cannot communicate discomfort except by moaning or restlessness OR has sensory impairment which limits the ability to feel pain or discomfort over HALF of body

3. Slightly Limited= Responds to verbal commands, but cannot always communicate discomfort or the need to be turned OR has some sensory impairment which limits ability to feel pain or discomfort in 1 or 2 extremities.

4. No Impairment= Responds to verbal commands, no sensory deficit

Monofilament testing



Checking 4 areas (green spots) is just as good as using 10. Have them lie down and close eyes and ask them to raise their hand or say “yes” when they feel a light touch. Touch their hand so they see what it feels like. Press till nylon bends and hold 1 second. (Can’t do it over callus) If they fail to feel any of the 4 sites notify PCP for further testing and **protect their heels!!**

Linked interventions for sensory

- 4- no impairment: encourage patient to report pain over bony prominences. Check heels daily.
- 3- slightly limited: Inspect skin every shift, especially heels. Provide heel protective devices.
- 2- very limited: Interventions from level 3 plus consider air bed.
- 1- completely limited: Interventions from level 2 & 3 plus pillows between knees.

Moisture subscale

1. Constantly Moist= Skin is kept moist almost constantly by perspiration, urine, etc. Dampness is detected every time patient is moved or turned.

2. Very Moist= Skin is often, but not always moist. Linen must be changed at least once a shift.

3. Occasionally Moist= Skin is occasionally moist, requiring an extra linen change approximately once a day.

4. No Impairment= Skin is clean and dry. Linen only requires changing at routine intervals.

Linked interventions for moisture

- 4. Rarely moist: Encourage use of lotion for dry skin. Encourage patient to report any moisture problems such as in skin folds or perineal area.
- 3. Occasionally moist: Interventions from level 4 plus protective barrier products for any moist areas. Packaged bathing and incontinence cleansers preferred. Routinely check incontinence pads or briefs.
- 2. Often moist: All interventions in levels 3 & 4 plus if stool incontinent consider bowel training and toileting after meals. Consider low air loss bed.
- 1. Constantly moist: All interventions above plus assess skin every shift. Apply external male catheter or penile wrap pad or female external catheter if appropriate. Consider fecal collector if appropriate.

Activity subscale

1. Bedfast= Confined to bed.

2. Chairfast= Ability to walk severely limited or non-existent. Cannot bear own weight and/or must be assisted into chair or wheelchair

3. Walks Occasionally= Walks occasionally during day, but for very short distances, with or without assistance. Spends majority of each shift in bed or chair

4. Walks Frequently= Walks outside room at least twice a day and inside room at least once every two hours during waking hours

Linked interventions for activity

- 4. Walks frequently: encourage ambulation out of room. Check skin daily.
- 3. Walks occasionally: provide structured activity plan. Consider a chair cushion. Consider PT consult.
- 2. Chair fast: Consider a chair cushion. Instruct patient to reposition every 15 minutes- set alarm if appropriate. Stand every hour. PT consult for conditioning and wheelchair assessment.
- 1. Bedfast: Assess skin every shift. Elevate head of bed no more than 30 degrees except 20 minutes for meals, etc. Use turn and position device to position at 30 degree side lying angle. Consider specialty bed. Use heel protectors. PT consult for conditioning and wheelchair assessment. Reposition every 2-4 hours based on overall score and condition, posting a schedule. Remind or assist to do more frequent small shifts.

Mobility subscale

1. Completely Immobile= Does not make even slight changes in body or extremity position without assistance.

2. Very Limited= Makes occasional slight changes in body or extremity position but unable to make frequent or significant changes independently.

3. Slightly Limited= Makes frequent though slight changes in body or extremity position independently.

4. No Limitation= Makes major and frequent changes in position.

Linked Interventions for mobility

- 4. No limitations: Check skin daily. Encourage ambulation outside room BID.
- 3. Slightly limited: Interventions from level 4 plus turn/reposition every 1-2 hours based on total score and condition. Teach or assist with more frequent small shifts. Consult PT for strengthening/conditioning.
- 2. Very limited: Interventions from levels 3 & 4 plus assess skin every shift. Consider a specialty bed. Utilize a turn and position device.
- 1. Completely immobile: Interventions from above levels plus definitely needs specialty bed.

Nutrition subscale

1. Very Poor= Never eats a complete meal. Rarely eats more than 1/3 of any food offered. Eats 2 servings or less of protein (meat or dairy products) per day. Takes fluids poorly. Does not take a liquid dietary supplement OR is NPO and/or maintained on clear liquids or IVs for more than 5 days.

2. Probably Inadequate= Rarely eats a complete meal and generally eats only about 1/2 of any food offered. Protein intake includes only 3 servings of meat or dairy products per day. Occasionally will take a dietary supplement OR receives less than optimum amount of liquid diet or tube feeding

3. Adequate= Eats over half of most meals. Eats a total of 4 servings of protein (meat, dairy products per day. Occasionally will refuse a meal, but will usually take a supplement when offered OR is on a tube feeding or TPN regimen which probably meets most of nutritional needs

4. Excellent= Eats most of every meal. Never refuses a meal. Usually eats a total of 4 or more servings of meat and dairy products. Occasionally eats between meals. Does not require supplementation.

When supplements get sent back or thrown away they can't help the patient!!

Linked interventions for nutrition

- 4. Excellent: Out of bed for all meals. Offer nutritious snacks.
- 3. Adequate: Interventions for level 4 plus record meals for 2 days.
- 2. Probably inadequate: Interventions for levels 3 & 4 plus obtain dietary consult. Offer fluids and nutrition between small meals. Encourage family to bring favorite foods.
- 1. Very poor: Interventions from above plus assess skin every shift.

Friction and shear subscale

1. Problem= Requires moderate to maximum assistance in moving. Complete lifting without sliding against sheets is impossible. Frequently slides down in bed or chair, requiring frequent repositioning with maximum assistance. Spasticity, contractures or agitation leads to almost constant friction.

2. Potential Problem= Moves feebly or requires minimum assistance. During a move skin probably slides to some extent against sheets, chair, restraints or other devices. Maintains relatively good position in chair or bed most of the time but occasionally slides down.

3. No Apparent Problem= Moves in bed and in chair independently and has sufficient muscle strength to lift up completely during move. Maintains good position in bed or chair.

Linked interventions for friction and shear

- 3. No apparent problem: Keep bed linens clean, dry and wrinkle free.
- 2. Potential problem: Intervention from level 3 plus apply silicone bordered foam to sacrum and heels and consider arm sleeves.
- 1. Problem: Interventions from 2 & 3 plus assess skin every shift. For repositioning use mechanical lift or turn and position device. When head of bed elevated also elevate knee gatch to prevent sliding. If up in chair consider chair positioning device.

Risk assessment for Babies and up to age 21

- What about a tool for pediatric patients?
- The Braden QD is the newest revision of the Braden Q and better able to predict both immobility and device associated PI

Curley MAQ, Hasbani NR, Quigley SM , Stellar JJ, Pasek TA, Shelley SS, Kulik LA, Chamblee TB, Dilloway MA, Caillouette CN, McCabe MA , Wypij D. Predicting Pressure Injury Risk in Pediatric Patients: The Braden QD Scale. J Pediatr. 2018 Jan;192:189-195.e2.

Case Study

Mrs. C. has had dementia for many years and is non-verbal and does not follow any commands

Incontinent of bowel and bladder multiple times throughout the day with no indication of awareness

No longer able to bear weight. OOB with mechanical lift and 2 assistants

Weight 95 lbs. Height 5’10”; unable to feed herself

Skin assessment – stage 1 sacrum, bilateral heels with unstageable areas due to dry, black eschar

What did we learn from Module 1??

- How to achieve timely and accurate comprehensive skin assessments
- Deep dive into the Braden Scale and interventions linked to each sub-scale- to create a truly individualized care plan!

Module 2: Identify pressure injury risk factors and create a care plan reflecting risk factors

- We'll get to work beyond the Braden Scale and look at other major risk factors
- We'll finish up our morning together by looking at the interventions for a care plan based on the risk factors and look at some of the devices available to help prevent pressure injuries

Risk factors from acute care study

- 199 patients (cutoff score of 17 as high risk) the total Braden Score was predictive of who would get a PI.
- The activity sub-score (cutoff of 2) was the best predictor of the subscales but all sub-scale scores were independent predictors
- Other risk factors:
- level of consciousness on admission ($P = 0.007$, $\chi^2 = 12.158$)
  - Unresponsive 6X more likely to develop PI than those awake
- presence of comorbidities ($P < 0.001$, $\chi^2 = 46.325$)

Lim E , Mordiffi Z, Chew HSJ, Lopez V. Using the Braden subscales to assess risk of pressure injuries in adult patients: A retrospective case-control study. Int Wound J. 2019 Jun;16(3):665-673.

Diabetes

- Risk from changes in sensation are detected via the Braden BUT-----
- Research shows that in those with sensory and motor neuropathy related to diabetes there will also be impaired microcirculation (next slide)
- Your little monofilament can help you in two ways!! Powerful tool!!

Microcirculatory impairment and diabetic neuropathy go together!

- Microcirculatory impairment was more closely associated with diabetic peripheral neuropathy than age, diabetic duration, smoking, drinking, systolic pressure, serum creatinine, 24-h urinary protein

- This study suggests doing a microcirculation test (nailfold test) RATHER THAN monofilament or vibratory sensation

Hu G , Zhai F , Mo F , He L , Shen W , Wang H. Effectiveness and feasibility of nailfold microcirculation test to screen for diabetic peripheral neuropathy. Diabetes Res Clin Pract. 2017 Sep;131:42-48.

Australian acute care study on risk factors for PI within 36 hours for those over 65 y.o.

- Increased age
- Multiple co-morbidities
- Admission from LTC
  - Why does someone go to LTC?? because of limited mobility and usually multiple co-morbidities

Latimer S , Chaboyer W , Thalib L , McInnes E , Bucknall T , Gillespie BM. Pressure injury prevalence and predictors among older adults in the first 36 hours of hospitalization. J Clin Nurs. 2019 Nov;28(21-22):4119-4127.

Predictors of PI for critically ill adults

- Mean arterial pressure <60 mmHg
- More likely to have lowest Total Braden score up to two weeks prior to the date of HAPI development

Sala JJ , Mayampurath A , Solmos S , Vonderheid SC, Banas M , D'Souza A , LaFond C. Predictors of pressure injury development in critically ill adults: A retrospective cohort study. Intensive Crit Care Nurs. 2021 Feb;62:102924.

How about heels! In a cardiovascular ICU

- You don’t have a CV ICU? Interesting info anyway!
- Predictors for PI: Cardiac surgery ($P < .001$), operation time ($P = .001$), use of a mechanical ventilator ($P < .001$), use of vasoconstrictors ($P < .001$), use of sedative drugs ($P < .001$), and extracorporeal membrane oxygenation treatment ($P < .001$)
- Does any of this surprise you?
- So much is related to either low oxygen or low flow to tissues or BOTH!

Lee HJ, Han MY, Hwang JH, Park KJ, Shin KM, Kim ES, Lee HJ, Lim A, Han EJ, Park JY, Jang YS. Risk factors for heel pressure injury in cardiovascular intensive care unit patients. Int Wound J. 2021 Nov 3. epub online

Predictors of PI during COVID pandemic

- Diagnosis of COVID-19, age, male gender, risk of mortality, severity of illness, and length of stay
- COVID makes sense- oxygen is key!! Anything compromising lungs would increase risk (would be included in 'multiple co-morbidities' as a risk factor)
- They didn't talk about nurse to patient ratios- which we know were not as good during the worst of the pandemic!
- They didn't talk about nurse fatigue or burnout as a factor!

Montgomery AP , Patrician PA, Hall A, Miltner, RS Enogela EM, Polancich S. Modeling Patient Risk for Hospital-Acquired Pressure Injuries During COVID-19: A Retrospective Study. J Nurs Care Qual. 2022 Apr-Jun 01;37(2):162-167.

Another tool to consider

- AHRQ pressure ulcer prevention tool for acute care

- Go to AHRQ.gov
- In search box type in ‘preventing pressure ulcers in hospitals’

- Glance over the table of contents of this tool-kit- especially if you’re working on implementing a PIP program- lots of good resources!

Developing a care plan for prevention of PI

- What interventions can we put into place that can decrease risk of PI?
- **Remember those linked to each of the Braden sub-scale scores**
- Now we'll discuss in detail the interventions most likely to make a difference so your care plan can really be individualized

Pressure redistributing surfaces

- Beds or mattress overlays in some hospitals are good foam pressure redistributing surfaces (check with maintenance whether they are keeping track of when each mattress outdates! If you ever have a lawsuit to deal with you'll be glad you did!)
- Several of the Braden sub-scale scores were linked to air or bumping up the level of mattress so we'll discuss that
- Even if the Braden Scoring does not indicate high risk- consider air for diabetics with neuropathy, very thin or very obese folks (bariatric versions), frail elderly or those with multiple co-morbidities

Cochrane review

- Compared with foam surfaces, reactive air surfaces may reduce pressure ulcer risk and may increase complete ulcer healing.
- Compared with foam surfaces, alternating pressure air surfaces may reduce pressure ulcer risk and are probably more cost-effective in preventing pressure ulcers.
- Compared with foam surfaces, reactive gel surfaces may reduce pressure ulcer risk, particularly for people in operating rooms and long-term care settings.

Shi C , Dumville JC , Cullum N , Rhodes S , McInnes E , Goh EL , Norman G. Beds, overlays and mattresses for preventing and treating pressure ulcers: an overview of Cochrane Reviews and network meta-analysis. Cochrane Database Syst Rev. 2021 Aug 16;8(8):CD013761.

Surface classification review

Foam- a good pressure redistributing foam is fine for those low risk for PI and not a 1 or 2 on the moisture sub-scale

For higher risk or those with an ulcer- air is the the best option

How about your facility??

Evidence on memory foam

- Study compared hospital mattress (with or without air overlay) to viscoelastic foam
- 55 in each group; all high risk per Braden score
- PI incidence in control group was 27.3%
- PI in memory foam group 3.6%

Park KH, Park J. The Efficacy of a Viscoelastic Foam Overlay on Prevention of Pressure Injury in Acutely Ill Patients: A Prospective Randomized Controlled Trial. J Wound Ostomy Continence Nurs. 2017 Sep/Oct;44(5):440-444.

Static air

- This is a plastic bag of air
- It is inflated prior to use, you need to watch that it doesn't get punctured during use for people without sensation or ability to tell you they are lying on the hard bed frame!
- They come either as an overlay to add to a foam mattress (possible entrapment danger with bed rails) or most acute cares have the built in version- air beds
- **They do NOT have a pump attached**

Low air loss (LAL)

- A bag of air with tiny holes in it that has a pump attached and responds to changes in position by moving air around in tubes or cells.
- This is a step above static air- but the Cochrane review did not list it in their review conclusions

- Some versions of low air loss can actually move enough air under the buttocks to keep someone drier if that's an issue- IF YOU DON'T HAVE A BUNCH OF LAYERS UNDER THEM SEPARATING THEM FROM THE AIR!

Alternating air

- Bag of air with a pump that automatically increases and decreases adjacent cells or tubes in order to intermittently off-load various tissues of the weight bearing surface of the body. Some are also LAL
- Disadvantages- makes noise when cycling; some c/o discomfort because some tubes/cells are hard against their tender tissue; requires pump to function
- Advantages- does have some advantage for preventing PIs

High air loss

- Tub or firm mattress edges contain a central bag of silicone type beads
- When air flows through them at a fast rate it makes it like lying on liquid
- Disadvantages- hard to move people (can put air on hold) and no skeletal support (eventually can cause subluxation of shoulders and hips and back pain for many folks
- Advantage- really really redistributes pressure!! Great for a short time after a flap graft or if someone has PI on multiple turning surfaces
- Hybrid is best- still offers ability to raise head of bed a bit- but like water under the trunk where they usually need the most help
- VERY drying- protect a wound (gauze/ABD not enough!!) or it will DIE (desiccation)

Algorithm for choosing support surfaces

- Plenty around- you probably already have one
- Today we'll utilize one from WOCN (Wound Ostomy Continence Nurse) Society website to get more familiar with some of what we've been talking about this morning- developing a care plan

- **Algorithm.Wocn.org**
- **YouTube-** a case study: Support Surface Algorithm | WOCN (9min 15 sec)

Repositioning in bed

- NPIAP says
  - Must turn at risk people on an individualized schedule
  - Reposition so that optimal offloading is achieved
  - Use the 30° lateral side lying position

- Need to get a 30° turn and keep it

European Pressure Ulcer Advisory Panel, National Pressure Injury Advisory Panel, and PanPacific Pressure Injury Alliance. Prevention and Treatment of pressure ulcers/injuries: quick reference guide. Emily Haesler (Ed.). EPUAP/NPIAP/PPPIA: 2019.

Repositioning timing

- Bergstrom study in LTC showed that high risk residents randomized to be turned every 4 hours didn't get more pressure injuries than the group turned every 2! MANY stable people tolerate q4h turning very well (be sure to follow your facility's policy)
- However- it is VERY important to reposition *reliably!*
- Pillows REALLY don't do that!! We know that is true!

Bergstrom N, Horn SD, Rapp MP, Stern A, Barrett R, Watkiss M.J. Turning for Ulcer ReductioN: a multisite randomized clinical trial in nursing homes. Am Geriatr Soc. 2013 Oct;61(10):1705-13.

Timing for repositioning in acute care

- Study in Indonesia compared 2, 3, and 4 hour schedules for turning and found no significant differences in PI incidence
- They did find increased buttock skin temp in 4 hour group- I only had the abstract so I don't know what bed they were on (probably foam)
- They only watched for PI for 2 weeks
- Patients were all high risk and in a 'high dependency unit'

Tarigan S, Yusuf S, Syam Y. Effect of interface pressure and skin surface temperature on pressure injury incidence: a turning schedule pilot study; randomized controlled trial. J Wound Care. 2021 Aug 2;30(8):632-641.

Evidence for using repositioning devices rather than pillows

- Research in an ICU setting tells us:
  - Using pillows, disposable underpads: 28% developed a Stage 2 sacral HAPI
  - Using turn assist devices and larger disposable airflow type underpads: **no** patients developed sacral HAPI (P <0.0001)
  - Time saved using device (mean difference) **12.76** minutes (P = 0.0006)

Hall KD, Clark RC. A Prospective, Descriptive, Quality Improvement Study to Investigate the Impact of a Turn-and-Position Device on the Incidence of Hospital-acquired Sacral Pressure Ulcers and Nursing Staff Time Needed for Repositioning Patients. Ostomy Wound Manage. 2016 Nov;62(11):40-44.

More evidence for devices vs pillows as standard of care

227 at risk patients in 16 US hospitals:

- Compliance to repositioning frequency increased significantly!!
- Correct positioning went from **34.6% to 69.6%!!**
- **Fewer PI incidents occurred!!**
- **Labor costs related to repositioning**

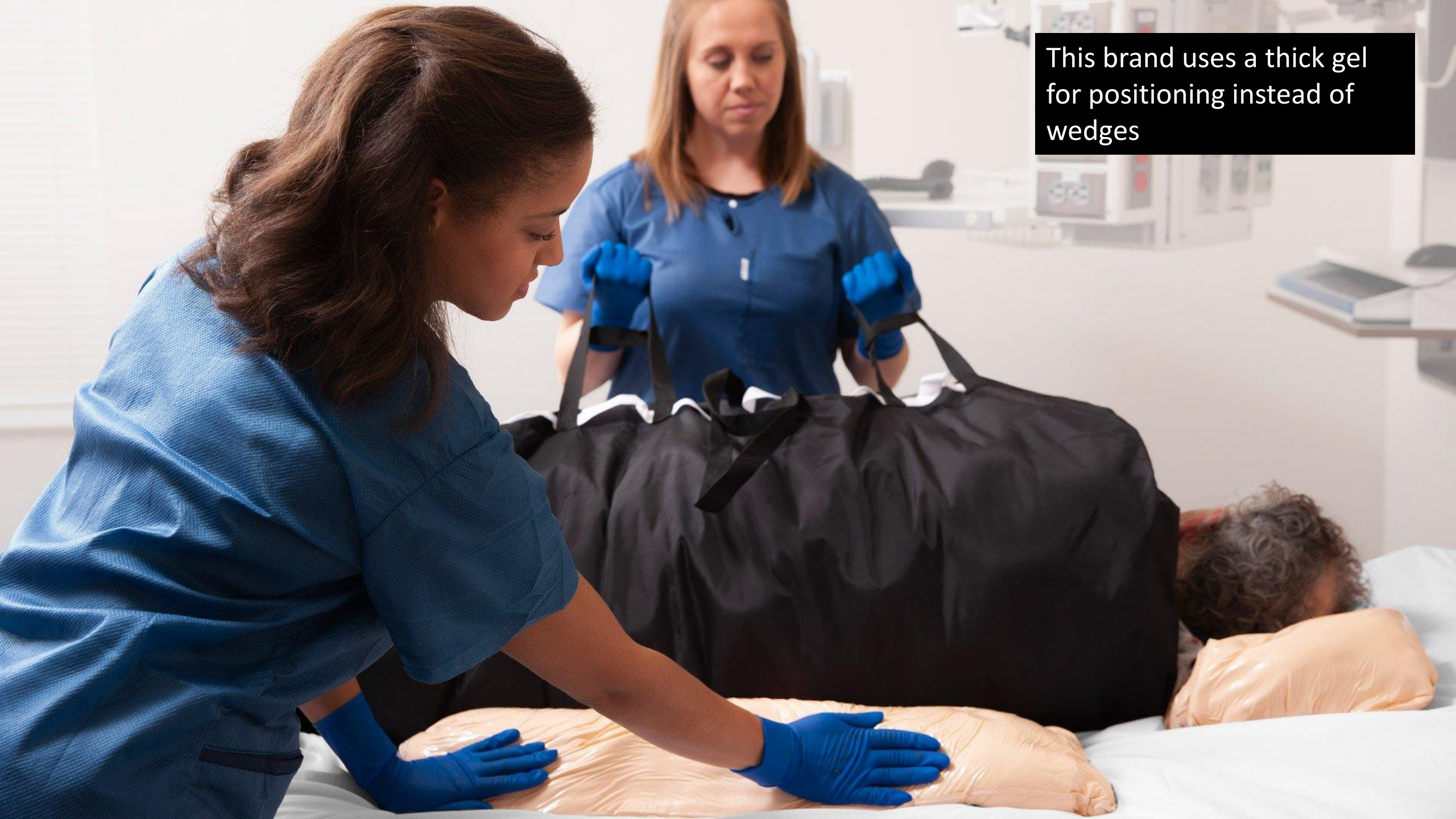
  decreased significantly!!

De Meyer D, Van Hecke A, Verhaeghe S, Beeckman D. PROTECT – Trial: A cluster RCT to study the effectiveness of a repositioning aid and tailored repositioning to increase repositioning compliance. J Adv Nurs. 2019;75:1085–1098.

Repositioning

- #1 cause of injury among hospital bedside staff
- We are not going to get more help
- We must have tools to help ourselves- and use them!

Olinski C, Norton CE. Implementation of a Safe Patient Handling Program in a Multihospital Health System From Inception to Sustainability: Successes Over 8 Years and Ongoing Challenges. Workplace Health Saf. 2017 Nov;65(11):546-559.


This brand uses a thick gel for positioning instead of wedges

Wedges

Example of wedge type system

The Low-Friction Glide Sheet works with the Anchor Wedge System to provide true friction and shear protection.

The top of the Glide Sheet has Dermasuede material, which grips the M² Microclimate Body Pad and keeps it in place.

MINIMIZE FRICTION AND SHEAR

REDUCE PRESSURE

The Body Wedge System reduces pressure by offloading the patient's sacrum. The system significantly reduces the exertion needed to achieve proper side lying positioning.

The Anchor Wedge helps the patient maintain a natural position when the head of the bed is raised. It also reduces the need for boosting and minimizes shear and friction.

PROTECT STAFF

The boost straps promote proper body mechanics and reduce the reliance on grip strength.

LESS EXERTION

A quick, gentle microturn positions the patient at the appropriate angle.

MANAGE MOISTURE

The M² Microclimate Body Pad protects the patient's skin by effectively absorbing and locking in moisture while allowing air to flow through.

Wedge type positioner with undersheet that floats on air- great for bariatrics

Another example of a wedge type system

Gel type system special for OR tables.
Pillows can be used anywhere

Protecting heels and ankles

- Some beds claim to have a heel protection feature- but the 2019 NPIAP guidelines still say to **off-load heels completely**
- Again I ask you- do **pillows** actually work!!
- The truth is that for the vast majority they DO NOT- rare exception

- ’Heel protectors’ also do not work (the soft cup held ‘in place’ by a strap)
- They cannot ‘off-load’ the heel completely!!

Oh yes- let's look at pillows

- Randomized controlled trial in surgical ICU
- **None** of the patients in the intervention group developed HAPI of the heels, as compared to 7 in the pillow group (**0% vs 41%, P < .001**)
- Researcher also found **less foot drop** in the device group

Meyers T. Prevention of Heel Pressure Injuries and Plantar Flexion Contractures With Use of a Heel Protector in High-Risk Neurotrauma, Medical, and Surgical Intensive Care Units: A Randomized Controlled Trial.. J Wound Ostomy Continence Nurs. 2017 Sep/Oct;44(5):429-433.

Boot choices- and a caution

Boots are a great option- to **encourage** bed mobility! However- beware of the **BRACE!**

- Boots with a brace attached (AFO, podus, etc) are for <u>footdrop</u> or ambulating with a plantar heel ulcer!
- **They increase** the risk of pressure ulcers (from brace on boot!!)
- **If** an AFO is necessary for footdrop- PT to evaluate and fit; use one- trade foot to foot as you reposition the person every 2- 4 hours and prn

More care plan choices for prevention of PI

- Other interventions we spoke of for preventing PI by preventing/treating moisture associated skin damage include:

- Microclimate modifiers
- Incontinent cleansing options
- Skin protectants/barriers
- Male and female external urinary collection devices
- Fecal collection devices

Microclimate modifiers

- Helpful to reduce heat, moisture and friction
- Improves comfort but also decreases unwanted **FRICTION- real big deal!**

- Devices use low air loss and/or reduced friction and shear layers over mattress or overlay
  - Mattress cover examples: Joern's **ClimateCare™** and KCI's **Skin IQ™**
  - Low friction, wicking linen- **DermaTherapy®** by Standard Textile

Important definitions

- **Friction** is what happens when 2 surfaces slide across each other
  - On skin it can cause abrasions and skin tears- but NOT PIs!
- **Shear** is what happens when skin sticks to something (sheets, back of chair, etc) and gravity pulls down the skeleton inside- this kinks off blood vessels and eventually causes ischemia and may result in PI- especially deep tissue PI!!

- Keeping skin dry is an important part of preventing shear. Moist skin sticks to sheets, chair backs, etc and can cause shear injuries!

Skin protectants, barriers and cleansers

- These are important parts of excellent incontinence care
- **IAD has been linked to pressure injury** so we know that preventing/treating IAD is key to preventing PI in the most frequent PI site which is the sacrum
- We'll take a look at what the state of art is for incontinence care

Gray M, Giuliano KK. Incontinence-Associated Dermatitis, Characteristics and Relationship to Pressure Injury: A Multisite Epidemiologic Analysis. J Wound Ostomy Continence Nurs. 2018 Jan/Feb;45(1):63-67.

Abstract

Incontinence-associated dermatitis (IAD) is a common type of irritant contact dermatitis, seen in patients with urinary or faecal incontinence. Mechanical factors such as traumata and friction may aggravate the lesions. The fragile skin in elderly patients is more prone to developing IAD. Both categories may be associated with clinical signs of major colonisation or infection. It is important to distinguish IAD from pressure ulcers and other dermatoses in the genital region. Due to the lack of well-established clinical trials, recommendations about prevention and treatment are based on expert opinion and best practice. **Gentle cleansing, use of hydrating topical agents and application of barrier products are the main elements in the prevention and treatment of IAD.** It is important to translate these recommendations and general guidelines into ready-to-use protocols that can be implemented for each specific clinical manifestation of IAD.

Beele H , Smet S , Van Damme N , Beeckman D. Incontinence-Associated Dermatitis: Pathogenesis, Contributing Factors, Prevention and Management Options. Drugs Aging. 2018 Jan;35(1):1-10.

How can we do better??

- Keep skin dry, acidic, protected
  - (from moisture, pressure, friction and scrubbing)
- Consistency really counts
- Let's get better at identifying IAD vs PI vs ITD vs friction/abrasions

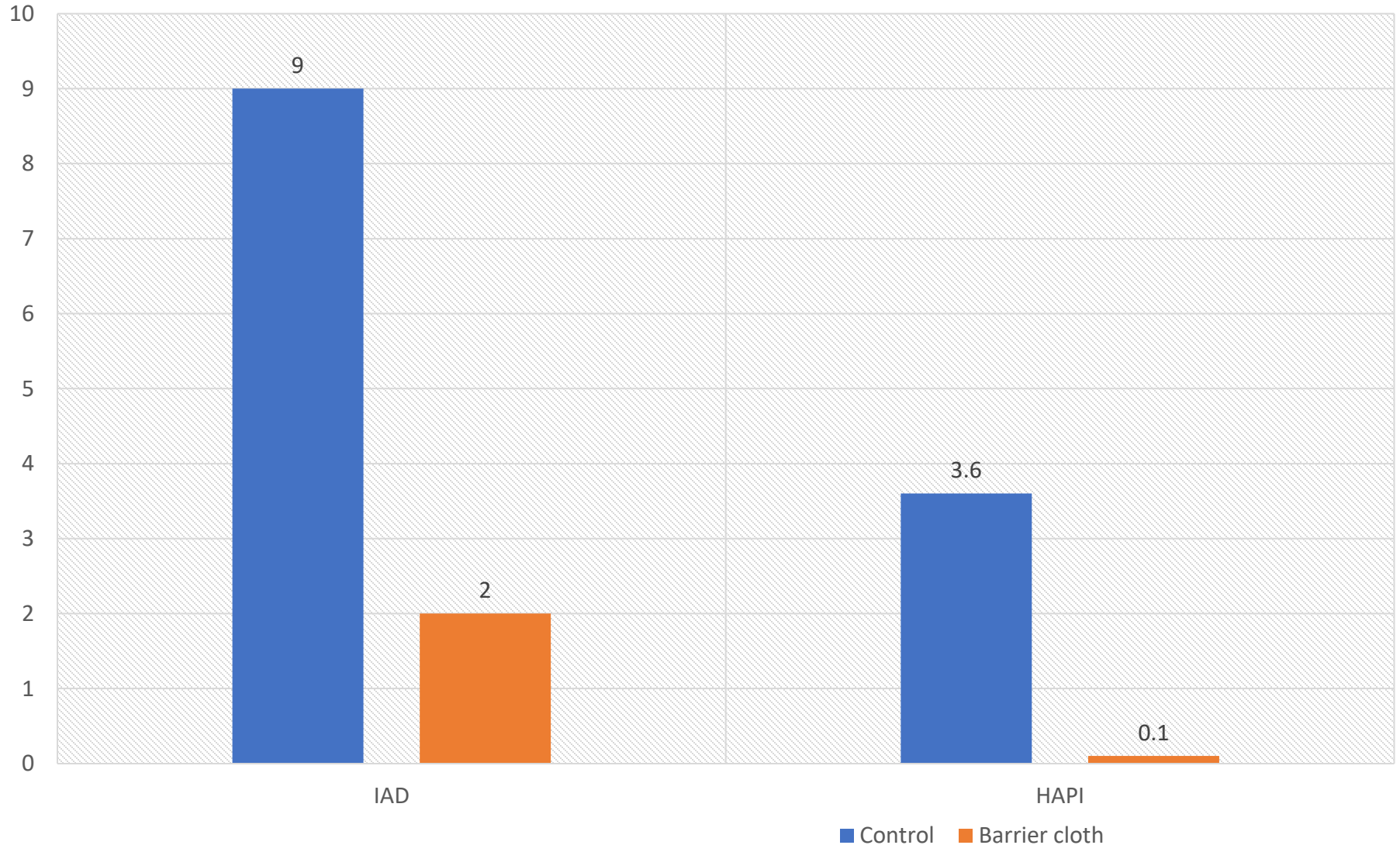
IAD= incontinence associated dermatitis
PI= pressure injury
ITD= intertriginous dermatitis (moisture injury in folds of skin)

QI study on 2 neuro units

- Did staff education and switched to a cleanse, moisturize, protect type disposable incontinence cleansing wipe
- They did see a significant decrease in **hospital acquired pressure injuries**, not in IAD

Hall KD , Clark RC. A Prospective, Descriptive, Quality Improvement Study to Decrease Incontinence-Associated Dermatitis and Hospital-Acquired Pressure Ulcers. Ostomy Wound Manage. 2015 Jul;61(7):26-30.

Barrier cream cloths in Australia



Barakat-Johnson M, Lai M, Wand T, Coyer F, White K. Cultivating Incontinence-associated Dermatitis Prevention Practices in an Australian Local Health District: A Quasi-experimental Study. Ostomy Wound Manage. 2018 Dec;64(12):16-28.

IHI.ORG website – many resources!

Their pressure injury prevention toolkit is available (Adobe files, poster or web based education all available for your use for free!)
http://www.ihi.org/resources/pages/tools/howtoguidepreventpressureulcers.aspx

"Provide pre-moistened, disposable barrier wipes to help cleanse, moisturize, deodorize, and protect patients from perineal dermatitis from incontinence."

Institute for Healthcare Improvement

Protective creams/ointments/barriers

- Protecting skin is a great way to reduce PI risk!!
- Many products available and all have a great use- if we know it :)

- We'll talk about oils, dimethicone and zinc oxide products
- There are also many combination products- just look at yours to see what the primary ingredient is

Skin care products for dry skin

- Water (lotion)- not best on top of VERY dry skin!
  - It evaporates- that causes more drying!

Best to **ingest** water and **healthy oils**!

To put on VERY dry skin:

- Emollients - help elasticity, decrease friction
- Protectants- help with the barrier function
  - Oils (animal, vegetable or mineral)
  - Dimethicone

Oils (emollients)

(Vaseline®, A&D®, Aloe Vesta®, Aquaphor®; olive, coconut, almond, corn, tea tree, shea, jojoba, argan; cod liver oil, lanolin, emu…)

- Great to help **DRY** skin issues
- Oily barriers are often less expensive but they decrease absorption of underpads and briefs for incontinence
- Not as helpful for weepy or sweaty skin (oil holds water in, slows evaporation)

Dimethicone skin barriers

Hydraguard® (Medline); Renew® (DermaRite);
Proshield® Plus (Healthpoint); Secura® (Smith & Nephew);
and any ‘all-in-one’ incontinence products

- Breathable and still protects skin
- Does **not** decrease absorbency of pads/briefs
- **Best when built-in to a product to assure use EVERY time**

Zinc oxide barriers

(Desitin®, EPC®, Z-Guard®, SensiCare®, Criticaid®, Calazime®, Calmoseptine® …)

- Very protective; slightly drying (astringent)
- Remove on bath day, not with each cleaning

  Remove zinc oxide after mixing **oil** into it- NO SCRUBBING!! Please

Use an **application pad** for zinc oxide paste
(Telfa™, ABD, B-Sure®
pads, disposable dry wipes… NOT gauze)

Apply THIN LAYER of zinc oxide to pad, gently tuck into cleft.
(no tape!) **Painless** and EFFECTIVE application of the thick zinc oxide!!!

If we can do it, shouldn't we do it?

B-Sure™ From Birchwood Labs

Spray-on ‘micro-fine’ zinc

- These products are not as long-lasting or quite as drying as zinc oxide paste but they allow VERY GENTLE, PAINLESS care in case staff chooses NOT to put the thick paste on a pad to apply or staff is still SCRUBBING
- Excellent option for scrotal erosion

- Rash Relief® (Crawford Healthcare)
- (25% zinc oxide/20% dimethicone)

- Dr Smiths® Adult Barrier Spray (Mission Pharma) (
- 10% zinc oxide)

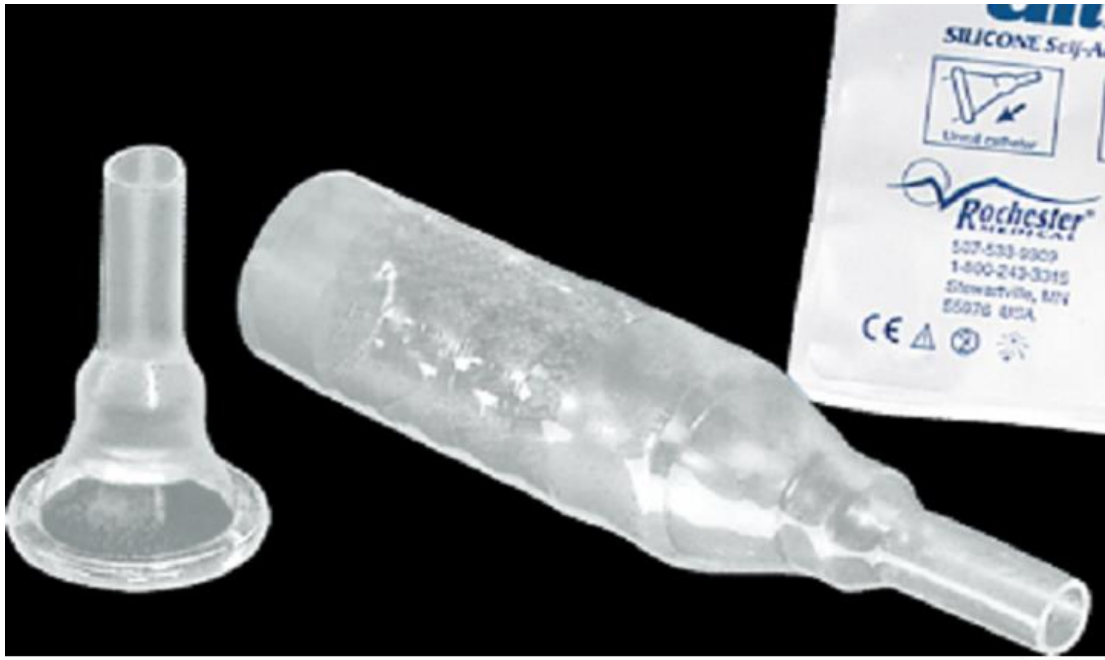
More skin protection tools

- Consider using non-invasive devices
- Male condom catheters
  - Many available
  - Must size correctly
  - Must use correctly or erosion may occur

Sinha AK, Kumar N, Kumar A, Singh S. Condom catheter induced penile skin erosion. J Surg Case Rep. 2018 Oct 22;2018(10):rjy275.

Male external caths

Must be sized correctly
Many times are not successful
Work great if you get them to stay on- worth a try



Quick Change™ wrap for men

- Being used in some Nebraska CHI hospitals- any of you use them?
- Can hold 500cc and a change takes about 60 seconds
- Primarily for minimally ambulatory, bedbound or chairbound men

- There is an 18 minute You Tube video that includes- standard application and
- Tips for use with heavy voiders (younger men or anyone on diuretics)
- Tips for application for bariatric men
- Tips for use when there is scrotal edema

External female collection devices

- Very soft core contours between labia
- One has a silicone suprapubic adhesive pad that secures
- Connects to continuous wall suction or portable unit

Beeson T and Davis C. Urinary Management With an External Female Collection Device. J Wound Ostomy Continence Nurs. 2018 Mar; 45(2): 187–189.

Incontinence pads

- Avoid those pads with a plastic back for anyone with a Braden moisture score of 2 or 1- use the dry flow type with polymer beads

- Important to use a good one that can be relied on- otherwise staff will use more layers- like a plastic backed pad, then a cloth pad, then the air flow pad- you aren't getting the benefit of the bed with that many layers!! And extra layers end up INCREASING the risk of PI!

Kayser SA, VanGilder CA, Lachenbruch C. Predictors of superficial and severe hospital-acquired pressure injuries: A cross-sectional study using the International Pressure Ulcer Prevalence™ survey. Int J Nurs Stud. 2019 Jan;89:46-52.

Fecal collectors

Zhang Y, Leng M, Guo J, Duan J, Wang Z. The effectiveness of faecal collection devices in preventing incontinence-associated dermatitis in critically ill patients with faecal incontinence: A systematic review and meta-analysis. Aust Crit Care. 2021 Jan;34(1):103-112.

TIP- still need zinc oxide around anus

A tool for assessing and interventions for IAD

- IAD-IT developed when I did my incontinence research and realized there was not an easy to use tool for bedside providers to classify IAD or any linked interventions
- If you decide to use it for education in your facility kindly email me to get permission (because I like to keep track of where and how it's being used)
- It's been translated into several different languages for research purposes but only English is available currently

What did we learn from Module 2??

- We learned to recognize risk factors beyond what the Braden gives us
- We learned about interventions for a great care plan to prevent PI

Module 3: 2016 staging system and recognizing each stage

- Latest guidelines for prevention and management are from 2019
- Latest staging system is from 2016

- We'll connect the dots between the definitions in the staging system and some pics of real people who had each stage as we work to increase our detective skills

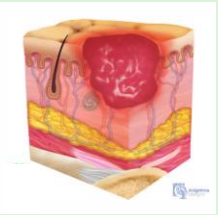
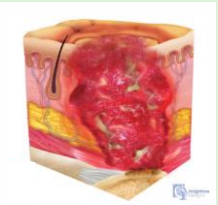
What are Pressure injuries?

- Compressed soft tissue between a bony prominence (or a device) and a surface - causing **ischemia** – resulting in tissue injury or death
- Staging re-defined by NPUAP in 2016

NPUAP= National Pressure ulcer Advisory Panel
Now NPIAP= because ‘ulcer’ became ‘injury’

Free at NPIAP.org

DTPI, unstageable and mucosal injuries also available

DEFINITION	SCHEMATIC DRAWING	EXAMPLE
STAGE 1 PRESSURE INJURY **Non-blanchable erythema of intact skin** Intact skin with a localized area of non-blanchable erythema, which may appear differently in darkly pigmented skin. Presence of blanchable erythema or changes in sensation, temperature, or firmness may precede visual changes. Color changes do not include purple or maroon discoloration; these may indicate deep tissue pressure injury.		
STAGE 2 PRESSURE INJURY **Partial-thickness skin loss with exposed dermis** Partial-thickness loss of skin with exposed dermis. The wound bed is viable, pink or red, moist, and may also present as an intact or ruptured serum-filled blister. Adipose (fat) is not visible and deeper tissues are not visible. Granulation tissue, slough and eschar are not present. These injuries commonly result from adverse microclimate and shear in the skin over the pelvis and shear in the heel. This stage should not be used to describe moisture associated skin damage (MASD) including incontinence associated dermatitis (IAD), intertriginous dermatitis (ITD), medical adhesive related skin injury (MARSI), or traumatic wounds (skin tears, burns, abrasions).		
STAGE 3 PRESSURE INJURY **Full-thickness skin loss** Full-thickness loss of skin, in which adipose (fat) is visible in the ulcer and granulation tissue and epibole (rolled wound edges) are often present. Slough and/or eschar may be visible. The depth of tissue damage varies by anatomical location; areas of significant adiposity can develop deep wounds. Undermining and tunneling may occur. Fascia, muscle, tendon, ligament, cartilage or bone are not exposed. If slough or eschar obscures the extent of tissue loss this is an Unstageable Pressure Injury.		
STAGE 4 PRESSURE INJURY **Full-thickness loss of skin and tissue** Full-thickness skin and tissue loss with exposed or directly palpable fascia, muscle, tendon, ligament, cartilage or bone in the ulcer. Slough and/or eschar may be visible. Epibole (rolled edges), undermining and/or tunneling often occur. Depth varies by anatomical location. If slough or eschar obscures the extent of tissue loss this is an Unstageable Pressure Injury.		

2016 definition:

“A pressure injury is localized damage to the skin and/or underlying soft tissue usually over a bony prominence or related to a medical or other device. The injury can present as intact skin or an open ulcer and may be painful. The injury occurs as the result of intense and/or prolonged pressure or pressure in combination with shear. The tolerance of soft tissue for pressure and shear may also be affected by microclimate, nutrition, perfusion, co-morbidities and condition of the soft tissue.”

Stage 1 Pressure Injury: Non-blanchable erythema of intact skin

"Intact skin with a localized area of non-blanchable erythema, which may appear differently in darkly pigmented skin. Presence of blanchable erythema or changes in sensation, temperature, or firmness may precede visual changes. Color changes do not include purple or maroon discoloration; these may indicate deep tissue pressure injury."

Anrys C, Van Tiggelen H, Verhaeghe S, Van Hecke A , Beeckman D. Independent risk factors for pressure ulcer development in a high-risk nursing home population receiving evidence-based pressure ulcer prevention: Results from a study in 26 nursing homes in Belgium. Int Wound J. 2019 Apr;16(2):325-333.

The aim of this study was to identify independent risk factors for pressure ulcer (PU) development in a high-risk nursing home population receiving evidence-based PU prevention. This study was part of a randomised controlled trial examining the (cost-)effectiveness of static air support surfaces compared with alternating pressure air mattresses. The sample consisted of 308 residents at a high risk of PU development (presence of non-blanchable erythema, Braden score ≤ 12 or Braden subscale "mobility" ≤ 2). PU incidence was monitored for 14 days. Demographic variables; functional, physical, and psychological characteristics; and data on skin assessment were collected. Independent risk factors were identified using multiple logistic regression analysis. The overall PU incidence (category II-IV) was 8.4% (n = 26), and 1.9% (n = 6) of the residents developed a deep PU (category III-IV). **PUs (category II-IV) were significantly associated with non-blanchable erythema**, a lower Braden score, and pressure area-related pain in high-risk residents even if preventive care was provided. These results highlight the need of a systematic risk assessment, including pain assessment and skin observations, in order to determine and tailor preventive care to the needs of high-risk individuals.

Stage 2 Pressure Injury: Partial-thickness skin loss with exposed dermis

"Partial-thickness loss of skin with exposed dermis. The wound bed is viable, pink or red, moist, and may also present as an intact or ruptured serum-filled blister. Adipose (fat) is not visible and deeper tissues are not visible. Granulation tissue, slough and eschar are not present. These injuries commonly result from adverse microclimate and shear in the skin over the pelvis and shear in the heel. This stage should not be used to describe moisture associated skin damage (MASD) including incontinence associated dermatitis (IAD), intertriginous dermatitis (ITD), medical adhesive related skin injury (MARSI), or traumatic wounds (skin tears, burns, abrasions)."

Stage 3 Pressure Injury: Full- thickness skin loss

"Full-thickness loss of skin, in which adipose (fat) is visible in the ulcer and granulation tissue and epibole (rolled wound edges) are often present. Slough and/or eschar may be visible. The depth of tissue damage varies by anatomical location; areas of significant adiposity can develop deep wounds. Undermining and tunneling may occur. Fascia, muscle, tendon, ligament, cartilage and/or bone are not exposed. If slough or eschar obscures the extent of tissue loss this is an Unstageable Pressure Injury."

Stage 4 Pressure Injury: Full- thickness skin and tissue loss

"Full thickness skin and tissue loss with exposed or directly palpable fascia, muscle, tendon, ligament, cartilage or bone in the ulcer. Slough and/or eschar may be visible. Epibole (rolled edges), undermining and/or tunneling often occur.
Depth varies by anatomical location. If slough or eschar obscures the extent of tissue loss this is an Unstageable Pressure Injury."

Unstageable Pressure Injury: Obscured full-thickness skin and tissue loss

"Full thickness skin and tissue loss in which the extent of tissue damage within the ulcer cannot be confirmed because it is obscured by slough or eschar.
If slough or eschar is removed, a Stage 3 or Stage 4 pressure injury will be revealed. Stable eschar (i.e. dry, adherent, intact without erythema or fluctuance) on an ischemic limb or the heel(s) should not be removed."

Deep Tissue Pressure Injury: Persistent non-blanchable deep red, maroon or purple discoloration

"Intact or non-intact skin with localized area of persistent non-blanchable deep red, maroon, purple discoloration or epidermal separation revealing a dark wound bed or blood filled blister. Pain and temperature change often precede skin color changes. Discoloration may appear differently in darkly pigmented skin. This injury results from intense and/or prolonged pressure and shear forces at the bone-muscle interface. The wound may evolve rapidly to reveal the actual extent of the tissue injury, or may resolve without tissue loss. If necrotic tissue, subcutaneous tissue, granulation tissue, fascia, muscle or other underlying structures are visible, this indicates a full thickness pressure injury (Unstageable, Stage 3 or Stage 4). Do not use DTPI to describe vascular, traumatic, neuropathic, or dermatologic conditions."

Medical Device Related Pressure Injury: This describes an etiology. Use the staging system to stage

This describes the etiology of the injury. Medical device related pressure injuries result from the use of devices designed and applied for diagnostic or therapeutic purposes. The resultant pressure injury generally conforms to the pattern or shape of the device. The injury should be staged using the staging system.

Mucosal Membrane Pressure Injury:

Mucosal membrane pressure injury is found on mucous membranes with a history of a medical device in use at the location of the injury. Due to the anatomy of the tissue these injuries cannot be staged.

What did we learn from module 3?

We delved deeply into the 2016 NPIAP staging system
We learned to recognize characteristics of each stage using case studies

Module 4: Differentiate PI on sacral/perineal area from other superficial skin injuries and Using the 2019 NPIAP Guideline

- Consider those pesky sacral/buttock area ulcers – let's see how to best decide what the most likely PRIMARY cause is- ischemia (PI) or IAD, ITD, abrasion, etc…

- Looking at specific recommendations from the 2019 guideline- how can we incorporate excellent interventions into our care plan?

Identifying IAD vs PI

- Location - bony prominence or under device = PI
- Shape/depth (Localized??)
  - Shape of underlying bone or device = PI
  - Full thickness = PI or infected wound
- Color
  - Deep purple/indurated= likely deep tissue pressure injury
  - Faded purple/soft may be resolving inflammation or old bruising

Get a good look AND feel!

On fleshy prominence – more likely IAD or abrasion

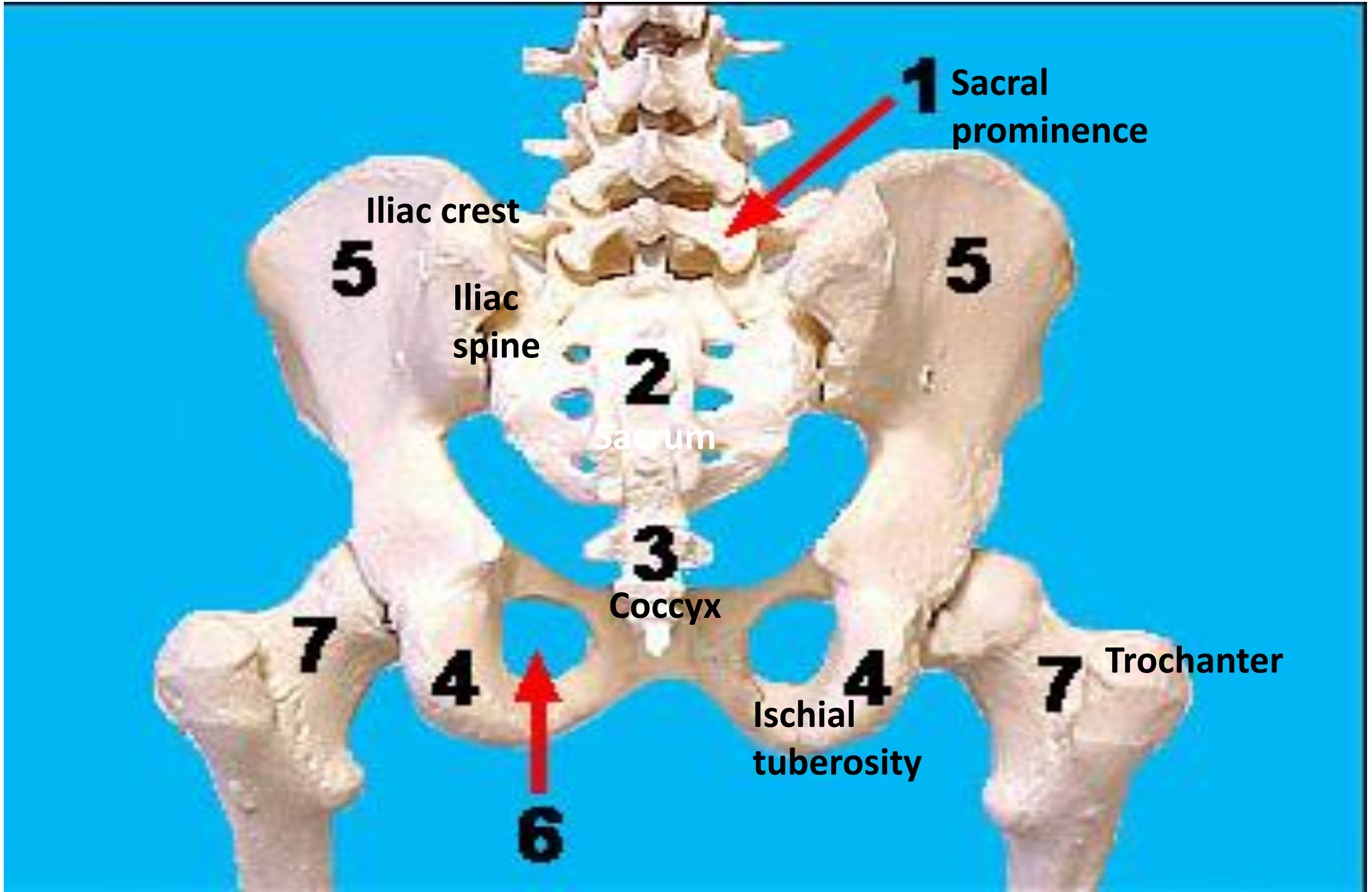
Berke CT. Pathology and clinical presentation of friction injuries: case series and literature review. J Wound Ostomy Continence Nurs. 2015 Jan-Feb;42(1):47-61.

Differentiation

- Buttocks and low back (sacral) are the most difficult areas
- Stage 2 PI vs ‘other’ – often a tough call!

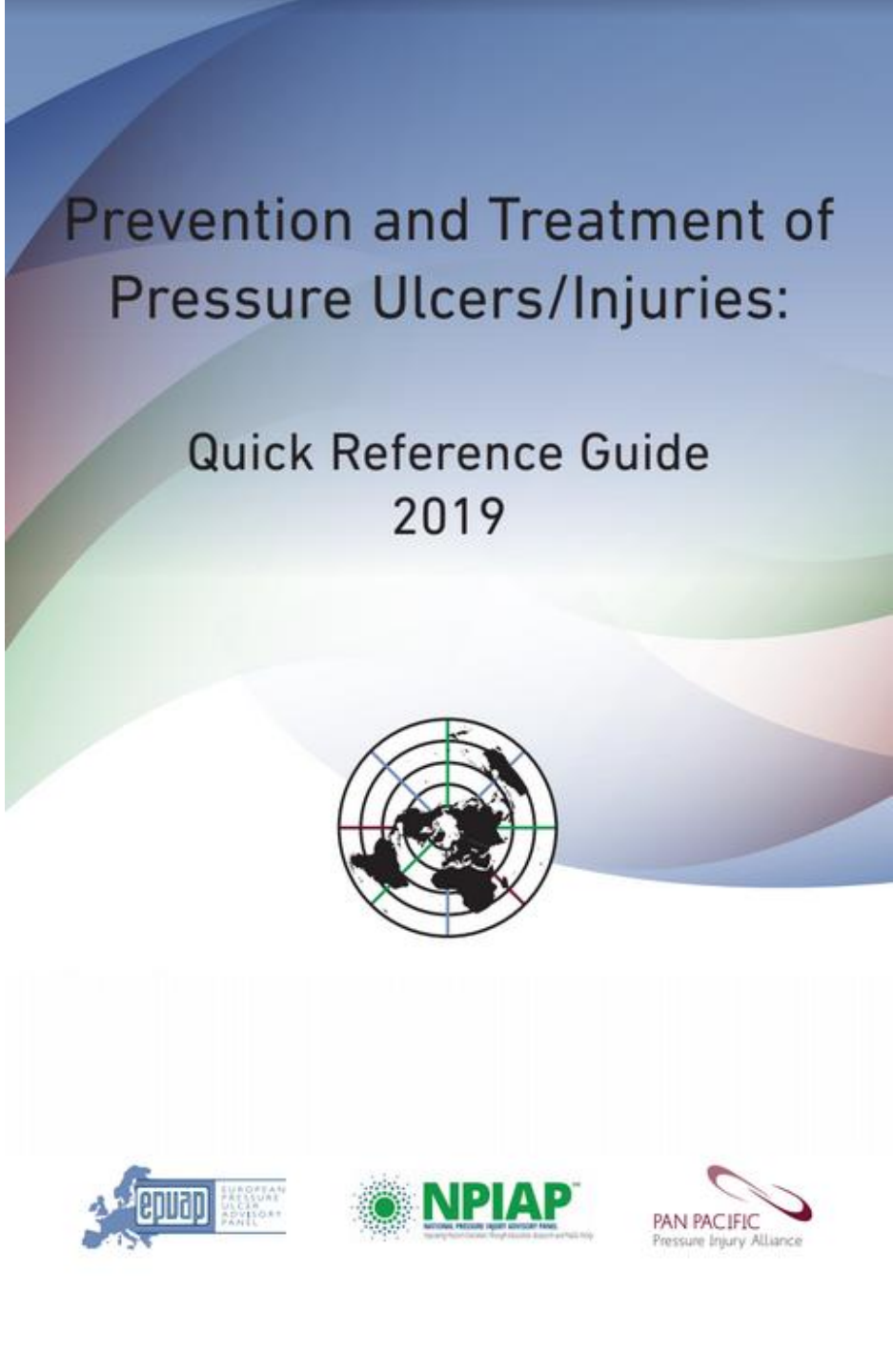
‘Other’ = Moisture associated skin damage (MASD), incontinence associated dermatitis (IAD), intertriginous dermatitis (ITD), abrasions, etc…

- Best to determine where bony prominences are!


1
Sacral prominence
Iliac crest
5
5
Iliac spine
2
Sacrum
3
Coccyx
7
4
4
7
Trochanter
Ischial tuberosity
6

2019 World PI guidelines

European Pressure Ulcer Advisory Panel, National Pressure Injury Advisory Panel, and PanPacific Pressure Injury Alliance. Prevention and Treatment of pressure ulcers/injuries: quick reference guide. Emily Haesler (Ed.). EPUAP/NPIAP/PPPIA: 2019.



Stage 1 recommendations

- “Consider them to be at risk for Stage 2 or greater injuries”

- “For individuals at risk of heel pressure injuries and/or with Stage 1 or 2 PI, elevate the heels using a specifically designed heel suspension device or a pillow/foam cushion. **Offload the heel completely** in such a way to distribute the weight of the leg along the calf without placing pressure on the Achilles tendon and the popliteal vein.”

Stage 2 recommendations

- “Provide high-calorie, high protein, arginine, zinc and antioxidant oral nutritional supplements or enteral formula for adults with a Stage 2 or greater PI who are malnourished or at risk of malnutrition.”
- “Use hydrocolloid dressings for non-infected Stage 2 PI as indicated by the clinical condition of the pressure injury.”
- “Use hydrogel dressings for non-infected Stage 2 PI as indicated by the clinical condition of the PI.”
- “Use polymeric dressings for non-infected Stage 2 PI as indicated by the clinical condition of the PI.”
- “Use foam dressings (including hydropolymers) for Stage 2 and greater PI with moderate/heavy exudate.”
- “Administer pulsed current electrical stimulation to facilitate wound healing in recalcitrant Stage 2 and greater PI.”

Stage 3 and greater recommendations

- “For individuals with a Stage 3 or greater PI, elevate the heels using a specifically designed heel suspension device offloading the heel completely in such a way as to distribute the weight of the leg along the calf without placing pressure on the Achilles tendon and the popliteal vein.”
- “Assess relative benefits of using an air fluidized bed to facilitate healing while reducing skin temperature and excess hydration for individuals with Stage 3 or 4 PI.”
- “Debride the PI of devitalized tissue and suspected or confirmed biofilm and perform maintenance debridement until the wound bed is free of devitalized tissue and covered with granulation tissue.”

Stage 3 and greater **infection control** recommendations

- “Use cleansing solutions with antimicrobials to clean PI with suspected or confirmed infection.“
- “Use topical antiseptics in tissue-appropriate strengths to control microbial burden and to promote healing in PI that have delayed healing.”
- “Use topical antiseptics that are active against biofilm in tissue-appropriate strengths in conjunction with regular debridement to control and eradicate suspected (or confirmed) biofilm in PI with delayed healing.”
- “Use systemic antibiotics to control and eradicate infection in individuals with PI and clinical evidence of systemic infection.”

Stage 3 and greater **dressing** recommendations

- “Use a hydrogel dressing for non-infected Stage 3 and 4 PI with minimal exudate.”
- “Use calcium alginate dressings for Stage 3 and 4 PI with moderate exudate.”
- “Use super-absorbent wound dressings with a high capacity for absorption to manage heavily exuding PI.”
- “Use moist gauze dressings to maintain an appropriately moist wound environment when advanced wound dressings are not an option.”
- “Consider applying collagen dressings to non-healing PI to improve rate of healing and decrease signs and symptoms of inflammation.”
- “Consider applying platelet-rich plasma or platelet-derived growth factor for promoting healing in Stage 3 and 4 PI.”

Stage 3 and greater- **biophysical agents**

- “Administer pulsed current electrical stimulation to facilitate wound healing in recalcitrant Stage 2 and greater PI.”
- “Consider using non-contact low-frequency ultrasound therapy as an adjunct therapy to facilitate healing in Stage 3 or 4 PI and DTPI.”
- “Consider using high frequency ultrasound therapy at 1MHz as an adjunct therapy to facilitate healing in Stage 3 and 4 PI.”
- “Consider negative pressure wound therapy as an early adjunct therapy for reducing the size and depth of Stage 3 and 4 PI.”
- “Obtain a surgical consultation for an individual with a PI that: has advancing cellulitis or is a suspected source of sepsis; has undermining, tunneling , sinus tracts and/or extensive necrotic tissue not easily removed by conservative debridement; is Stage 3 or 4 and not closing with conservative treatment.”

Deep Tissue PI recommendations

- Non-contact ultrasound is the only one mentioned for DTPI

- Since shearing is usually a component of this type of PI consider:
  - Sliding causes friction, but if they're a bit moist that also can cause shearing
  - Is the person **STAYING** in position when repositioned
  - Re-evaluate how they are being transferred out of bed
- Consider overall goals and expected outcomes and evaluate whether an air mattress may be helpful

Unstageable PI recommendations

- “Avoid disturbing stable, hard, dry eschar in ischemic limbs and heels, unless infection is suspected”

- Part of the definition from the 2016 NPIAP staging system also says “stable eschar on the heel or ischemic limb should not be softened or removed”

  Joan’s note: Placing occlusive dressings on stable eschar will soften and often remove it! Occlusive dressings include <u>oily</u> gauze, hydrocolloids; anything that holds moisture in. You want it to stay DRY! (no whirlpools!)

Dressing categories mentioned in guideline

- This is not an exhaustive list but will most likely cover the brand that is on your buying contract

- Please check with your supplier or Central Supply person and find out which brands are on your contract- you must stay ‘on contract’ for a majority of your supplies or you will lose your best prices (we all want to help save money!)

‘Gentle giant' wound cleansers

- **Sodium hypochlorite-** Anasept® spray (Anacapa) very diluted (0.0125%) not cytotoxic; assists in biofilm removal
- **PHMB-** Prontosan® spray (B Braun)- PHMB also used in contact lens cleanser solution- very gentle
- **Chlorhexadine**- ie: Hibiclens® soap- long lasting germ-killing effect in the presence of protein; FDA approved for partial-thickness wounds
- **Oxychlorine**- Microcyn® spray (Oculus)- mimics free chlorines used by our own neutrophils

Tip: find out which gentle giant cleanser is on your contract and get that one!

More! Gentle giants

- **Hypochlorous acid**
  - Vashe® (Puricore)- mimics free chlorines used by our own neutrophils; for irrigation (no surfactants included)
  - NeutroPhase® claims 1 minute kill rate (NovaBay)
  - Puracyn® Plus (Innovacyn)
  - Pure & Clean (Pure & Clean)

- **Benzethonium Chloride (These do not KILL germs!)**
  - MicroKlens® (Medline);
  - Dermal Wound Cleanser® (Smith & Nephew)

Monofilament pad for maintenance debridement

- Powerful debrider but very gentle to wound tissue
- **Breaks biofilm so antiseptics/antibiotics can kill bacteria**
- Effective for removing fibrin slough (in combination with autolytic)

Schultz GS, Woo K, Weir D, Yang Q. Effectiveness of a monofilament wound debridement pad at removing biofilm and slough: ex vivo and clinical performance. J Wound Care. 2018 Feb 2;27(2):80-90.

Dissemond J, Eberlein T, Bültemann A, Riepe G, Stoffels I, Stephen-Haynes J, Roes C, Abel M. A purpose-designed monofilament-fibre pad for debridement of hard-to-reach wounds: experience in clinical practice. J Wound Care. 2018 Jul 2;27(7):421-425.

Hydrocolloids

(Duoderm®, Comfeel® Plus, CovaWound®, Restore®, Bursamed® HC, Nu-Derm®, Replicare®; Exuderm® …)

- Absorbs minimal exudate - **only use on drier wounds**
- Occlusive- seals in moisture in a dry wound
- Can be used for autolytic debridement

- ***Not*** safe in the gluteal cleft: won't ***stay*** sealed due to skin moisture-

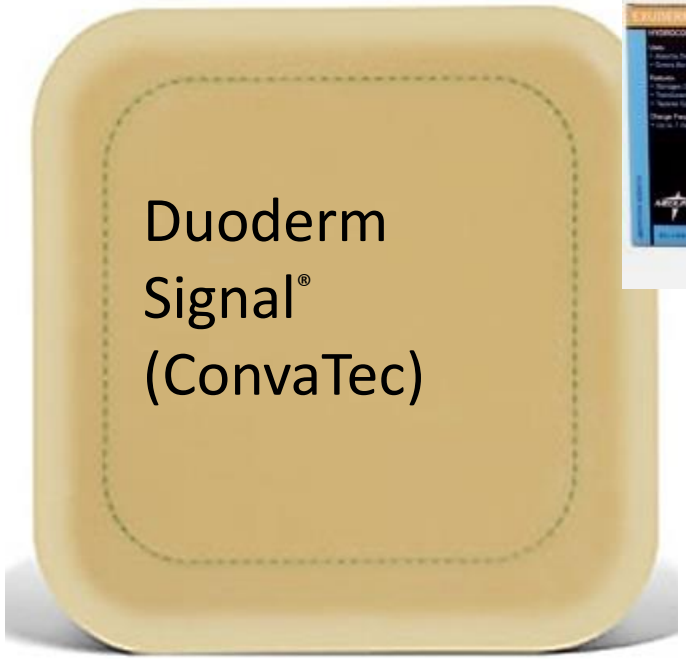
NASTY

- Be careful if surrounding skin is very fragile- on dry skin some brands can be aggressively adhesive

Replicare® (Smith & Nephew)

Comfeel Plus®
(Coloplast)

Duoderm Signal® (Medline)



Duoderm
Signal®
(ConvaTec)

Hydrogels that increase moisture and decrease bacteria

- Silver (ie: Silvasorb®, Arglaes®, Elta Silver®…)
- PHMB in gel (Prontosan®)
- Sodium hypochlorite in gel (Anasept®)
- Hypochlorous acid in gel (Microcyn®)
- Honey is moist; acts like an antiseptic hydrogel (TheraHoney®, ManukaMed®, etc,)
- Salt in a gel (Hypergel®)
- Sugar in a gel (MultiDex® gel)

Joan's note: One hydrogel dressing is actually absorbent so can be used on fragile or painful minimal to moderately draining wounds like burns or Stage 2 PI- Elastogel® (Southwest Technologies)

Prontosan® spray or gel (B Braun)

)

(ManukaMED)

(Mölnlycke)

(DeRoyal)

Fillers to use in wounds with moderate exudate

- Calcium alginate (Kaltostat®, Biatain®, Tegaderm® Alginate, CalciCare™, Maxorb®, Sorbsan®...)- **only use in moderately or heavily draining wounds**; can kill cells (desiccation) in drier wounds

- Gelling fiber (Aquacel®, OptiCell®, KerraCel™, Cardinal Health™ Reinforced Gelling Fibers, Biosorb™, AquaRite™, Simpurity™, MedSaf®, Durafiber®…)
  - Use dry in a draining wound; moisten first for drier wounds
  - Comes in reinforced options- to pull out easily even when wet; most come in silver version

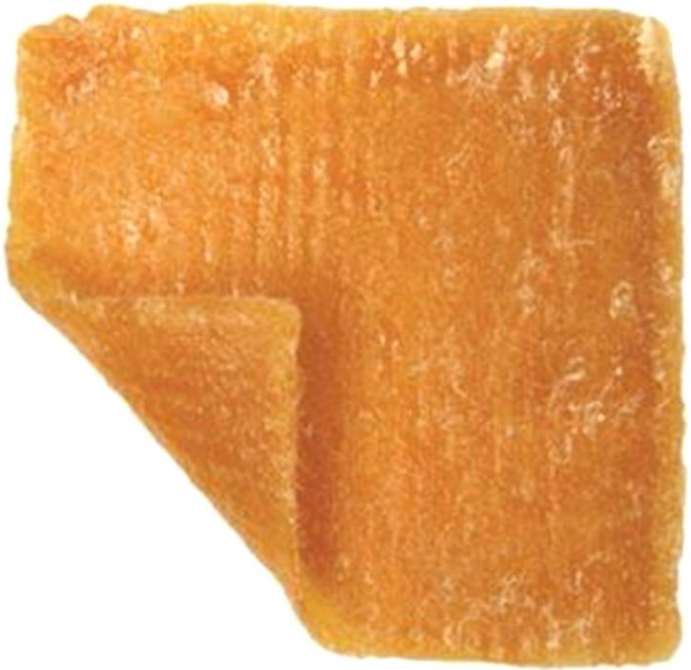
Reinforced alginate/CMC
by Cardinal

PolyMem®
Foam by Ferris

Biosorb® gelling
fiber by Acelity

Hydrofera® Blue by Hollister

MediHoney® alginate
by DermaSciences



Securing a dressing on a limb

- How is that rolled gauze working out for ya???
- So- if it IS BROKE, DO FIX IT!!
- Not only does it NOT WORK to secure a dressing, if the person has edema it ends up being a TOURNIQUET!!!!!
- This is what stretchy netting was made for – please use it

Tubular elastic netting

Medi-tech International

Tubular elastic dressing retention netting

SurgiLast® by DermaSciences

Mölnlycke

Tubifast 2-WAY STRETCH™

Medline

Foams (Allevyn®, Copa®, Polymem®, Mepilex®, Flexan®, Lyofoam®, Hydrasorb®, Tielle®, Biatain®, CarraSmart®, HydroCell®, Polyderm®…)

- Moderately absorbent; insulating; protective padding
- If covered/bordered, protects wound from contaminants
- These are for moderate exudate; use a superabsorbent pad instead for highly exudating!
- Borders may be aggressive or gentle adhesive
- Silicone instead of adhesive is most gentle (Mepilex® Border, Allevyn® Gentle, Copa® Gentle…)
- Polymem® doesn't come in a silicone version but won't normally stick to a wound due to the glycerin, starch and surfactant built-in to the dressing

Tip from Joan

- If not using a sacral silicone bordered foam- what can you use in the gluteal cleft????
  - If it is partial thickness (the vast majority of the time!!) I use any zinc oxide paste spread onto a pad (Telfa™, B-Sure® pads, or ABD if large area) and apply that to injured skin. Change BID and prn soiling. Do NOT scrub off old zinc oxide- just put a little oil (Vaseline, A&D, etc) on a disposable cloth or incontinence cloth and wipe gently to remove feces then apply the new zinc oxide covered pad- it really works!!
  - If it is full thickness- if can get a good seal with NPWT and it is appropriate use that; if not, fill cavity with gauze soaked with an antiseptic cleanser, cover with zinc oxide covered ABD and secure with brief. Change BID and irrigate wound

Superabsorbent dressings

Tegaderm™ Superabsorber (3M); CovaWound™ Superabsorbent (Covalon Technologies); Cutisorb® Ultra (BSN); Eclypse® Superabsorbent (Advancis); Flivasorb® Superabsorbent (Lohmann & Rauscher); HydraLock SA™ (DermaRite); KerraMax® Care (Crawford); Super Absorbent (McKesson); Mextra® Superabsorbent (Molnlycke); OptiLock™ (Medline); Xtrasorb® (Derma Sciences); Biatain® Super Absorbent (Coloplast); DynaSorb™ SuperAbsorbent (Dynarex); PolyMem® Max (Ferris)…

PS- These all work as germ **traps**!

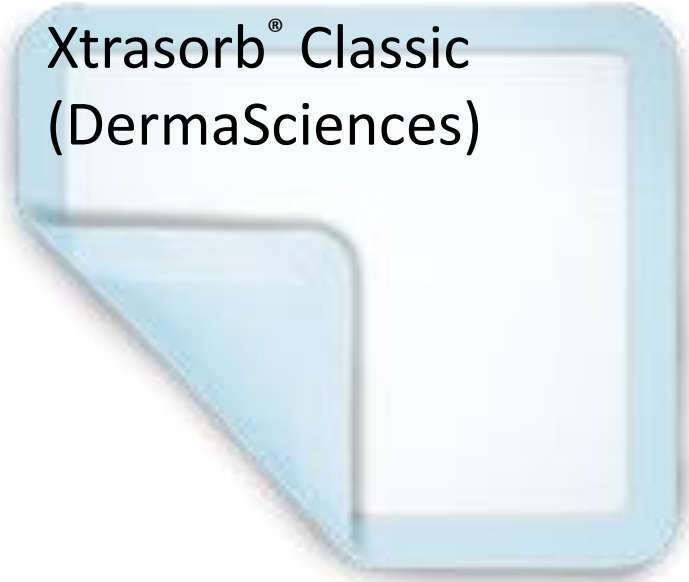
Super-absorbent dressings-
use alone on flat wounds or use over fillers

Tegaderm®
Superabsorber (3M)

Eclypse® (Advancis)

Mextra®
(Mölnlycke)

Optilock®
(Medline)



Xtrasorb® Classic
(DermaSciences)

Cutisorb® Ultra
(BSN Medical)

What have we learned from Module 4?

- We can better recognize whether a sacral/perineal injury is a PI or ‘other’ like IAD
- We know how to get a free copy of the 2019 guideline on our devices
- We have nuggets of knowledge from the guidelines regarding treatments
- We practiced using these recommendations using photos of real cases