



The Challenge: Minimizing the Risk of Incontinence Associated Dermatitis while Reducing CAUTIs



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Disclosures

- △ Consultant-Michigan Hospital Association Keystone Center
- △ Subject matter expert on CAUTI, CLABSI, HAPI, Sepsis, Safety culture for HRET/AHA
- △ Consultant and speaker bureau
 - △ Stryker's Sage business
 - △ LaJolla Pharmaceutical
 - △ Potrero Medical
 - △ Baxter Healthcare



Objectives

- Describe the forces within the current healthcare environment that are targeting zero for device related infections and reducing pressure injuries.
- Identify and detail the evidence-based practices for reducing IAD while maintaining the goal of reduce catheter cultivation.
- Discuss possible barriers to practice changes and realistic solutions to assist the team in the implementation process.



Notes on Hospitals: 1859

“It may seem a strange principle to enunciate as the very first requirement in a hospital that it should do the sick no harm.”

- Florence Nightingale

Advocacy = Safety



Protect The Patient From Bad Things
Happening on Your Watch



Implement
Interventional Patient Hygiene



Hand Hygiene

INTERVENTIONAL PATIENT HYGIENE

- Hygiene...the science and practice of the establishment and maintenance of health
- Interventional Patient Hygiene....nursing action plan directly focused on fortifying the patients host defense through proactive use of evidence-based hygiene care strategies

**Comprehensive
Oral Care Plan**

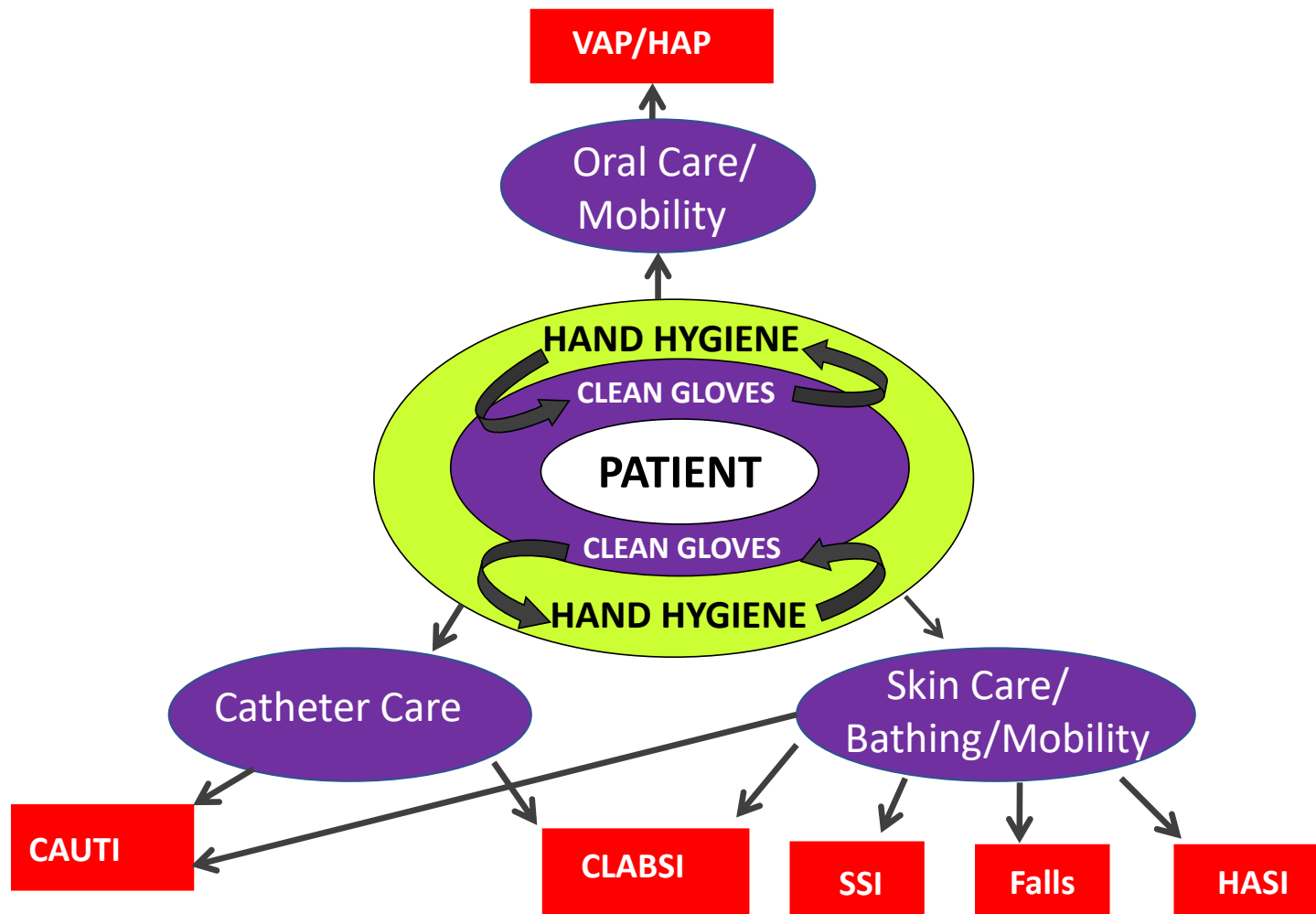
**Incontinence Associated
Dermatitis Prevention
Program**

**Pressure
Injury Risk
Reduction**

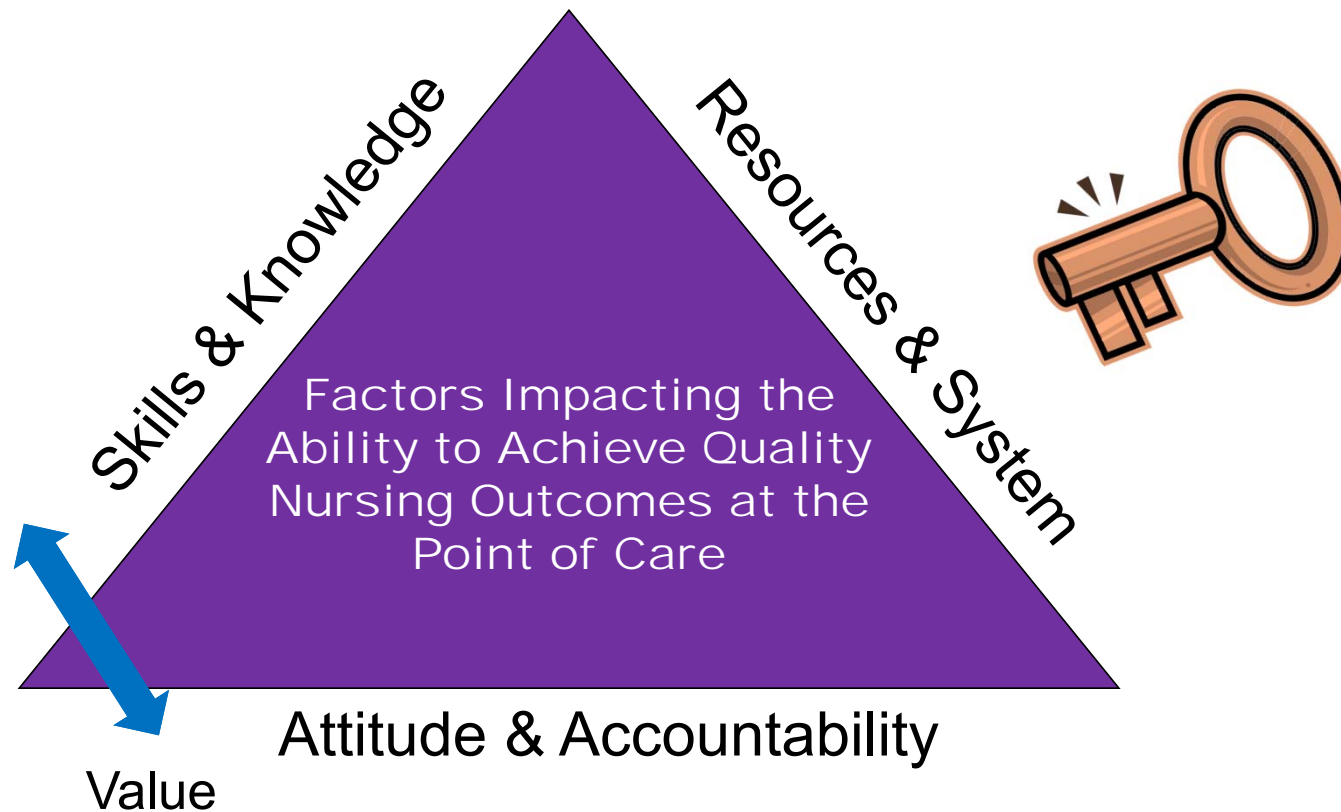
**Catheter
Care**

**Bathing &
Assessment**

INTERVENTIONAL PATIENT HYGIENE(IPH)



Achieving the Use of the Evidence



WOC-Skin Focus

- ▶ Incontinence associated dermatitis (IAD)
- ▶ Bathing strategies to maximize the barrier function of the skin
- ▶ Do no harm: process variation reduction



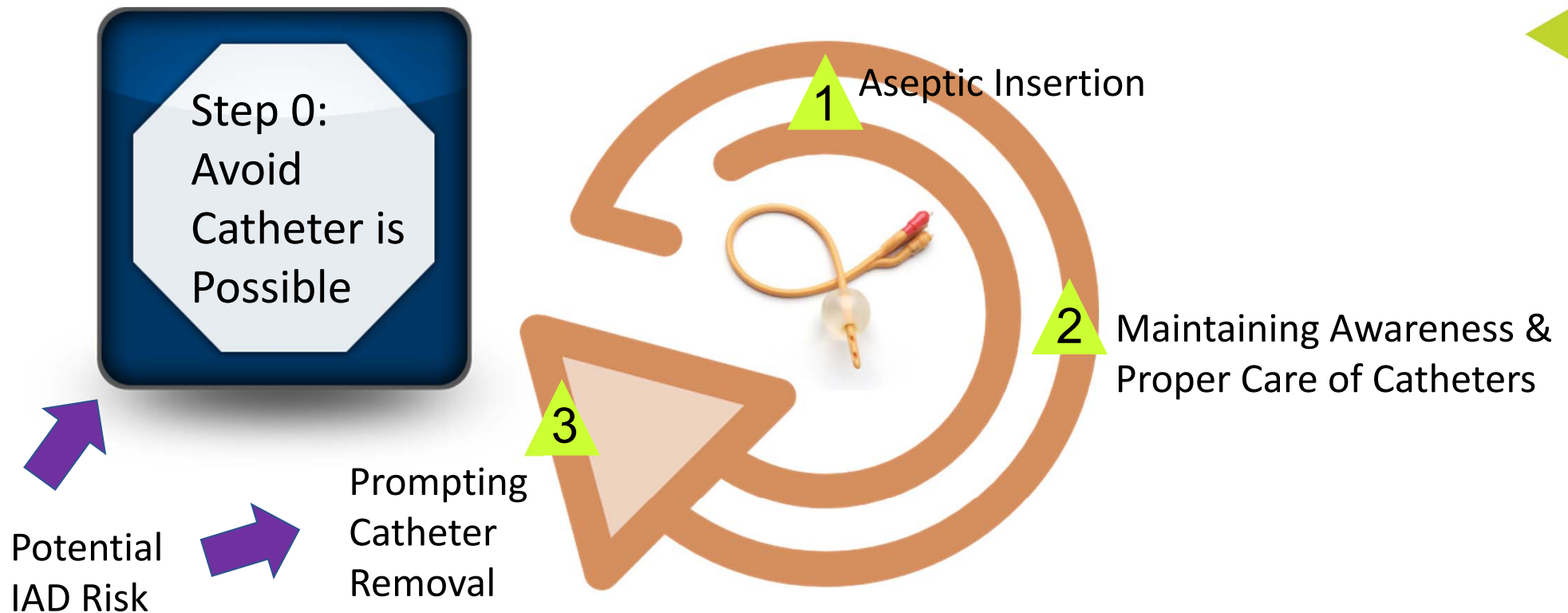
IP-Infection Prevention

- ▶ Nurse catheter removal program
- ▶ Basin less bathing to address the risk factors with basins and tap water
- ▶ Do no harm: process variation reduction



Marchaim D, et al. *Am J Infect Control*. 2012;40(6):562-564,
Trautmann M, et al. *Am J of Infect Control*, 2005;33(5):S41-S49,
McGuckin M, et al. *AJIC*, 2008;36:59-62,
Parrv MF, et al. *AM J Of Infect Control*, 2013;41:1178-81

Disrupting the Lifecycle of the Urinary Catheter



Moisture Injury: Incontinence-Associated Dermatitis

🔗 Inflammatory response to the injury of the water-protein-lipid matrix of the skin¹

- Caused from prolonged exposure to urinary and fecal incontinence
- Contributing factors of friction and secondary infection²

🔗 Top-down injury^{1,2}

🔗 Physical signs on the perineum & buttocks¹

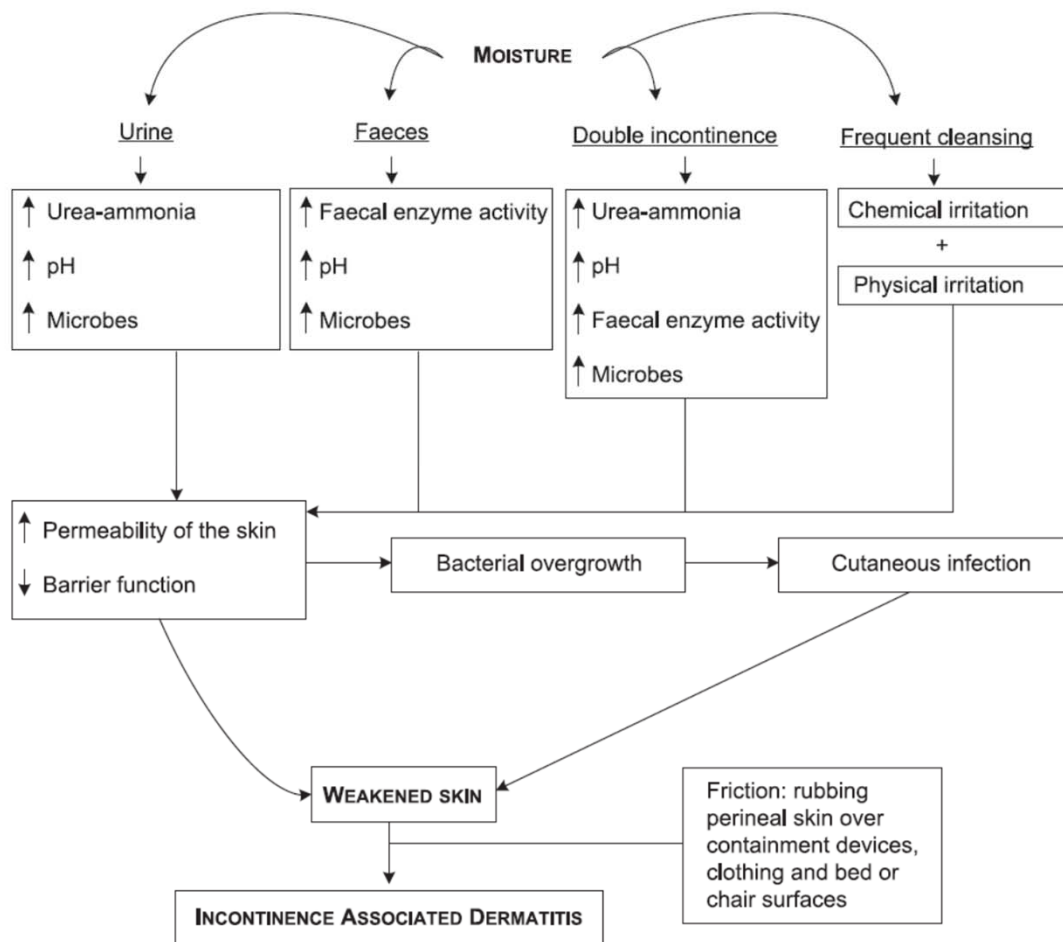
- Erythema, swelling, oozing, vesiculation, crusting, and scaling

🔗 Skin breaks 4x more easily with excess moisture than dry skin³



1. Doughty D, et al. JWOCN. 2012;39(3):303-315
2. Beele H, et al. Drugs Aging 2018;35:1-10
3. Kottner J, et al. Clin Biomech, 2018;59:62-70

Proposed Etiology of IAD



Incontinence Associated Dermatitis Incidence



🌈 5,342 patients in 189 acute care facilities in 36 states

🌈 Prevalence study

- To measure the prevalence of IAD, describe clinical characteristics of IAD, and analyze the relationship between IAD and prevalence of sacral/coccygeal pressure ulcers

🌈 Results: 2,492 patients incontinent (46.6%)

- 57% both FI and UI, 27% FI, 15% UI
- 21.3% IAD rate overall/14% also had fungal rash
- 45.7% in incontinent patients
 - 52.3% mild
 - 27.9% moderate
 - 9.2% severe
- 73% was facility-acquired
- ICU a 36% rate
- IAD alone and in combination with immobility statistically associated with FAPI



Pressure Injury Impact



- ▶ HAPU are the 4th most common preventable medical error in the United States¹
- ▶ 2.5 million patients are treated for HAPU annually in acute care¹
- ▶ Acute care: 0-12%, critical care: 3.3% to 53.4% (International Guidelines)²
- ▶ Most severe pressure ulcer: sacrum (44.8%) or the heels (24.2%)^{1,2}
- ▶ Cost Stage 1-2 \$2,770.54, Stage 3-4 \$71,000 to \$127,000^{3,4}
 - 17,000 lawsuits are related to pressure ulcers annually
 - Targeted pressure injury prevention to patients with low Braden scores < 15 vs standard care does save money and results in better quality per life year (QALYs)
- ▶ 60,000 persons die from pressure ulcer complications each year in US/Pain & Suffering¹
- ▶ National healthcare cost \$26.8 billion per year in US^{3,4}

1. <http://www.ahrq.gov/professionals/systems/hospital/pressureulcertoolkit/putool1.html#11>
2. European Pressure Ulcer Advisory Panel/ National Pressure Injury Advisory Panel, and Pan Pacific Pressure Injury Alliance. Prevention & treatment of pressure ulcers/injuries Clinical Practice Guideline. Emily Haesler (Ed).EPUAP/NPIAP/PPPIA. 2019
3. Padula WV, et al. *Int Wound J*. 2019;16(3):634-640.
4. Padula WV. Et al *BMJ Qual Safety*, 2019;28:132-41



The Why: CAUTI Incidence



- One of the most common healthcare acquired infections (HAIs)- nearly up to 40% of all HAIs^{1,2}
- 70% urinary catheter associated HAIs; up to 95% in the intensive care setting²
- Approximately 20% of hospital patients have urinary catheter at some point in their stay³

1. Magill et al NEJM 2014; APIC Guide to Prevention of CAUTI, 2014;
2. Chenoweth, C. et al. *Infectious Disease Clinics of North America*, 2014 28(1), pp.105-119.
3. Saint, S et al. *Clinical Infectious Diseases*, 2008 46(2), pp.243-250



Associated CAUTI Costs

🌐 Catheter associated urinary tract infections (CAUTIs) are associated with increased morbidity, mortality, and costs

- △ Leads to ↑ increased morbidity, ↑ LOS 2-4 days
- △ CAUTIs are associated with an ↑ cost of \$400 million to \$500 million annually
- △ Estimated additional inpatient CAUTI costs:
 - \$4,694-\$29,743 (Review of 6 studies)

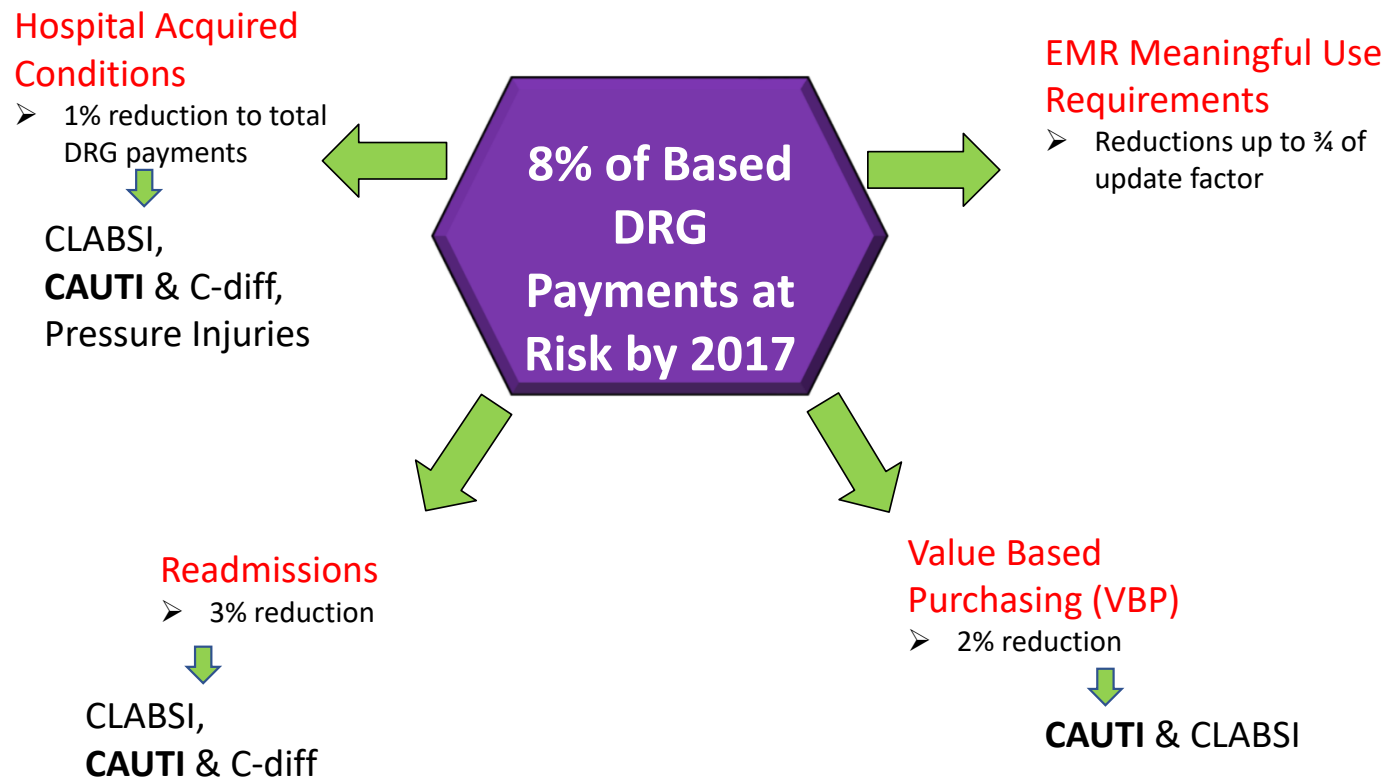
🌐 Specific patient impact---

- △ Discomfort r/t to mild signs of infection
- △ Potential urethral trauma
- △ Embarrassment
- △ Pyelonephritis
- △ Urosepsis leading to potential death



Zimlichman E, et al. JAMA Intern, 2013;173:2039-2046;
Agency for Healthcare Research and Quality (2017). Retrieved from
<https://www.ahrq.gov/hai/pfp/haccost2017-results.html>.

Hospital Performance Based Payments



An abstract geometric design featuring a large purple triangle on the left side. To its right, a series of smaller triangles in shades of blue, yellow, and purple are arranged in a stepped, ascending pattern towards the top right corner. The overall composition is modern and minimalist.

Do the staff see CAUTI and Pressure
Injuries as harm events?

Immediate Huddle Learn from a Defect

Learning from Defect: Pressure Injury Facility Acquired

Date: _____

sticker

Attendees: _____

Instructions:

When HAPI is identified, staff nurse to notify unit manager. Manager will notify team of super huddle time. Super huddle to include any staff nurses and PSTs available, wound care nurse, CNS, CL, and NEC if available, and respiratory if applicable. If this occurs on nights, huddle can be done at night with any staff available, and then info passed on to manager to follow up with wound care, CL, CNS, NEC.

Manager to complete the form AT the BEDSIDE with input from everyone present. Once Section I has been completed, clinical leader (or manager designee) will complete Section II. Return completed form to Quality Department. Manager to keep a copy and have available for review at Pressure Injury Task force.

*if manager is off, contact whomever is covering, i.e. other manager or clinical leader.

Section I:

Location of the Pressure Injury: Unit _____ Date of Pressure Injury: _____

What happened? (brief description from RN caring for patient)

1. Anatomical location of the HAPI: _____
2. LOS when discovered: _____
3. Stage when discovered: _____
4. Was the patient transferred prior to discovery? ☐ yes ☐ no
5. Was there an OR procedure within 72 hours of discovery? ☐ yes ☐ no
6. Time in ED from admit order to admission to floor > 8 hours? ☐ yes ☐ no

Why did it happen?

Wound Nurse Comments:

Risk:

7. What risks were identified? ☐ mobility ☐ Shear ☐ Medical device ☐ HD patient
☐ Moisture/incontinence ☐ hemodynamic instability with turning ☐ nutrition risk

Skin Assessment:

8. Redness was recognized before the skin broke down. ☐ Yes ☐ no ☐ N/A

Pressure/Shear and Patient Movement: complete on how patient is currently positioned

9. If the patient is in bed, what position are they currently in? ☐ back ☐ Rt side lying
☐ Lt side lying ☐ prone ☐ N/A
 10. Immobile patients are moved using lifting equipment to minimize shear and caregiver injury?
☐ Yes ☐ no ☐ N/A -not immobile
 11. Heels are floated with pillows if temporary (<8hrs)? ☐ Yes ☐ no ☐ N/A
 12. Heel floated with a device if >8 hrs of immobility? ☐ Yes ☐ no ☐ N/A
 13. Sacral foam dressing in place? ☐ Yes ☐ no
 14. HOB greater than 30 degrees? ☐ Yes ☐ no

Incontinence/Moisture

Rev. 7.11.2019 LMC

15. Urine and fecal containment per policy if patient is incontinent? ☐ Yes ☐ no ☐ N/A

16. Was barrier cream in room if patient is incontinent? ☐ Yes ☐ no ☐ N/A

Support Surface:

17. At risk patient is on appropriate surface? ☐ Yes ☐ no ☐ N/A

Medical Devices (check all that apply) (If none check proceed to the questions in a box)

- ☐ Trach ☐ noninvasive mask ☐ oxygen N/C ☐ cervical collar ☐ arterial line
☐ Endotracheal tube ☐ Endo Tube Holder ☐ orthotics ☐ cooling blanket ☐ SCD/Stocking
☐ Immobilizer/splint/arm board

18. Were protective measures taken to prevent injury? (Foam padding, protective dressing, repositioning?) ☐ Yes ☐ No ☐ N/A

What happened to cause the defect?	What prevented it from being worse?

What can we do to prevent this from happening to someone else?

Action Plan	Responsible person	Targeted date	Evaluation Plan: How will we know risk is reduced?

With whom shall we share our learning? (communication plan)


Who	When	How	Follow up

Section II:

Additional Data to be completed when able:

1. Was Braden risk identified? yes ☐ no ☐
2. 4 eyes head to toe assessment performed on admission? ☐ Yes ☐ no
3. 4 eyes head to toe assessment performed per shift (last 24hrs)? ☐ Yes ☐ no
4. 4 eyes assessment of skin underneath device done q 12 hrs by RT.? ☐ Yes ☐ no ☐ N/A
5. Patient pressures redistributed and documented q 2? ☐ Yes ☐ no
6. Was patient placed on a specialty surface in OR (>4hrs) ☐ Yes ☐ no ☐ N/A
7. Was patient placed on specialty surface in ER? (>4hrs) ☐ Yes ☐ no ☐ N/A
8. Was a nutritional consult placed/completed in patients at high risk? ☐ Yes ☐ no ☐ N/A
9. Document significant co-morbidities: _____
10. Doctor notified of the pressure injury: ☐ yes ☐ No

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Addressing IAD Prevention & CAUTI Reduction Through Evidence Based Care Practices

Know Your Rates!!!



Measuring IAD-Incorporate into Pressure Injury Audit

Hospital Survey on Incontinence & Related Skin Injury

Unit / Work Area		
Instructions: This survey is limited to inpatient care areas and excludes the following: Labor & Delivery, Obstetrics, Nursery, Emergency Department & Operating Room. <i>Note: Complete ONLY ONE form for each unit.</i>		
Date of Survey: ____/____/____		Unit: _____
Please check the unit specialty that best describes the care provided.		
<input type="checkbox"/> Burn <input type="checkbox"/> Cardiac Surgery <input type="checkbox"/> CCU - General <input type="checkbox"/> CCU - Interventional <input type="checkbox"/> ICU - Cardiovascular <input type="checkbox"/> ICU - General <input type="checkbox"/> ICU - Medical <input type="checkbox"/> ICU - Neuro <input type="checkbox"/> ICU - Neonatal <input type="checkbox"/> ICU - Pediatric <input type="checkbox"/> ICU - Surgical	<input type="checkbox"/> LTAC <input type="checkbox"/> LTC <input type="checkbox"/> Medical <input type="checkbox"/> Med/Surg <input type="checkbox"/> Neurology <input type="checkbox"/> Oncology <input type="checkbox"/> Orthopedic <input type="checkbox"/> Other <input type="checkbox"/> PACU <input type="checkbox"/> Pediatrics <input type="checkbox"/> Psychiatric - General	<input type="checkbox"/> Psychiatric - Geriatric <input type="checkbox"/> Rehabilitation <input type="checkbox"/> Renal/Urology <input type="checkbox"/> Respiratory/Pulmonary <input type="checkbox"/> SNF/Transitional Care <input type="checkbox"/> Skilled Care (LTC) <input type="checkbox"/> Stepdown/Transition <input type="checkbox"/> Surgical <input type="checkbox"/> Telemetry - General <input type="checkbox"/> Telemetry - Medicine <input type="checkbox"/> Telemetry - Surgical <input type="checkbox"/> Wound Care
Patient Census of Unit at Time of Survey: _____		
Incontinence Collection Products:		
Check all that apply to a specific unit/work area.		
<input type="checkbox"/> Pad/Chux <input type="checkbox"/> Reusable cloth <input type="checkbox"/> Disposable plastic-backed <input type="checkbox"/> Disposable air flow-backed	<input type="checkbox"/> Diaper/Brief <input type="checkbox"/> Reusable cloth <input type="checkbox"/> Disposable plastic-backed <input type="checkbox"/> Disposable air flow-backed	<input type="checkbox"/> Collection Device
Incontinence Cleanup & Skin Protection:		
Check all product categories that are available in a specific unit/work area.		
Cleansing: <input type="checkbox"/> Soap/Water/Basin <input type="checkbox"/> Peri-Wash (spray) <input type="checkbox"/> Cleansing Foam <input type="checkbox"/> Washcloth (circle type) <input type="checkbox"/> reusable / disposable <input type="checkbox"/> Premoistened Wipe (thin, not washcloth)	Barrier Protection (Tubes, Bottles or Sprays): <i>Must contain one of the "Active Ingredients" listed below</i> <input type="checkbox"/> Petroleum <input type="checkbox"/> Zinc Oxide <input type="checkbox"/> Dimethicone <input type="checkbox"/> Liquid Film Barrier <input type="checkbox"/> Other _____	All-in-one products: <i>Must combine cleansing, moisturizing & barrier protection</i> <input type="checkbox"/> Barrier cloth with skin protectant
Moisturizers: <input type="checkbox"/> Lotion <input type="checkbox"/> Cream <input type="checkbox"/> Ointment		

Patient Information		
Patient Unit: _____ (from Unit/Work Area data collection form)		
Section 1 - Complete for all patients surveyed		
Demographic Information:		
Patient Gender: <input type="checkbox"/> Male <input type="checkbox"/> Female	Patient Age Group: <input type="checkbox"/> 0 to 12 months <input type="checkbox"/> 1 to 3 yrs <input type="checkbox"/> 4 to 18 yrs <input type="checkbox"/> 20 to 29 yrs <input type="checkbox"/> 30 to 39 yrs	<input type="checkbox"/> 40 to 49 yrs <input type="checkbox"/> 50 to 59 yrs <input type="checkbox"/> 60 to 69 yrs <input type="checkbox"/> 70 to 79 yrs <input type="checkbox"/> 80 + yrs
Continence Status:		
Incontinence = inability to control the flow of urine and/or stool in the preceding 24 hours		
Check all that apply		
Urine: <input type="checkbox"/> Continent <input type="checkbox"/> Male: A patient with a Foley Catheter is deemed "continent." <input type="checkbox"/> Patient has Foley <input type="checkbox"/> Incontinent	Stool: <input type="checkbox"/> Continent <input type="checkbox"/> Male: A patient with an indwelling fecal collection device is deemed "continent." <input type="checkbox"/> Incontinent <input type="checkbox"/> Liquid or semi-liquid stools <input type="checkbox"/> Frequency <input type="checkbox"/> Patient has indwelling fecal collection device <input type="checkbox"/> Patient has external fecal collection device	
Section 2 - Complete only for incontinent patients		
Contributing Factors & Co-Morbidities		
Check all that apply:		
<input type="checkbox"/> Low albumin <input type="checkbox"/> Antibiotics <input type="checkbox"/> Clostridium difficile stool positive <input type="checkbox"/> Tube feeding	<input type="checkbox"/> Braden Score <input type="checkbox"/> Mobility Score <input type="checkbox"/> Friction & Shear Score <input type="checkbox"/> Nutrition Score	<input type="checkbox"/> Diabetic with recent hyperglycemia <input type="checkbox"/> Obesity with deep groin/abdomen skin folds <input type="checkbox"/> Immunosuppressed <input type="checkbox"/> Other _____
Incontinence Cleanup & Skin Protection:		
Check products used on patient		
Cleansing: <input type="checkbox"/> Soap/Water/Basin <input type="checkbox"/> Peri-Wash (spray) <input type="checkbox"/> Cleansing Foam <input type="checkbox"/> Washcloth (circle type) <input type="checkbox"/> reusable / disposable <input type="checkbox"/> Premoistened Wipe (thin, not washcloth)	Barrier Protection: (Tubes, Bottles or Sprays) <i>Must contain one of the "Active Ingredients" listed below</i> <input type="checkbox"/> Petroleum <input type="checkbox"/> Zinc Oxide <input type="checkbox"/> Dimethicone <input type="checkbox"/> Liquid Film Barrier <input type="checkbox"/> Other _____	All-in-one products: <i>Must combine cleansing, moisturizing & barrier protection</i> <input type="checkbox"/> Barrier Cloth with skin protectant
Section 3		
Complete only for incontinent patients with redness of buttock or perineal skin		
Perineal Skin Injury		
Check all that apply		
Condition: <input type="checkbox"/> Incontinence Associated Dermatitis <input type="checkbox"/> Red and dry <input type="checkbox"/> Red and weepy <input type="checkbox"/> Present on Admission <input type="checkbox"/> Pressure Ulcer (anal, coccyx or rectal) <input type="checkbox"/> How many? <input type="checkbox"/> Stage(s) <input type="checkbox"/> Present on Admission <input type="checkbox"/> Fungal/yeast appearing rash <input type="checkbox"/> Other <input type="checkbox"/> Specify _____	Area Affected: <input type="checkbox"/> Buttocks <input type="checkbox"/> Coccyx <input type="checkbox"/> Rectal Area <input type="checkbox"/> Scrotum/Vulva <input type="checkbox"/> Lower Abdomen <input type="checkbox"/> Upper Thighs <input type="checkbox"/> Genital cleft <input type="checkbox"/> Groins	Containment Products: <input type="checkbox"/> Fitted Seal Fecal Collection Device <input type="checkbox"/> Zastri Fecal Collection Device <input type="checkbox"/> Nasal Trumpet <input type="checkbox"/> Other _____ Y N Is there leakage around device at the anus? Y N Was there an underpad present? <input type="checkbox"/> Reusable cloth <input type="checkbox"/> Disposable plastic-backed <input type="checkbox"/> Disposable air flow-backed Y N Were incontinence briefs worn by patient?
signature: _____		

Incontinence Associated Dermatitis (IAD) Diagnosis

- 🌀 Diagnosis primarily based on visual inspection
 - △ Inflammation (bright red) in persons with lighter skin tones
 - △ Located in skin fold or underneath containment device
 - △ Borders are poorly demarcated and irregular
 - △ Surface of skin may “glisten” owing to serous exudate
- 🌀 Determine location of skin damage- does it lie in the skin folds or over bony prominence, underneath the containment device
- 🌀 Partial thickness erosion common with IAD– full thickness with pressure and shear injury

Differential DX

TABLE 1.

Differential Classification of Pressure Ulcers, Incontinence-Associated Dermatitis (IAD), and Intertriginous Dermatitis (ITD)

	Pressure Ulcer	IAD	ITD
Location	Over bony prominence or under medical device	Perineum; perianal area; inner thighs; buttocks	Intergluteal cleft Groin creases
Associated factors	Reduced mobility May have reduced sensory awareness	Urinary and/or fecal incontinence	Diaphoresis
Depth	Initially may present as stage I or sDTI; ultimately usually full thickness (III/IV)	Usually partial thickness	Usually partial thickness, at least initially
Shape/distribution	Typically round; if shear involved, may be oval/elongated; distinct borders	Irregular and indistinct borders common	Linear break in skin
Associated findings	May have necrotic tissue; may have undermining or tunneling	Surrounding skin typically macerated	Surrounding skin frequently macerated

Abbreviations: IAD, incontinence-associated dermatitis; ITD, intertriginous dermatitis.

Gray M, et al. J Wound Ostomy Continence Nurse, 2012;39(1):61-74

GLOBIAD

The Ghent Global IAD Categorization tool

Category 1: Persistent redness

1A - Persistent redness without clinical signs of infection



Critical criterion

- Persistent redness
A variety of tones of redness may be present. Patients with darker skin tones, the skin may be paler or darker than normal, or purple in colour.

Additional criteria

- Marked areas or discolouration from a previous (healed) skin defect
- Shiny appearance of the skin
- Macerated skin
- Intact vesicles and/or bullae
- Skin may feel tense or swollen at palpation
- Burning, tingling, itching or pain

1A

Category 2: Skin loss

2A - Skin loss without clinical signs of infection



Critical criterion

- Skin loss
Skin loss may present as skin erosion (may result from damaged/eroded vesicles or bullae), denudation or excoriation. The skin damage pattern may be diffuse.

Additional criteria

- Persistent redness
A variety of tones of redness may be present. Patients with darker skin tones, the skin may be paler or darker than normal, or purple in colour
- Marked areas or discolouration from a previous (healed) skin defect
- Shiny appearance of the skin
- Macerated skin
- Intact vesicles and/or bullae
- Skin may feel tense or swollen at palpation
- Burning, tingling, itching or pain

2A

1B - Persistent redness with clinical signs of infection



Critical criteria

- Persistent redness
A variety of tones of redness may be present. Patients with darker skin tones, the skin may be paler or darker than normal, or purple in colour.
- Signs of infection
Such as white scaling of the skin (suggesting a fungal infection) or satellite lesions (pustules surrounding the lesion, suggesting a *Candida albicans* fungal infection).

Additional criteria

- Marked areas or discolouration from a previous (healed) skin defect
- Shiny appearance of the skin
- Macerated skin
- Intact vesicles and/or bullae
- The skin may feel tense or swollen at palpation
- Burning, tingling, itching or pain

1B

2B - Skin loss with clinical signs of infection



Critical criteria

- Skin loss
Skin loss may present as skin erosion (may result from damaged/eroded vesicles or bullae), denudation or excoriation. The skin damage pattern may be diffuse.
- Signs of infection
Such as white scaling of the skin (suggesting a fungal infection) or satellite lesions (pustules surrounding the lesion, suggesting a *Candida albicans* fungal infection), slough visible in the wound bed (yellow/brown/grayish), green appearance within the wound bed (suggesting a bacterial infection with *Pseudomonas aeruginosa*), excessive exudate levels, purulent exudate (pus) or a shiny appearance of the wound bed.

Additional criteria

- Persistent redness
A variety of tones of redness may be present. Patients with darker skin tones, the skin may be paler or darker than normal, or purple in colour
- Marked areas or discolouration from a previous (healed) skin defect
- Shiny appearance of the skin
- Macerated skin
- Intact vesicles and/or bullae
- Skin may feel tense or swollen at palpation
- Burning, tingling, itching or pain

2B

Beeckman D. et al. The Ghent Global IAD Categorisation Tool (GLOBIAD). Skin Integrity Research Group - Ghent University 2017. Available to download from www.UCVVGent.be

CAUTI Measurement

- ⚙ Obtain unit CAUTI rates from your IP
- ⚙ Compare IAD rates with units with low CAUTI rates
- ⚙ Compare IAD rates with units with high CAUTI rate



Helps to target education and evidence-based strategies

iPCaRe: Evidence-Based Algorithms

Continence Care

J Wound Ostomy Continence Nurs. 2020;47(6):601-618.
Published by Lippincott Williams & Wilkins



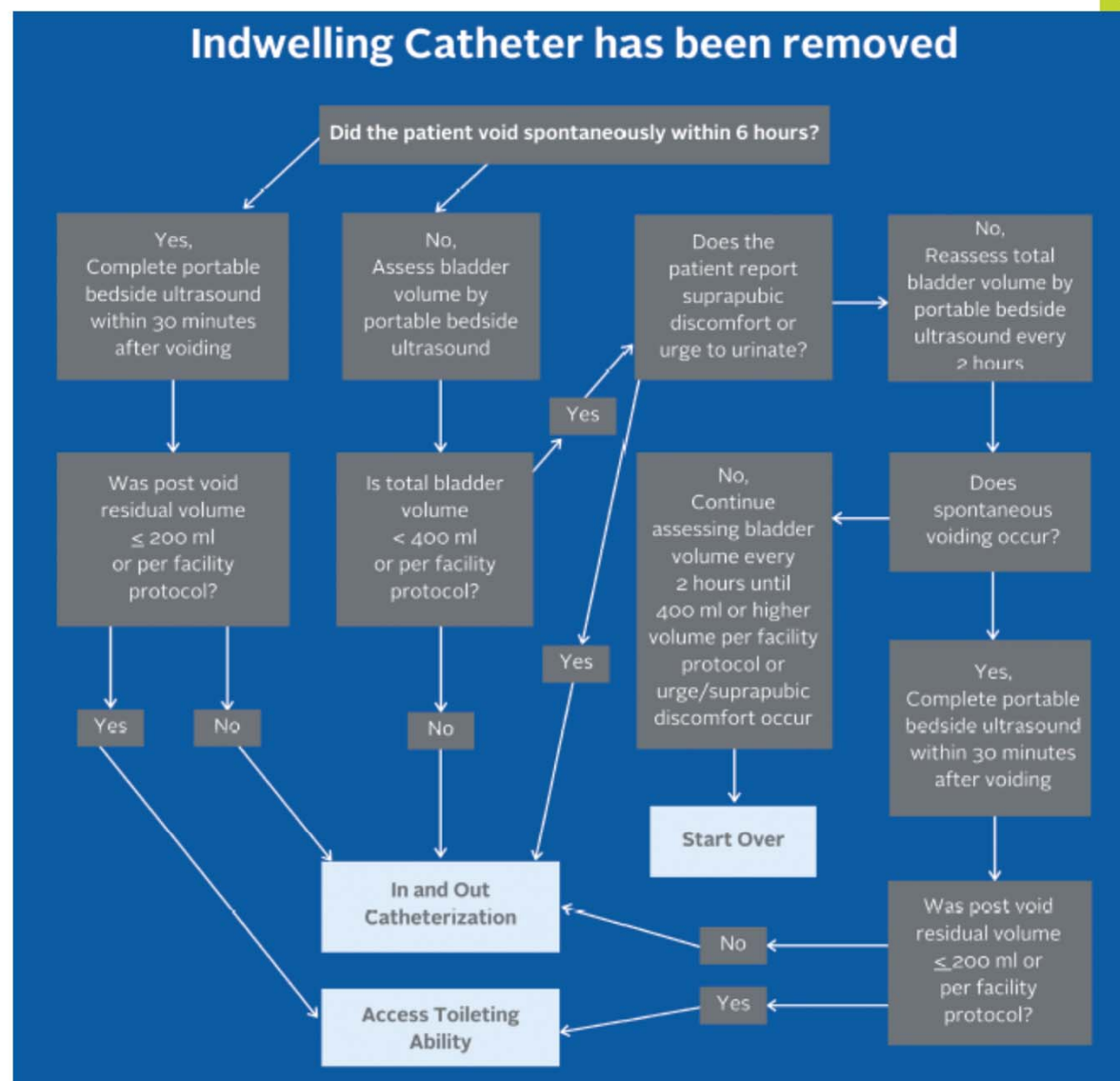
Interventions Post Catheter Removal (iPCaRe) in the Acute Care Setting

An Evidence- and Consensus-Based Algorithm

Mikel Gray ♦ Terrie Beeson ♦ Dea Kent ♦ Dianne Mackey ♦ Laurie McNichol ♦ Donna L. Thompson ♦ Sandra Engberg



Image retrieved from <https://www.wocn.org/blog/the-latest-decision-support-tool-from-wocn/>.



Method to Manage Urine

- 🔗 Toileting
- 🔗 Absorbent underpads/support services
- 🔗 External collection devices
- 🔗 Body worn absorbent products
- 🔗 Intermittent catheterization






Toileting

Assessment

- △ Ability to recognize, respond & act on cues to urinate
- △ Mobility and dexterity necessary to use a toilet bedside commode, bedpan or urinal independently or with assistance
- △ Extent to which pain interferes with independent or assisted toileting
- △ Patient's preference of toileting method
 - toilet versus bedside commode, urinal,
 - bedpan
 - absorbent products
 - external collection device

Consensus Statements

-  Toileting should be the first line strategy for bladder management of any patient able to toilet independently or with assistance
-  Patients with cognitive impairment should be considered for toileting program if it can be done safely with undue distress
-  Cueing and providing assistance with toileting at fixed intervals



Absorbent Under Pads

- ▶ Select an under pad with a low friction coefficient
- ▶ Absorbent core that rapidly contains moisture and disseminates through the pad
- ▶ Prevents moisture strikethrough
- ▶ Breathable

Support Surfaces

- ▶ Use low air loss feature with the Braden subscale score of 2 or 1
- ▶ Advise use of plastic back products that interfere with therapeutic air flow
- ▶ Utilized minimum number of layers between the patient and the support surface

An abstract geometric design featuring a large purple triangle on the left side. To its right, a series of smaller triangles in shades of blue, purple, and yellow are arranged in a stepped, ascending pattern towards the top right corner. The overall composition is modern and minimalist.

Use of Male and Female External Devices



External Devices

- Consider use external device in males who are unable to get engage in toileting programs
- Consider use of external device in males requiring close monitoring of urine output following indwelling catheter removal

- Consider use of external suction collection device for females requiring close monitoring of urine output only indwelling catheter removal

Challenges with Current Appropriate Alternatives: External Male Catheters



1 out of every 200 men
is born with what's
medically known as
'micro-penis'



Buried & Micro Penis



1 out of every 200 men
is born with what's
medically known as
'micro-penis'



Condom Catheter



Challenges with Male External Urine Collection Devices



- 🔹 Skin irritation and maceration
- 🔹 Difficult to keep the condom from falling off/retraction of the penis or decrease size
- 🔹 Ischemia and penile obstruction/tightness
- 🔹 Adherence: requires securement on the shaft & adhesive mechanisms are challenging



New Male Devices: Overcoming the Challenges

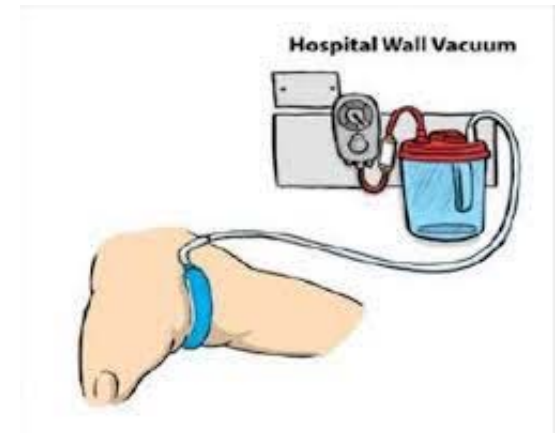
- Adjusts to different sized penises
 - △ No sizing chart required
- Prevents backflow with continuous suction
- Diverts urine away from the skin -addressing the risk factors of IAD



Alternative Female External Collection Devices

How do they work?

- △ They are placed between the labia and the urethral opening
- △ The devices are attached to wall suction



Quality Improvement Project

- 🌀 18 bed adult SICU
- 🌀 10 month pre/post QI study
- 🌀 Utilization of an external female collection device
- 🌀 Daily rounds discussion
 - △ Inter-professional discussion regarding indications
 - Avoid placement
 - Early removal
- 🌀 Measurement: CAUTI & SIR rates


Outcomes

Pre/Post Comparison Using Female External Device

	Before	After
CAUTI Rate	2.55	0.7
Standardized Infection Ratio (SIR)	1.395	0.381

Indwelling Catheter Days ↓ 9%


Beeson T, Davis C & Vollman K. Presented at the NACNS Meeting in Austin TX, March 2, 2018



An Innovative Technique for Managing Female Urinary Incontinence in Acute and Critically Ill Women


Terrie Beeson MSN RN CCRN ACNS-BC and Carmen Davis MSN RN CCRN CNS-BC

Indiana University Health, University Hospital



Introduction

Reducing the usage of urinary catheters is the leading prevention approach to decreasing hospital acquired urinary infections. Without a catheter some females may have urinary incontinence leading to sequelae of problems such as infection, skin injury, pain/discomfort, loss of dignity. Therefore prudent alternatives are needed for female urinary incontinence management. The purpose of this evaluation was two-fold: 1) to determine device functionality and to solicit ideas for device improvement 2) to explore workflow impact on nursing practice with use of a urine management system in acute and critically ill women.



Methods

Data collection surveys were developed by content experts and distributed to nursing staff who utilized the device in one of four designated units in a tertiary academic medical center. The first survey was a five item Likert scale evaluation with a narrative section for comments on how to enhance the device wear and utilization. The second survey was a device utilization and experience survey created to examine nursing practice. This included 10 multiple choice items targeting initiation and management of device usage.

PRODUCT EVALUATION (13 RESPONSES)			
Questions	Agree	N/A	Disagree
1. This product helped to manage female urinary incontinence.	100%	0%	0%
2. This product was easy to place on a female patient.	100%	0%	0%
3. This product stayed in place.	100%	0%	0%
4. This product had minimal leakage.	92%	0%	8%

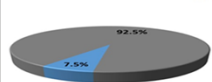
Results

In the first survey, 100% of 13 nurses surveyed agreed that "This product helped to manage female urinary incontinence." Other nursing staff reported that the device was effective in maintaining skin integrity. There were a total of 40 responses for the second survey, utilization and experience. 100% of the nurses documented appropriate urine collection and overall appropriate management of the device.

PRODUCT UTILIZATION & EXPERIENCE SURVEY (40 RESPONSES)

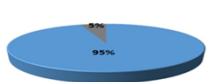
Have you ever observed any skin injuries or pressure injuries from the use of the collection device?

■ Yes ■ No



If frequent stooling is an issue, would you use a collection device in conjunction with bowel management devices?

■ Yes ■ No



Conclusions

These findings suggest use of a urine management system as a viable alternative for female urinary incontinence in a broad range of patient sizes and body habits; thus reducing the need for an urinary catheter. Increased nursing and patient satisfaction resulted as the urine management system was often requested from patients.

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Gray M. Reducing catheter associated urinary tract infection in the critical care unit. AACN Adv Crit Care 2010;21(3):247-57 doi: 10.1097/NCJ.0b013e3181d6030a[published Online First: Epub Date].

Gray M, Beechman D, Bliss DZ, et al. Incontinence-associated dermatitis: a comprehensive review and update. J Wound Ostomy Continence Nurs 2012;29(1):61-74 doi: 10.1097/WON.0b013e318233f2e6[published Online First: Epub Date].

Junkin J, Salekoff JL. Prevalence of incontinence and associated skin injury in the acute care hospital. J Wound Ostomy Continence Nurs 2007;24(3):260-9 doi: 10.1097/01.WON.0000270820.91694.1f[published Online First: Epub Date].

Bliss DZ, Mathiason MA, Garrich O, et al. Incidence and Predictors of Incontinence-Associated Skin Damage in Nursing Home Residents With New-Onset Incontinence. J Wound Ostomy Continence Nurs 2017;34(2):168-71 doi: 10.1097/WON.0000000000000313[published Online First: Epub Date].

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Beeson, T. & Davis, C. Poster Abstract at the Wound Ostomy Continence Society Meeting in Philadelphia, PA., June 3-6, 2018.

Building the Case for Use of Alternatives

- CAUTI reduction
- Decreased urinary catheter (device) days
- Patient satisfaction
- Clinician satisfaction
- Reduce incontinence associated dermatitis incidence



Factors That Affect Success of Reminders, Stop Orders and Nurse Driven Protocols



- 🔗 Communication patterns and unit culture relative to urinary catheter use¹
- 🔗 Nurse comfort with urinary catheter removal protocols¹
- 🔗 Right urine collection alternatives²
- 🔗 Staff knowledge and skills¹
- 🔗 Respect among nurses and physicians¹
- 🔗 Ownership by frontline staff, local leadership and quality to review, remind, and reinforce using RCA's or learn from a defect ^{1,2}
- 🔗 Information technology support for data collection ^{1,2}
- 🔗 Feedback using data on catheter use ^{1,2}
- 🔗 ICU team's recognition of the hazard of urinary catheters¹

1. Meddings J, et al. BMJ Qual Saf. 2014 Apr;23:277-89.
2. Quinn M, et al Jt Comm J Qual Patient Saf. 2019 Dec 23.





“Even if you are on the
right track, you will get
run over if you just sit
there.”

Will Rogers



Body Worn Absorbent Products

- Use when incontinence cannot be managed by an external collection device during ambulation, therapy or when the off unit in order to preserve dignity , privacy, prevent falls and reduce environmental contamination
- Should not be used for staff convenience



Nurse Driven Removal Protocol: ER/ICU/OR & Floor

- 🔗 Assessment of criteria for insertion/removal^{1,3}
- 🔗 Use of the bedside bladder ultrasound to assess urinary retention (reduce rates by 30-50%)^{1,3}
 - △ If minimal or no urine found in the bladder alternative strategies should be considered prior to catheterization
- 🔗 Examine alternatives to indwelling catheters^{2,3}
 - △ Intermittent catheterization several times per day (post –op)
 - △ External catheters for male patients or female patients without urinary retention or bladder outlet obstruction²
- 🔗 If no voiding within 4-6 hours of assessment pre insertion or post removal, a bladder scan ultrasound used-follow IC protocol at your institution³

1. Saint S, et al. Clin Infect Dis. 2008;46(2):243-250,
2. *Saint S, et al. J am Geriatr Sco. 2006;54(7)1055-1061
3. Gray M, et al. J Wound Ostomy Continence Nurse. 2020;47(6):601-618



Methods to Protect the Skin: Urine and Fecal Cleansing & Protection

Do not use soap and water to clean incontinence^{1,2}


- △ Impact of tap water
- △ Impact of wash cloth
- △ Soaps with high alkaline

Reduce exposure to urine or stool^{1,2}

Implement a structure skin care regime²

- △ Gentle cleansing
- △ pH balance cleanser/soft cloth
- △ Do not rub
- △ Apply hydration cream
- △ Apply barrier cream (if incontinent)

1. Beele H. Drugs Aging. 2018;35:1-10
2. Coyer F, et al. BACCN, 2017;23(4):198-206

A black and white photograph of two young children, likely toddlers, standing outdoors in a yard. Both children are crying with their mouths wide open. A speech bubble originates from the child on the left, containing the text "Why are there so many bugs in here?". The background shows a brick wall and some foliage.

Why are
there so
many bugs in
here?

How We Bathe May Impact
CAUTI's & Skin

Optimal Hygiene

🔄 pH balanced (4-6.8)²⁻⁴

△ Stable pH discourages colonization of bacteria & ↓ risk of infection

△ Bar soaps may harbor pathogenic bacteria

🔄 Excessive washing/use of soap compromises the water holding capacity of the skin¹

🔄 Non-drying, lotion applied²⁻⁴

🔄 Multiple steps can lead to large process variation^{1,2}

1. Voegel D. J WOCN, 2008;35(1):84-90
2. Byers P, et al. WOCN. 1995; 22:187-192.
3. Fiers SA. Ostomy Wound Managment.1996; 42:32-40.
4. Kabara JJ. et. al. J Environ Pathol Toxicol Oncol. 1984;5:1-14



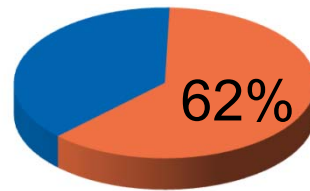
Bath Basins

Potential Source of Infection

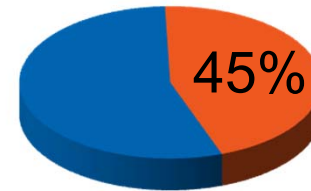


Large multi-center study evaluates presence of multi-drug resistant organisms

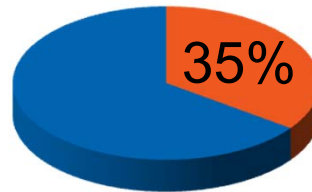
Total hospitals: 88
Total basins: 1,103



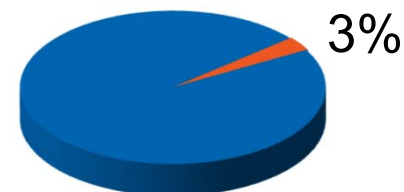
Contaminated
686 basins/88 Hospital



Gram negative bacilli
495 basins/86 hospitals



Colonized w/ VRE
385 basins/80 hospitals



MRSA
36 basins/28 hospitals

Mechanisms of Contamination

🔗 Skin flora¹

🔗 Multiple-use basins²⁻⁴

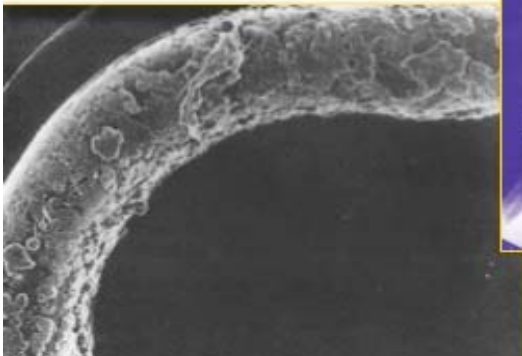
- Incontinence cleansing
- Emesis
- Product storage

🔗 Bacterial biofilm from tap water¹⁻⁴



1. Larson EL, et al. *J Clin Microbiol.* 1986;23(3):604-608
2. Johnson D, et al. *Am J Crit Care*, 2009;18(1):31-38, 41
3. Marchaim D, et al. *Am J Infect Control.* 2012;40(6):562-564.
4. Shannon RJ, et al. *J Health Care Safety Compliance Infect Control.* 1999;3:180-3

Biofilms are Ubiquitous



Water Source

Hospital Tap Water

- 🔗 Bacterial biofilm¹⁻³
- 🔗 Most overlooked source for pathogens¹⁻³
- 🔗 29 studies demonstrate an association with HAIs and outbreaks¹
- 🔗 Transmission:^{2,3}
 - △ Drinking
 - △ Bathing
 - △ Rinsing items
 - △ Contaminated environmental surfaces
- 🔗 Immunocompromised patients at greatest risk¹⁻³



1. Anaissie EJ, et al. *Arch Intern Med.* 2002;162(13):1483-1492.,
2. Cervia JS, et al. *Arch Intern Med*, 2007;167:92-93,
3. Trautmann M, et al. *Am J of Infect Control*, 2005;33(5):S41-S49,

Understanding Water



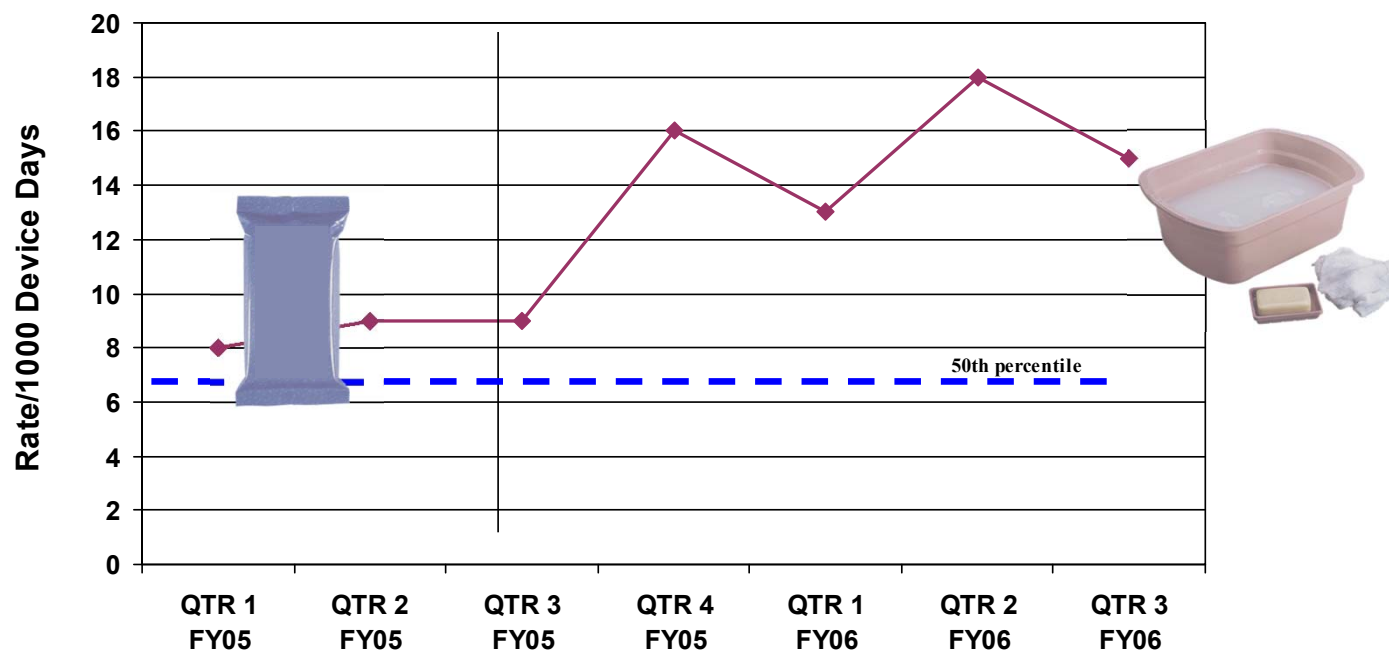
- 🔗 All water except for sterile water and filtered water is contaminated with microbes (e.g., potable water, tap water, showers, and ice)¹
- 🔗 In healthy persons, contact or ingestion of such water rarely leads to infection¹
- 🔗 However, contact or ingestion of such water may cause infection in immunocompromised persons or when applied to non-intact skin¹
- 🔗 Transmission of these pathogens from a water reservoir may occur by direct and indirect contact, ingestion and aspiration of contaminated water, or inhalation of aerosols^{1,2}

1. Presented at MSIPC October 6th, 2016, Lansing MI by Dorine Berriel-Cass
2. *Decker BK, et al. Opin Infect Dis 2013; 26:345–51.



Impact on UTI with Basin Bathing

UTI Rate- Removal of Prepackaged Bath Product QTR 3 FY05





The Effect of Bathing with Basin and Water and UTI Rate, LOS and Costs

Unit Census: 14				
Phases	Product Cost	No. of UTI	Median⁴ LOS 17 Days	Median⁴ Cost (4857.00)
I- Pre-Packaged Bathing Washcloths (9 months)	\$10,530 ¹ (\$3.00)	25	175	\$117,175
II- Basin/Water (9 months)	\$3,510 ² (\$1.00)	48	336	\$224,916
III- Additional Product Cost, UTI, LOS, COSTS	\$7,020	23 ³	151	\$107,741

¹Based on 3 packages of 8 towels each ²Based on product cost of towels, soap, and basin³
Difference between phase I pre-package/phase II basin water⁴



Cleansing of Patients with Indwelling Catheter



- Antiseptic cleaning of the meatal area before and during catheter use may reduce the risk of CAUTIs.
- Indwelling catheter care should occur with the daily bath (basinless bathing), as a separate procedure using clean technique
- There is no evidence to support 2x a day indwelling catheter care
- If a large liquid stool occurs, bathe the patient with basinless bathing
- Apply barrier cloth to area of skin requiring protection



Methods to Protect the Skin: Urine and Fecal Cleansing & Protection

Do not use soap and water to clean incontinence^{1,2}

- △ Impact of tap water
- △ Impact of wash cloth
- △ Soaps with high alkaline

Reduce exposure to urine or stool^{1,2}

Implement a structure skin care regime²

- △ Gentle cleansing
- △ pH balance cleanser/soft cloth
- △ Do not rub
- △ Apply hydration cream
- △ Apply barrier cream (if incontinent)

1. Beele H. Drugs Aging. 2018;35:1-10
2. Coyer F, et al. BACCN, 2017;23(4):198-206

Fecal Containment Device



Methods to Protect the Skin: Urine and Fecal Cleansing & Protection

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- △ Impact of tap water
- △ Impact of wash cloth
- △ Soaps with high alkaline

Reduce exposure to urine or stool^{1,2}

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- △ Do not rub
- △ Apply hydration cream
- △ Apply barrier cream (if incontinent)

1. Beele H. Drugs Aging. 2018;35:1-10
2. Coyer F, et al. BACCN, 2017;23(4):198-206

Implementation of a Skin Bundle Decreases IAD



Before & after study of incontinent MV patients

Skin Bundle

- △ Assessment on admission
- △ Ongoing assessment q 12
- △ Notification of team lead if IAD present
- △ Skin hygiene
 - Pre-package bath cloth
 - Barrier film
 - Topical moisturizer
 - Incontinence cleansing: cleanser and cloth
- △ Temp control
 - Avoid plastic surfaces on the skin

Pre group:

- △ 66 patients with 733 days in ICU

Post group

- △ 80 patients with 768 days

Similar demographics

IAD rates

- △ Intervention group: 15% (p=0.016)
- △ Control group: 32%

IAD developed later for those in intervention group (p<0.022)



Evidence-Based Components of an IAD Prevention Program



🌀 Skin care products used for prevention or treatment of IAD should be selected based on consideration of individual ingredients in addition to consideration of broad product categories such as cleanser, moisturizer, or skin protectant. (Grade C)

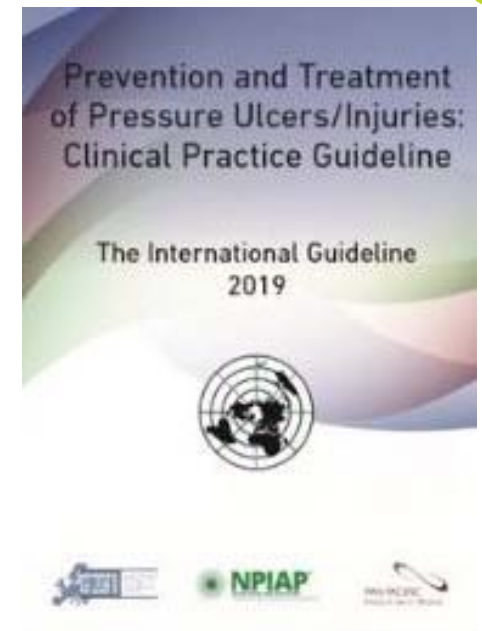
△ A skin protectant or disposable cloth that combines a pH balanced no rinse cleanser, emollient-based moisturizer, and skin protectant is recommended for prevention of IAD in persons with urinary or fecal incontinence and for treatment of IAD, especially when the skin is denuded. (Grade B)

△ Commercially available skin protectants vary in their ability to protect the skin from irritants, prevent maceration, and maintain skin health. More research is needed. (Grade B)



EBP Recommendations to Reduce Injury From Incontinence & Other Forms of Moisture

- 🌀 Clean the skin as soon as it becomes soiled^{2,4}
- 🌀 Use an incontinence pad and/or briefs that wick away moisture^{1,2,4}
- 🌀 Use a protective cream or ointment^{1,2,4}
 - △ Disposable barrier cloth recommended by IHI & IAD consensus group
- 🌀 Ensure an appropriate microclimate & breathability⁴
- 🌀 < 4 layers of linen³
- 🌀 Barrier & wick away material under adipose and breast tissue^{2,4}
- 🌀 Support or retraction of the adipose tissue (i.e. KanguruWeb)⁴
- 🌀 Pouching device or a bowel management system^{2,4}



1. www.ihi.org
2. Doughty D, et al. JWOCN. 2012;39(3):303-315
3. Williamson, R, et al (2008) Linen Usage Impact on Pressure and Microclimate Management. Hill-Rom
4. European Pressure Ulcer Advisory Panel/ National Pressure Injury Advisory Panel, and Pan Pacific Pressure Injury Alliance. Prevention & treatment of pressure ulcers/injuries :Clinical Practice Guideline. Emily Haesler (Ed).EPUAP/NPIAP



IAD/HAPU Reduction Study

- 🌀 Prospective, descriptive study

- 🌀 2 Neuro units

- 🌀 Phase 1: prevalence of incontinence & incidence of IAD & HAPU

- 🌀 Phase 2: Intervention

 - △ Use of a 1 step cleanser/barrier product

 - △ Education on IAD/HAPU

- 🌀 Results:

 - △ Phase 1: incontinent 42.5%, IAD 29.4%, HAPU 29.4%, LOS 7.3 (2-14 days), Braden 14.4

 - △ Phase 2: incontinent 54.3%, IAD & HAPU 0, LOS 7.4 (2-14), Braden 12.74



IAD Prevention Practices: Implementation Science Approach



- Identified evidence gaps in previous study (4 hospitals-250 patients)
- Using implementation science approach to introduce evidence based IAD practices
- IAD committee: education about correct pad sizing, washable and disposable pads and plastic sheets removed from the wards. All in one barrier cloth that cleans, protects and moisturizes was introduced
- Nurses from wards ask to participate in 1 of 6 focus groups post implementation



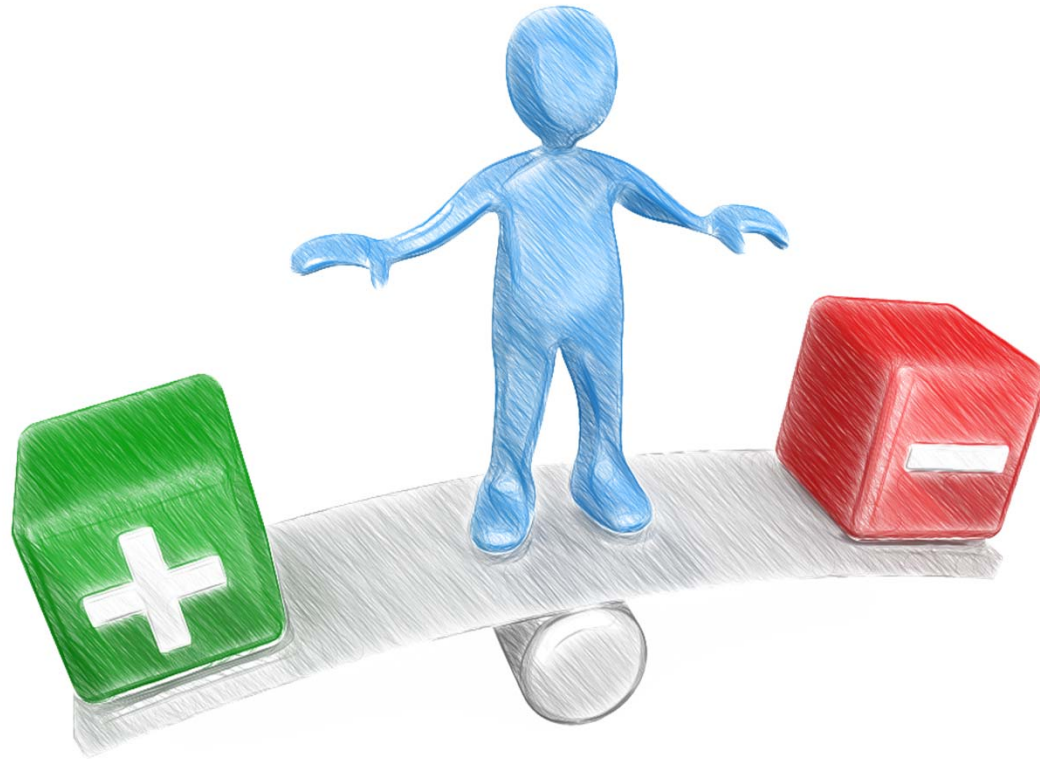
IAD Prevention Practices: Results

Variable	Pre-Implementation N=250	Post Implementation N=259	P value
IAD	23 (9.2%)	6 (2.3%)	.015
HAPI	9 (3.6%)	2 (0.8%)	.034
Bed protection use	154 (64.7%)	6 (2.3%)	<.01
Continent patients with incontinent products	73 (29.2%)	28 (10.8%)	<.01

Nurse Focus Groups: 31 nurses, 4 themes

- Benefit to patient: improved skin condition, patient comfort
- Usability: fewer steps
- Problems encountered: not seeing barrier in place
- Related factors: confusion between IAD and pressure injury

Finding the Balance



CAUTI vs. IAD & Pressure Ulcer



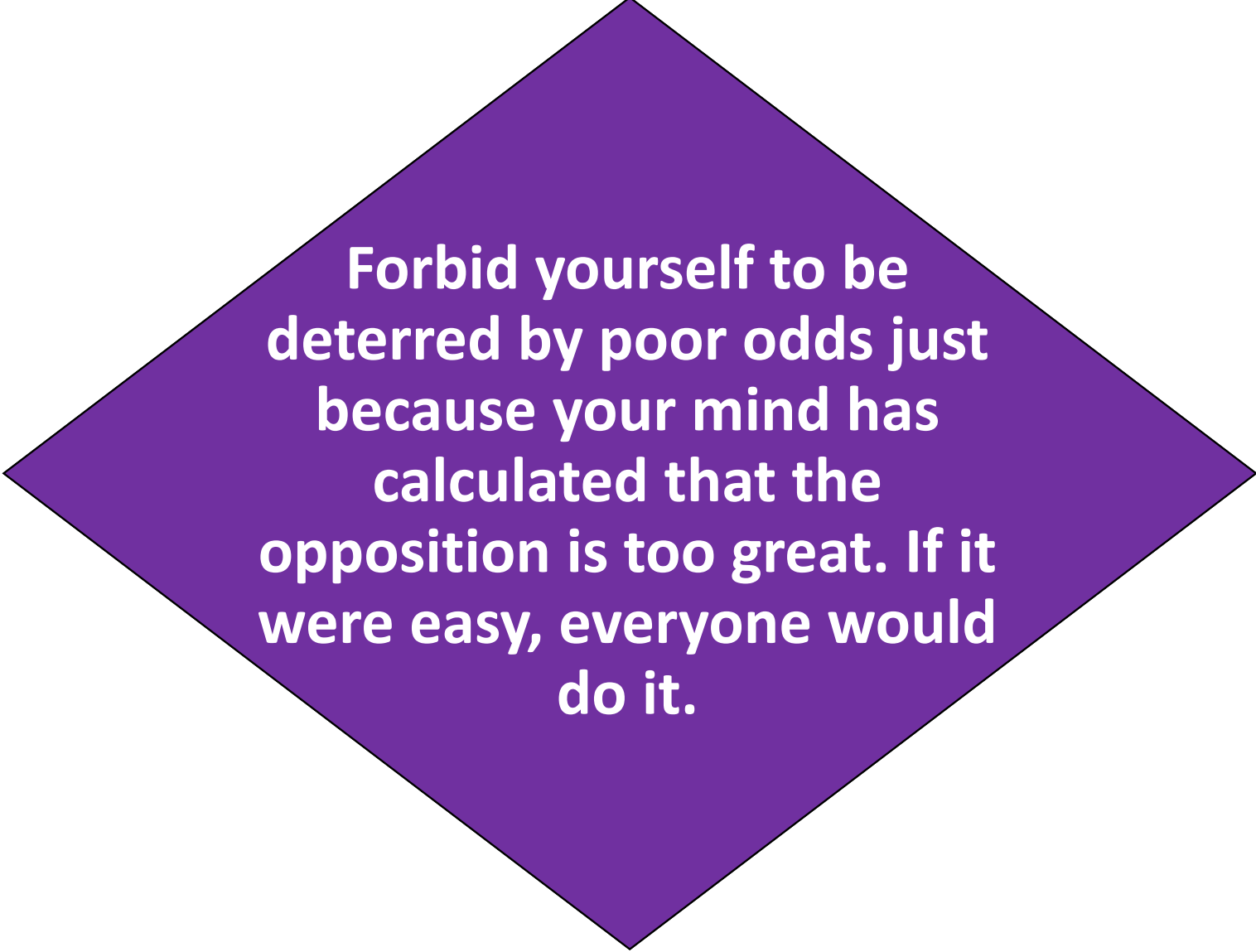
A photograph of a person with a backpack standing on a snowy mountain slope, looking up at a large, snow-capped mountain peak. The sky is clear and blue.

WHEN WOULD NOW BE A GOOD TIME TO DO THIS?

It is not enough to do your best;
you must know what to do, and
THEN do your best.

~ W. Edwards Deming





**Forbid yourself to be
deterred by poor odds just
because your mind has
calculated that the
opposition is too great. If it
were easy, everyone would
do it.**

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