Back to The Basics: 
Getting There with Science

Disclosures

- Sage Products Speaker Bureau & Consultant
- Eloquest Healthcare Speaker Bureau & Consultant
- Hill-Rom Speaker Bureau & Consultant
- Off label discussion of a CHG cloth
Session Objectives

- Define key fundamental evidence based nursing care practices that reduce harm
- Discuss strategies to overcome barriers

INTERVENTIONAL PATIENT HYGIENE (IPH)

VAP/HAP
Oral Care/ Mobility
HAND
Patient
HYGIENE
Catheter Care
Skin Care/ Bathing/Mobility
CA-UTI
CA-BSI
SSI
HASI

Attitude & Accountability

Factors Impacting the ability to Achieve Quality Nursing Outcomes at the Point of Care

Achieving the Use of the Evidence

Factors Impacting the ability to Achieve Quality Nursing Outcomes at the Point of Care

Value

Skills & Knowledge

Resources & System

Achieving the Use of the Evidence

Why HAI's? Protecting Patients From Harm

Estimates: 183 Hospitals in 10 States

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>HAI:</td>
<td>722,000/year</td>
</tr>
<tr>
<td>HAI-related deaths:</td>
<td>75,000/year</td>
</tr>
<tr>
<td>Hospitalized patients</td>
<td>1 out of 25 (4%)</td>
</tr>
<tr>
<td>develop infection:</td>
<td></td>
</tr>
<tr>
<td>Death due to</td>
<td>700/day</td>
</tr>
<tr>
<td>sepsis/septic shock:</td>
<td></td>
</tr>
<tr>
<td>Money spent:</td>
<td>$45 billion/year</td>
</tr>
<tr>
<td>Increase risk of</td>
<td>27 days vs. 59 days</td>
</tr>
<tr>
<td>readmission:</td>
<td></td>
</tr>
</tbody>
</table>


Improvement Seen Except CAUTI’s

- 46 percent decrease in CLABSI between 2008 and 2013
- 19 percent decrease in SSI related to the 10 select procedures tracked in the report between 2008 and 2013
- **6 percent increase in CAUTI between 2009 and 2013**
- 8 percent decrease in MRSA bacteremia between 2011 and 2013
- 10 percent decrease in C. difficile infections between 2011 and 2013

www.cdc.gov/hai/progress-report

Preventing Harm:

Evidence Based Bathing Practices
Patients at Risk

Multi-Drug Resistant Organisms
- Immunodeficiencies
- Breaks in skin integrity related to invasive devices
- Co-morbidities
- Hand transmission
- Equipment contamination/Hospital environment

Damaging the Natural Barriers to Infection…the Skin
- Bathing techniques
- Soaps
- Wash cloths

Bonten MJM. Am J Respir Crit Care Med. 2011;184:991-993

The Bath: The First Line Of Defense

Early Detection of Skin Injury

Nurse!!! Reducing Microorganism spread

Efficiency & Effectiveness

Health/Social Well Being
Optimal Hygiene

- pH balanced (4-6.8)
  - 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 skin
- Non-drying, lotion applied
- Multiple steps can lead to large process variation

Voegel D. J WOCN, 2008;35(1):84-90

Traditional Bathing

Why are there so many bugs in here?

Soap and water basin bath was an independent predictor for the development of a CLABSI
Bath Basins: Potential Source of Infection

- Multicenter sampling study (3 ICU’s) of 92 bath basins
- Identify & quantify bacteria in patients basins
- Sampling done on basins used > 2x in patients hospitalized > 48 hours & preformed 2 hours post bath
- Cultures sent to outside laboratory
- Qualitative vs. quantitative measures used to exclude growth that may have occurred in transport
- Bathing practices not controlled & no antiseptic soaps used to bathe


The Evidence: Bath Basins
Potential Source of Infection

Multicenter Sample Study to Identify and Quantify Bacteria in Basins

- Enterococci 54%
- Gram negative 32%
- S. aureus 23%
- VRE 13%
- Less than 10% growth rates
  - MRSA 8%
  - P. aeruginosa 5%
  - Candida albicans 3%
  - E. coli 2%

**Bath Basins**
**Potential Source of Infection**

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

- Total hospitals: 88
- Total basins: 1103

- **Contaminated**
  - 62%
  - 686 basins/88 hospitals

- **Gram negative bacilli**
  - 45%
  - 495 basins/86 hospitals

- **Colonized w/ VRE**
  - 35%
  - 385 basins/80 hospitals

- **MRSA**
  - 3%
  - 36 basins/28 hospitals


**Mechanisms of Contamination**

- **Skin flora**
- **Multiple-use basins**
  - Incontinence cleansing
  - Emesis
  - Product storage
- **Bacterial biofilm from tap water**

Waterborne Infection

Hospital Tap Water
- Most overlooked source for pathogens
- 29 studies demonstrate an association with HAIs and outbreaks
- Transmission:
  - Drinking
  - Bathing
  - Rinsing items
  - Contaminated environmental surfaces
- Immunocompromised patients at greatest risk


Reducing UTI’s Through Basinless Bathing

89% Reduction

CA-UTI 7.5 per 1000 catheter days to 4.42 per 1000 catheter days, then to .46 per 1000 catheter days
Impact on UTI with Basin Bathing

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

**Unit Census: 14**

<table>
<thead>
<tr>
<th>Phases</th>
<th>Product Cost/</th>
</tr>
</thead>
<tbody>
<tr>
<td>I- Pre-Packaged Bathing Washcloths (9 months)</td>
<td>$10,530(^1) ($3.00)</td>
</tr>
<tr>
<td>II- Basin/Water (9 months)</td>
<td>$3,510(^2) ($1.00)</td>
</tr>
<tr>
<td>III- Additional Product Cost, UTI, LOS, COSTS</td>
<td>$7,020</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>No. of UTI</th>
<th>Median(^4) LOS 17 Days</th>
<th>Median(^4) Cost (4857.00)</th>
</tr>
</thead>
<tbody>
<tr>
<td>25</td>
<td>175</td>
<td>$117,175</td>
</tr>
<tr>
<td>48</td>
<td>336</td>
<td>$224,916</td>
</tr>
<tr>
<td>23(^3)</td>
<td>151</td>
<td>$107,741</td>
</tr>
</tbody>
</table>

\(^1\)Based on 3 packages of 8 towels each  \(^2\)Based on product cost of towels, soap, and basin
\(^3\)Difference between phase I pre-package/phase II basin water
Prepackaged Disposable Bathing

Studies show

Prepackaged disposable bathing cloths result in...

- Nurse satisfaction
- Improved skin condition
- 78% fewer UTIs
- Amount of product used
- Time spent
- Cost
- Variation in bathing process


The Efficacy of Daily Bathing with Chlorhexidine for Reducing Healthcare-Associated Bloodstream Infections: A Meta-analysis

John C. O’Herin, MD, M. Guerrero L. M. Silva, MD, L. Silvia Munoz-Price, MD, N. Nina Sotlar, MD, PhD

![Table and graph representing the efficacy of daily bathing with chlorhexidine for reducing healthcare-associated bloodstream infections.](image)
2% CHG Cloth Bathing: SCRUB Trial Critically Ill Children

- Cluster-randomized 2-period cross over trial
- >2 months of age
- 6 month
- 4947 admissions
  - SOC: basin less bathing or soap & H₂O
  - CHG: 2% CHG cloth
- Demographics similar
- Outcomes:
  - Primary bacteremia-36% reduction
  - 12 pts withdrew because of skin irritations (1%)
  - CHG-associated skin reactions-1-2 per 1000 pt days

The Evidence: Impact of 2% CHG Cloth Baths
Evaluate effect of daily bathing with CHG on acquisition of MDRO’s and incidence of CLABSI

9ICU’s & Bone Marrow Transplant unit
Randomly assigned 7727 patient:
- a. No-rinse, 2% CHG impregnated washcloths
- b. Non-antimicrobial, no-rinse bath cloths

Results of 2% CHG bathing

**Impact of 2% CHG Cloth Baths**

Study to determine the best method for reducing spread of MRSA & MDROs

3 protocols tested:

a) Swab for MRSA on admission to ICU
   - Isolate if positive
b) Swab for MRSA on admission to ICU
   - Isolate if positive
   - Nasal mucopiricin x 5 days
   - 2% CHG cloth bathing for entire ICU stay
c) No swab
   - Nasal mucopiricin x 5 days
   - 2% CHG bath for entire ICU stay

Results: No Swab Group
Universal Decolonization Demonstrated


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**Recommendations and Implementation Strategies**

1. Bath patients daily with Basin-less bathing
2. Patient-centered bath times
   - Evaluate clinical stability and patient preference.
   - Avoid bathing between 2400 - 0600.
   - Evaluate workloads on all shifts.
   - Adjust distribution of care practices.
3. Avoid tap water for any component of bathing patients
4. Avoid reusable bath basins and use of washcloths
   - Remove soaps and creams from the unit stock.
   - Replace basin with better strategies for containing emesis and keeping supplies.
   - Reduce par levels of washcloths.
For Successful Banning of Basins for Patient Care

- We need to provide alternatives for the other functions:

<table>
<thead>
<tr>
<th>Current</th>
<th>New</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emesis</td>
<td>Emebags being installed in every adult and ped pt. room, ACU, PACU</td>
</tr>
<tr>
<td>Storage of patient items</td>
<td>Clear plastic “baggies” Trial of &quot;Concierge List&quot; to decrease waste of unused/unneeded products</td>
</tr>
<tr>
<td>Foot soaks</td>
<td>Shampoo caps, prepackaged</td>
</tr>
<tr>
<td>Shampoo patient’s hair</td>
<td>Shampoo caps par’d on all units</td>
</tr>
<tr>
<td>24 hour urine, ice</td>
<td>Store some basins in lab to be dispensed with each 24 hour jug.</td>
</tr>
<tr>
<td>Bath cloths with no insulation, cold halfway through bath.</td>
<td>Bath cloths with insulation to stay warm longer</td>
</tr>
</tbody>
</table>

General Implementation Strategies

- Tools for successful implementation available at AHRQ
- Educate patients and families about new bathing technologies
  - Improves condition of the skin
  - Reduces the spread of microorganisms
- Monitor compliance
  - Assess estimated number of baths given
  - Compare to use of bathing products used.
Preventing CA-UTI's Through Evidence Based Fundamental Nursing Care Strategies

Beyond the Bundle

The Why

- Urinary tract infection (UTI) are one of the most common hospital-acquired infections
- Along with other device associated infections (CLABSI and VAP) account for 25% of all hospital acquired infections
- 70-80% of CAUTI are due to urinary catheters
- 12-16% of inpatients are catheterized
- Leads to increased morbidity and costs
- Medicare no longer reimburses U.S. hospitals for the additional costs of certain infections
- CAUTI prevention is part of the 2012 National Patient Safety Goal

## CUSP & CA-UTI Interventions

<table>
<thead>
<tr>
<th>Adaptive/Cultural</th>
<th>Technical</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CUSP</strong></td>
<td><strong>CAUTI</strong></td>
</tr>
</tbody>
</table>
| 1. Educate on the Science of Safety | 1. Insertion  
Limited use  
Using aseptic technique for site prep, equip & supplies |
| 2. Identify Defects (Staff Safety Assessment) | 2. Maintenance  
• Securing the catheter for unobstructed flow  
• Maintaining the sterility of the urine collection system  
• Replacing the urine collection system when required  
• Collecting urine samples |
| 3. Senior Executive Partnership |          |
| 4. Learn from Defects |          |
| 5. Implement Teamwork & Communication Tools |          |

## Disrupting the Lifecycle of the Urinary Catheter

1. Preventing Unnecessary and Improper Placement

2. Maintaining Awareness & Proper Care of Catheters

3. Prompting Catheter Removal

4. Preventing Catheter Replacement

(Muddings, Clin Infect Dis 2011)
Isn’t this a patient safety issue, not just CAUTI?

**CDC, SHEA, IDSA and NHS: Indications for Placement**

- Perioperative use for selected surgical procedures
- Urine output in critically ill patients
- Management of acute urinary retention and urinary obstruction
- Assistance in pressure ulcer healing for incontinent patients
- At a patient request to improve comfort (SHEA) or for comfort during end of life care (CDC)

Core Recommendations

- Insert catheters only for appropriate indications (1B)
- Leave catheters in only as long as needed (1B)
- Ensure that only properly trained persons insert and maintain catheters (1B)
- Insert catheters using aseptic technique and sterile equipment (acute care settings) (1C)
- Consider use of alternatives (II)
- Maintain a close drainage system (1B)
- Secure the system (1B)
- Maintain unobstructed urine flow (1B)
- Key the collecting bag below the level of the bladder at all times (1B)
Simplified Insertion Checklist for Urinary Catheter

<table>
<thead>
<tr>
<th>Components of Checklist</th>
<th>Compliant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hand hygiene before and after procedure</td>
<td>Yes, after correction</td>
</tr>
<tr>
<td>Sterile gloves, drapes, sponges, aseptic sterile solution for cleaning, and single use packet lubricant used</td>
<td></td>
</tr>
<tr>
<td>Aseptic insertion technique (no contamination during placement)</td>
<td></td>
</tr>
<tr>
<td>Proper securement of urinary catheter post-procedure</td>
<td></td>
</tr>
<tr>
<td>Closed drainage system and bag below patient post-procedure</td>
<td></td>
</tr>
</tbody>
</table>

Core Recommendations

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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 Penis
Common Problems

- Most common problems are:
  - 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 to secure on the shaft & adhesive mechanisms are challenging

A New Male External Catheter: ReliaFit

- Hydrocolloid alternative
  - Hydrocolloid wafer shaped adheres to the glans penis
  - Acts as a skin protectant
  - Protects the glans penis from excessive moisture
  - The seal is reinforces by a second hydrocolloid strip
  - Can be used with circumcised and uncircumcised males
  - Clean glans penis with a remover & alcohol

Before & After QI Project

- 60 day comparison
- Use of a novel EMC device vs. indwelling catheter
- Inclusion criteria:
  - No restraints
  - No BPH
  - No neurogenic bladder
  - Cooperative
  - Hospitalize 2 wks or greater
- Monitored wear time and evaluated the skin

Average Wear Time = 24hrs

Fitzwater M, IP Kindred Albuquerque, 2015
Core Recommendations

• Insert catheters only for appropriate indications (1B)
• Leave catheters in only as long as needed (1B)
• Ensure that only properly trained persons insert and maintain catheters (1B)
• Insert catheters using aseptic technique and sterile equipment (acute care settings) (1C)
• Consider use of alternatives (II)
• Maintain a close drainage system (1B)
• Secure the system (1B)
• Maintain unobstructed urine flow (1B)
• Key the collecting bag below the level of the bladder at all times (1B)

Securement Devices

[Images of various securement devices]
Core Recommendations

- Do not clean the periurethral area with antiseptics to prevent CAUTI while the catheter is in place. Routine hygiene (e.g., cleansing of the meatal surface during daily bathing) is appropriate. (IB)

- Further research is needed on the use of antiseptic solutions vs. sterile water or saline for periurethral cleaning prior to catheter insertion. (No recommendation/unresolved issue)

- If the CAUTI rate is not decreasing with a comprehensive strategy, consider using antimicrobial/antiseptic impregnated catheters. (IB)

- Practice hand hygiene in standard precautions according to CDC & HICPAC guidelines

Supports Recommendations of the National Patient Safety Goal NPSG.07.06.01

Cleansing of Patients with Indwelling Catheter

- Indwelling catheter care should occur with the daily bath (basinless bathing)*

- There is no evidence to support 2x a day indwelling catheter care

- If a large liquid stool occurs, bathe the patient with basin less bathing (clean front to back in the perineal area and 6 inches of the catheter**)

- Apply barrier cloth to area of skin requiring protection


* Sage recommends following hospital policy
Additional Recommendations: SHEA Compendium Update 2014

- Replace the catheter and the collecting system using aseptic technique when breaks in aseptic technique, disconnection, or leakage occur (quality of evidence: III).
- For examination of fresh urine, collect a small sample by aspirating urine from the needleless sampling port with a sterile syringe/cannula adaptor after cleansing the port with disinfectant (quality of evidence: III).
- Unresolved
  - Antiseptic or sterile saline foe meatal cleaning before insertion


Reminder Systems May Reduce Inpatient Catheter Use and Associated UTIs

<table>
<thead>
<tr>
<th>Study</th>
<th>RR(95% CI)</th>
<th>% Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reminder</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Apsarvanichmarak (2007)</td>
<td>0.24 (0.15, 0.37)</td>
<td>19.34</td>
</tr>
<tr>
<td>Groucutt (2007)</td>
<td>0.15 (0.01, 0.82)</td>
<td>11.09</td>
</tr>
<tr>
<td>Haaper (2004)</td>
<td>0.72 (0.54, 0.96)</td>
<td>16.72</td>
</tr>
<tr>
<td>Jain (2006)</td>
<td>0.64 (0.33, 1.20)</td>
<td>10.35</td>
</tr>
<tr>
<td>Yoon et al. (2007)</td>
<td>0.44 (0.33, 0.74)</td>
<td>57.49</td>
</tr>
<tr>
<td>Total</td>
<td>0.53 (0.21, 1.06)</td>
<td>11.09</td>
</tr>
<tr>
<td>Reminders only</td>
<td>0.41 (0.19, 0.82)</td>
<td>13.55</td>
</tr>
</tbody>
</table>
Nurse Directed Catheter Removal

- 300 bed community teaching hospital
- Implementation of a nurse directed urinary catheter removal protocol
  - Protocol linked to physician catheter order
  - Physician documentation of catheter insertion criteria & device specific charting in progress notes
  - Bi-weekly unit specific feedback
- Results: 50% ↓ in catheter use & 70% ↓ in CAUTI

Parry MF, et al. AM J Of Infect Control, 2013;41:1178-81
THINGS TO CONSIDER

Cost-Benefit Ratio

CA-UTI vs. IAD & Pressure Ulcer
Moisture Injury: Incontinence Associated Dermatitis

- Inflammatory response to the injury of the water-protein-lipid matrix of the skin
  - Caused from prolonged exposure to urinary and fecal incontinence
- Top down injury
- Physical signs on the perineum & buttocks
  - Erythema, swelling, oozing, vesiculation, crusting and scaling

Brown DS & Sears M, OWM 1993;39:2-26

IAD Assessment Tool

IAD: Multisite Epidemiological Study

- 791 patients in 20 facilities in US
- One day prevalence
  - To measure the prevalence of IAD in the acute care setting,
  - To describe clinical characteristics of IAD, and
  - To analyze the relationship between IAD and prevalence of sacral/coccygeal pressure ulcers
- Results: Incontinence 54%
  - 16.3% perineal skin damage, (23.3%) IAD
  - All patients had urinary or fecal incontinence or both
  - 26% was present on admission, 74% was hospital acquired
  - IAD was associated with an increased prevalence of sacral/coccygeal pressure ulcers (p<0.000).

Gray M, Presented at the 23rd Annual Meeting of the Wound Healing Society; SAWC Spring/WHS Joint Meeting: Denver, Colorado • May 1 - 5, 2013

Impact of Moisture

- Urinary and fecal incontinence are common in the acute care setting, occurring in more than one-third of hospitalized adults.
- Humidity/Moisture:
  - Strain at which the skin breaks is 4x greater with excess moisture than dry skin
  - Moisture increases the risk of shear & friction damage
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 balance 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)

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

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

~ W. Edwards Deming
Back to The Basics!!!!

How to Get Started

Interventions To Ensure Patients Receive Evidence-Based Care

- Evidence based education
- Recognition of value and reinforcement
- Products/Processes that make it easy for the frontline caregiver to provide the care (make it part of the bundle)
  - Bathing kits
  - Oral care kits
  - Placement on the med record
  - Automated charting with flag reminders
- Frequent rounding/reinforcement of standard
- Multidisciplinary rounds/Checklists

Westwall S. Nursing in Critical Care, 2008;13(4):203-207
Interventions To Ensure Patients Receive Evidence-Based Care

• Setting targets/Celebrating successes
• Placement of new practice/education in orientation
• Attractive signs to outline protocol in the patient rooms near the products
• Compliance program with feedback to all caregivers
• Outcome measurement/Feedback*

Westwall S. Nursing in Critical Care, 2008;13(4):203-207
Abbott CA, et al. Worldviews on Evidence Based Practice, 2006;139-152

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.