

**Evidence vs. Tradition: Examining the science on bathing critically ill patients**  
**Kathleen M. Vollman, Advancing Nursing**  
Teleclass sponsored by Sage Products ([www.sage.com](http://www.sage.com))



## Evidence vs. Tradition: Examining the science on bathing critically ill patients

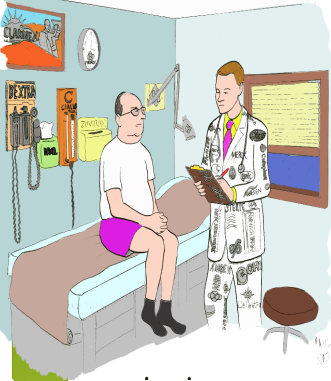
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## Session Objectives

- Create the link of patient advocacy to the basic nursing care
- Define key fundamental evidence based nursing care practice of bathing to reduce harm/infection
- Discuss strategies to overcome barriers

3

## 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**

4

Protect The Patient From  
Bad Things Happening  
on Your Watch



Implement  
Interventional Patient Hygiene

5

## 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

Hand Hygiene

Catheter Care

Comprehensive Oral Care Plan

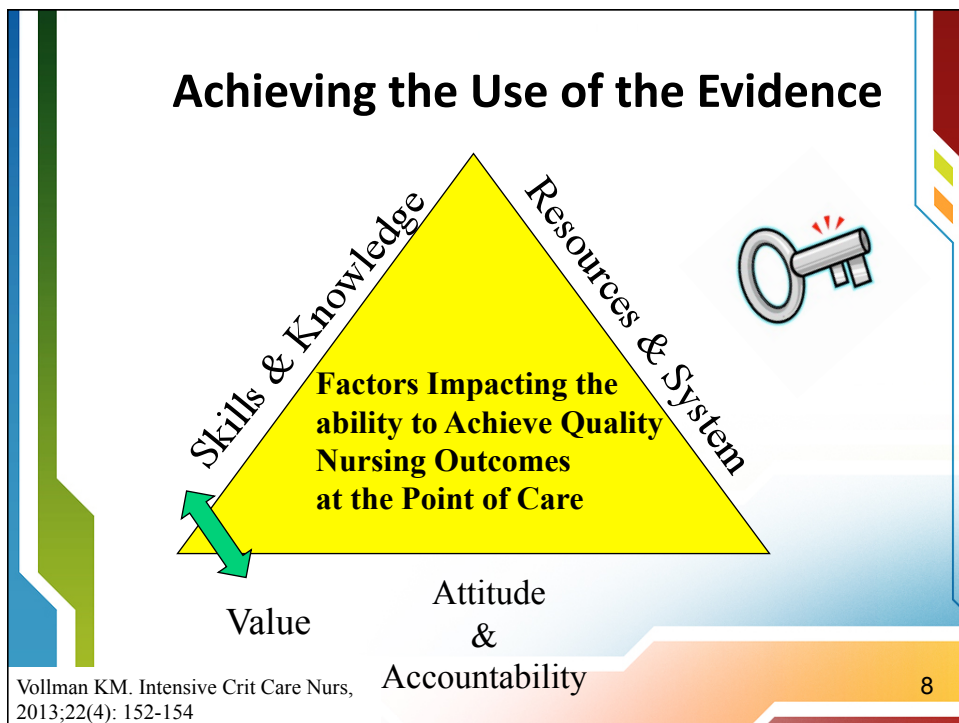
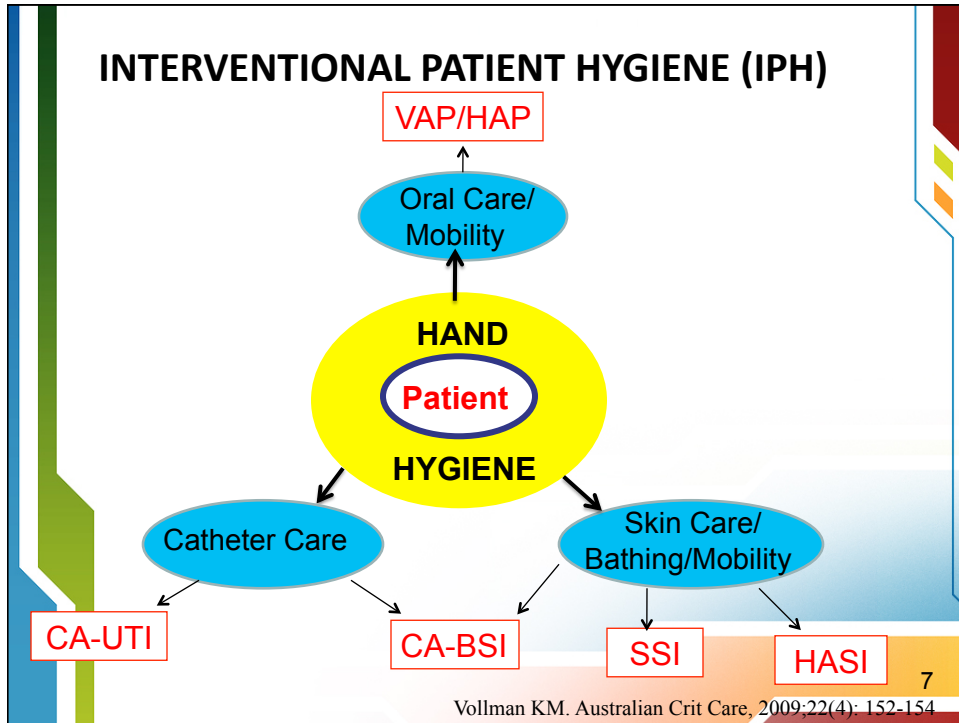
Bathing & Assessment

Incontinence Associated Dermatitis Prevention Program

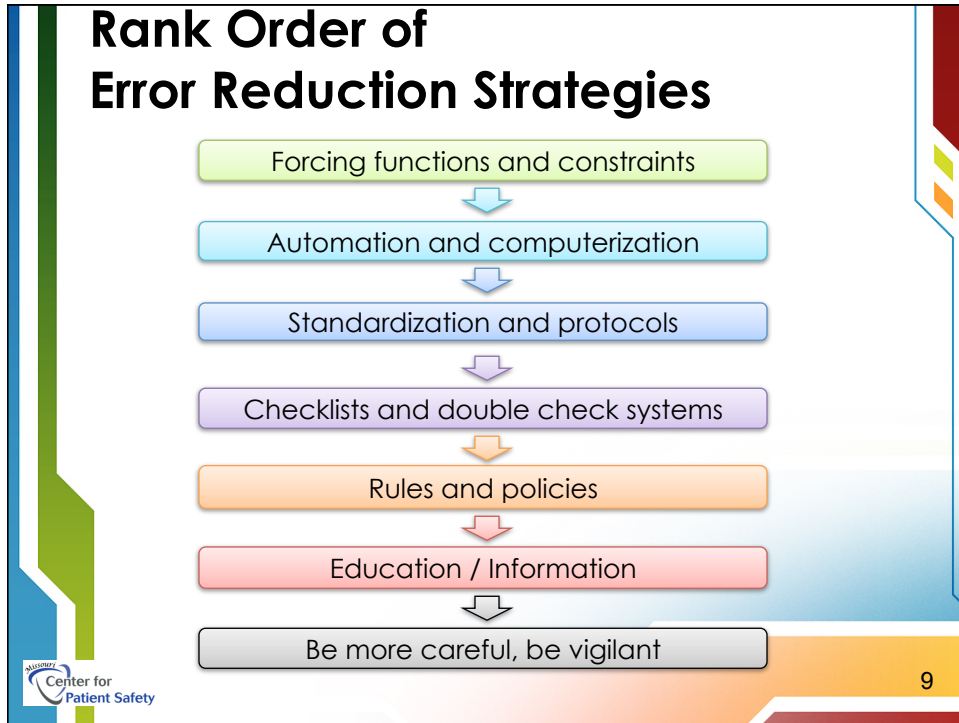
Pressure Ulcer Prevention

6

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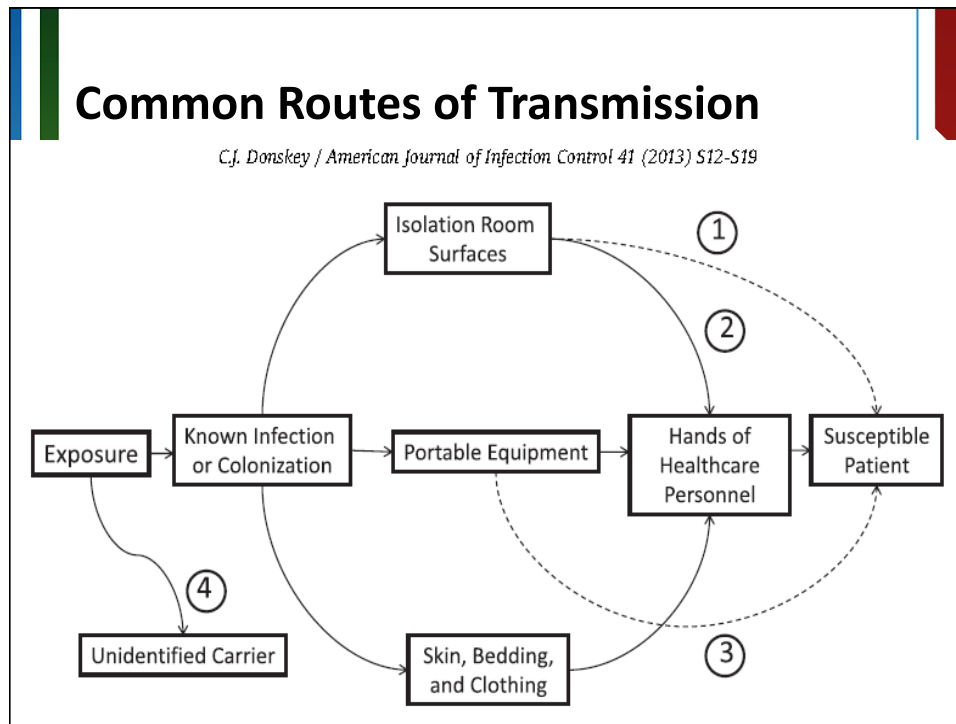
## Why HAI's? Protecting Patients From Harm

Estimates: 183 Hospitals in 10 States	
HAI:	<b>722,000/year</b>
HAI-related deaths:	<b>75,000/year</b>
Hospitalized patients develop infection:	<b>1 out of 25 (4%)</b>
Death due to sepsis/septic shock:	<b>700/day</b>
Money spent:	<b>\$45 billion/year</b>
Increase risk of readmission:	<b>27 days vs. 59 days</b>

Magill SS, et al. New England Journal of Med, 2014;370:1198-208

10

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## Reducing MDRO's

- Hand hygiene (Electronic versus direct observation more accurate in measuring compliance)<sup>1</sup>
- Decontamination of environment and equipment
- Ultraviolet–C to kill pathogens.<sup>2,3</sup>
  - After 45 minutes of use, *C. difficile* spores were reduced by up to 99 percent.
  - 15 minutes for non-spore forming bacteria
- Decontamination of the patient<sup>4</sup>
- Practice the device bundles (VAP,BSI, UTI)<sup>5</sup>

<sup>1</sup>Morgan DJ, et al. AJIC, 2012;40:955-959  
<sup>2</sup>Nerandzic MM, et al. BMC Infect Dis 2010 Jul 8;10:197  
<sup>3</sup>Havill NL et al. Infect Control Hosp Epidemiol, 2012;33:507-512  
<sup>4</sup>Huang SS, et al. New Engl J of Med, 2013;368(24):2255-65  
<sup>5</sup>[www.ihl.org](http://www.ihl.org)

12

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## 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  
Popovich KJ, et al. *Infect control and Hosp Epidemiol.* 2012;33:889-896  
Weber DS, et al. *Am J of Infect control.* 2010;38:S25-33

13

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## The Bath: The First Line Of Defense

Early Detection of Skin Injury

Nurse!!!

Reducing Microorganism spread

Efficiency & Effectiveness

Health/Social Well Being



14

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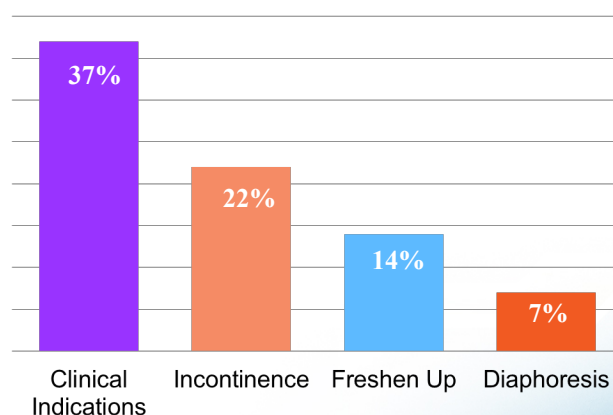
## Optimal Hygiene

- pH balanced (4-6.8)
  - Stable pH discourages colonization of bacteria & ↓ risk of infection
  - Bar soaps may harbor pathogenic bacteria
  - Skin pH requires 45 minutes to return to normal following a ordinary washing
- 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  
Byers P, et al. WOCN. 1995; 22:187-192.  
Hill M. Skin Disorders. St Louis: Mosby; 1994.  
Fiers SA. Ostomy Wound Managment. 1996; 42:32-40.  
Kabara JJ, et al. J Environ Pathol Toxicol Oncol. 1984;3:1-14

15

## The Evidence: Reasons for Bathing



Coyer FM, et al. *Aust Crit Care*. 2011;24(3):198-209.

16

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## Timing of Bath



**40%** baths occur 2400 – 0600

- Timing for bathing varies globally
- Consider patient need for sleep and energy reserves.

Avoid:

- Nurse preference
- Organizational factors
- Unit norms

Coyer FM, et al. *Aust Crit Care*. 2001;24:198-209  
Celik S, et al. *J Clin Nurs*. 2004;14:102-106  
Tamburri LM, et al. *Am J Crit Care*. 2004;392:102-113

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17

## 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

Bleasdale SC, et al. *Arch Intern Med*. 2007;167(19):2073-2079

18

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**Environmental Contamination as a Source of Health Care Acquired Pathogens**

Pathogen	Survival	Data	Transmission Settings
<i>C. difficile</i>	Months	3+	Healthcare facilities
MRSA	d-weeks	3+	Burn units
VRE	d-weeks	3+	Healthcare facilities
Acinetobacter	33 d	2/3+	ICUs
<i>P. aeruginosa</i>	7 h	1+	Wet environments

Hands equally become contaminated from commonly examined skin sites & environmental surfaces

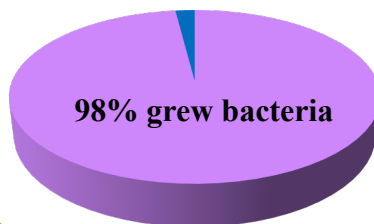
Hota B, *Clin Inf Dis* 2004; 39(8):1182-9

Stiefel U et al. *Infect control & Hosp Epidemiol* 2011;32:185-187.

19

**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%

Johnson D, et al. *Am J Crit Care*, 2009;18(1):31-40, 41.

20

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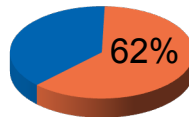
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## Bath Basins

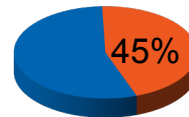
### Potential Source of Infection

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

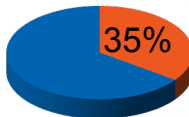
**Total hospitals: 88**  
**Total basins: 1103**



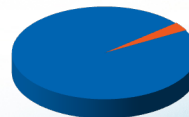
**Contaminated**  
 686 basins/88 Hospital



**Gram negative bacilli**  
 495 basins/86 hospitals



**Colonized w/ VRE**  
 385 basins/80 hospitals



**MRSA**  
 36 basins/28 hospitals

Marchaim D, et al. *Am J of Infect Control.* 2012;40(6):562-564

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21

## Mechanisms of Contamination

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



Shannon RJ, et al. *J Health Care Safety Compliance Infect Control.* 1999;3:180-184.

Larson EL, et al. *J Clin Microbiol.* 1986;23(3):604-608.

Johnson D, et al. *Am J Crit Care,* 2009;18(1):31-38, 41.

Marchaim D, et al. *Am J Infect Control.* 2012;40(6):562-564.

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## 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

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

23

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## 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

Larson E, et al. *AJCC.* 2004; 13(3):235-41  
McGuckin M, et al *Am J Infect Control.* 2008 Feb;36(1):59-62  
Shepard CM, et al. *J of Gerontol Nurs.* 2003;49:36-45  
Birch S, et al. *Ostomy Wound Manage.* 2003;49:64-67

24

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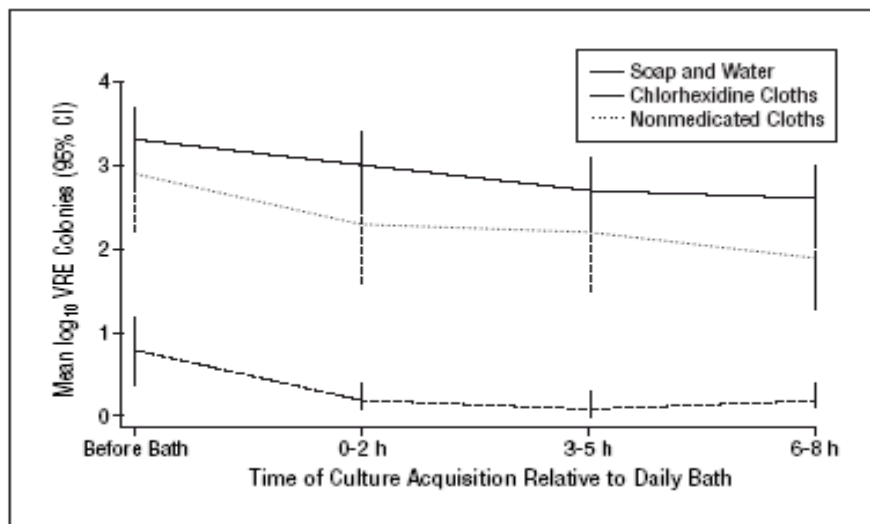
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## Antisepsis Bathing

- Prospective sequential group single arm clinical trial
- 1787 patients bathed
  - Period 1: soap & water
  - Period 2: CHG basinless cloth bath
  - Period 3: non-medicated basinless cloth bath

Veron MO et al. Archives Internal Med 2006;166:306-312

25



**26 colonization's with VRE per 1000 patients days vs. 9 colonization's per 1000 patient days with CHG bath**

26

Veron MO et al. Archives Internal Med 2006;166:306-312

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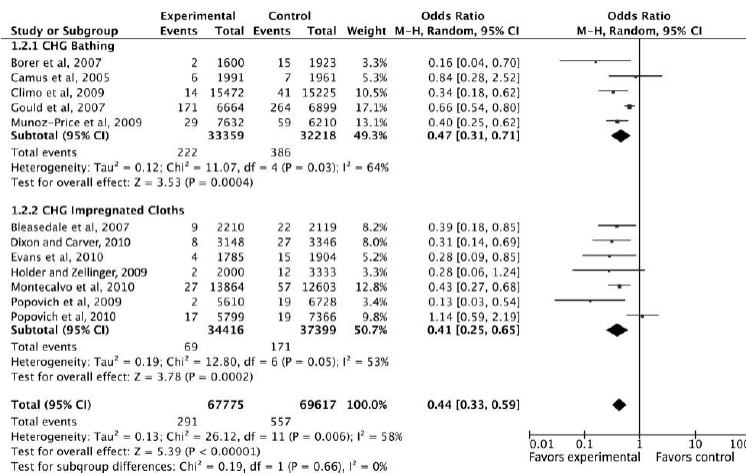
**Table 3. Percentage of Environmental Surface Culture Specimens That Were Positive for Vancomycin-Resistant Enterococci During the 3 Study Periods\***

Site Where Culture Specimen Was Obtained	Study Period		
	Soap and Water (n = 311)	Chlorhexidine (n = 307)†	Nonmedicated Cloth (n = 140)‡
Table	10 (3)	4 (1)	13 (9)
Bed rail	33 (11)	13 (4)	23 (16)
Pull sheet	63 (20)	17 (6)	43 (31)

Veron MO et al. Archives Internal Med 2006;166:306-312<sup>27</sup>

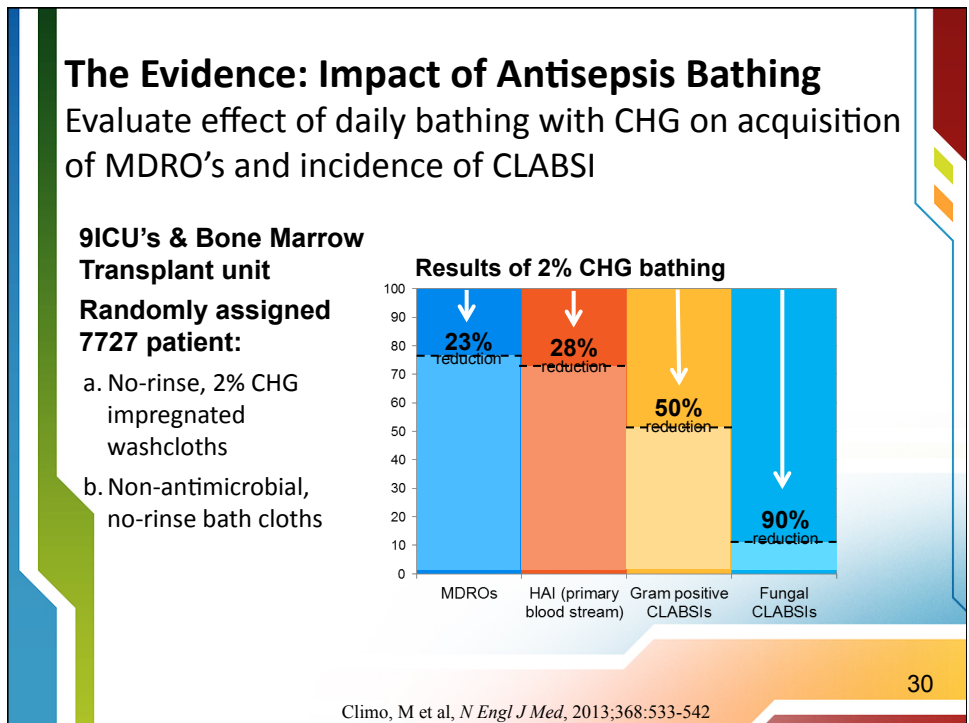
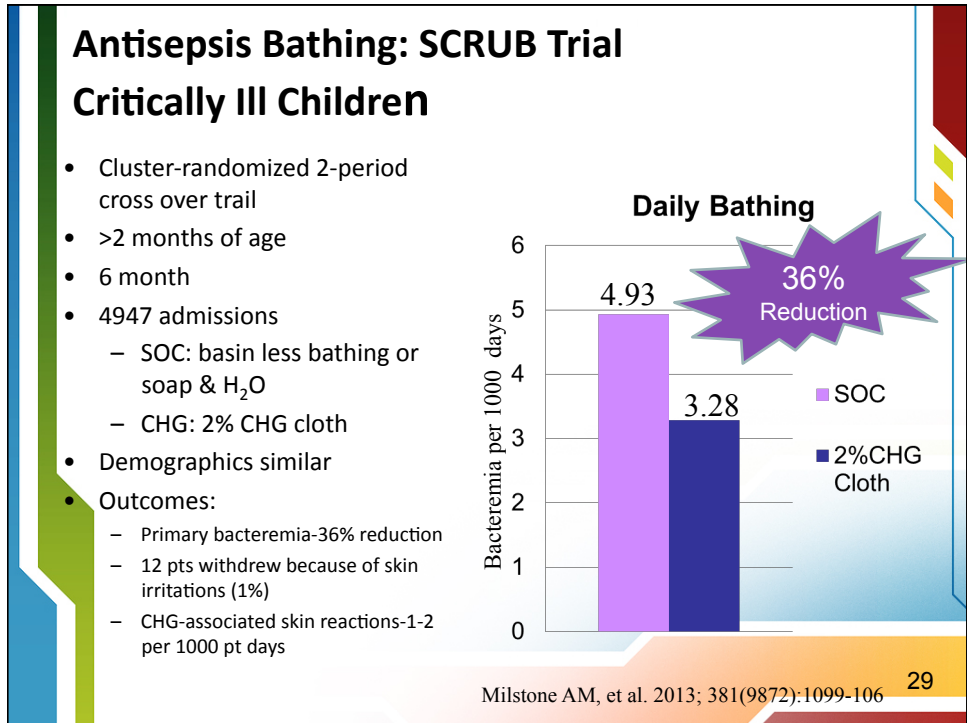
**The Efficacy of Daily Bathing with Chlorhexidine for Reducing Healthcare-Associated Bloodstream Infections: A Meta-analysis**

John C. O'Horo, MD;<sup>1</sup> Germana L. M. Silva, MD;<sup>2</sup> L. Silvia Munoz-Price, MD;<sup>3</sup> Nasia Safdar, MD, PhD<sup>4</sup>



Infect Control Hosp Epidemiol 2012;33(3):257-267

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### Impact of Antisepsis Bathing

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

**3 protocols tested:**

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

Huang SS, et al. New England Journal of Med, 2013; May 30<sup>th</sup> online.

**Results: No Swab Group Universal Decolonization Demonstrated**

Pathogen	Reduction
MRSA	37%
CLABSI from all pathogens	44%

31

### Single Center CHG Bathing Study

- A pragmatic cluster randomized, crossover study of 9340 patients admitted to 5 adult intensive care units of a tertiary medical center in Nashville, Tennessee, from July 2012 through July 2013.
- Units performed once-daily bathing of all patients with disposable cloths impregnated with 2%chlorhexidine or non-antimicrobial cloths as a control
- Bathing treatments were performed for a 10-week period followed by a 2-week washout period during which patients were bathed with non-antimicrobial disposable cloths, before crossover to the alternate bathing treatment for 10 weeks....3x
- Results
  - No difference in CLABSI's, CAUTI's, VAP & c-diff infections were seen

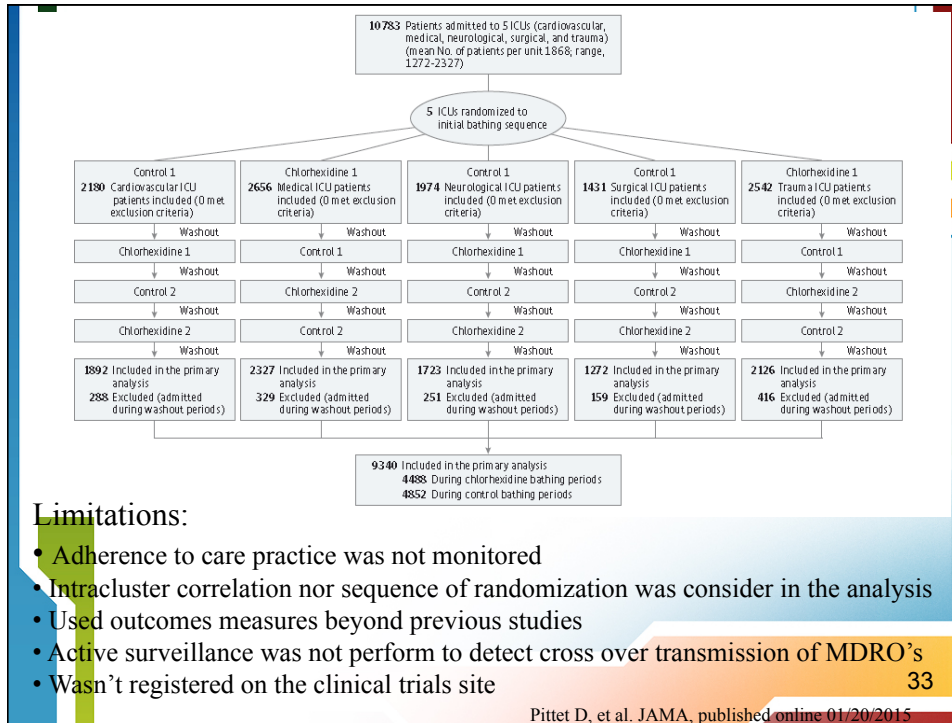
Noto MJ, et al. JAMA, published online 01/20/2015

32



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33

## Recommendations and Implementation Strategies

- 1. Bath patients daily in ICU with CHG (determine if exclusion criteria)**
- 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 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.
- 3. Avoid tap water for any component of bathing ICU patients**
- 4. Use a no-rinse pH-balanced cleanser for facial cleansing**

34

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## Recommendations and Implementation Strategies

### 6. Procedure:

- After routine washing of face and hair, remove one batch of CHG cloths (three bundled packages of two cloths each = six cloths).
- Warming is for patient comfort, it is not required.
- Cloths should be used to bathe the skin with firm massage.
- Do not use CHG above the jawline
- CHG should be used for incontinence care, or for any other reasons for additional cleaning
  - If incontinence occurs, rinse the affected area with water and clean with chux. Then clean skin with CHG cloths.
- Use CHG-compatible barrier products if needed
- Do not rinse with water or wipe off

Universal ICU Decolonization: An Enhanced Protocol: Appendix F. Chlorhexidine Bathing Skills Assessment. September 2013. Agency for Healthcare Research and Quality, Rockville, MD. [http://www.ahrq.gov/professionals/systems/hospital/universal\\_icu\\_decolonization/universal-icu-apf.html](http://www.ahrq.gov/professionals/systems/hospital/universal_icu_decolonization/universal-icu-apf.html)

35

## For Successful Banning of Basins for Patient Care

- We need to provide alternatives for the other functions:

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

36

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## General Implementation Strategies

### Educate patients and families about new bathing technologies

- Improves condition of the skin
- Reduces the spread of microorganisms
- Should not be rinsed off

### Monitor compliance

- Assess estimated number of baths given
- Compare to use of bathing products used.

37

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## Strategies for Successful Implementation

- Baseline measurement of HAI's
- Build the Will
- Reduce process variation
- Cost-benefit analysis
- Place resources at point of care
- Monitor compliance



38

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September 28 (Free British Teleclass ... Broadcast live from the 2015 IPS conference)  
**WHAT DID THE ROMANS EVER DO FOR US?**  
Carole Fry, Healthcare Infection Society

September 29 (Free British Teleclass ... Broadcast live from the 2015 IPS conference)  
**FAECAL TRANSPLANT TO TREAT *CLOSTRIDIUM DIFFICILE* DISEASE**  
Dr. Jonathan Sutton, Betsi Cadwaladr University Health Board, Wales

September 29 (Free British Teleclass ... Broadcast live from the 2015 IPS conference)  
**DEBATE – SELECTIVE DECONTAMINATION OF THE GUT**  
Dr. Cliff McDonald, Division of Healthcare Quality Promotion, USA, and  
Professor Jan Kluytmans, St Elisabeth Hospital, The Netherlands

September 30 (Free British Teleclass ... Broadcast live from the 2015 IPS conference)  
**THE EMERGENCE OF MERS: FROM ANIMAL TO HUMAN TO HUMAN**  
Professor Ziad Memish, Prince Mohammed Bin Abdulaziz Hospital, Saudi Arabia

October 14 (FREE WHO Teleclass - Europe)  
**THE USE OF SOCIAL MEDIA IN SUPPORT OF GLOBAL INFECTION PREVENTION AND CONTROL**

[www.webbertraining.com/schedule1.php](http://www.webbertraining.com/schedule1.php)

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