Implementation Pearls for Decolonization in Healthcare: 
*The Process of Adoption*

Susan Huang, MD MPH  
Professor of Medicine  
Medical Director, Epidemiology & Infection Prevention  
Division of Infectious Diseases & Health Policy Research Institute  
University of California Irvine School of Medicine
What is Decolonization?

- Topical antiseptics to reduce body bacteria and infection
- Commonly
  - Chlorhexidine (CHG) for skin and wound bathing
  - Mupirocin or iodophor for nasal use
- Prevents shedding, spreading, and infection
- Used in vulnerable times, high risk populations
- Active against drug-resistant bacteria
- Strong safety record
The REDUCE MRSA Trial

**Randomized Evaluation of Decolonization vs. Universal Clearance to Eliminate MRSA**

- 43 Hospital, 74 ICUs
- 3-arm cluster randomized ICU trial
- Universal decolonization arm (CHG, mupirocin)
  - 37% reduction in MRSA clinical cultures
  - 44% reduction in all bloodstream infection
  - 44% reduction in blood culture contamination
  - 26-37% reduction in uropathogens in men

Huang et al. ICHE 2014; 35 S3:S23-S31
Septimus et al. ICHE 2014; 35 S3:S17-S22
Huang et al. Lancet ID 2016;16(1):70-9
Implementation Pearl #1

Fund Pragmatic Trials

• Assess impact under usual care
• Usual hospital QI infrastructure
• No research staff on-site
• Provided
  — Coaching calls
  — Educational materials, protocols, training modules, video
  — Staff handouts, FAQs, talking points
Implementation Pearl #2: Provide Tools

Staff training video for CHG bathing/showering at https://vimeo.com/164608558
Toolkits

- Contact Information and Phone Matrix
- Participation Requirements
- Nursing Protocol
- FAQ
- Do’s and Don’ts
- Patient/Resident Talking Points
- Instructional Handouts
- Training Module
- Just in Time Training
- CHG Compatibility
- Safety and Side Effects
- Compliance Documentation
Implementation Pearl #3: 
Require Training

• Proper bathing not intuitive
• More than cleaning intact skin
  ✓ Lines, tubes, drains, devices
  ✓ Wounds
  ✓ Rashes, friable skin
• Remove incompatible products
• Air dry

Chlorhexidine Only Works If Applied Correctly: Use of a Simple Colorimetric Assay to Provide Monitoring and Feedback on Effectiveness of Chlorhexidine Application

Laura Supple, BS; Monika Kumaraawami, MD; Sirisha Kundrapu, MD, MS; Venkata Sunkesula, MD, MS;
Jennifer L. Cadnum, BS; Michelle M. Nerandzic, BS;
Myreen Tomas, MD; Curtis J. Donskey, MD

We used a colorimetric assay to determine the presence of chlorhexidine on skin, and we identified deficiencies in preoperative bathing and daily bathing in the intensive care unit. Both types of bathing improved with an intervention that included feedback to nursing staff. The assay provides a simple and rapid method of monitoring the performance of chlorhexidine bathing.

Infect Control Hosp Epidemiol 2015;00(0):1–3
Implementation Pearl #4: Assess Adherence

- 3-5 assessments per unit per month

Patient CHG Cloth Self-Bathing Survey

CHG Cloth Bathing Observation Form
Adherence Matters

• Post discharge trial of education vs decolonization if MRSA+
• Overall decolonization arm
  — 30% reduction in MRSA infection
  — 17% reduction in all infection
• Fully adherent subjects
  — 44% reduction in MRSA infection
  — 40% reduction in all infection

Project CLEAR Trial
IDWeek 2016
Implementation Pearl #5: Foster Comparison and Collaboration
Implementation Pearl #6: 
*Ensure Dissemination*

- Dissemination grants are critical

The REDUCE MRSA Trial

Randomized Evaluation of Decolonization vs. Universal Clearance to Eliminate MRSA

• Successful adoption by 95 hospitals with BSI reduction
• 80% of US hospitals use universal decolonization in ICUs

Septimus ES et al. CID 2016;63(2):172-7
Shuman EK et al. IDWeek 2014
Implementation Pearl #7: Assess Value to Other Settings

- ICU: REDUCE MRSA, SCRUB, Climo et al.
- Non-ICU: ABATE Infection Trial
- Post-Discharge: Project CLEAR
- Nursing Homes: PROTECT Trial
- Region: SHIELD OC