Oral Abstract Session:

152. Featured Abstract: Epidemiology and Infection Control

Friday: 4:15 p.m. - 4:30 p.m.
Room: Ballroom 20 ABCD

Moderators:
JAN E. PATTERSON, MD, FIDSA, FSHEA; University of Texas Health Sciences Center
JOHN A. JERNIGAN, MD, MS; Centers for Diseases Control and Prevention
SCOTT FRIDKIN, MD; Centers for Disease Control and Prevention

Presenters:

1234 4:15 p.m. **Randomized Evaluation of Decolonization vs. Universal Clearance to Eliminate Methicillin-Resistant *Staphylococcus aureus* in ICUs (REDUCE MRSA Trial)**
SUSAN S. HUANG, MD, MPH, FIDSA[1], EDWARD SEPTIMUS, MD, FIDSA, FSHEA[2], KEN KLEINMAN, SCD[3], JULIA MOODY, MS[2], JASON HICKOK, MBA[2], TALISER AVERY, MS[4], JULIE LANKIEWICZ, MPH[5], ADRIJANA GOMBOSEV, BS[6], LEAH TERPSTRA, BA[6], FALLON HARTFORD, MS[7], MARY HAYDEN, MD[8], JOHN A. JERNIGAN, MD, MS[9], ROBERT WEINSTEIN, MD[10], VICTORIA J. FRASER, MD, FIDSA, FSHEA[11], KATHERINE HAFFENREFFER, BS[7], ERIC CUI, BS[6], REBECCA E. KAGANOV, BA[5], KAREN LOLANS, BS[12], JONATHAN PERLIN, MD[2], RICHARD PLATT, MD, MS, FSHEA[7] and THE CDC PREVENTION EPICENTERS AND THE AHRQ DECIDE NETWORK AND HEALTHCARE-ASSOCIATED INFECTIONS PROGRAM; [1]University of California Irvine School of Medicine, Orange, CA, [2]HCA Inc, Nashville, TN, [3]Department of Population Medicine, Harvard Medical School and Harvard Pilgrim Health Care Institute, Boston, MA, [4]Harvard Medical School, Boston, MA, [5]Harvard Pilgrim Health Care Institute, Boston, MA, [6]University of California Irvine School of Medicine, Irvine, CA, [7]Harvard Medical School and Harvard Pilgrim Health Care Institute, Boston, MA, [8]Rush University Medical Center, Chicago, IL, [9]Centers for Diseases Control and Prevention, Atlanta, GA, [10]John Stroger Hospital, Chicago, IL, [11]Washington University School of Medicine, St. Louis, MO, [12]Rush Univ. Med. Ctr., Chicago, IL

Session #152 Presentations:

1234. Randomized Evaluation of Decolonization vs. Universal Clearance to Eliminate Methicillin-Resistant *Staphylococcus aureus* in ICUs (REDUCE MRSA Trial)

Part of Session: 152. Featured Abstract: Epidemiology and Infection Control

4:15 p.m.

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Background: Many states mandate screening of ICU admissions for carriage of MRSA. However, universal decolonization without screening might be a better strategy to reduce MRSA prevalence and prevent infection due to a broader set of

pathogens.

Methods: We conducted a 3 arm cluster-randomized trial of MRSA prevention strategies. Study design included a 1-year baseline period (Jan-Dec 2009) and an 18-month intervention period (Apr 2010 - Sept 2011). All ICUs in a hospital were assigned to the same strategy. These were 1) **screening and isolation**: nasal MRSA screening followed by isolation if positive, 2) **targeted decolonization**: screening, followed, if positive, by isolation and decolonization with chlorhexidine baths and mupirocin for 5 days, and 3) **universal decolonization**: stop screening, add universal use of mupirocin for 5 days and daily chlorhexidine baths for the duration of ICU stay. Proportional hazards models with shared frailties were used to assess differences in infection reductions across the arms, accounting for clustering by hospital. The primary analysis was as-randomized and unadjusted. A secondary analysis adjusted for age, gender, race, payer, comorbidities, and prior MRSA history.

Results: We randomized 43 hospitals in 16 states. There were 74 adult ICUs with 48,390 admissions in the baseline period and 74,256 in the intervention period. There were significant differences between arms in the relative hazards for intervention vs. baseline for both clinical isolates of MRSA and bloodstream infections caused by all pathogens (Table). In each case, universal decolonization produced a significantly greater reduction than screening and isolation. Targeted decolonization was not significantly different from screening and isolation alone. Adjusted analyses yielded similar results (Table).

Conclusion: Universal decolonization with chlorhexidine and mupirocin in adult ICUs yielded a 37% reduction in risk of an MRSA clinical isolate and a 44% reduction in risk of bloodstream infections due to all pathogens. Decolonizing all ICU patients was more effective than screening for MRSA. It also eliminated the need for surveillance cultures and reduced the need for isolation precautions.