Association for Professionals in Infection Control and Epidemiology (APIC)
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Handling inquiries about the May 29, 2013 *New England Journal of Medicine* (NEJM) study: 'Targeted vs. Universal Decontamination to Prevent ICU infection'

Given the study that was published on 5/29/13 in the *New England Journal of Medicine* titled "Targeted vs. Universal Decontamination to Prevent ICU infection," which has received wide media coverage, you may receive inquiries about infection prevention policies, practices, and rates of MRSA in your facility. The following provides background on the study, information for infection preventionists, and talking points to assist in handling general inquiries.

Note: Edward Septimus, MD, will present results of the REDUCE MRSA trial at the APIC 40th Annual Conference in Fort Lauderdale. Plan to attend live or listen via the conference proceedings: Sunday, June 9, Plenary Session, 8-9 a.m., "Horizontal vs. vertical interventions in prevention of healthcare-associated infections."

Important note

Prior to responding to inquiries from those outside your organization, be sure to talk with your risk management department as well as public relations to clarify your facility's position regarding disclosure and release of information including policies, plans and infection rates.

Background on the study

Methicillin-resistant *Staphylococcus Aureus* (MRSA) is an important cause of illness and sometimes death, especially among patients who have had medical care. Three-fourths of *Staphylococcus aureus* infections in hospital ICUs are considered methicillin-resistant.

A new study has been published showing that using germ-killing soap and ointment on all intensive-care unit (ICU) patients can reduce bloodstream

infections by up to 44 percent and significantly reduce the presence of MRSA in ICUs.

The study, REDUCE MRSA trial, was published in the *New England Journal of Medicine* and took place in two stages from 2009-2011. A multidisciplinary team from the University of California, Irvine; Harvard Pilgrim Health Care Institute; Hospital Corporation of America (HCA); and the Centers for Disease Control and Prevention (CDC) carried out the study. A total of 74 adult ICUs and 74,256 patients were part of the study, making it the largest study on this topic to date.

The study looked at the effectiveness of three MRSA prevention practices: routine care, providing germ-killing soap and ointment only to patients with MRSA, and providing germ-killing soap and ointment to all ICU patients.

More detail on the three MRSA prevention practices that were evaluated:

- **Group I (Screening and isolation):** bilateral screening of the nares for MRSA performed on ICU admission, and contact precautions for patients with a history of MRSA colonization or infection and for those who had any positive MRSA test.
- **Group II (Targeted decolonization):** screening and contact precautions same as group I; patients known to have MRSA colonization or infection underwent a 5-day decolonization which included twice daily intranasal mupirocin ointment and daily bathing with chlorhexidine (CHG) impregnated cloths.
- **Group III (Universal decolonization):** no screening for MRSA on admission to the ICU. Contact precautions same as group I. All patients received twice-daily intranasal mupirocin for 5 days, plus daily bathing with CHG impregnated cloths for the entire ICU stay.

According to the study, the universal decolonization strategy was the most effective and the easiest to implement. It eliminated the need for screening ICU patients for MRSA. There is some concern, however, that widespread use of mupirocin could cause resistance.

Study conclusions:

- Routine care (Group I) did not significantly reduce MRSA or bloodstream infections.
- Providing germ-killing soap and ointment only to patients with MRSA (Group II) reduced bloodstream infections by any germ by 23 percent.
- Providing germ-killing soap and ointment to all ICU patients (Group III) reduced MRSA by 37 percent and bloodstream infections by any germ by 44 percent.

Important information for infection preventionists from APIC

Patient safety is APIC's highest priority and this study is another contribution to review, weigh, and consider as the evidence of best practice(s) continues to evolve in the Intensive Care Unit population.

The CDC is working to determine how these findings will affect infection prevention recommendations. APIC follows the CDC guidelines in developing best practice recommendations. APIC will be following the science as it develops to help infection preventionists (IPs) improve prevention efforts.

This latest study points to the efficacy of the horizontal approach – prevention strategies for a broad category of people who are at highest risk, not just the patients who are colonized with a certain organism. This contrasts with the vertical orientation – which is pathogen-specific and aims to tackle some, but not all, microbes. There remains a longstanding debate about screening, and this study provides statistically significant data to analyze, including the future research agendas the authors included in the article.

IPs should weigh the study in the context of their own situation and make an evaluation based on their own rates, patient population, how comparable their facilities are to the ones in the study group, the feasibility of implementing such an approach, etc.

In evaluating this study and how the findings may be applicable to your prevention programs, begin with a thorough risk assessment and analysis to determine how well your infection prevention practices are working. Consult with your experts, look at the strengths of the paper, and decide what will work for your hospital. Determine how you fit into the three groups, compare your rates to the study groups and to published rates in the literature, and determine from there if practice changes should be recommended. Under no circumstances should hospitals deviate from state mandates.

Additional reading material

This investigation should be reviewed in the context of preceding studies, especially these:

Effect of daily chlorhexidine bathing on hospital-acquired infection. Climo MW, Yokoe DS, Warren DK, Perl TM, Bolon M, Herwaldt LA, Weinstein RA, Sepkowitz KA, Jernigan JA, Sanogo K, Wong ES.N Engl J Med. 2013 Feb 7;368(6):533-42

Zeroing in on methicillin-resistant *Staphylococcus aureus*: US Department of Veterans Affairs' MRSA Prevention Initiative. Kralovic SM, Evans ME, Simbartl LA, Ambrose M, Jain R, Roselle GA. Am J Infect Control. 2013 May;41(5):456-8

Molecular epidemiology of methicillin-resistant *Staphylococcus aureus* (MRSA) among patients admitted to adult intensive care units: the STAR*ICU trial. Nair N, Kourbatova E, Poole K, Huckabee CM, Murray P, Huskins WC, Blumberg HM.Infect Control Hosp Epidemiol. 2011 Nov;32(11):1057-63

Intervention to reduce transmission of resistant bacteria in intensive care. Huskins WC, Huckabee CM, O'Grady NP, Murray P, Kopetskie H, Zimmer L, Walker ME, Sinkowitz-Cochran RL, Jernigan JA, Samore M, Wallace D, Goldmann DA; STAR*ICU Trial Investigators.N Engl J Med. 2011 Apr 14;364(15):1407-18

Clin Infect Dis. 2012 Jun;54(11):1621-3. doi: 10.1093/cid/cis277. Epub 2012 Apr 4. Deconstructing the Veterans Affairs MRSA prevention bundle. Perencevich EN.

Veterans Affairs initiative to prevent methicillin-resistant Staphylococcus aureus infections. Jain R, Kralovic SM, Evans ME, Ambrose M, Simbartl LA, Obrosky DS, Render ML, Freyberg RW, Jernigan JA, Muder RR, Miller LJ, Roselle GA.N Engl J Med. 2011 Apr 14;364(15):1419-30

General points about effective infection prevention programs

- The infection preventionists at our facility have designed a coordinated infection prevention and control program to protect everyone who comes into our facility, including patients, healthcare workers, and the public. Here are the steps we have taken at our facility to reduce the risk of infection.

- Our program incorporates evidence-based practices from leading authorities in infection prevention including the Centers for Disease Control and Prevention (CDC) and the Association for Professionals in Infection Control and Epidemiology (APIC). In addition, we comply with regulations from government agencies such as the state and local health departments, the Occupational Safety and Health Administration (OSHA) and the Centers for Medicare and Medicaid Services (CMS), as well as accrediting bodies, such as The Joint Commission.

- The essential elements of an infection prevention and control program to prevent healthcare-associated infections include:

- Rigorous hand hygiene practices that ensure healthcare providers clean their hands before and after providing patient care and after having contact with the patient's environment

    - Patients as well as visitors need to practice good hand hygiene. We encourage our patients to be partners in their care and talk with their healthcare providers about wearing gloves and washing hands before and after delivering care

- Use of barrier precautions, such as gloves, gowns, masks, caps, etc., by healthcare workers and visitors

- Separating patients with serious infections from other patients to prevent the transmission of infection

- Proper disinfection of the patient's skin prior to medical and surgical procedures

- Environmental cleaning and decontamination of equipment, especially items that are frequently touched or are close to patients, such as bedrails and bedside equipment

- Monitoring the cleaning, disinfection and sterilization of instruments and equipment used for patient care

- Removing IV and urinary catheters promptly

- When possible, avoiding veins in the groin for IV catheter placement

- Assure that antibiotics are used carefully

- Staff education on best practices to prevent infections including central-line bloodstream infections and spread of resistant organisms such as CRE, MRSA, and *C. difficile*

- Sharing information with patients and families so they understand the importance of infection prevention practices in all healthcare settings and at home

- Additionally, in order to ensure patient safety, our staff is trained to identify any breaks in infection prevention and control practices and to intervene if such breaks are identified.