Study examines effect of use of gloves and gowns for all patient contact in ICUs on MRSA or VRE

October 4 2013

The wearing of gloves and gowns by health care workers for all intensive care unit (ICU) patient contact did not reduce the rate of acquisition of a combination of the bacteria methicillin-resistant *Staphylococcus aureus* (MRSA) and vancomycin-resistant *Enterococcus* (VRE), although there was a lower risk of MRSA acquisition alone, according to a study published online by *JAMA*. The study is being released early to coincide with its presentation at IDWeek 2013.

Antibiotic-resistance is associated with considerable illness, death, and costs. MRSA and VRE are primary causes of health care-associated infections. "The estimated cost of antibiotic-resistance in the United States is more than $4 billion per year. Health care-associated infections are the most common complication of hospital care, affecting an estimated 1 in every 20 inpatients. Numerous studies have shown that health care workers acquire bacteria on their hands and their clothing by touching patients," according to background information in the article.

The Centers for Disease Control and Prevention recommend use of contact precautions (wearing gloves and gowns) when caring for patients colonized or infected with antibiotic-resistant bacteria. However, colonization with MRSA, VRE, or other antibiotic-resistant bacteria often is not detected and contact precautions, therefore, are not applied. It has not been known whether wearing gloves and gowns for all patient contact, not just for patients with known colonization, decreases

acquisition of antibiotic-resistant bacteria in the ICU.

Anthony D. Harris, M.D., M.P.H., of the University of Maryland School of Medicine, Baltimore, and colleagues assessed whether wearing gloves and gowns for all patient contact in the ICU compared with the use of contact precautions for patients with known antibiotic-resistant bacteria reduces acquisition rates of MRSA and VRE. The randomized trial was conducted in 20 medical and surgical ICUs in 20 U.S. hospitals from January 2012 to October 2012. In the intervention ICUs, all health care workers were required to wear gloves and gowns for all patient contact and when entering any patient room. The primary outcome was acquisition of MRSA or VRE based on surveillance cultures (92,241 swabs) collected on admission and ICU discharge from 26,180 patients.

The researchers found that there was a decrease in both the intervention and control ICUs in the composite rate of MRSA or VRE acquisition over the study periods, but the difference in change was not statistically significant. There was a borderline statistically significant reduction in MRSA that was greater in the intervention group.

The intervention did not reduce VRE acquisition, but it did reduce MRSA acquisition, the authors write. "Better hand hygiene compliance on room exit occurred in the intervention ICUs. The intervention led to fewer health care worker-patient visits and did not increase the frequency of adverse events."

"Although the results of Harris et al failed to demonstrate an overall benefit of universal use of gloves and gowns to reduce acquisition of MRSA or VRE, this approach may be worth considering in some high-risk settings such as surgical ICUs wherein MRSA transmission is high among patients with newly implanted medical devices. If implemented, gloving and gowning should be just part of an overall strategy that includes efforts to optimize hand hygiene and prudent use of

antimicrobials," writes Preeti N. Malani, M.D., M.S.J., of the University of Michigan Health System, Veterans Affairs Ann Arbor Healthcare System, Ann Arbor, in an accompanying editorial.

"Although it is appealing to believe there is a simple approach to what should and should not be done to prevent infection in the ICU, best practices are more nuanced and unfortunately, one size does not fit all. The final approach must be adapted to fit the epidemiology of specific ICUs and should also consider the type of resources available. The study by Harris et al serves as a poignant reminder that many questions remain for what constitutes best practice in the care of critically ill patients. Ongoing investment in these sorts of resource intensive trials is essential for continued progress."

More information: doi:10.l001/jama.2013.277815
doi:10.l001/jama.2013.277816