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New Study: Environmental Cleaning Intervention Reduces Transmission of Multidrug-Resistant Organisms in ICUs

San Diego, CA (March 20, 2009) –A rigorous environmental cleaning intervention can reduce the transmission of methicillin-resistant *Staphylococcus aureus* (MRSA) and other multidrug-resistant organisms in hospital intensive care units (ICUs), according to a new study released today at the annual meeting of the Society for Healthcare Epidemiology of America (SHEA). Researchers found that following an enhanced cleaning protocol reduced the spread of MRSA to patients exposed to rooms in which the prior occupant had been colonized or infected.

The multi-modal cleaning intervention consists of three parts: a change from use of a pour bottle to bucket immersion for applying disinfectant to cleaning cloths; an educational campaign involving the environmental services staff at the hospital; and feedback method using removal of intentionally-applied marks visible only under UV light.

“We know that environmental contamination with highly antibiotic-resistant bacteria can still occur in hospitals where cleaning policies exceed national standards established by the CDC,” said Rupak Datta, MPH, an MD/PhD candidate at the University of California at Irvine. “Although the risk of acquiring MRSA and VRE is already low, this study suggests that there are additional preventative measures that hospitals can take to reduce the risk of transmission from one patient to another.”

The retrospective study of more than 13,000 hospital stays in 10 ICUs at a large, tertiary care academic medical center in Boston, measured the risk of MRSA and vancomycin-resistant *Enterococci* (VRE) acquisition before (Sept. 2003-April 2005) and during the cleaning intervention (Sept. 2006-April 2008). Routine admission and weekly screenings for MRSA and VRE were conducted during both periods providing a systematic method to identify new cases of MRSA and VRE. During the pre-intervention period, 3.9% of the 1,454 patients exposed to a prior occupant with MRSA acquired the pathogen compared to just 1.5% of the 1,443 patients exposed during the intervention. Of the 1,291 patients exposed to VRE prior to the intervention, 4.5% acquired VRE compared to 3.5% of 1,446 patients during intervention.

The study builds upon a body of research conducted by Datta and his co-authors. In a 2006 study, they found that patients admitted to an ICU room whose prior occupant had been infected with MRSA or VRE had as much as a 40 percent increased risk of acquiring either pathogen, suggesting environmental contamination could play a significant role in their transmission. In a subsequent study, the authors showed that a multi-modal cleaning intervention could reduce environmental cultures for MRSA and VRE. The current study now suggests that this same intervention reduces acquisition of these pathogens, particularly MRSA, in subsequent room occupants.

Despite the overall reduction in MRSA and VRE acquisition, the cleaning intervention appears to be more effective against MRSA compared to VRE. The difference could be due to a generally higher rate of VRE room contamination and Datta suggests it is a question for future research.

“The results suggest that a multi-modal cleaning intervention can reduce MRSA and, to a lesser extent, VRE transmission in high-risk patient areas including the ICU,” said Datta.

Datta and his co-authors point out that a relatively small percentage of healthcare-associated infections (HAIs) are transmitted due to inadequate room cleaning (constituting about five percent of all new cases of either pathogen.) Still, there are measures hospitals can take to put patients’ minds at ease.

“Even though we know the risk is relatively low, it is unsettling for patients admitted to hospitals to know that the health condition of the prior room occupant could impact their risk for acquiring MRSA or another antibiotic-resistant infection.” Datta added.

The research was funded by the CDC Prevention Epicenters program and a grant from the National Institutes of Health (NIH).

SHEA, comprised of more than 1,200 physicians, infection control practitioners, and other healthcare professionals, is dedicated to maintaining the utmost quality of patient care and healthcare worker safety in all healthcare settings. It upholds its high success rate in infection control and prevention, while applying epidemiologic principles and prevention strategies to a wide range of quality-of-care issues. For more information, visit SHEA’s website, www.shea-online.org.

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