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Superbug in SE Michigan shows recent decline

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A new study finds a decrease in an emergent strain of methicillin-resistant *S. aureus* (MRSA) that is resistant to last line defense antibiotics. Researchers examined the prevalence of vancomycin-resistant *Staphylococcus aureus* (VRSA) infections in southeastern Michigan, where the majority of these infections have occurred in the U.S. The study is published in the December issue of *Infection Control and Hospital Epidemiology*, the journal of the Society for Healthcare Epidemiology of America (SHEA).

"Vancomycin is one of the few antimicrobial agents that can treat infections caused by drug-resistant strains of *S. aureus*, such as MRSA," said Alice Guh, MD, MPH, a medical officer at the Centers for Disease Control and Prevention and senior author of the study. "Because alternative treatments are limited, widespread emergence of VRSA would pose a significant clinical and public health threat."

As of 2012, 13 cases of the rare VRSA organism had been reported in the U.S. All VRSA cases have resulted from the transfer of genetic material between vancomycin-resistant Enterococcus (VRE) that contain certain genes and MRSA strains that contain certain genes. To better understand how this multidrug-resistant strain of MRSA arises, researchers tested samples of the VRSA precursor VRE and MRSA organisms from a large, diverse collection of clinical isolates from two southeastern Michigan healthcare institutions. .

A total of 826 isolates of VRE and 752 isolates of MRSA from these 2

institutions were studied. The researchers found the overall prevalence of VRSA precursor organisms were low.. Only 1.5 percent of VRE and 2.5 percent of MRSA organisms had the genes that allowed transfer of resistance from VRE to MRSA and development of VRSA.

Examining the trends, the authors found a significant decrease in the prevalence of VRE containing this gene after 2009, coinciding with the last VRSA case reported in Michigan. Risk factors associated with MRSA carrying the gene allowing transfer from VRE included prior use of intravenous vancomycin

"Reasons for such a decrease are unknown but could reflect changes in the ecology of VRE due to natural fluctuations or interventions designed to reduce healthcare-associated VRE. Further evaluation is needed to confirm our findings and to better describe the evolving epidemiology of VRSA," said Guh.

More information: Valerie Albrecht, Marcus Zervos, Keith Kaye, Pritish Tosh, Samia Arshad, Kayoko Hayakawa, Alexander Kallen, Linda McDougal, Brandi Limbago, Alice Y. Guh. "Prevalence of and Risk Factors for Vancomycin-Resistant Staphylococcus aureus Precursor Organisms in Southeastern Michigan." *Infection Control and Hospital Epidemiology* [35:12] (December 2014).

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