Methicillin-Resistant *Staphylococcus aureus* Transmission in the Home

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*Staphylococcus aureus* (*S. aureus*) is one of the most common pathogens in healthcare facilities and in the community (Kourtis et al., 2019), and is a major cause of community- and healthcare-associated infections (Magill et al., 2018). Methicillin-resistant *S. aureus* (MRSA) has long been recognized as a pathogen associated with healthcare facilities; however, in the 1990s, community-associated MRSA infections, resulting in mostly superficial skin and soft tissue infections emerged in the United States (Boucher & Corey, 2008). *S. aureus* also accounts for substantial morbidity. In 2017, in the United States there were an estimated 119,247 cases of *S. aureus* bloodstream infections and 19,832 associated deaths. Methicillin-susceptible *S. aureus* infections are slightly increasing in the community (3.9% annually, 2012–2017) and cause approximately half of all healthcare-associated *S. aureus* infections (Kourtis et al.). However, the largest burden of invasive community-associated MRSA disease remains among patients with infection onset outside of acute care hospitals, but with recent or ongoing exposure to healthcare services, such as a recent discharge from an acute care hospital (Dantes et al., 2013), which has strong implications for providers of care in the home setting.

From 2012 to 2015, Mork et al. (2019) conducted a prospective cohort study called the Household Observation of MRSA in the Environment (HOME). In the HOME study, the household members, pets, and environmental surfaces in the homes of 150 pediatric patients who had a culture-confirmed, community-onset MRSA infection (with no other healthcare-related risk factors) were cultured. The researchers collected a total of 3,819 *S. aureus* samples from 692 home occupants, 154 cats and dogs, and 21 household items and asked more than 100 questions about personal habits and hygiene. Molecular testing was performed on all *S. aureus* samples collected to identify if the particular *S. aureus* strain had been identified during a previous home visit, if it came from outside the home, or the result of transmission of an *S. aureus* strain previously identified in the home, but on a different family member, pet, or household item. Over the 12-month study period, MRSA was found in 104 homes, 513 individuals were colonized at least once with *S. aureus*, and 319 individuals were colonized with MRSA. Of the 154 pets sampled, 68 were colonized with *S. aureus*, 44 were colonized with MRSA. Although pets can play a role in *S. aureus* transmission, most pets were receiving the bacteria from the occupants in the home. Only three transmission events occurred in which the pet was the only possible source of the bacteria (Mork et al., 2019).

*S. aureus* can be spread by direct contact with patients and indirect contact with the environment. Mork et al. (2019) found that acquisition of MRSA occurred both by introduction from sources outside the home, and by transmission within the home. *S. aureus* household environmental contamination significantly predicted transmission, with the burden of a given *S. aureus* strain in the home being
surfaces, such as the refrigerator or razors, and to clean and disinfect personal items, such as towels. This practice that home care clinicians can implement to reduce their risk from exposure to S. aureus, even when the exposure to S. aureus contamination may be high in the home environment. Although this may seem like a straightforward infection prevention strategy, despite staff education, staff competence assessment activities, and ready access to hand hygiene products and supplies brought into the home by staff, hand hygiene is not consistently performed by home care clinicians when indicated.

When the patient is known to be infected or colonized with MRSA, use an Environmental Protection Agency (EPA)-approved disinfectant from the EPA's "list H" that contains the names of products effective against MRSA to clean and disinfect the equipment used in the home and prior to placing it back into the nursing bag (if disposable and/or dedicated equipment is not available for use and the nursing bag is brought into the home). The list can be accessed at https://www.epa.gov/pesticide-registration/list-h-epas-registered-products-effectiveness-against-methicillin-resistant. Also, adhere to the applicable Centers for Disease Control and Prevention (CDC) Healthcare Infection Control Practices Advisory Committee's (HICPAC) guidance documents for preventing transmission of device- and procedure-associated infections and breaking the chain of transmission and further spreading S. aureus infections. The CDC's HICPAC guidelines can be accessed at https://www.cdc.gov/infectioncontrol/guidelines/index.html. Anyone can become colonized or infected with MRSA, including home care clinicians. Be aware of the potential for home environmental contamination and diligently implement infection prevention strategies to prevent and control the transmission of MRSA in the home.

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