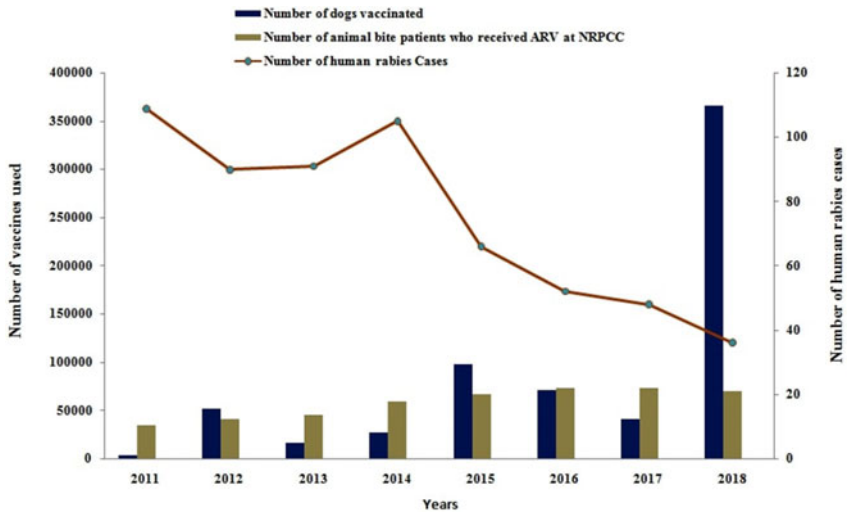

Fig. 2.

Presentation Type:
Poster Presentation

Trends in *Staphylococcus aureus* Bloodstream Infections in Nursing Homes in Monroe County, New York

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Background: Methicillin-resistant *Staphylococcus aureus* (MRSA) bloodstream infections (BSIs) are common in hospitals and nursing homes. Infection prevention efforts reduced MRSA BSI in hospitals but the trend in nursing homes is not well described. In addition, the contribution of methicillin sensitive *S. aureus* (MSSA) to the total burden of invasive *S. aureus* (iSA) in nursing homes remains unknown. **Methods:** As part of the CDC Emerging Infections Program, we conduct population-based surveillance for iSA infections in Monroe County, New York. Case patients were county residents with *S. aureus* isolated from a sterile site. Our analysis was limited to data from 2009–2018 for MRSA and 2015–2018 for MSSA and to cases classified as hospital-onset (HO, positive culture ≥3 calendar days after admission) or nursing home-onset (NHO, positive culture in nursing homes or within 3 days of hospital admission from a nursing home). Risk factors for iSA BSI in nursing homes were compared using the χ^2 and Student *t* tests in SAS version 9.4 software. **Results:** During 2009–2014, 664 MRSA cases occurred and 427 (64%) were BSIs. Of these, 228 (53%) were NHO and 199 (47%) were HO. The BSI incidence per 100,000 population of NHO cases declined from 7.9 in 2009 to 2.8 in 2014, mirroring the decline in HO incidence from 8.7 in 2009 to 3.1 in 2014 (Fig. 1). During 2015–2018, 203 MRSA cases (163 BSIs, 80%) and 235 MSSA cases (163 BSIs, 69%) occurred. Of the 163 MRSA BSIs, 94 (58%) were NHO and 69 (42%) were HO, whereas of the 235 MSSA BSIs, only 56 (34%) were NHO and 107 (66%) were HO. MRSA BSI incidence per 100,000 population in both settings plateaued during 2015–2018 (Fig. 1) and MSSA NHO BSI incidence was lower than HO (1.9 NHO vs 3.6 HO). The total iSA BSI incidence was similar in both settings (5.9 vs 5.0 per 100,000 population in HO and NHO, respectively). NHO MSSA and MRSA cases have similar risk factors for BSI; 45 (30%) had decubitus ulcers, 34 (23%) were on chronic dialysis, 41 (27%) had a CVC in place within 2 days of BSI onset, and 63% had prior healthcare exposures. Most of these developed within 4 weeks of hospital discharge (Fig. 2). **Conclusions:** The incidence of MRSA BSI in nursing homes has declined since 2009 but plateaued starting in 2015. Compared to MRSA, MSSA caused fewer BSIs in

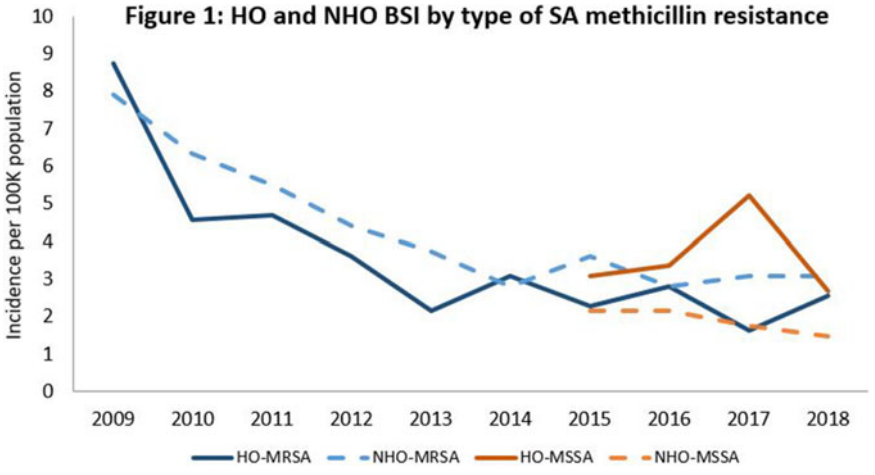

Fig. 1.

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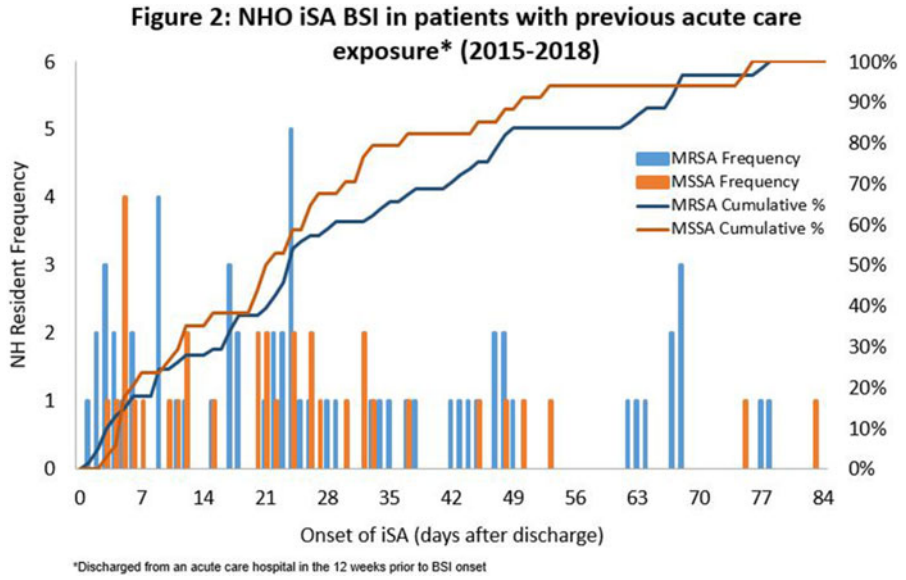

Fig. 2.

nursing homes; however, iSA risk factors, including previous healthcare exposure, were similar. Continued study is needed to identify interventions effective against all iSA infections in nursing homes.

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Poster Presentation

Trimethoprim-Sulfamethoxazole Resistance Patterns Among Methicillin-Resistant *Staphylococcus aureus*, 2012–2018

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Background: Trimethoprim-sulfamethoxazole is commonly used for the treatment of noninvasive methicillin-resistant *Staphylococcus aureus* (MRSA) infections. Following a report from 2 facilities of increased trimethoprim-sulfamethoxazole resistance among MRSA infections, we assessed changes in resistance nationally and by state. **Methods:** We reviewed antibiotic susceptibility testing (AST) data for trimethoprim-sulfamethoxazole among *S. aureus* isolates associated with surgical site infections (SSIs), central-line–associated bloodstream infections (CLABSIs), and catheter-associated urinary tract infections (CAUTIs) from acute-care hospitals reported to the NHSN Device and Procedure Module from 2012 to 2018. We compared the pooled mean percentage of isolates nonsusceptible to trimethoprim-sulfamethoxazole in 2012 and 2018, stratified by MRSA and methicillin-sensitive *Staphylococcus aureus* (MSSA). Among MRSA isolates, we compared the percentage nonsusceptible to trimethoprim-sulfamethoxazole by healthcare-associated infection (HAI) type and state in 2012 and 2018. States with ≥20 MRSA isolates with AST reported each year were included in the state-level analysis. **Results:** Overall, 36,587 MRSA isolates and 46,824 MSSA isolates were reported from 2012 to 2018. Moreover, >80% of MRSA and MSSA isolates had trimethoprim-sulfamethoxazole AST reported each year. Nationally, the percentage of trimethoprim-sulfamethoxazole nonsusceptible among MRSA isolates was 3.9% in 2012 compared to 6.5% in 2018 ($P < .001$), but it was unchanged among MSSA isolates during the same period (1.1% in 2012 vs 1.4% in 2018; $P = .08$). Among MRSA surgical site infections (SSIs), the proportion of trimethoprim-sulfamethoxazole nonsusceptible isolates was 3.1% in 2012 versus 6.1% in 2018 ($P < .001$) but did not change significantly for CLABSIs or CAUTIs (Fig. 1). Among the 32 states that met the inclusion criteria, there were no significant decreases, whereas 4 (12.5%) showed significant increases in the percentage of MRSA that were trimethoprim-sulfamethoxazole nonsusceptible in 2018 compared to 2012: New Jersey (2.4% in 2012 vs 19.3% in 2018; $P < .001$); Florida (9.1% in 2012 vs 22.4% in 2018; $P < .001$); Maryland (0.0% in 2012 vs 10.9% in 2018; $P < .01$); and Pennsylvania (1.7% in 2012 vs 6.5% in 2018; $P < .001$). **Conclusions:** Nationally, there was a modest but significant increase in the percentage of MRSA HAI isolates nonsusceptible to trimethoprim-sulfamethoxazole in 2018 compared to 2012; however, 3 of 4 states with significant increases in nonsusceptibility had substantial, potentially clinically relevant increases (>10%). Ongoing characterization of MRSA isolates from Florida and New Jersey may provide insight into the underlying cause of these shifting patterns in trimethoprim-sulfamethoxazole resistance among MRSA. Healthcare personnel should select appropriate antibiotic regimens based on local resistance patterns, should monitor patients for treatment failure, and should report changes in resistance to the appropriate public health department.

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