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Trends in *Staphylococcus aureus* Bacteremia Rates among U.S. Acute Care Hospitals, January 2017- June 2021

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BACKGROUND

Previous U.S. estimates of methicillin-resistant and -sensitive *Staphylococcus aureus* (MRSA, MSSA) bacteremia rates in hospitalized patients showed:

- decreases in hospital-onset (HO) MRSA
- no changes in community-onset (CO) MRSA and HO MSSA
- slight increases in CO MSSA rates from 2012–2017

METHODS

STUDY POPULATION

11 million discharges from 356 hospitals in the PINC AI (Premier) Database: with microbiology data and reporting antibiotic susceptibility results from January 2017- June 2021

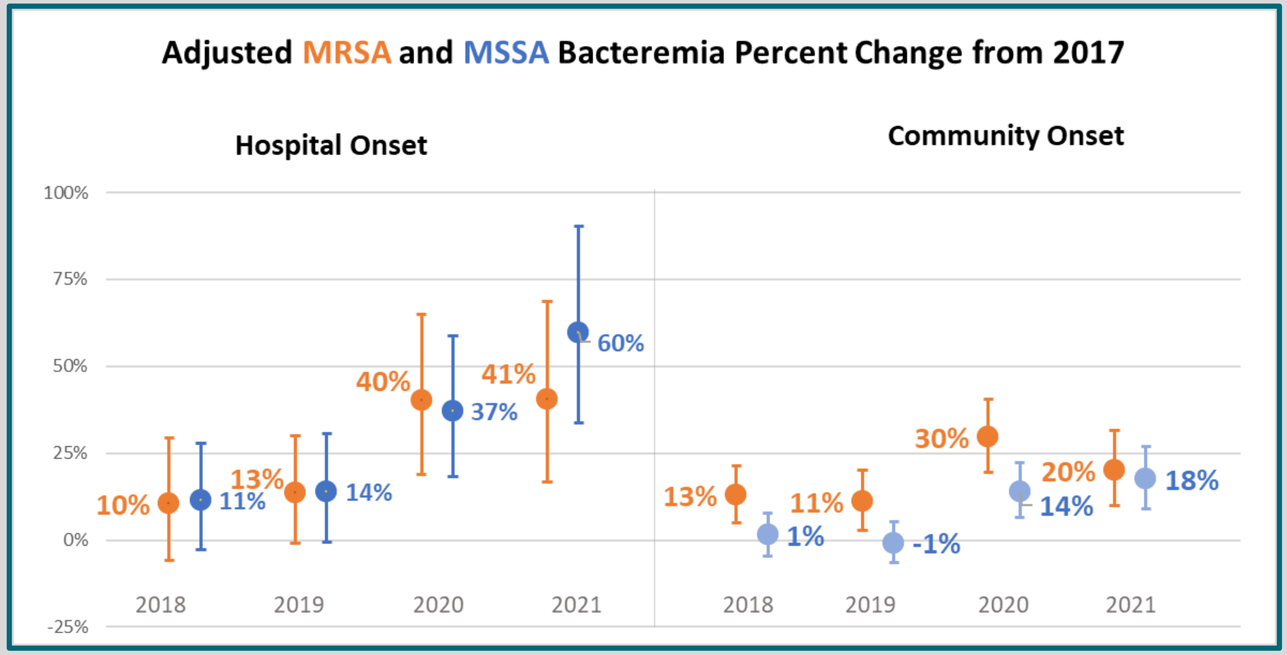
DEFINITIONS

- *S. aureus* blood isolates resistant to methicillin, oxacillin, or cefoxitin were categorized as MRSA; otherwise MSSA.
- Community-onset (CO): Positive blood cultures collected on or before day 3
- Hospital-onset (HO): collected on day 4 or later

ANALYSIS

Annual rate differences were assessed using generalized estimating equation models with a negative binomial distribution adjusting for hospital bed size, teaching status, urban/rural designation, discharge month, census division, distributions of patient age, sex and race and hospital-level clustering.

MRSA and MSSA bacteremia rates were significantly higher in 2020 and 2021 than 2017



RESULTS

Among included discharges, we identified 5,627 HO and 42,587 CO *S. aureus* bacteremia events: 45% MRSA, 55% MSSA.
In addition to year, we identified significant variability by census divisions.

Table. Annual observed Hospital-onset *S.aureus* rates per 10,000 patient-days

Year	MRSA Rate	MSSA Rate
2017	0.41	0.49
2018	0.47	0.56
2019	0.48	0.57
2020	0.63	0.73
2021	0.62	0.83

Table. Annual observed Community-onset *S.aureus* rates per 1,000 hospitalizations

Year	MRSA Rate	MSSA Rate
2017	1.52	2.03
2018	1.73	2.06
2019	1.70	2.02
2020	2.04	2.34
2021	1.86	2.42

CONCLUSIONS

Increases in *S. aureus* bacteremia relative to 2017 are concerning. Potential explanations warranting exploration include differences in regional trends and pandemic-associated changes in inpatient risk, severity of illness, length of stay, and hospital utilization.

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