

Kentucky Antimicrobial Stewardship Innovation Consortium

Educational Pearl

Staphylococcus aureus in a urine culture

Isolation of *S. aureus* on urine culture is uncommon, representing <5% of positive urine cultures.¹ When it is isolated, it may represent colonization or specimen contamination. However, there are situations where isolation is clinically relevant.

S. aureus on urine culture may indicate invasive infection outside of the urinary tract

Urine cultures growing *S. aureus* may be a result of invasion of the pathogen and translocation from blood to urine. The proportion of concurrent bacteremia in patients with *S. aureus* on urine cultures varies widely between studies. A retrospective study of 2,054 patients with *S. aureus* on urine culture found 7% of patients also had *S. aureus* bacteremia.² However, a review reported *S. aureus* isolated from urine culture in up to 39% of patients with *S. aureus* bacteremia and has been associated with increased mortality.³

S. aureus on urine culture rarely indicates a urinary tract infection (UTI)

True *S. aureus* UTI is very rare and should be a diagnosis of exclusion after systemic disease has been ruled out.¹ Patients with indwelling urinary catheters or invasive urologic procedures are more likely to have UTI due to *S. aureus* than the general population.⁴ A retrospective study of 102 patients with *S. aureus* on urine culture, most of whom were catheterized, found only 33% of the cohort had symptoms of UTI.⁴

<u>Key take-aways</u>

- S. aureus on urine culture may represent the following clinical scenarios:
 - Asymptomatic colonization or contamination during collection process
 - Systemic *S. aureus* infection outside of the urinary tract
 - *S. aureus* UTI (least common)
- It is prudent to perform blood cultures in patients with *S. aureus* isolated on urine culture to rule out systemic infection, especially those at high risk of invasive disease.

References

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- 3. Schuler F, Barth PJ, Niemann S, Schaumburg F. A narrative review on the role of *Staphylococcus aureus* bacteriuria in *S. aureus* bacteremia. *Open Forum Infect Dis*. 2021; 8(6):ofab158.
- 4. Muder RR, Brennen C, Rihs JD, et al. Isolation of *Staphylococcus aureus* from the urinary tract: association of isolation with symptomatic urinary tract infection and subsequent staphylococcal bacteremia. *Clin Infect Dis.* 2006; 42:46–50.