

Electronic health record–focused interventions can reduce unnecessary urine cultures in hospital patients

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Physicians in the largest safety-net hospital system in the United States used two electronic health record (EHR)-focused interventions to

significantly reduce inappropriate urine cultures among hospitalized patients. Findings from their study, published in the *American Journal of Infection Control (AJIC)*, suggest low-resource approaches could help reduce the overdiagnosis and overtreatment of asymptomatic bacteriuria.

"This quality improvement initiative revealed that low-effort EHR interventions can successfully reduce unnecessary urine-[culture](#) orders to create better, more efficient care, particularly for vulnerable patient populations," said Mona Krouss, MD, AVP, Value and Patient Safety, NYC Health + Hospitals (NYC H+H), and the lead author on the published study. "We believe this successful intervention can be a model for other institutions, and may be especially valuable in resource-limited, safety-net systems."

Asymptomatic bacteriuria (ASB), the isolation of bacteria in the absence of symptoms or signs of a [urinary tract infection](#) (UTI), is overdiagnosed and overtreated in the United States. While the United States Preventive Services Task Force, Infectious Diseases Society of America, and multiple Choosing Wisely Lists all recommend not treating ASB given the lack of benefit for all but a few populations, inappropriate urine culture tests and subsequent treatment are common. Overtreatment of ASB leads to harm, including adverse effects from antibiotics, [antibiotic resistance](#), and increased length of [hospital](#) or facility stay.

Dr. Krouss and colleagues at NYC H+H implemented a quality improvement project intended to decrease unnecessary urine culture orders across their 11 acute care hospitals in a relatively nonintrusive, efficient manner. The intervention consisted of changing the electronic medical record (EMR) ordering screen for urine cultures to require the entry of an indication for the culture, and a Best Practice Advisory (BPA) that appeared when urine cultures were ordered for patients with [urinary catheters](#) who were hospitalized for more than 48 hours. The researchers then compared urine-culture ordering preintervention

(6/2020 to 10/2021) to postintervention (12/2021 to 8/2022). They also assessed variation in hospitals and clinics, as well as BPA responses by clinician type and specialty.

During the study period, the BPA triggered 4,822 times, with 552 urine culture orders removed, an accept rate of 11.4%. All 11 hospitals saw a statistically significant reduction in urine culture tests. Specifically, urine culture orders in the inpatient setting decreased from 32.68 per 1,000 patient days preintervention to 25.85 per 1,000 patient days postintervention, a 20.9% reduction. The researchers noted that reductions in urine culture ordering rates were highly variable among the 11 hospitals.

For those patients with a urinary catheter tested 48 hours after admission, [urine](#) culture rates decreased from 2.36 per 1,000 patient days preintervention to 1.85 per 1,000 patient days postintervention, a 21.6% reduction. Rates of catheter-associated urinary tract infection (CAUTI) did not change pre- and postintervention (1.95 and 1.63, respectively, $p = 0.1$).

"These findings suggest that EHR-based clinical-decision support can be effective and scalable to improve care for patients with indwelling catheters and reduce excessive antibiotic use," said Patricia Jackson, RN, BSN, CIC, FAPIC, 2023 APIC president. "Curbing antibiotic use is necessary to combat the growing threat of antibiotic resistance."

More information: Mona Krouss et al, Choosing wisely initiative for reducing urine cultures for asymptomatic bacteriuria and catheter-associated asymptomatic bacteriuria in an 11-hospital safety net system, *American Journal of Infection Control* (2023). [DOI: 10.1016/j.ajic.2023.01.005](https://doi.org/10.1016/j.ajic.2023.01.005)

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