

Healthcare-Associated Infections

CLABSI, CAUTI, SSI, VTE

Healthcare-associated infections continue to be an area requiring focus and reduction for health care facilities across the U.S. and internationally. Although progress has been made in preventing HAIs, the data and patient experience show there is still much work to do to keep patients safe.

What is *Your* ‘Culture of Culturing?’

Accurate diagnosis of infection directly impacts antibiotic prescribing practices and begins with your ‘culture of culturing.’ This phrase has become widely adopted as it captures the impact culturing practices have on a facility’s ability to identify true positive versus false positive results. For example, if a facility does not have a preventive measure for the processing of a stool that does not conform to the shape of the container, or one from a patient who was just given a laxative, their ‘culture of culturing’ is likely to result in false-positive reporting of *C. difficile* infection. If patients with “smelly or concentrated” urine routinely are tested for a urinary tract infection, the facility’s “culture of culturing” is likely to result in false-positive UTIs.^{4,5}

It is very helpful if we think about specimen collection and culturing with the end in mind. The end in this scenario leads straight to Antibiotic Stewardship.

The Centers for Disease Control and Prevention estimates that 20 to 50 percent of all antibiotics prescribed in acute care hospitals are inappropriate. There are four major areas of concern related to prescribing inappropriate antibiotics.^{2,3,4,5}

1. Occurrence of untoward drug effects, including diarrhea, rash, candidiasis and kidney damage.
2. The spread of multidrug-resistant organisms. It is estimated that at least 2 million people become infected with bacteria that are resistant to antibiotics, resulting in 23,000 deaths annually.

Data Corner:^{1,2,3}

- According to the Centers for Disease Control and Prevention, one in 25 hospitalized patients acquire at least one healthcare-associated infection.
- An estimated 30,100 central line-associated bloodstream infections still occur every year.
- Surgical site infections are now the most common and expensive HAI in the U.S. with an estimated 160,000 to 300,000 SSIs annually.
- In the U.S., more than 2 million people are affected by HAIs, and more than 100,000 people die annually from HAIs.
- The CDC reports that drug resistant bacteria cause 23,000 deaths and 2 million illnesses each year.
- Avoidable costs from antibiotic misuse ranges from \$27 to \$47 billion per year in the U.S.



Be part of the
HAIN CROWD

Innovate. Exnovate.
Improve. Inspire.

3. The potential development of CDI. The most important risk factor for CDI is antibiotic agent use.
4. Increased health care costs, with CDI alone contributing \$264 million to \$2.9 billion to the burden due to the 107,600 hospital onset cases occurring each year.

According to research, inappropriate antibiotic use has serious consequences. By establishing a pre-culture strategy and policy to ensure cultures are taken appropriately, facilities can eliminate the occurrence of false positives or misleading culture results, which often lead to inappropriate antibiotic usage.^{2,4,5}

A specimen collection policy should focus on the following.

1. Who should we culture?
2. When should we culture?
3. What is the proper culturing technique?

Culturing Tips:^{2,4,5}

1. Avoid culturing in the absence of a compelling clinical reason.
2. Avoid testing patients who have a low pre-test probability of having the infection you are testing for. This will reduce your rates of false-positive results, e.g. suggesting *C. difficile* ‘infection’ in a patient who is actually only colonized.
3. Avoid testing urine for infection in the absence of clinical symptoms.
4. Avoid culturing to capture “present on admission”
5. Utilize optimal collection, storage and transport practices.
6. Treat the patient, not the test.

Resource Tool Box	
<p>CLABSI: CLABSI Change Package Top 10 Checklist Access past HRET HIIN CLABSI webinars here.</p> <p>SSI: SSI Change Package Top 10 Checklist Access past HRET HIIN SSI webinars here. Additional articles and resources here.</p> <p>VAE: VAE Change Package Top 10 Checklist Access past HRET HIIN VAE webinars here. Additional articles and resources here.</p>	<p>CAUTI: CAUTI Change Package Top 10 Checklist Article: Promoting Appropriate Urine Culture Management Article: Approach to a Positive Urine Culture in a Patient Without Urinary Symptoms Asymptomatic Bacteriuria Practice Treatment Guidelines Asymptomatic Bacteriuria Algorithm JAMA Article - The Benefits of Reducing Unnecessary Urine Cultures Access past HRET HIIN CAUTI webinars here. Additional articles and resources here.</p>

HIInovative Practice: Reducing Unnecessary Urine Cultures^{4,5,6,7,8}

It is difficult to break the habit of screening patients with urinary catheters on admission, whether to “catch” a POA CAUTI or to attempt to diagnose and treat foul-smelling or dark urine. Well-meaning clinicians who send unnecessary urine cultures are contributing to patient harm when unnecessary antibiotics are then ordered. Treatment of asymptomatic bacteriuria may be associated with antimicrobial resistance, *C. difficile* infections and increased costs. The practice also may lead to over-diagnosis of CAUTI.

Key Points Related to Obtaining Urine Cultures:

- Make sure clinicians are aware of the appropriate indication to obtain urine cultures.
- Point out the risk of indiscriminate urine cultures on patient outcomes.
- Address the local “culture” or practice of clinicians at your organization to align with optimal patient care.
- Avoid ordering cultures without a clinical assessment of the patient’s condition.

When to Obtain or Not Obtain a Urine Culture in a Patient with an Indwelling Catheter:

Discouraged Urine Culture Use in a Catheterized Patient	Appropriate Urine Culture Use in a Catheterized Patient
<ul style="list-style-type: none"> • Urine quality: Color, smell, sediments, turbidity. These do not constitute signs of infection. • Screening urine cultures on admission or before non-urologic surgeries. • Standing orders for UA or UC without an appropriate indication. • PAN culturing. Be mindful in evaluating source. • Obtaining urine cultures based upon pyuria (white blood cells in urine) in an asymptomatic patient. • Asymptomatic elderly and diabetics (high prevalence of asymptomatic bacteriuria). • Repeat urine culture to document clearing of bacteriuria. This provides no clinical benefit to the patient. 	<ul style="list-style-type: none"> • Part of an evaluation of sepsis without a clear source. CAUTI is often diagnosed by exclusion. • Based upon clinical findings suggestive of CAUTI, for example pelvic discomfort or flank pain. • Prior to urologic surgeries where mucosal bleeding is anticipated or in transurethral resection of prostate. • Early pregnancy. Avoid urinary catheters if possible.

Special thanks to Barbara DeBaun, MSN, R.N., CIC of Cynosure Health for assistance with this publication.



Be part of the
HIIN CROWD

Innovate. Exnovate.
Improve. Inspire.

References:

- ¹ HAI Data and Statistics. (2018, January). Retrieved from <http://www.cdc.gov/hai/surveillance/index.html>
- ² *Preventing Unnecessary Harm from Antibiotics Change Package* (2017, November). Retrieved from www.hret-hiin.org
- ³ *Surgical Site Infections Change Package: 2017 Update*. (2017, February) Retrieved from www.hret-hiin.org
- ⁴ Garcia, R., & Spitzer, E.D. (2017). Promoting appropriate urine culture management to improve health care outcomes and accuracy of catheter-associated urinary tract infections. *American Journal of Infection Control*, 1-11.
- ⁵ Garcia, R. A., et al. (2015). Multidisciplinary team review of best practices for collection and handling of blood cultures to determine effective interventions for increasing the yield of true-positive bacteremias, reducing contamination, and eliminating false-positive central line–associated bloodstream infections. *American Journal of Infection Control*, 43(11), 1222-1237.
- ⁶ Trautner, B. W., & Grigoryan, L. (2014). Approach to a Positive Urine Culture in a Patient Without Urinary Symptoms. *Infectious Disease Clinics of North America*, 28(1), 15–31. doi: 10.1016/j.idc.2013.09.005
- ⁷ Mody, L., et al. (2017). A National Implementation Project to Prevent Catheter-Associated Urinary Tract Infection in Nursing Home Residents. *JAMA Internal Medicine*, 1:177(8), 1154-1162. Retrieved from <http://www.hret-hiin.org/resources/display/a-national-project-to-prevent-cauti-in-nursing-home-residents>
- ⁸ Conrad, J. (2017, December 27). HRET-HIIN-INFECTIONS [Listserve].



Be part of the
HIIN CROWD

Innovate. Exnovate.
Improve. Inspire.