shea/cdc position paper

Surveillance Definitions of Infections in Long-Term Care Facilities: Revisiting the McGeer Criteria (jstor.org)

Urinary Tract Infections

The definitions for UTI presented here differ substantially from the original surveillance definitions1 for both (A) residents without an indwelling catheter and (B) residents with an indwelling catheter (Table 5). The revised definitions take into account the low probability of UTI in residents without indwelling catheters if localizing symptoms are not present, as well as the need for microbiologic confirmation for diagnosis. For residents without an indwelling catheter, the clinical criterion "acute dysuria" and the urinary tract subcriteria are derived from Loeb et al's consensus criteria, which require localizing genitourinary findings and have been validated in a prospective randomized trial showing efficacy and safety. The criterion "acute pain, swelling, or tenderness of the testes, epididymis, or prostate" was added by expert consensus during the review. Fever or leukocytosis plus 1 localizing urinary tract subcriterion or the presence of 2 or more new or increased localizing urinary tract subcriteria could be used to meet the definition for symptomatic UTI.

Acute change in mental status and change in the character of the urine (eg, change in color or odor) were each independently associated with bacteriuria (≥105 colony-forming units [cfu]/mL) plus pyuria (≥10 white blood cells per high-power field) in a prospective study of LTCF residents with clinically suspected UTI; however, these 2 symptoms are frequently demonstrated in the presence of

asymptomatic bacteriuria due to other confounding clinical conditions, such as dehydration. Other nonspecific signs and symptoms (eg, falls) without localizing lower urinary tract findings were not associated with bacteriuria plus pyuria.

For residents with an indwelling catheter, the first clinical criterion, "fever, rigors, or new-onset hypotension with no alternate site of infection" is consistent with the criteria of Loeb et al. Localizing urinary tract symptoms for residents with an indwelling catheter include "new-onset suprapubic pain," "costovertebral angle tenderness," and "purulent discharge from around the catheter." "Acute pain, swelling, or tenderness of the testes, epididymis, or prostate" is included for both catheterized and noncatheterized men as recognized complications of UTI in males, particularly when an indwelling urinary catheter is present.

The additional criterion "acute change in mental status or acute functional decline with no alternate diagnosis AND leukocytosis" has been included. Acute mental status change and functional decline are nonspecific manifestations of many conditions including hypoxia, dehydration, and adverse effects of medication. The additional requirement of concomitant leukocytosis, a marker of a systemic inflammatory reaction, provides support that the clinical deterioration has an infectious etiology.However, symptomatic UTI in the catheterized resident should always be a diagnosis of exclusion in the absence of localizing urinary tract findings.

A positive urine culture is necessary for diagnosis of UTI and is applied in the revised surveillance definitions for both subcategories (residents without and with an indwelling catheter). For individuals without an indwelling catheter, at least 105 cfu/mL of no more than 2 species of microorganisms is the recommended quantitative count from a voided specimen, and for a specimen collected by in-and-out catheterization it is at least 102 cfu/mL of any number of organisms. Although a small proportion of female residents in LTCFs who have UTI have voided specimens with quantitative counts of less than 105

cfu/mL, these specimens were usually evidence of contamination.

Before urine samples for culture are obtained from individuals with a chronic indwelling catheter (in place for more than 14 days), the original urinary catheter should be replaced and the specimen should be obtained from the new catheter. Again, a small number of individuals with symptomatic UTI may have lower counts, but a value of at least 105 cfu/mL is recommended for increased specificity for surveillance criteria, and it is also consistent with current NHSN acute care definitions for symptomatic UTI.

Repeat urine cultures following treatment as a “test of cure” are not recommended because of the high prevalence of asymptomatic bacteriuria in the LTCF population.

A diagnosis of UTI can be made without localizing urinary tract symptoms if a blood culture isolate is the same as the organism isolated from the urine and there is no alternate site of infection. This secondary BSI provides definitive evidence of the existence of systemic infection; in the absence of an alternate source, a UTI becomes the presumptive diagnosis.

TABLE 5. Surveillance Definitions for Urinary Tract Infections (UTIs)

Criteria	Comments
A. For residents without an indwelling catheter (both criteria 1 and 2 must be present)	UTI should be diagnosed when there are localizing genitourinary signs and symptoms and a positive urine culture result. A diagnosis of UTI can be made without localizing symptoms if a blood culture isolate is the same as the organism isolated from the urine and there is no alternate site of infection. In the absence of a clear alternate source of infection, fever or rigors with a positive urine culture result in the noncatheterized resident or acute confusion in the catheterized resident will often be treated as UTI. However, evidence suggests that most of these episodes are likely not due to infection of a urinary source.
1. At least 1 of the following sign or symptom subcriteria	
a. Acute dysuria or acute pain, swelling, or tenderness of the testes, epididymis, or prostate	
b. Fever or leukocytosis (see Table 2) and at least 1 of the following localizing urinary tract subcriteria	
i. Acute costovertebral angle pain or tenderness	
ii. Suprapubic pain	
iii. Gross hematuria	
iv. New or marked increase in incontinence	
v. New or marked increase in urgency	
vi. New or marked increase in frequency	
c. In the absence of fever or leukocytosis, then 2 or more of the following localizing urinary tract subcriteria	
i. Suprapubic pain	
ii. Gross hematuria	
iii. New or marked increase in incontinence	
iv. New or marked increase in urgency	
v. New or marked increase in frequency	
2. One of the following microbiologic subcriteria	Urine specimens for culture should be processed as soon as possible, preferably within 1–2 h. If urine specimens cannot be processed within 30 min of collection, they should be refrigerated. Refrigerated specimens should be cultured within 24 h.
a. At least 10^5 cfu/mL of no more than 2 species of microorganisms in a voided urine sample	
b. At least 10^2 cfu/mL of any number of organisms in a specimen collected by in-and-out catheter	
B. For residents with an indwelling catheter (both criteria 1 and 2 must be present)	Recent catheter trauma, catheter obstruction, or new-onset hematuria are useful localizing signs that are consistent with UTI but are not necessary for diagnosis.
1. At least 1 of the following sign or symptom subcriteria	
a. Fever, rigors, or new-onset hypotension, with no alternate site of infection	
b. Either acute change in mental status or acute functional decline, with no alternate diagnosis and leukocytosis	
c. New-onset suprapubic pain or costovertebral angle pain or tenderness	
d. Purulent discharge from around the catheter or acute pain, swelling, or tenderness of the testes, epididymis, or prostate	
2. Urinary catheter specimen culture with at least 10^5 cfu/mL of any organism(s)	Urinary catheter specimens for culture should be collected following replacement of the catheter (if current catheter has been in place for >14 d).

NOTE. Pyuria does not differentiate symptomatic UTI from asymptomatic bacteriuria. Absence of pyuria in diagnostic tests excludes symptomatic UTI in residents of long-term care facilities. cfu, colony-forming units.