Corporate Medical Policy

Urinalysis and Urine Culture Testing for Bacteria AHS – G2156

File Name: urinalysis_and urine culture testing for bacteria
Origination: 01/01/2019
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Description of Procedure or Service

Bacteriuria is the presence of bacteria in the urine. Urinary tract infections (UTIs) can occur in the urinary system and can be either symptomatic or asymptomatic. UTIs can include cystitis, an infection of the bladder or lower urinary tract; pyelonephritis, an infection of the upper urinary tract or kidney; urosepsis; urethritis; and male-specific conditions, such as bacterial prostatitis and epididymitis (Bonkat et al., 2018; Hooton & Gupta, 2018). Typically, in an infected person, bacteriuria and pyuria (the presence of pus in the urine) are present and can be present in both symptomatic and asymptomatic UTIs. A urine culture can be performed to determine the presence of bacteria and to characterize the bacterial infection (Meyrier, 2017).

For guidance on pathogen panel testing from urine samples, please see AHS-G2149 Pathogen Panel Testing.

***Note: This Medical Policy is complex and technical. For questions concerning the technical language and/or specific clinical indications for its use, please consult your physician.

Policy

BCBSNC will provide coverage for urine testing for bacteria when it is determined the medical criteria or reimbursement guidelines below are met.

Benefits Application

This medical policy relates only to the services or supplies described herein. Please refer to the Member's Benefit Booklet for availability of benefits. Member's benefits may vary according to benefit design; therefore member benefit language should be reviewed before applying the terms of this medical policy.

When urine testing for bacteria is covered

In pregnant women, reimbursement is allowed for urinalysis and urine culture testing (with isolate identification and antibiotic susceptibilities if applicable) for any urinary tract infection, asymptomatic or symptomatic, including suspected cystitis, pyelonephritis, and asymptomatic bacteriuria.

For asymptomatic patients prior to undergoing urological interventions breaching the mucosa, reimbursement is allowed for urinalysis and urine culture testing (with isolate identification and antibiotic susceptibilities if applicable).
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For patients exhibiting at least one sign or symptom of possible UTI or bacteriuria* (See Note 1 below), reimbursement is allowed for urinalysis and urine culture testing (with isolate identification and antibiotic susceptibilities if applicable).

To assess pyelonephritis, reimbursement is allowed for urinalysis and urine culture testing (with isolate identification and antibiotic susceptibilities if applicable

*NOTE 1: Signs and symptoms of UTI/bacteriuria include (CDC, 2018) (CDC link: https://www.cdc.gov/antibiotic-use/community/for-patients/common-illnesses/uti.html)
  - Fever
  - Urgency to urinate
  - Feeling the need to urinate despite having an empty bladder
  - Increased frequency of urination
  - Dysuria
  - Suprapubic tenderness
  - Pyuria
  - Hematuria
  - Cloudy urine
  - Lower Back and Side (flank) pain
  - Nausea
  - Vomiting
  - Chills
  - Night sweats
  - Pelvic pressure
  - Change in urine smell
  - Abnormal urinalysis findings

When urine testing for bacteria is not covered

Reimbursement is not allowed for follow-up urinalysis or urine culture testing for an uncomplicated urinary tract infection in patients that show evidence of clinical resolution of infection.

Reimbursement is not allowed for urinalysis or urine culture testing:
  - as part of initial screening for asymptomatic prostatitis or
  - as routine use prior to prostate biopsy.

Reimbursement is not allowed for urinalysis or urine culture testing in all other situations, including for asymptomatic bacteriuria or asymptomatic urinary tract infection in all other instances not outlined by the above criteria.

Policy Guidelines

Urinary tract infections (UTIs) can be either symptomatic or asymptomatic and can also be classified as uncomplicated or complicated. Uncomplicated UTIs are “acute, sporadic or recurrent lower (uncomplicated cystitis) and/or upper…UTI, limited to non-pregnant, pre-menopausal women with no known relevant anatomical and functional abnormalities within the urinary tract or comorbidities… All UTIs which are not defined as uncomplicated [are complicated UTIs]. Meaning in a narrower sense UTIs in a patient with an increased chance of a complicated course: i.e. all men, pregnant women, patients with relevant anatomical or functional abnormalities of the urinary tract, indwelling urinary catheters, renal diseases, and/or with other concomitant immunocompromising diseases for example, diabetes (Bonkat et al., 2018)”. For complicated UTIs, Escherichia coli is the most common cause; however, “other uropathogens include other Enterobacteriaceae (such as Klebsiella spp and Proteus spp), Pseudomonas, enterococci, and staphylococci (mecillin-sensitive Staphylococcus aureus [MSSA] and
methicillin-resistant S. aureus [MRSA]) (Hooton & Gupta, 2018)”. Even though both bacteriuria and pyuria are often present in UTIs, their presence alone is not indicative of a symptomatic infection.

The presence of bacteriuria does not guarantee negative outcomes for a patient. In fact, the paradigm of the sterility of the bladder environment has changed considerably over recent years. At least for females, the presence of female urinary microbiota (FUM) is believed to occur naturally and has been documented using sensitive bacterial DNA screening tests on asymptomatic females (Brubaker & Wolfe, 2016). Beneficial microbes, such as vaginal strains of Lactobacillus, can inhibit the growth of uropathogenic bacteria, including E. coli (Aroutcheva et al., 2001; Brubaker & Wolfe, 2016). Over-prescribing antibiotics, especially in cases of asymptomatic bacteriuria, can lead to both an eradication of beneficial bacterial flora and an emergence of antibiotic-resistant bacteria. Prescribing antibiotics as a prophylactic measure or in the instance of asymptomatic bacteriuria is detrimental because it is of limited value and can also increase incidences of drug-resistance. A study in 2002 by Harding and colleagues show that antibiotic treatment in diabetic women with asymptomatic bacteriuria did not result in a decrease of future symptomatic UTIs as compared to the control group; in fact, the experimental group had higher rates of adverse antimicrobial reactions (Harding, Zhanel, Nicolle, & Cheang, 2002).

Even though the evidence-based guidelines by various societies, such as the EAU (Bonkat et al., 2018) and SHEA (SHEA, 2015), do not recommend performing urine testing or treatment for asymptomatic bacteriuria, inappropriate treatment is still occurring; in fact, one study by Cope and colleagues show that 32% of catheter-associated cases of asymptomatic bacteriuria and asymptomatic UTI received inappropriate treatment (Cope et al., 2009). The Antimicrobial Resistance Epidemiological Survey on Cystitis (ARESC) shows that up to 10.3% of E. coli in UTIs are “resistant to at least three different classes of antimicrobial agents” with ampicillin having the highest degree of resistance (48.3%). This is a large study of 4264 women from ten different countries to show that antibiotic-resistance is of international importance (Schito et al., 2009).

Analytical Validity
Urinalysis to detect nitrite and leukocyte esterase to indicate the presence of bacteria is an accepted laboratory practice. One report, though, has shown that the use of nitrite has “a sensitivity of 3%, a specificity of 97%, and a negative predictive value of 55% (Cooper, Raeburn, Hamilton-Miller, & Brumfitt, 1992)”. A 2004 meta-analysis study (Devillé et al., 2004) asserts that the “sensitivities of the combination of both tests vary between 68 and 88% in different patient groups, but positive test results have to be confirmed.” They did note that the accuracy of the leukocyte esterase testing was higher in urology patients with a diagnostic odds ratio (DOR) of 276 as compared to the accuracy of nitrites (for example, in elderly patients DOR = 108).

Urine culture is considered a “gold standard” for detecting the presence of bacteria in urine (Graham & Galloway, 2001; Schmiemann, Kniehl, Gebhardt, Matejczyk, & Hummers-Pradier, 2010). That being said, “the interpretation of culture results can be considered as more of an art than a science. A urine culture result depends on so many variables, such as appropriate collection, transport, and the limits of the methods of detection. The reliability of single positive urine culture in diagnosing UTI is only 80%, rising to 90% if a repeat culture shows identical results (Graham & Galloway, 2001).” This is using the definition of bacteriuria as being $10^5$ bacteria/ml of urine.

Clinical Validity and Utility
A study in 2010 ((Bruyere, d'Arcier, Boutin, & Haillot, 2010) using 353 patients undergoing prostate biopsy show that the routine use of obtaining a pre-operative urine culture is not clinically relevant to positive outcomes. “Of the 353 men, 12 had a pre-biopsy-positive bacterial culture and underwent prostate biopsy without any infections complication. Fifteen patients with a negative pre-biopsy culture developed a post-biopsy-positive bacterial culture but remained asymptomatic without any treatment. Only four men from the group without pre-biopsy bacteriuria developed an infectious complication, requiring 3 weeks of antibiotic therapy.” Both
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experimental and control groups had similar rates of complication, suggesting “that routine urine bacterial culture before prostate biopsy is not useful when antibiotic prophylaxis and enema are performed.”

The method of obtaining the urine sample for culture testing is important. This is especially true for children. A 2017 study of 4808 acutely ill children demonstrated that there was modest agreement between the results obtained if the test was conducted by a research laboratory versus a health service laboratory; however, the method of obtaining the urine sample did have significance. The calculated areas under the receiver-operator curve (AUC) for UTI ranged from 0.75-0.86 if the sample was obtained using a clean-catch method versus AUC values of 0.65-0.79 if the sample was obtained using “nappy pad samples”. The authors conclusions were that urine cultures did not necessarily have to be sent to a research lab for testing, but that “primary care clinicians should try to obtain clean catch samples, even in very young children (Birnie et al.)”.

A smaller study of 83 infants compared the use of urine obtained either via bladder catheterization or suprapubic aspiration (SPA)(Eliacik et al., 2016). All 83 infants had previously tested positive using urine culture samples obtained via bladder catheterization. Then, they had samples removed by SPA. The SPA samples were used in both urinalysis and urine culture testing, and “only 24 (28.9%) and 20 (24%) yielded positive urine culture and abnormal urinalysis data, respectively.” This indicates a 71.1% false-positive result rate if the urine sample is obtained using bladder catheterization. “In infants younger than 12 months, SPA is the best method to avoid bacterial contamination, showing better results than transurethral catheterization (Eliacik et al., 2016).”

Another study (Ducharme, Neilson, & Ginn, 2007) researched the use of either urine cultures and/or reagent test strips for use in diagnosing UTIs in elderly patients. The study consisted of 100 elderly patients with one group having no symptoms and non-infectious complaints and a second group “presenting with acute confusion, weakness or fever but no apparent urinary symptoms”. Their results show that “of the 33 positive cultures, 10 had negative reagent strips. Thirteen of the 14 positive nitrite tests were culture positive for a specificity of 92.8% and a sensitivity of 36.1%. Positive cultures did not infer a diagnosis of UTI. Of the 67 positive reagent strips, 41 (61.2%) were associated with negative cultures.” They conclude that, “in the elderly, reagent testing is an unreliable method of identifying patients with positive blood cultures. Moreover, positive urine culture rates are only slightly higher in patients with vague symptoms attributable to UTI than they are in (asymptomatic) patients treated for non-urolologic problems, which suggests that many positive cultures in elderly patients with non-focal systemic symptoms are false-positive tests reflecting asymptomatic bacteriuria and not UTIs (Ducharme et al., 2007).”

A study by Price and colleagues (Price et al., 2016) show that using an enhanced quantitative urine culture (EQUC) increased the detection of microorganisms in UTIs. This study consisted of 150 female patients using an initial UTI symptom assessment questionnaire to divide them into symptomatic and asymptomatic groups. Both sets underwent culture testing using both conventional urine culture testing and an EQUC method. “Compared to expanded-spectrum EQUC, standard urine culture missed 67% of uropathogens overall and 50% in participants with severe urinary symptoms. Thirty-six percent of participants with missed uropathogens reported no symptom resolution after treatment by standard urine culture results.” Their protocol resulted in an “84% uropathogen detection relative to 33% detection by standard urine culture”.

**State and Federal Regulations, as applicable**

Since 1978, the FDA has approved several urine culture kits and devices (FDA, 2018). Additionally, many labs have developed specific urine culture tests that they must validate and perform in house. These laboratory-developed tests (LDTs) are regulated by the Centers for Medicare and Medicaid (CMS) as high-complexity tests under the Clinical Laboratory Improvement Amendments of 1988 (CLIA ’88). As an LDT, the U. S. Food and Drug Administration has not approved or cleared this test; however, FDA clearance or approval is not currently required for clinical use.
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Guidelines and Recommendations

Choosing Wisely, an initiative by the ABIM Foundation, consists of a number of national organizations representing medical specialists that write recommendations within their respective field to help choose care based on scientific evidence and to help reduce testing redundancy.

2017 AMDA-The Society for Post-Acute and Long-Term Care Medicine (AMDA, 2017)
In 2017, the AMDA updated their earlier 2013 Choosing Wisely guideline concerning the use of urine cultures. Due to the high prevalence (up to 50%) of chronic asymptomatic bacteriuria in a long-term care setting, they state, “Don’t obtain a urine culture unless there are clear signs and symptoms that localize to the urinary tract”. Since the urine culture would have a high likelihood of yielding a positive result in an otherwise asymptomatic case, this “contributes to the over-use of antibiotic therapy in this setting, leading to an increased risk of diarrhea or other adverse drug events, resistant organisms and infection due to Clostridium difficile.” They also note that “the finding of asymptomatic bacteriuria may lead to an erroneous assumption that a UTI is the cause of an acute change of status, hence failing to detect or delaying the more timely detection of the patient’s more serious underlying problem.”

2018 American Academy of Pediatrics-Section on Nephrology and the American Society of Pediatric Nephrology (AAP & ASPN, 2018)
The AAP Section on Nephrology and the ASPN issued a joint Choosing Wisely recommendation stating, “Avoid ordering follow-up urine cultures after treatment for an uncomplicated urinary tract infection (UTI) in patients that show evidence of clinical resolution of infection. Studies have shown that clinical resolution of infection is adequate for determining effectiveness of antibiotic therapy after treatment for a UTI.”

2016 American Academy of Pediatrics (AAP, 2016)
The AAP updated their Choosing Wisely recommendation in 2016: “Avoid the use of surveillance cultures for the screening and treatment of asymptomatic bacteriuria.” There is no evidence that surveillance urine cultures or treatment of asymptomatic bacteriuria is beneficial. Surveillance cultures are costly and produce both false positive and false negative results. Treatment of asymptomatic bacteriuria is harmful and increases exposure to antibiotics, which is a risk factor for subsequent infections with a resistant organism. This also results in the overall use of antibiotics in the community and may lead to unnecessary imaging.”

2015 Society for Healthcare Epidemiology of America (SHEA, 2015)
The SHEA recommendation in Choosing Wisely is more encompassing: “Don’t perform urinalysis, urine culture, blood culture or C. difficile testing unless patients have signs or symptoms of infection. Tests can be falsely positive leading to over diagnosis and overtreatment. Although important for diagnosing disease when used in patients with appropriate signs or symptoms, these tests often are positive when an infection is not present. For example, in the absence of signs or symptoms, a positive blood culture may represent contamination, a positive urine culture could represent asymptomatic bacteriuria, and a positive test for C. difficile could reflect colonization. There are no perfect tests for these or most infections. If these tests are used in patients with low likelihood of infection, they will result in more false positive tests than true positive results, which will lead to treating patients without infection and exposing them to risks of antibiotics without benefits of treating an infection.”

2018 European Association of Urology (EAU) (Bonkat et al., 2018)
The EAU in 2018 released an update to their extensive guidelines concerning urological infections. With respect to asymptomatic bacteriuria, they state (all with a ‘Strong’ strength of rating), “Do not screen or treat asymptomatic bacteriuria in the following conditions:
- Women without risk factors;
- Patients with well-regulated diabetes mellitus;
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- Post-menopausal women;
- Elderly institutionalised patients;
- Patients with dysfunctional and/or reconstructed lower urinary tracts;
- Patients with renal transplants;
- Patients prior to arthroplasty surgeries;
- Patients with recurrent urinary tract infections.”

They do recommend with a ‘Strong’ rating to “screen for and treat asymptomatic bacteriuria prior to urological procedures breaching the mucosa” and to “screen for and treat asymptomatic bacteriuria in pregnant women with standard short course treatment”. For the latter, however, it should be noted that it is a ‘Weak’ strength of rating. They do recommend to “diagnose recurrent UTI by urine culture” with a ‘Strong’ rating. Please note that recurrent UTI indicates that the occurrences are symptomatic. In general, they only weakly recommend to “use laboratory urine culture to detect bacteriuria in patients prior to undergoing urological interventions breaching the mucosa.”

With respect to uncomplicated cystitis, they give a ‘Strong’ rating to only perform urine culture analysis “in the following situations:
- Suspected acute pyelonephritis;
- Symptoms that do not resolve or recur within four weeks after the completion of treatment;
- Women who present with atypical symptoms;
- Pregnant women.”

The EAU gives a ‘Weak’ recommendation to “use urine dipstick testing for diagnosis of acute uncomplicated cystitis.”

In cases of uncomplicated pyelonephritis, the EAU recommends with a ‘Strong’ rating to “perform urinalysis (e.g. using a dipstick method), including the assessment of white and red blood cells and nitrite, for routine diagnosis” and to “perform urine culture and antimicrobial susceptibility testing in patients with pyelonephritis.”

The EAU defines complicated UTI (cUTI) as occurring “in an individual in whom factors related to the host (e.g. underlying diabetes or immunosuppression) or specific anatomical or functional abnormalities related to the urinary tract (e.g. obstruction, incomplete voiding due to detrusor muscle dysfunction) are believed to result in an infection that will be more difficult to eradicate than an uncomplicated infection.” Other factors associated with cUTIs include vesicoureteral reflux, recent history of instrumentation, UTI in males, pregnancy, and healthcare-associated infections. “Laboratory urine culture is the recommended method to determine the presence or absence of clinically significant bacteriuria in patients suspected of having a cUTI”.

For catheter-associated UTIs (CAUTI), the EAU recommends with ‘Strong’ ratings to “not carry out routine urine culture in an asymptomatic catheterised patients”, to “not use pyuria as an indicated for catheter-associated UTI”, and to “not use the presence or absence of odorous or cloudy urine alone to differentiate catheter-associated asymptomatic bacteriuria from catheter-associated UTI.”

In cases of urethritis and urosepsis, the EAU states that “in all patients with urethritis, and when sexual transmission is suspected, the aim should be to identify the pathogenic organisms…. laboratories should use validated nucleic acid amplification tests (NAATs) to detect chlamydia and gonorrhea, in first void urine samples, as they are better than any of the other tests available for the diagnosis of chlamydial and gonococcal infections. N. gonorrhoeae and chlamydia cultures are mainly to evaluate treatment failures and monitor developing resistance to current treatment.” With a ‘Strong’ rating, they recommend:
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- “Perform a gram stain of urethral discharge or a urethral smear to preliminarily diagnose pyogenic urethritis.”
- “Perform a validated nucleic acid amplification tests on a mid-stream urine sample or urethral smear to diagnose chlamydial and gonococcal infections.”
- “Use a pathogen directed treatment based on local resistance data.”

For the diagnosis and disease management of bacterial prostatitis (CBP), the EAU recommends with a ‘Strong’ rating to “perform the Meares and Stamey 2- or 4-glass test in patients with CBP”. They only give a ‘Weak’ rating in the use of digital rectal examination, the urine dipstick test, and blood culture with a total blood count. They also give a ‘Weak’ rating to their recommendation to “not routinely perform microbiological analysis of the ejaculate alone to diagnosis CBP”; however, they give a ‘Strong’ recommendation to “treat acute bacterial prostatitis according to the recommendations for complicated UTI” where they recommend a laboratory urine culture. However, with respect to prostate biopsy, the EAU states that “urine culture prior to prostate biopsy has an uncertain predictive value”.

The EAU’s recommendation in cases of suspected acute infective epididymitis (with a ‘Strong’ rating) is “to obtain a mid-stream urine and a first voided urine for pathogen identification by culture and nucleic acid amplification test.” It should be noted that, if the acute scrotal pain and/or swelling is due to suspected torsion, then a urine culture is not necessary. Instead, in that case, “urgent surgical exploration” is recommended.

2016 World Health Organization (WHO, 2016)

The WHO recommendations on antenatal care for a positive pregnancy experience in 2016 does include a recommendation to test for asymptomatic bacteriuria (ASB) in pregnant women. “Midstream urine culture is the recommended method for diagnosing asymptomatic bacteriuria (ASB) in pregnancy. In settings where urine culture is not available, the onsite midstream urine Gram-staining is recommended over the use of dipstick tests as the method for diagnosing ASB in pregnancy.” They do make note of the amount of time a urine culture takes (up to 7 days) but state that it is “the gold standard”. The concern of ASB in pregnancy is because “ASB is associated with an increased risk of preterm birth”.

2014 Canadian Paediatric Society (CPS) (Robinson et al., 2017)

In 2014, the CPS issued their position statement titled Urinary tract infection in infants and children: Diagnosis and management and reaffirmed their statement in 2017. Their recommendations are for children ≥2 months old. They recommend that “infants from two to 36 months of age with a fever of >39°C and no other source for fever on history or physical examination…should have urine collected for urinalysis. Unless this test is completely normal, they should then have urine collected by catheter or suprapubic aspirate [SPA] sent for culture.” If the child has been toilet-trained, then the urine sample can be collected midstream in lieu of the catheter. “Children with possible UTI who require antibiotic treatment immediately for other indications, such as suspected bacteremia, should have urine collected for urinalysis, microscopy, and culture.” Again, this sample should be obtained via either catheterization or SPA unless the child has been toilet-trained. They also state that “urine collection must occur before starting antibiotics because a single dose of an effective antibiotic rapidly sterilizes the urine.”


The AAP issued guidelines for UTIs in children 2 to 24 months of age in 2011. With an “A” grade for evidence quality and a strong recommendation, they issued their Action Statement 1: “If a clinician decides that a febrile infant with no apparent source for the fever requires antimicrobial therapy to be administered because of ill appearance or another pressing reason, the clinician should ensure that a urine specimen is obtained for both culture and urinalysis before an antimicrobial agent is administered; the specimen needs to be obtained through catheterization or SPA, because the diagnosis of UTI cannot be established reliably through culture of urine collected in a bag.” For instances where the clinician believes that the febrile child does not
warrant immediate antimicrobial therapy, the AAP in Action Statement 2 (strong recommendation; “A” grade of evidence) the following: (Action Statement 2a) “If the clinician determines the febrile infant to have a low likelihood of UTI [in Table below]…then the clinical follow-up monitoring without testing is sufficient.” In Action Statement 2b, the AAP states: “If the clinician determines that the febrile infant is not in a low-risk group [in Table below], then there are 2 choices. Option 1 is to obtain a urine specimen through catheterization or SPA for culture and urinalysis. Option 2 is to obtain a urine specimen through the most convenient means and to perform a urinalysis. If the urinalysis results suggest a UTI (positive leukocyte esterase test results or nitrite test or microscopic analysis results positive for leukocytes or bacteria), then a urine specimen should be obtained through catheterization or SPA and cultures; if urinalysis of fresh (<1 hour since void) urine yields negative leukocyte esterase and nitrite test results, then it is reasonable to monitor the clinical course without initiating anti-microbial therapy, recognizing that negative urinalysis results do not rule out a UTI with certainty.” The table below from (Roberts, 2011) depicts the level of risk factors separated by gender.

<table>
<thead>
<tr>
<th>Individual Risk Factors: Girls</th>
<th>Probability of UTI</th>
<th>No. of Factors Present</th>
</tr>
</thead>
<tbody>
<tr>
<td>White race</td>
<td>≤1%</td>
<td>No more than 1</td>
</tr>
<tr>
<td>Age &lt; 12 mo</td>
<td>≤2%</td>
<td>No more than 2</td>
</tr>
<tr>
<td>Temperature ≥ 39°C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fever ≥ 2 d</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Absence of another source of infection</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Individual Risk Factors: Boys</th>
<th>Probability of UTI</th>
<th>No. of Factors Present</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nonblack race</td>
<td>≤1%</td>
<td>Uncircumcised</td>
</tr>
<tr>
<td>Temperature ≥ 39°C</td>
<td>≤2%</td>
<td>Circumcised</td>
</tr>
<tr>
<td>Fever &gt; 24 h</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Absence of another source of infection</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2009 Infectious Diseases Society of America (IDSA) (Hooton et al., 2010) & 2010 IDSA/European Society for Microbiology and Infectious Diseases (ESMID) (Gupta et al., 2011)

In 2009, IDSA issued their guidelines concerning the diagnosis, prevention, and management of asymptomatic and symptomatic CAUTIs as well as catheter-associated asymptomatic bacteriuria (CAASB). They list the symptoms of a CAUTI to “include new onset or worsening of fever, rigors, altered mental status, malaise, or lethargy with no other identified cause; flank pain; costovertebral angle tenderness; acute hematuria; pelvic discomfort; and in those whose catheters have been removed, dysuria, urgent or frequent urination, or suprapubic pain or tenderness.” They also recommend that pyuria not be considered diagnostic of CA-bacteriuria or CAUTI; however, a level III recommendation does state that “the absence of pyuria in a symptomatic patient suggests a diagnosis other than [CAUTI]”. Also as a level III recommendation, “in the catheterized patient, the presence or absence of odorous or cloudy urine alone should not be used to differentiate [CAASB] from [CAUTI] or as an indication for urine culture or antimicrobial therapy.” Recommendation 45 (level III) states that “a urine specimen for culture should be obtained prior to initiating antimicrobial therapy for presumed [CAUTI] because of the wide spectrum of potential infecting organisms and the increased likelihood of antimicrobial resistance”; moreover, if the catheter has been in place for more than 2 weeks since the symptoms of a CAUTI began, a new catheter should be inserted prior to obtaining a urine sample for culture (Recommendation 46 part I; level II recommendation). They do make note that the incidence rate of bacteriuria in patients does increase with the length of time of catheterization as well as how often urine cultures are performed on the patient (Hooton et al., 2010).
In 2010, the IDSA and ESMID issued joint guidelines concerning acute uncomplicated cystitis and pyelonephritis in women. With a level III recommendation, in Recommendation 8, “in patients suspected of having pyelonephritis, a urine culture and susceptibility test should always be performed, and initial empirical therapy should be tailored appropriately on the basis of the infecting uropathogen (Gupta et al., 2011).”

**2011 Canadian Urological Association (CUA) (Dason, Dason, & Kapoor, 2011)**
The CUA Guidelines for the diagnosis and management of recurrent urinary tract infection in women contains an algorithm for a “female without a prior history of structural or functional abnormalities of the urinary tract presenting with 3 or more UTIs in 12 months” that requires a urine culture during a time when the patient is symptomatic followed by a urine culture two weeks after initiating treatment with sensitivity-adjusted antibiotics (Level 4 evidence, Grade C recommendation [Recommendation 2c]). In doing so, this “may aid in confirming the diagnosis of UTI, as well as guiding further specialist evaluation and management.” For recurrent uncomplicated UTI, “culture and sensitivity analysis should be performed at least once while the patient is symptomatic…. A midstream urine bacterial count of $1 \times 10^5$ CFU/L should be considered a positive culture while the patient is symptomatic.” For patients that choose an option of ‘self-start antibiotic’ therapy, “it is not necessary to culture the urine after UTI self-diagnosis since there is a 86% to 92% concordance between self-diagnosis and urine culture in an appropriately selected patient population. Patients are advised to contact a health care provider if symptoms do not resolve within 48 hours for treatment based on culture and sensitivity.”

**American Urological Association (AUA) (Averch et al., 2014; Wolf et al., 2012)**
In the updated 2012 AUA guidelines Urologic Surgery Antimicrobial Prophylaxis, the AUA gives two options for patients post-procedure requiring catheterization. “In the absence of preexisting bacterial colonization, there is no evidence that prophylaxis should extend beyond 24 hours following a procedure. In cases where prolonged catheterization follows the procedure (e.g., radical prostatectomy), antimicrobial therapy at the time of catheter removal may be therapeutic rather than prophylactic, since colonization has likely occurred. One option is to culture the urine 24 to 48 hours prior to intended catheter removal and administer culture-directed therapy. This is not practical in many cases of catheterization for only 48 to 72 hours and may be misleading. The other option is to administer antimicrobial treatment empirically. The Panel does not make a recommendation as to which option is preferable (Wolf et al., 2012).”

The AUA issued a white paper in 2014 concerning CAUTIs. In the white paper, they refer to the use of the National Surgical Quality Improvement Program (NSQIP) definition of UTIs, which does reference the use of urine culture. It should be noted, however, that this definition requires at least a minimum of one of the following symptoms: fever ($>38^\circ$C), urgency, frequency, dysuria, or suprapubic tenderness. They, too, refer to the 2009 IDSA guidelines concerning CAUTIs as well as those of the EAU. They state that there are “no consistent guidelines are available on how to obtain urine for culture from chronically catheterized patients, or what constitutes true urinary tract infection versus asymptomatic bacteriuria.” They make note of a study concerning the possible cost-effectiveness of the use of dipsticks to screen asymptomatic ICU patients for CAUTIs. They conclude, “however, as previously discussed, screening of asymptomatic patients may not be warranted, and treatment is usually not recommended in these cases (Averch et al., 2014).”

**National Institute for Health and Care Excellence (NICE)**
NICE recommends against using dipstick testing to diagnose UTIs in adults with urinary catheters. However, NICE states that patients with a UTI not responding to initial antibiotic treatment should have a urine culture (NICE, 2015).

NICE also recommended the following populations of children for a urine culture:
- in infants and children who are suspected to have acute pyelonephritis/upper urinary tract infection
- in infants and children with a high to intermediate risk of serious illness
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- in infants under 3 months
- in infants and children with a positive result for leukocyte esterase or nitrite
- in infants and children with recurrent UTI
- in infants and children with an infection that does not respond to treatment within 24–48 hours, if no sample has already been sent
- when clinical symptoms and dipstick tests do not correlate (NICE, 2018)

Billing/Coding/Physician Documentation Information

This policy may apply to the following codes. Inclusion of a code in this section does not guarantee that it will be reimbursed. For further information on reimbursement guidelines, please see Administrative Policies on the Blue Cross Blue Shield of North Carolina web site at www.bcbsnc.com. They are listed in the Category Search on the Medical Policy search page.

Applicable service codes: 81000, 81001, 81002, 81003, 81005, 81007, 81015, 81020, 87077, 87086, 87088, 87140, 87149, 87181, and 87147

BCBSNC may request medical records for determination of medical necessity. When medical records are requested, letters of support and/or explanation are often useful, but are not sufficient documentation unless all specific information needed to make a medical necessity determination is included.

Scientific Background and Reference Sources


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health service laboratories and a research laboratory: Diagnostic cohort study. (1932-6203 (Electronic)).


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Urinalysis and Urine Culture Testing for Bacteria AHS – G2156


Specialty Matched Consultant Advisory Panel review 2/2020

**Policy Implementation/Update Information**

<table>
<thead>
<tr>
<th>Date</th>
<th>Description</th>
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<tbody>
<tr>
<td>1/1/19</td>
<td>New policy developed. BCBSNC will provide coverage for urine culture testing for bacteria when it is determined to be medically necessary because the medical criteria and guidelines are met. Medical Director review 1/1/2019. Policy noticed 1/1/2019 for effective date 4/1/2019. (an)</td>
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<tr>
<td>8/27/19</td>
<td>References and guideline description updated. Code table removed, and applicable codes listed. Statement added to when not covered section. “Follow-up urine culture testing for an uncomplicated urinary tract infection in patients that show evidence of clinical resolution of infection is considered not medically necessary.” Policy noticed 8/27/19 for effective date 10/29/2019. (eel)</td>
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<tr>
<td>10/29/19</td>
<td>Wording in the Policy, When Covered, and/or Not Covered section(s) changed from Medical Necessity to Reimbursement language, where needed. (gm)</td>
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<tr>
<td>12/10/19</td>
<td>Policy title changed from “Urine Culture Testing for Bacteria” to “Urinalysis and Urine Culture Testing for Bacteria”. When not covered section reworded for clarity, no change to policy intent. (eel)</td>
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<tr>
<td>03/10/20</td>
<td>Specialty Matched Consultant Advisory Panel review 2/19/2020. No change to policy statement. (eel)</td>
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</tbody>
</table>

Medical policy is not an authorization, certification, explanation of benefits or a contract. Benefits and eligibility are determined before medical guidelines and payment guidelines are applied. Benefits are determined by the group contract and subscriber certificate that is in effect at the time services are rendered. This document is solely provided for informational purposes only and is based on research of current medical literature and review of common medical practices in the treatment and diagnosis of disease. Medical practices and knowledge are constantly changing and BCBSNC reserves the right to review and revise its medical policies periodically.