ANMC Adult Urinary Tract Infection Testing Guideline

Urine Culture Appropriate with UTI Symptoms

No Urinary Catheter

- Urinary Urgency
- Urinary Frequency
- Suprapubic Tenderness
- Fever and flank pain or costovertebral angle tenderness

Urine Catheter Present

- Fever and Suprapubic Tenderness
- Fever and flank pain or costovertebral angle tenderness

Urine Culture Indicated in Absence of Symptoms

- Suspected Sepsis without clear source
- Pregnancy at 12-16 weeks gestation
- Invasive Urologic Procedure in which mucosal bleeding is expected.

Urine Culture Not Indicated

- Foul Smelling Urine
- Cloudy Urine
- Mental Status Changes Alone
- Pyuria, Positive Leukocyte Esterase, Nitrite, or bacteria on Urinalysis without appropriate symptoms.
- Fever without UTI symptoms
- As a test of cure for UTI

Key Points

How to Obtain a Urine Culture

- Midstream urine
  - Instruct patient on proper technique if self-collecting
- In/Out Catheterization
- If indwelling catheter present, remove before obtaining urine culture

Clinical Pearls

- Diagnosis of a UTI starts with having appropriate symptoms
- Abnormal urinalysis or positive urine culture does not diagnose a UTI in the absence of symptoms
- Treating asymptomatic bacteriuria can paradoxically increase risk of subsequent UTI
- Pan-culturing for fever is not best practice

Asymptomatic Bacteriuria (ASB) is common

- Healthy premenopausal women 1-5%
- Women 70-90 years old 11-16%
- Female long-term care residents 25-50%
- Male long-term care residents 15-50%
- Females with diabetes 9-29%
- Males with diabetes 1-11%
- People on hemodialysis 25%
- Long term indwelling urinary catheter 100%

Pyuria in setting of ASB

- Young women 32%
- Pregnant women 30-70%
- Women with diabetes 70%
- Elderly institutionalized patients 90%
- Dialysis patients 90%
- Patients with short-term catheters 30-75%
- Patients with long-term catheters 50-100%

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REFERENCES: **Best Practices in Diagnosis and Treatment of Asymptomatic Bacteriuria and Urinary Tract Infections:** ***https://www.ahrq.gov/antibiotic-use/acute-care/diagnosis/uti.html***

ANMC Adult Ambulatory Urinary Tract Infection Treatment Guideline

Severity → This guideline is intended for patients who can tolerate oral therapy and **do NOT require hospitalization**.

Category	Asymptomatic Bacteriuria	Acute Cystitis	Acute Pyelonephritis	Complicated UTI / Catheter-Associated UTI (CAUTI)
Symptoms and/or Risk Factors	Isolation of a specific quantity of bacteria in an appropriately collected urine specimen (**≥10^5 cfu/mL** or from catheter; **≥10^2 cfu/mL**) from an individual **WITHOUT** signs or symptoms of infection.	**General symptoms**: acute onset dysuria, frequency or urgency *Risk factors for resistance* • Antibiotic exposure within 90 days • Hospitalization within 90 days • Presence of invasive device(s)	**Upper UTI** is frequently associated with general symptoms PLUS **back/flank pain, fever & chills.**	**Complicated UTI:** infection in the presence of an anatomic or functional abnormality (e.g. enlarged prostate, calculi, obstruction, catheter or stent, neurogenic bladder, renal transplant, neutropenia). **Lower UTI** classically presents with suprapubic pain, increased frequency, and dysuria.
See ANMC Adult Urinary Tract Infection Testing Guideline				
Culture & Susceptibility (C&S) Investigation	Routine C&S is NOT indicated in asymptomatic patients *unless* screening for pregnancy or urologic procedure with mucosal bleeding.	Routine C&S is NOT indicated *unless* risk factor(s) for resistance exist; consider if prescribing 2nd line therapy	**Urine C&S are critical** in order to optimize treatment. Urine collection from freshly placed catheter or if discontinued, a voided midstream prior to antibiotics. ***Note: if indwelling catheter or urinary stent, **contact lab** to identify all species since multiple isolates or "skin flora" may be discarded as contaminants.*	
Recommended Treatment and Duration	Pregnant women: 1. **Cephalexin** 500mg BID x 5d 2. **Nitrofurantoin** 100mg BID x 5d Urologic procedure: Direct treatment based on pre-procedure screening C&S. Treatment is **NOT** appropriate for women (premenopausal, non-pregnant), diabetics, elderly, nursing home residents, spinal cord injury or indwelling urethral catheters.	First Line: 1. **Nitrofurantoin** 100mg BID x 5d 2. **Cephalexin** 500mg BID x 7d **Fluoroquinolone FDA Safety Alert**: *Disabling & potentially permanent adverse effects outweigh benefit in cystitis. Only use when no other alternatives exist.* 3. **Ciprofloxacin** 250mg BID x 3d ***Note: If STI risk w/ symptoms of urethritis, consider treatment for Chlamydia.*	First Line: 1 dose of **Ceftriaxone** 1gm IM/IV or **Gentamicin** 5mg/kg IM/IV PLUS 1 of the following: 1. **Cephalexin** 1gm BID x 14d 2. **Levofloxacin** 750mg daily x 5d 3. **Ciprofloxacin** 500mg BID x 7d *Tailor maintenance therapy to C&S report.*	Base empiric treatment on prior culture data. Use acute pyelonephritis treatment unless prior culture data available. **Duration:** • Stop antibiotics **3-5 days** after either defervescence or elimination of complicating factor (e.g. catheter, stone) • *If female and ≤ 65 years of age*, a **3-day** regimen *may be considered* for CAUTI with catheter removal. • *If CAUTI and NOT severely ill*, a **5-day** regimen of **levofloxacin 750mg** may be considered. • Shorter courses (**7 days**) are reasonable, if symptoms promptly resolve. • Longer courses (**10-14 days**) if delayed response, regardless if catheterized or not.

- **Nitrofurantoin is 1st line for most patients without** fever. Toxicity is minimized by short course therapy, which can be safe and effective with a **CrCl as low as 30mL/min**.
- **3rd generation cephalosporins** (e.g. cefpodoxime) provide **no additional coverage for *E.coli* or *K. pneumoniae* over cephalexin**.
- Per ACOG/IDSA, TMP/SMX 1 DS tab BID x 3d may be used during the 2nd and 3rd trimester if needed as an **alternative** for nitrofurantoin or cephalexin in pregnancy.
- *E. coli* susceptibility to TMP/SMX is <80% **and should be avoided as empiric therapy** but may be considered if confirmed by C&S for complicated UTI or pyelonephritis (2 week duration).
- For **ESBL (Extended Spectrum Beta-lactamase)** producing organism, **treat according to reported susceptibility** with nitrofurantoin, TMP/SMX or FQ. If resistant to all tested antibiotics or multiple allergies, consider ***Infectious Diseases consultation*** for potential alternatives: (ex. Fosfomycin). ESBL pyelonephritis may require IV carbapenem.
- **Penicillin allergy**? Inquire about onset and severity of symptoms and update patient medical record. ***Most PCN-allergic patients CAN safely receive cephalosporins.***
- **Antibiotic prophylaxis for most patients** with risk factors for recurrent, complicated UTI **is NOT recommended**. Risk of resistance outweighs the slight reduction in infection rate.
- **Methenamine salts** or **cranberry products** should ***NOT*** be used routinely to reduce CA-bacteriuria or CA-UTI.

Antimicrobial Stewardship Program Approved 2017, Updated October 2020

*Executive Summary: International Clinical Practice Guidelines for the Treatment of Acute Uncomplicated Cystitis and Pyelonephritis in Women: **CID 2011;52(5):561–564**. Diagnosis, Prevention, and Treatment of Catheter-Associated Urinary Tract Infection in Adults: **CID 2010; 50:625–663.** IDSA Guidelines for the Diagnosis and Treatment of Asymptomatic Bacteriuria in Adults. **CID 2005; 40:643–54.** 2015 Updated Beers Criteria. IDSA Clinical Practice Guideline for Management of Asymptomatic Bacteriuria. **CID 2019; 68(10):e83-e110.***