## ANMC Adult Urinary Tract Infection Testing Guideline

<table>
<thead>
<tr>
<th>No Urinary Catheter</th>
<th>Urine Culture Indicated in Absence of Symptoms</th>
<th>Urine Culture Not Indicated</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Suspected Sepsis without clear source</td>
<td>Fever without UTI symptoms</td>
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<td>Pregnancy at 12-16 weeks gestation</td>
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<td>Invasive Urologic Procedure in which mucosal bleeding is expected.</td>
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### 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%

### REFERENCES
### 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.

<table>
<thead>
<tr>
<th>Category</th>
<th>Asymptomatic Bacteriuria</th>
<th>Acute Cystitis</th>
<th>Acute Pyelonephritis</th>
<th>Complicated UTI / Catheter-Associated UTI (CAUTI)</th>
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<tbody>
<tr>
<td><strong>Symptoms and/or Risk Factors</strong></td>
<td>Isolation of a specific quantity of bacteria in an appropriately collected urine specimen ($\geq 10^5 \text{ cfu/mL}$ or from catheter; $\geq 10^6 \text{ cfu/mL}$) from an individual WITHOUT signs or symptoms of infection.</td>
<td>General symptoms: acute onset dysuria, frequency or urgency</td>
<td>Upper UTI is frequently associated with general symptoms PLUS back/flank pain, fever &amp; chills.</td>
<td>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).</td>
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</table>

**Risk Factors**
- Antibiotic exposure within 90 days
- Hospitalization within 90 days
- Presence of invasive device(s)

**Antibiotic Exposure**
- 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 cephalaxin in pregnancy.
- E. coli susceptibility to TMP/SMX is <80% and should be avoided as empiric therapy may be considered if confirmed by C&S for complicated UTI or pyelonephritis (2 week duration).
- For ESBL (Extended Spectrum Beta-lactamase) producing organisms, 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.

### 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.

1. **Ciprofloxacin** 250mg BID x 3d
2. **Levofloxacin** 750mg daily x 5d
3. **Ciprofloxacin** 500mg BID x 7d

**Note:** If STI risk w/ symptoms of urethritis, consider treatment for Chlamydia.

**First Line:**
1. 1 dose of Ceftiraxone 1gm IM/IV or Gentamicin 5mg/kg IM/IV
2. 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.

**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. cepodoxime) provide no additional coverage for *E.coli or K. pneumoniae* over cephalaxin.

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Antimicrobial Stewardship Program Approved 2017, Updated February 2022