Urinary Tract Infection in Children and Adolescents (age >= 3 months)

Key points
- *E. coli* is the predominant cause of UTI in children and adolescents
- UTI can present with nonspecific symptoms or fever alone in younger children
- Undiagnosed UTI can lead to renal scarring and future sequelae
- Do not culture bag specimens (high false positive rate) – catheterize or suprapubic aspirate if too young to do clean catch
- Obtain clean-catch sample if toilet-trained
- Consider chlamydia and other sexually transmitted infections in adolescents

### Signs, symptoms, and risk factors for urinary tract infection:

<table>
<thead>
<tr>
<th>Non-verbal children</th>
<th>Verbal children</th>
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<tbody>
<tr>
<td>1) Fever (temperature &gt;39°C) and no other source infection</td>
<td>1) Dysuria</td>
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<td>2) Ill-appearing, irritable, poor feeding</td>
<td>2) Abdominal pain</td>
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<td>3) Suprapubic tenderness</td>
<td>3) Back or flank pain</td>
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<td>4) Uncircumcised</td>
<td>4) New onset incontinence</td>
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<td>5) History of UTI</td>
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<tr>
<td>6) Family history of genitourinary (GU) abnormality or vesicoureteral reflux (VUR)</td>
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</tbody>
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*Pyelonephritis is difficult to distinguish from simple cystitis in younger children*

### Any complicating factors present?
- Anatomical GU abnormality or VUR
- Nephrolithiasis or Renal Disease
- Recent treatment failure
- Recent GU instrumentation

#### Hospital admission

### Any of the following present?
- Ill-appearing → clinical urosepsis or potential bacteremia
- Vomiting or inability to tolerate oral medication
- Failure to respond to outpatient therapy
- Lack of adequate outpatient follow-up

### Diagnostic evaluation
- Culture should be performed
- Dipstick analysis 88% sensitivity for UTI – UTI less likely if dip negative, culture if clinically suspicious
- Leukocyte esterase-positive bag specimen – catheterize or suprapubic aspiration
- WBC, ESR, CRP do not distinguish upper tract from lower tract infection

### Treatment options (choice varies with local resistance rates)
- **Amoxicillin-clavulanate**: 40 mg/kg/day divided BID (max 875mg BID) OR
- **Cephalexin**: 50 mg/kg/day divided BID-TID (max 500mg TID) OR
- **Cefixime**: 8 mg/kg/day divided BID (max 400mg/day) OR
- **Cefpodoxime**: 10 mg/kg/day divided BID (max 400mg BID) OR
- **TMP-SMX**: 6-12 mg/kg/day TMP divided BID (max 1 DS tab BID)

**Total duration of therapy:** 7-10 days

**In children >13 years with cystitis and no upper tract signs:**
- **Nitrofurantoin**: 5 to 7 mg/kg/day divided 4 times/day (max 200mg/day) for 7 days OR
- **Levofloxacin**: 250mg daily for 3 days

### Culture result
- Complete therapy - consider further evaluation in appropriate patients
- Positive
- Negative
- Call to discontinue antibiotics

### Disclaimer:
This is intended only as a guide for evidence-based decision-making; it is not intended to replace clinical judgment. Assess for antibiotic allergies and use alternative agents as appropriate. Suggested antibiotic doses are for normal renal function; adjust for renal impairment when necessary.

*Not recommended for males. Contraindicated in patients with a creatinine clearance of less than 60 mL/min