Northwestern Medicine-West Region
Pediatric UTI Treatment Guideline Summary

Background
- Identification and treatment of urinary tract infection (UTI) in children is important to avoid damage to the upper urinary tract such as renal scarring. Such damage can result in long-term complications such as poor renal growth, recurrent pyelonephritis, impaired glomerular function, early hypertension, end-stage renal disease, and preeclampsia.
- In a study in children aged 0 to 36 months, boys were found to have a higher proportion of UTIs caused by gram-positive organisms (52.3% vs. 18.6% in girls), and boys were more likely to have a UTI caused by a gram-negative organism other than E.coli.²

Common Signs and Symptoms of UTI in Children
- Dysuria
- Stranguria
- Urinary frequency
- Infants and children may also have non-specific signs such as poor appetite, failure to thrive, lethargy, irritability, vomiting, or diarrhea; fever may be the only symptom in young children.

Diagnosis of UTI
- Exclude other potential sources of fever when diagnosing UTI, and perform thorough physical examination to check for physical conditions that may predispose the patient to UTI
- Ensure urine sample is obtained prior to starting any antimicrobials for accurate results
- There is a high likelihood of UTI if both pyuria and bacteriuria are present
- Ultrasound is recommended in patients with febrile UTI or in patients with pain and hematuria to discriminate between complicated and uncomplicated UTI (if no prior normal US on file)

Bacteria Counts in Urine to Diagnose UTI in Children:

<table>
<thead>
<tr>
<th>Urine specimen from suprapubic bladder puncture</th>
<th>Urine specimen from bladder catheterization</th>
<th>Urine specimen from midstream void</th>
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</thead>
<tbody>
<tr>
<td>Any number of CFU per mL (at least 10 identical colonies)</td>
<td>&gt;10,000</td>
<td>&gt; 50,000 with symptoms</td>
</tr>
<tr>
<td></td>
<td></td>
<td>≥ 100,000 CFU/mL without symptoms</td>
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</tbody>
</table>

Treatment Recommendations
- If a patient has asymptomatic bacteriuria (positive urine culture but no symptoms of UTI), and no leukocyturia, it is recommended to avoid antibiotics unless a surgical procedure is planned
- Febrile children < 2 months old or pyelonephritis ages 0-6 months old: parenteral antibiotics are recommended

Must complete sepsis work up as needed prior to antibiotics in infants 0-60 days (CBC, blood culture, UA, urine cx, blood cx, LP):
- Ampicillin 150-200mg/kg/day IV divided q6-8h plus gentamicin 7.5mg/kg/day IV divided q8h or
- Ampicillin 150-200mg/kg/day IV divided q6-8h plus cefotaxime 150mg/kg/day IV divided q6-8h
- Narrow agent once susceptibilities known
- If 0-30 days, recommend 7-10 days of parenteral therapy, before switching to oral therapy.
- If > 30 days, give IV until the child is afebrile, negative blood cultures, then complete 7 to 14 days of oral antibiotics based on susceptibilities

Uncomplicated pyelonephritis ages > 6 months old; parenteral antibiotics initially, if necessary
- Ceftriaxone 50mg/kg IV daily then switch to po based on susceptibilities for total of 7 to 14 days

Febrile children > 2 months old:
- May do IV or PO therapy depending on clinical factors including age; suspicion of urosepsis; severity of illness; refusal of fluids, food, and/or medication; vomiting/diarrhea; and complicated febrile UTI (e.g., upper tract dilatation)
- PO options:
  - Ceftriaxone [Keflex] 20 mg/kg q8h for 7 to 14 days
  - TMP-SMX [Bactrim] if PCN allergy 4-5 mg/kg (TMP component) BID for 7 to 14 days
- IV option:
  - Ceftriaxone 50mg/kg IV daily then switch to PO for total of 7 to 14 days

Uncomplicated UTI in children > 6 months old:
- Treatment options same as ABOVE; if afebrile with only cystitis, can treat minimum 3-5 days
- Ceftriaxone [Keflex] 20 mg/kg q8h for a minimum of 3 to 4 days
- TMP/SMX [Bactrim] 4-5mg/kg (TMP component) divided BID for minimum of 3 to 4 days
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References: