First Febrile Urinary Tract Infection
Risk Factors and Screening Recommendations
Evidence Based Outcome Center

GUIDELINE EXCLUSION CRITERIA
- Known genitourinary anatomical abnormality
- Known immunodeficiency and/or on immunosuppressants
- Known uncorrected, hemodynamically unstable complex heart disease
- Prior febrile UTI with pathogen other than E. coli
- Prior febrile UTI with E. coli pathogen known to be resistance to empiric antibiotics therapy
- Clinically unstable (Septic Shock)

GUIDELINE INCLUSION CRITERIA
- 2 months to 18 years of age with symptoms: fussiness, foul smelling urine, blood in urine, new incontinence, dysuria, or urethral discharge
- Febrile > 38°C with no apparent source

Inpatient Criteria
- Ill-appearing (SIRS/SEPSIS)
- Dehydration requiring IV or NG fluids
- Persistent vomiting or inability to tolerate PO ABX
- Social indicators that make treatment compliance and/or PCP follow-up difficult
- Failure of outpatient treatment with need for IV therapy

Guideline Exclusion Criteria

<table>
<thead>
<tr>
<th>Probability of UTI &gt; 1%:</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 or more risk factors</td>
</tr>
</tbody>
</table>

**Female Risk Factors***
- Non-black
- T ≥ 39°C
- Fever ≥ 2 days
- No apparent source of fever
- Age < 12 months

**Male Risk Factors***
- Non-black
- T ≥ 39°C
- Fever ≥ 2 days
- No apparent source of fever
- Age < 6 months

DCMC UTI Definition: The presence of pyuria and/or bacteruria on urinalysis AND a positive urine culture.

- Pyuria should be considered present if there are ≥5 WBCs/hpf in a centrifuged specimen and ≥10 WBCs/hpf in a counting chamber. DCMC uses centrifuged specimens.
- Urine culture is considered positive if there are ≥50,000 cfu/mL in a specimen obtained by catheterization or suprapubic aspiration. If the specimen was obtained by the clean-catch method, ≥100,000 cfu/mL is considered optimal for diagnosis but 50,000-100,000 can also be accepted with the understanding that the sensitivity and specificity are decreased in this setting.

Emergency Department Pathway

Inpatient Pathway

Legal Disclaimer
First Febrile Urinary Tract Infection
Inpatient Management Pathway
Evidence Based Outcome Center

**Primary care provider or outside hospital admission**

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**Induction criteria met?**

- **NO** → **Manage OFF-Pathway Close clinical follow-up**

- **YES** → **Transition:**
  - 24 – 48 hours of IV therapy with clinical improvement.
  - Assess antibiotic susceptibility and adjust to most narrow spectrum agent.
  - **Total duration of antibiotics:** IV + PO = 7 Days

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**Outside record documents appropriate urine collection and UA is positive**

- **NO**
  - **Likelihood of UTI ≤ 1%** → **TOILET TRAINED?**
    - **YES**
      - **Order Urine Analysis (UA)**
        - alternative: Catheter OR Suprapubic Aspirate
      - **UA positive?**
        - **NO** → **Consider stopping antibiotics**
        - **YES** → **Order Urine Culture**
    - **NO** → **Consider stopping antibiotics**

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**TOILET TRAINED?**

- **YES**
  - **Order Urine Culture**
    - **MUST** be obtained from clean catch, catheter, or Suprapubic Aspirate. If bag sample previously tested, another specimen should be obtained to send for culture.
    - **Antibiotic Management: Continue or start**
      - Cefazolin: 50 mg/kg/Day divided Q8hrs | Max dose: 2g per dose
      - **Urine Culture Positive?**
        - **YES** → **Imaging Recommendations**
          - **Transition:**
            - 24 – 48 hours of IV therapy with clinical improvement.
            - Assess antibiotic susceptibility and adjust to most narrow spectrum agent.
            - **Total duration of antibiotics:** IV + PO = 7 Days
          - **DISCHARGE CRITERIA**
            - Non-toxic appearing
            - Well-hydrated
            - Can tolerate oral antibiotics and fluids
            - Normal genitourinary anatomy
            - Renal Bladder Ultrasound reviewed if performed
            - Quality follow-up within 24 to 48 hours
            - Clinically assessed as stable for home disposition
        - **NO** → **Consider stopping antibiotics**

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**Outside record documents appropriate urine collection and UA is positive**

- **NO** → **Manage OFF-Pathway Close clinical follow-up**

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**DCMC Emergency Department Admission**

- **UA positive?**
  - **NO** → **Consider stopping antibiotics**
  - **YES** → **Order Urine Analysis (UA)**
    - bag specimen is preferred if possible
    - **Alternative**: Catheter OR Suprapubic Aspirate
  - **NO** → **Consider stopping antibiotics**

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For questions concerning this pathway,
Click Here
Last Updated May 31, 2017
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Click Here 
Last Updated May 31, 2017
DCMC Positive Urinalysis (UA) Definition: The presence of Leukocyte Esterase OR Nitrites OR microscopic analysis results positive for leukocytes or bacteria is suggestive of an active UTI. When more than one of these findings is present at the same time, the sensitivity and specificity increase significantly.

- Urine dipstick alone is unable to report WBC count and presence of bacteria and should be used with caution for detecting a UTI.
- Within the guideline, there exists the option to perform a bag specimen if the clinician feels it to be more convenient. If the results of the UA are positive, it is strongly advised to obtain a catheterized specimen for the urine culture to avoid contamination.

DCMC UTI Definition: The presence of pyuria and/or bacteruria on urinalysis AND a positive urine culture.

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# First Febrile Urinary Tract Infection
## Antibiotic Management
### Evidence Based Outcome Center

## EMERGENCY DEPARTMENT/OUTPATIENT

<table>
<thead>
<tr>
<th>Medication</th>
<th>Dose</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Empiric First Line</strong></td>
<td></td>
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<tr>
<td>Cephalexin</td>
<td>50-100 mg/kg/day divided TID-QID</td>
<td>Maximum 1000 mg/dose</td>
</tr>
<tr>
<td><strong>Empiric Alternative</strong></td>
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<td></td>
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<tr>
<td>Amoxicillin/clavulanate</td>
<td>20-40 mg/kg/day divided BID</td>
<td>Maximum 875 mg/dose</td>
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<tr>
<td><strong>If IgE-mediated allergy to penicillins AND cephalosporins</strong></td>
<td></td>
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<tr>
<td>Ciprofloxacin</td>
<td>20 mg/kg/day divided BID</td>
<td>Maximum 750 mg/dose (oral)</td>
</tr>
<tr>
<td>Trimethoprim/sulfamethoxazole</td>
<td></td>
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</tr>
<tr>
<td><strong>INPATIENT</strong></td>
<td></td>
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<tr>
<td><strong>Empiric First Line</strong></td>
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<td></td>
</tr>
<tr>
<td>Cefazolin</td>
<td>50 mg/kg/day divided q8H</td>
<td>Maximum 2000 mg/dose</td>
</tr>
<tr>
<td><strong>If IgE-mediated allergy to penicillins AND cephalosporins</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aztreonam</td>
<td>90 mg/kg/day divided q8H</td>
<td>Maximum 2000 mg/dose</td>
</tr>
<tr>
<td>Gentamicin</td>
<td>5-7 mg/kg/day divided q24H</td>
<td>No maximum dose</td>
</tr>
<tr>
<td><strong>If concern for CNS involvement (first line)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ceftriaxone</td>
<td>100 mg/kg/day divided q12H</td>
<td>Maximum dose 2000 mg/dose</td>
</tr>
<tr>
<td><strong>If concern for CNS involvement and IgE-mediated allergy</strong></td>
<td></td>
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<tr>
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<td>Maximum 2000 mg/dose</td>
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Evidence Based Outcome Center

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Approved by the Evidence-Based Outcomes Center

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