



## Winter 2026 Newsletter III: Urinary Tract Infections

### Overview

- Urinary Tract infections (UTI) are common in children; females account for 80-90% of pediatric UTIs. Uncircumcised males more susceptible than circumcised males
- Uro-pathogenic Escherichia coli (UPEC) is the most common pathogen, accounting for approximately 80% of UTIs in children

### Symptoms

- Preverbal children: fever, poor feeding, vomiting, decreased urine output, lethargy, irritability, jaundice
- Verbal children
  - Lower urinary tract symptoms: Dysuria, suprapubic or nonlocalized abdominal pain, urinary frequency, urgency, enuresis, hematuria
  - Upper urinary tract symptoms: Fever, vomiting, flank pain

### Diagnosis

#### Urine Testing

- Clean catch urine sample or catheterization for children who are not toilet trained
  - In non-toilet trained children, the AAP does give the option of non-invasive means (urine bag) for UA. However, if results show pyuria, nitrite, or bacteriuria, a second sample must be obtained via catheterization. Do not use urine bag samples for culture
  - Do not collect in a urine hat or use cotton balls in neonates – this is not sterile – okay to put several sterile urine cups in the hat
- Dipstick analysis with or without Microscopy
- Culture: send for all children not toilet trained (catheter sample). Toilet trained children send if you are considering treatment.

#### Making the Diagnosis

- Hallmarks of UTI are pyuria, urinary nitrite and bacteriuria
  - Pyuria: at least 5 WBC per HPF on urine microscopy or detection of leukocyte esterase on urine dipstick
  - Pyuria alone can be caused by other conditions aside from UTI such as urethritis, vulvovaginitis, STIs, crystalluria or nephrolithiasis or others
  - Blood in urine is not a **specific** finding for UTI

- Diagnosing UTI can be difficult given non-specific symptoms and diagnostic uncertainty if only pyuria is present
- In febrile children aged 2 to 24 months, AAP guidelines define UTI as both urinalysis suggesting infection (pyuria or bacteriuria) and a urine culture with at least 50,000 colony forming units (CFU)/mL of a uropathogen
- In toilet-trained children, a UTI diagnosis is made in the presence of urinary signs/symptoms, urinalysis suggesting infection and positive urine culture with threshold of 50,000 or 100,000 CFU/mL.

## Treatment

### Antibiotics

- Always treat empirically if patient has fever, but if well appearing, afebrile, and no systemic findings it is safe to wait for initial culture result
- If child does not have fever, it is reasonable to wait for culture result and susceptibility data before initiating antibiotic therapy
- Empiric antibiotic treatment
  - Cephalexin (children) and Nitrofurantoin (adolescents)
  - Simple cystitis: 3–4-day course
  - Febrile UTI/Pyelonephritis: 7-day course
  - Amoxicillin is not recommended due to high rates of resistance to E. Coli

## Additional Imaging

- AAP guidelines recommend all infants aged 2-24 months with febrile UTI complete kidney and bladder ultrasonography (KBUS). Please reference the article below for timing of imaging (PIR).
  - If abnormal, AAP guidelines recommend voiding cystourethrogram (VCUG)

## Prevention

- Antibiotics are not recommended for UTI prevention outside of consultation with Urology in the setting Grade 4/5 reflux
- Consider and address other variables that could promote UTI
  - Bowel and bladder dysfunction
    - Dysfunctional Voiding Scoring System, Vancouver Symptom score for Dysfunction Elimination Syndrome
    - Behavioral modifications, treatment of constipation
  - Male circumcision
  - Sexual hygiene
  - Wiping hygiene

## Resources:

- Free Online UTIcalc (<https://uticalc.pitt.edu>) - incorporates demographic and clinical information to guide decisions about urine testing and empirical treatment

- [Urinary Tract Infections in Children | Pediatrics In Review | American Academy of Pediatrics](#) ([Pediatrics In Review Urinary Tract Infection](#))