Pediatric Urinary Tract Infection Testing and Treatment Guideline (>2 months old)

Exclusion Criteria: chronic kidney disease, known urinary tract abnormality, neurogenic bladder, immune deficiency, history of UTI with multidrug resistant organism

Signs and Symptoms

Pre-Verbal	Verbal
For 2-23mo use UTI Risk Calculator (UTICalc): https://uticalc.pitt.edu/ • Fever (increased risk with fever ≥2 days or 102.2F with no source) • Poor feeding • Vomiting • Irritability	• Dysuria • Frequency • Urgency/hesitancy • Abdominal pain/flank pain • New onset incontinence

Testing

Not Toilet Trained	Toilet Trained
• Catheterization • Suprapubic Aspirate (SPA) • Clean catch using Quick-Wee method*[3] • Bag specimen for screening (ONLY use to rule *out* UTI) ➔ If positive nitrite, LE, or >0-2 WBC obtain urine for urinalysis and culture by catheter or clean catch/Quick-Wee method	• midstream clean catch • Consider "dirty" urine for STI screening in adolescents

Order: "Urinalysis *with* Microscopic" **Obtain urine culture PRIOR to starting antibiotics**
Note: urine culture is reflex in children <2yo, for older children a urine culture needs to be ordered separately (may order as add on to specimen in lab)

Urinalysis Interpretation and Indications for Empiric Antibiotics

2-23 Months Old: Use UTICalc (https://uticalc.pitt.edu/), to assess risk + UA results. Treat empirically if high probability of UTI

≥24 Months Old: Consider empiric treatment for symptoms of UTI ***AND*** positive urinalysis:
- Leukocyte esterase (LE) **OR**
- Positive nitrite **OR**
- ≥5 WBC/hpf

Empiric Antibiotic Selection

If history of previous UTI, review previous cultures and susceptibilities to determine if alternate empiric therapy is appropriate.

	Ambulatory Empiric Treatment	Inpatient Empiric Treatment
Preferred Treatment	**Cephalexin** 17mg/kg/dose PO Q8H (max 500mg/dose)	**Cefazolin** 20mg/kg/dose IV Q8H (max 1g/dose) **If history of prior UTIs or ill appearing:** **Ceftriaxone** 50mg/kg IV Q24H (max 2gm/day)
Beta-lactam allergy (severe)	**Sulfamethoxazole/trimethoprim** 4-5mg/kg/dose PO BID (trimethoprim component for dosing; max 160mg trimethoprim/dose)	**Gentamicin** 2mo-<5yo: 7.5mg/kg IV Q24H 5-10yo: 6mg/kg IV Q24H ≥10yo: 4.5mg/kg IV Q24H

Diagnosis of UTI

Symptoms ***AND*** Abnormal Urinalysis ***AND*** Growth of a urinary pathogen with appropriate CFU

	Definite	Possible
Catheterization	>50,000 cfu/mL	>10,000 cfu/mL
Clean Catch	>100,000 cfu/mL	>50,000 cfu/mL

Most Common Organisms: *Escherichia coli* (85-90% of UTIs), *Klebsiella, Proteus, Enterococcus*, and *Enterobacter* species

Common contaminants: *Lactobacillus sp., Corynebacterium sp,* alpha-hemoytic *streptococci*, coag-neg *Staph*

Tailored Antibiotic Selection

	Duration

Urine Culture Positive + History of Positive UA
• If empiric treatment prescribed: review susceptibilities and narrow or adjust antibiotics
  • If not clinically improving after 48-72h of appropriate antibiotics, complete renal ultrasound
• If no empiric treatment prescribed, reassess patient:
  • If symptomatic and initial UA supports UTI, sta antibiotics, narrow/adjust per susceptibilities
  • If no ongoing symptoms, *do not start antibiotics* (diagnosis: asymptomatic bacteria or spontaneous resolution)
	Febrile UTI 7 days
	Afebrile UTI 3-5 days

Urine Culture Positive + History of Negative UA • Reassess: if remains symptomatic consider repeat UA, assess for alternate diagnosis	Stop Antibiotics if UTI Ruled Out
Urine Culture Negative or Culture Consistent with Contaminant • Inform family does not have UTI • If persistent symptoms, reassess	Stop Antibiotics

Indications for Imaging

	Refer to urology
Renal/bladder ultrasound (RUS): 1st febrile UTI in age 2-24 months old or recurrent UTI in >24 months old. -Complete ***after*** treatment unless concern for acute complication/ no improvement in 48-72 hours **VCUG**: recurrent febrile UTI, abnormalities seen on RUS, atypical pathogen, complex clinical course, known renal scarring	• Recurrent febrile UTI's • Abnormal imaging on RUS or VCUG • Need for DMSA scan

Considerations

*Quick-Wee method: clean perineum, stimulate suprapubic area with cold fluid soaked gauze, collect urine midstream

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Shaw K, et al. Clinical Pathway for the Evaluation and Treatment of Children with Febrile UTI. *Children's Hospital of Philadelphia.* 2024. https://www.chop.edu/clinical-pathway/urinary-tract-infection-uti-febrile-clinical-pathway. Accessed 18 April 2025; Kaufman H, et al. Faster clean catch urine collection (Quick-Wee method) from infants: randomized controlled trial. *BMJ.* 2017; 357:j1341; Mattoo, T. K., Shaikh, N., & Nelson, C. P. Contemporary management of Urinary Tract Infection in children. *Pediatrics*. 2021;*147*(2): e2020012138; Shaikh N, Lee S, Krumbeck JA, Kurs-Lasky M. Support for the use of a new cutoff to define a positive urine culture in young children. *Pediatrics.* 2023;152(4):3202361931; Hunt KM, et al. Urine Dipstick for the Diagnosis of Urinary Tract Infection in Febrile Infants Aged 2 to 6 months. *Pediatrics.* 2025;155(4):e2024068671; Noronha AA, et al. Short- versus standard-course antibiotic therapy for urinary tract infection in children: a systemic review and meta-analysis. Pediatr Nephrol. 2024: Oct 1: 10.1007/s00467-024-06509-z