

INCLUSION CRITERIA

- Age: ≥ 2 months
- Presumed or definite first or recurrent UTI in an otherwise healthy child

EXCLUSION CRITERIA

- Less than 2 months of age
- History of ESBL or other resistant UTI pathogen
- Septic shock
- Known genitourinary abnormalities
- Neurogenic bladder
- Indwelling urinary catheter
- Immunodeficiency
- Pregnancy
- Recent history of sexual abuse
- Patient presenting to telehealth

MEASURES

1st line Antibiotic choice and duration

CONSIDER HIGHER LEVEL OF CARE¹

- Ill appearance/ concern for urosepsis or in some cases pyelonephritis
- Unable to tolerate PO and oral medications
- Moderate to Severe Dehydration
- Failed outpatient therapy: persistent clinical symptoms beyond 48 hours on appropriate therapy
- Consider lower threshold for referring infants < 6 months

UTI CALCULATOR

For patients 2-23 months: Estimates probability of UTI to guide testing (UA/ culture) and consideration of empiric treatment in select cases. <https://uticalc.pitt.edu/>

INITIAL ASSESSMENT

Assess urinary signs and symptoms

- Dysuria
- Urinary Frequency or Urgency
- New onset incontinence
- Flank or suprapubic pain
- Fever $\geq 39^{\circ}\text{C}$ without apparent source of infection, especially in children 2 months-2 years of age

Does patient require higher level of care?

Off Pathway
Send to ED
for
Evaluation

No

Proceed to Screening:
Complete Urinalysis

NOT Toilet Trained

Catheterization if high probability of UTI; can complete bag specimen for UA, however if UA is positive then must obtain catheterized urine sample for culture

Toilet Trained

Midstream clean catch

Adolescent > 12 yrs

Midstream clean catch

Recommend initial contaminated urine sample or swab for STI testing if clinical concern

UA Results:
Pyuria
Any Nitrite
Any Leukocyte Esterase (LE)
 ≥ 5 WBC/hpf
And/or bacteriuria?

Negative

CONSIDER

- Consider alternative diagnosis
- If strong clinical suspicion - Send culture (for example: significant dysuria, recurrent or history of UTI, antibiotic use prior to UA)

Positive

GUIDANCE

Cystitis² – Infection confined to the bladder with presence of dysuria, urgency, frequency, or suprapubic pain, no fever or other systemic symptoms

Pyelonephritis³ – Infection of the urinary tract that extends beyond the bladder to kidneys with presence of fever or flank pain

Confirmed UTI – Clinical signs and symptoms and positive culture for urinary pathogen

Specimen	Definite
Catheterization	≥50,000 cfu/mL
Clean catch	≥100,000 cfu/mL
cfu/mL: colony forming units per milliliter	

PENICILLIN ALLERGY⁴ DEFINITIONS

- Mild PCN allergy type IV:** Delayed maculopapular rash without urticaria, blistering, desquamation, mucosal involvement, systemic symptoms
- Severe PCN allergy (type I/IgE mediated):** Allergist-confirmed history of urticaria, angioedema, wheezing, respiratory distress or anaphylaxis

REFERRAL RECOMMENDATIONS

Renal Bladder Ultra Sound (RBUS)⁵ – Recommended for children 2 months to 24 months after first febrile UTI.

Urology services –

- Female after 2nd febrile UTI
- Male after 1st febrile UTI
- Abnormal RBUS

Positive

Send Culture and Initiate Empiric Antibiotic Treatment

2 months – 2 years of age

Duration: 7-10 days

First Line: PO Cephalexin

Second Line (Severe PCN Allergy⁴): PO Trimethoprim/Sulfamethoxazole

≥ 2 years of age

**Duration: 3-5 days for Cystitis²
7-10 days for Pyelonephritis³**

First Line: PO Cephalexin
OR
PO Nitrofurantoin (Cystitis only)

Second Line (Severe PCN Allergy⁴ and unable to take other 1st line agents): PO Trimethoprim/Sulfamethoxazole

DISCHARGE

- Provide related educational resources
- Discuss UC or ED return precautions vs follow up with PCP if symptoms do not improve
- Advise PCP follow up in 2-3 days for potential Renal Bladder Ultrasound⁵ referral if patient 2 months-24 months of age

Follow-up Actions When Urine Culture Results Available

- Contact family to review urine culture results as appropriate
- Narrow antibiotic coverage when sensitivities return
- Discontinue antibiotics if culture negative

Antibiotic Dosing				
Indication	Medication	Route	Dosage	Max per Dose
Cystitis	Cephalexin	PO	25 mg/kg/dose BID	500 mg
	Nitrofurantoin macrocrystals liquid (ONLY for children >2 years of age)	PO	1.5 mg/kg/dose QID	100 mg
	Nitrofurantoin monohydrate/macrocrystals Macrobid® or Macrodantin® (For Adolescents >12 years)	PO	Macrobid® 100 mg BID	NA
			Macrodantin® 1.5 mg/kg/dose QID	100 mg
	Trimethoprim (TMP)/Sulfamethoxazole	PO	5 mg/kg/dose (TMP) BID	160 mg (TMP)
Pyelonephritis	Cephalexin	PO	25 mg/kg/dose TID	1000 mg
	Trimethoprim (TMP)/Sulfamethoxazole	PO	5 mg/kg/dose (TMP) BID	160 mg (TMP)

Disclaimer: The clinical pathways are based upon publicly available medical evidence and/or a consensus of medical practitioners at Nemours Children's Health ("Nemours") and are current at the time of publication. These clinical pathways are intended to be a guide for practitioners and may need to be adapted for each specific patient based on the practitioner's professional judgment, consideration of any unique circumstances, the needs of each patient and their family, and/or the availability of various resources at the health care institution where the patient is located.

VERSION MANAGEMENT

- Version 1.0 (8/25/2026): Go Live.

Questions about this pathway should be directed to **clinicalpathways@nemours.org**.

AUTHORS & REFERENCES

Central Florida Authors: Adriana Cadilla (Infectious Disease), Chase Carpenter (Pharmacy), Kamal Chavda (Emergency Medicine), Madhushree Desiraju (Primary Care), Morgan Setteducato (Urgent Care)

Delaware Valley Authors: Jennifer Cooper (Emergency Nursing), Oliva Craig (Emergency Medicine), Monique Devens (Emergency Medicine), Mathew Mason (Pharmacy) Jacquelyn Nguyen (Urology), Maria Petrini (Primary Care), Karen Ravin (Infectious Disease), Amy Renwick (Primary Care), Jennifer Vodzack (Infectious Disease)

- Barola S, Grossman OK, Abdelhalim. Urinary Tract Infections in Children. *StatPearls*. 2024. <https://www.ncbi.nlm.nih.gov/books/NBK599548/>
- Branagan A, Canty N, O'Halloran E, Madden M, O'Neill MB. Evaluation of the Quick Wee method of inducing faster clean catch urine collection in pre-continent infants: a randomized controlled trial. *World J Pediatr*. 2022;18(1):43-49. doi:10.1007/s12519-021-00483-4
- Campbell A, Hartling L, Louie-Poon S, Scott SD. Exploring the Experiences and Information Needs of Parents Caring for a Child with a Urinary Tract Infection: A Qualitative Study. *J Patient Exp*. 2021;8:23743735211008299. doi:10.1177/23743735211008299
- Desai S, Aronson PL, Shabanova V, et al. Parenteral Antibiotic Therapy Duration in Young Infants with Bacteremic Urinary Tract Infections. *Pediatrics*. 2019;144(3):e20183844. doi:10.1542/peds.2018-3844
- Gates A, Shulhan J, Featherstone R, Scott SD, Hartling L. A systematic review of parents' experiences and information needs related to their child's urinary tract infection. *Patient Educ Couns*. 2018;101(7):1207-1215. doi:10.1016/j.pec.2018.01.014
- Hari P, Meena J, Kumar M, et al. Evidence-based clinical practice guideline for management of urinary tract infection and primary vesicoureteric reflux. *Pediatr Nephrol*. 2024;39(5):1639-1668. doi:10.1007/s00467-023-06173-9
- Kooner GK, Bass M, Saroha V, Gonzalez PJ, Jain S. Reducing Antibiotic Duration for Uncomplicated UTI in the Pediatric Emergency Department. *Hosp Pediatr*. 2024;14(4):265-271. doi:10.1542/hpeds.2023-007561
- Kowalsky RH, Rondini AC, Platt SL. The Case for Removing Race from the American Academy of Pediatrics Clinical Practice Guideline for Urinary Tract Infection in Infants and Young Children With Fever. *JAMA Pediatr*. 2020;174(3):229-230. doi:10.1001/jamapediatrics.2019.5242
- Mattoo TK, Shaikh N, Nelson CP. Contemporary Management of Urinary Tract Infection in Children. *Pediatrics*. 2021;147(2):e2020012138. doi:10.1542/peds.2020-012138
- Noronha AA, Domingues GR, de Souza GC, Nau AL, Lo DS. Short- versus standard-course antibiotic therapy for urinary tract infection in children: a systematic review and meta-analysis. *Pediatr Nephrol*. 2025;40(8):2481-2488. doi:10.1007/s00467-024-06509-z
- Pantell RH, Roberts KB, Adams WG, et al. Evaluation and Management of Well-Appearing Febrile Infants 8 to 60 Days Old. *Pediatrics*. 2021;148(2):e2021052228. doi:10.1542/peds.2021-052228
- Shaikh N, Hoberman A, Hum SW, et al. Development and Validation of a Calculator for Estimating the Probability of Urinary Tract Infection in Young Febrile Children. *JAMA Pediatr*. 2018;172(6):550-556. doi:10.1001/jamapediatrics.2018.0217
- 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):e2023061931. doi:10.1542/peds.2023-061931
- Shaikh N, Lee MC, Stokes LR, et al. Reassessment of the Role of Race in Calculating the Risk for Urinary Tract Infection: A Systematic Review and Meta-analysis. *JAMA Pediatr*. 2022;176(6):569-575. doi:10.1001/jamapediatrics.2022.0700
- Shaikh N, Morone NE, Bost JE, Farrell MH. Prevalence of urinary tract infection in childhood: a meta-analysis. *Pediatr Infect Dis J*. 2008;27(4):302-308. doi:10.1097/INF.0b013e31815e4122
- SUBCOMMITTEE ON URINARY TRACT INFECTION. Reaffirmation of AAP Clinical Practice Guideline: The Diagnosis and Management of the Initial Urinary Tract Infection in Febrile Infants and Young Children 2-24 Months of Age. *Pediatrics*. 2016;138(6):e20163026. doi:10.1542/peds.2016-3026
- Subcommittee on Urinary Tract Infection, Steering Committee on Quality Improvement and Management, Roberts KB. Urinary tract infection: clinical practice guideline for the diagnosis and management of the initial UTI in febrile infants and children 2 to 24 months. *Pediatrics*. 2011;128(3):595-610. doi:10.1542/peds.2011-1330
- Vyas DA, Eisenstein LG, Jones DS. Hidden in Plain Sight - Reconsidering the Use of Race Correction in Clinical Algorithms. *N Engl J Med*. 2020;383(9):874-882. doi:10.1056/NEJMms2004740
- Zaoutis T, Shaikh N, Fisher BT, et al. Short-Course Therapy for Urinary Tract Infections in Children: The SCOUT Randomized Clinical Trial. *JAMA Pediatr*. 2023;177(8):782-789. doi:10.1001/jamapediatrics.2023.1979