UTI Emergency Department Clinical Pathway

See UTI ED order set

Well appearing child > 2 months*
with suspected UTI

If toxic, see sepsis pathway.

Obtaining urine sample:**
Toilet trained: Obtain clean catch UA. If positive, send urine culture.

Not toilet trained: Obtain catheterized specimen and send urinalysis (without reflex) and urine culture separately. Bagged UA only as screening tool in stable patient (never send for culture).

Confirm signs/symptoms of UTI:
Simple cystitis: Afebrile kids >2yo with dysuria, urgency/frequency, suprapubic pain
Pyelonephritis: All kids <2yo with unexplained fever, kids >2yo with fever/chills, nausea/vomiting, flank/back pain

Exclusion criteria*
Urinary tract abnormalities or hardware
History of resistant organism
Immunocompromised
Sepsis/septic shock
Spina bifida
Pregnancy

Obtain urine sample: Is UA abnormal?**
+LE, +nitrites or >5WBC/hpf

B-lactam Type 1 Hypersensitivity***
Mild allergy: urticaria, hives
Severe allergy: angioedema, anaphylaxis
Avoid Cephalexin in patients with Amoxillin and/or severe Penicillin allergy. Patients with a severe Amoxicillin allergy or who experience hives only to Cephalexin can receive a test dose of Ceftriaxone or Cefazolin. Reaction based on similarity of side chains.
Avoid Cephalosporin if prior history of serum sickness, EM/SJS/TEN and DRESS to a β-lactam.

Abnormal UA

Meets admission criteria?
Unable to tolerate oral antibiotics
Requiring IV fluids for hydration
Failed outpatient treatment > 48 hours appropriate antibiotics
Concern for follow up

No

Outpatient antibiotics
First line: PO Cephalexin
Cephalosporin or severe Penicillin allergy***: PO Bactrim
Sulfa allergy: PO Nitrofurantoin (only simple cystitis >2yo), PO Ciprofloxacin
Gram positive cocci/Enterococcus: PO Amoxicillin
Duration:
Simple cystitis: 5 days for ≥12yo, 7 days for 2yo-12yo
Uncomplicated pyelonephritis: 7-10 days

Yes

Inpatient antibiotics
First line: IV Ceftriaxone or IV Cefazolin
Cephalosporin allergy***: IV Ciprofloxacin
Gram positive cocci/Enterococcus: IV Ampicillin
History of resistant bacteria: IV Cefepime (consult ID)

ED Discharge:

- Follow up urine cultures. Adjust antibiotics if resistant bacteria grow. Stop antibiotics if negative culture****.
- Renal bladder ultrasound within 48h if not improving or 1-2 weeks of first febrile UTI in kids 2mo-2yo or older children with recurrent UTIs.
- Assess/treat constipation (major risk factor for UTI).
- Educate family to see doctor to assess urine for future fevers.
- Follow up with PCP 1-2 days.

Definition of UTI**:**
Abnormal UA
(+LE, +nitrites or > 5WBC/hpf)
AND
Growth of a single urinary pathogen

Cath: definite UTI > 50,000 cfu/ml (possible > 10,000 cfu/ml)

Clean catch: definite UTI > 100,000 cfu/ml

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VIP Value in Inpatient Pediatrics Network
from the Quality Improvement Innovation Networks of the American Academy of Pediatrics

Ann & Robert H. Lurie Children's Hospital of Chicago

Antibiotic Recommendations

	Outpatient (ED discharge or transition IV to PO)	Inpatient (ED admission)	Duration
UTI	**First line:** PO Cephalexin 25 mg/kg/dose TID (max 500 mg/dose) **Cephalosporin allergy:** PO Bactrim 4 mg TMP/kg/dose Q12H (max 160 mg TMP/dose) **Cephalosporin and Sulfa allergy:** PO Nitrofurantoin (only ≥2yo with simple cystitis**, NOT pyelonephritis) suspension 25mg/5 mL 7 to <12kg: 12.5mg Q6H 12 to < 22kg: 25mg Q6H 31 to < 42kg: 50 mg Q6H ≥ 42kg: 50 to 100mg Q6H PO Nitrofurantoin 100mg capsule BID PO Ciprofloxacin 10 mg/kg/dose BID (max 500 mg/dose) (suspension requires prior auth for outpatient use) PO Ciprofloxacin 500 mg BID (max 500 mg/dose) of 250 mg tablets **Enterococcus/Gram positive cocci:** PO Amoxicillin suspension 250mg/mL 16 mg/kg/dose TID (max 500 mg/dose)	**First line** (AAP recommends IV Cefazolin for E. coli susceptibility ≥80% in urine): IV Ceftriaxone 50 mg/kg/dose Q24H (max dose 2000 mg) IV Cefazolin 25 mg/kg/dose Q8H (max dose 1000 mg) **Cephalosporin allergy:** IV Ciprofloxacin 10 mg/kg/dose Q8-12H (max dose 400 mg)(consult ID) **Enterococcus/Gram positive cocci:** IV Ampicillin 200 mg/kg/day divided Q6H (max 8 g/day) **History of resistant organisms:** IV Cefepime (consult ID before ordering)	**Simple cystitis*** ≥2yo-12yo: 7 days ≥12yo: 5 days **Uncomplicated pyelonephritis**** (previously healthy) 7-10 days **Complicated pyelonephritis** (GU anomalies) Consult ID (10-14 days)

*Simple cystitis: Kids ≥2yo with lower urinary tract symptoms.
**AAP UTI guidelines 2016 recommend duration 7-14 days for febrile UTI in 2mo-2yo. AAP BASiC recommends no more than 10 days.

E. coli susceptibility

Abbreviations: AHH = Adventist Hinsdale Hospital, CDH = Central du Page, HH = Huntley Hospital (includes Woodstock and McHenry), LCH = Lurie

	CDH 2020** (urine/blood)	HH 2020** (urine)	AHH 2020** (urine)	NCH 2019* (urine)	NLFH 2020** (urine)	LCH 2020* (urine)
Cefazolin	92	82	86	98	81	72
Ceftriaxone	99	88	91	100	86	92
TMP-SMX	79	78	78	72	67	71
Ciprofloxacin	85	75	83	95	72	89
Nitrofurantoin	99 (urine only)	97	98	98	95	97

Children's Hospital, NCH = Northwest Community, NLFH = Lake Forest
*pediatric antibiogram **pediatric-adult antibiogram

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