

# UTI History and Risk Factors

## History – Infants & Toddlers

- Fever
  - No alternative source for fever
- Foul-smelling urine
- Vomiting
- Fussiness
- Prior UTI
- Potty training (urine withholding)
- Constipation
- Neonate: jaundice, hypothermia

[UTI Calc to calculate risk of UTI in 2-23 month olds](#)

## History – Children

- Dysuria
- Urinary frequency
- Urgency
- Hematuria
- New incontinence
- Fever
- Prior UTI
- Wipe front to back
- New school situation (urine withholding)
- Constipation

## History – Adolescent

As above plus:

- Sexual activity
- Vaginal discharge

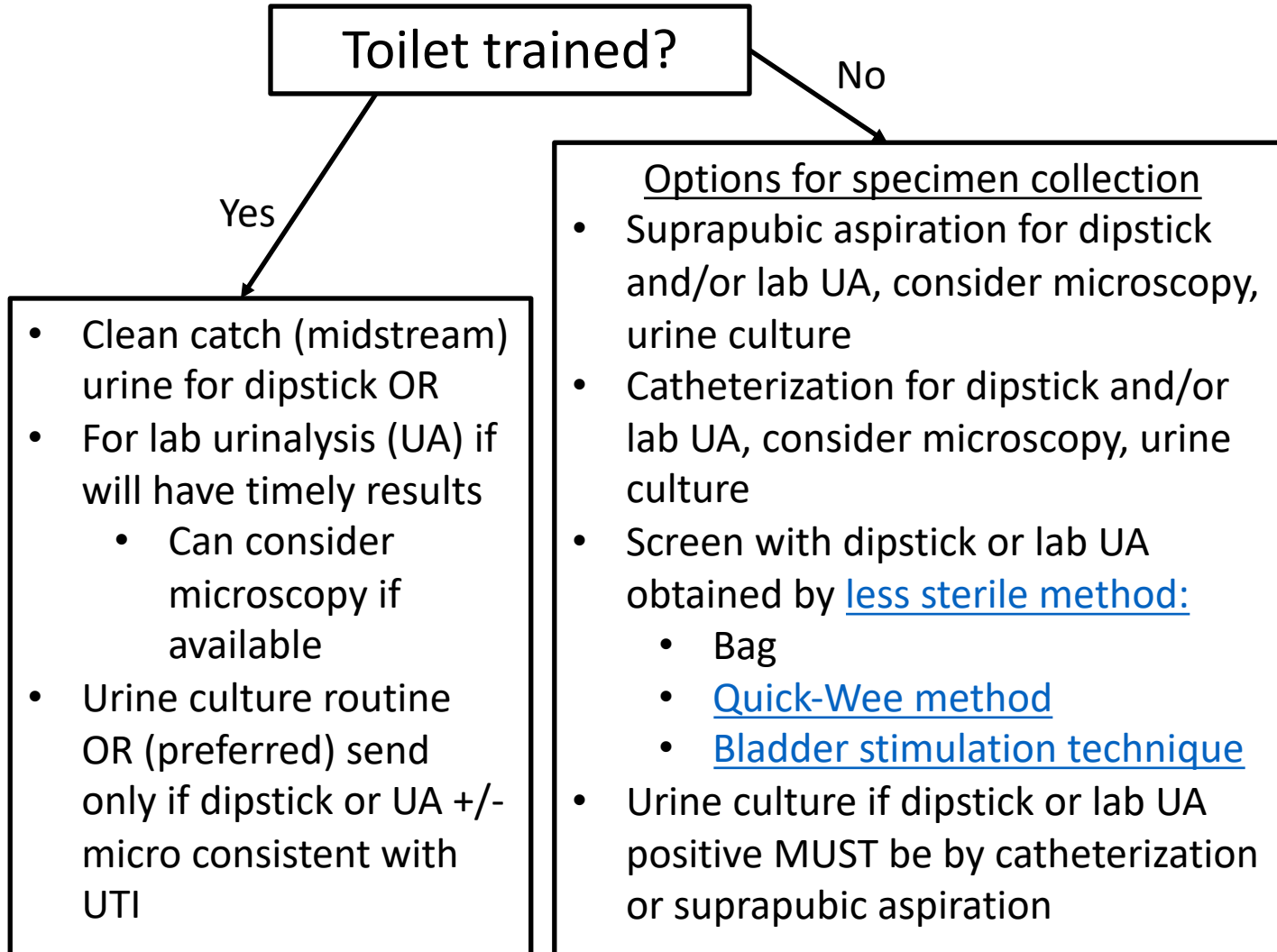
## Physical Exam

- Fever, hypothermia in neonate
- Suprapubic tenderness
- CVA tenderness
- Circumcision in males
  - After infancy, circumcised males much lower risk
- Phimosis
- Labial fusion
- Sacral hair tuft / lipoma / dimple = possible occult myelomeningocele

## Special Populations at Risk

- History of vesicoureteral reflux
- UPJ obstruction or posterior urethral valves
- Myelomeningocele or neurogenic bladder
- Indwelling bladder catheter

# UTI Diagnosis



Urine dip results	Leuk +	Nitr +	Leuk OR Nitr+
Sensitivity	79%	49%	88%
Specificity	87%	98%	79%
# unneeded abx Rx per 1000 pts	120	18	198
# delayed or missed per 1000 pts	16	38	9

Leukocyte Esterase Likelihood Ratios (LRs)

[Calculator](#) for post-test probability using Prevalence & LR  
 UTI prevalence febrile 0-23mo = 7%, ≥ 2yo with UTI sx: 7.8%

LE	Neg	Trace	1+	2+	3+
LR	0.2	1.86	2.79	7.53	37.68

Ideal WBC cutoffs/hpf and LR's by urine spec grav

< 1.011	1.011-1.020	> 1.020
3, LR 10.5	6, LR 12	8, LR 11.1

# UTI Management

## IV vs PO antibiotics

- 0-28 days, admit for IV antibiotics
- [29-60 days](#) without elevated inflammatory markers, consider oral antibiotics
- > 2 months, non-toxic, previously healthy, tolerating PO, dc on oral antibiotics

## Oral antibiotic options

### **Febrile**

Cefdinir 14 mg/kg/day div qD-BID (max 300 mg BID)

Cefixime 8 mg/kg/day (max 400 mg)

Ceftibuten 9 mg/kg/day (max 400 mg)

### **Afebrile**

Cephalexin 50 mg/kg/day div q8hr (max dose 500 mg)

TMP-SMX 12 mg/kg/day of TMP div BID (max dose 160 mg)

Nitrofurantoin 6 mg/kg/day div q6hr (max dose 100 mg)

Augmentin 50 mg/kg/day div BID (max dose 500 mg)

**Do not use** Amoxicillin, Ciprofloxacin

**Duration** 7-10 days

## + Urine culture definition CFU/mL

- SPA: 1,000
- Cath: 10,000-50,000
- Clean-catch: 50-100,000
- Single uropathogen

## Not uropathogens in children:

Lactobacillus  
Corynebacterium  
Viridans strep  
Coag-neg staph  
(except Staph saprophyticus in adolescents)

Discuss: stop antibiotics if urine culture negative

Education for toilet-trained: wipe front to back, treat any constipation, avoid urine withholding

Do not treat with abx if asymptomatic bacteriuria (+urine culture but no UTI symptoms, 1-3% incidence)

# Dysuria but no UTI?

- Vaginitis
  - Irritants: bubble bath, change in soap or laundry detergent, scented toilet paper, new clothes worn before washing, douching
- Candidal vaginitis (recent antibiotics, consider new-onset diabetes)
- Pinworms
- Vaginal foreign body (commonly, toilet paper)
- Sexually transmitted infection (sexually active adolescent or sexually abused child)
- Boys: balanitis, balanoposthitis, meatitis (candidal)
- Poor hygiene
- Masturbation
- [ABCs of dysuria without UTI](#)

# UTI References

- Shaikh N, Hoberman A, Hum SW, Alberty A, Muniz G, Kurs-Lasky M, Landsittel D, Shope T. Development and Validation of a Calculator for Estimating the Probability of Urinary Tract Infection in Young Febrile Children. *JAMA Pediatr.* 2018 Jun 1;172(6):550-556
- Kaufman J, Fitzpatrick P, Tosif S, Hopper SM, Donath SM, Bryant PA, Babl FE. Faster clean catch urine collection (Quick-Wee method) from infants: randomised controlled trial. *BMJ.* 2017 Apr 7;357:j1341
- Herreros Fernández ML, González Merino N, Tagarro García A, Pérez Seoane B, de la Serna Martínez M, Contreras Abad MT, García-Pose A. A new technique for fast and safe collection of urine in newborns. *Arch Dis Child.* 2013 Jan;98(1):27-9
- Mattoo TK, Shaikh N, Nelson CP. Contemporary Management of Urinary Tract Infection in Children. *Pediatrics.* 2021 Feb;147(2):e2020012138. doi: 10.1542/peds.2020-012138
- Liang T, Schibeci Oraa S, Rebollo Rodríguez N, Bagade T, Chao J, Sinert R. Predicting Urinary Tract Infections With Interval Likelihood Ratios. *Pediatrics.* 2021 Jan;147(1):e2020015008
- Nadeem S, Badawy M, Oke OK, Filkins LM, Park JY, Hennes HM. Pyuria and Urine Concentration for Identifying Urinary Tract Infection in Young Children. *Pediatrics.* 2021 Feb;147(2):e2020014068
- Shaikh N, Morone NE, Bost JE, Farrell MH. Prevalence of urinary tract infection in childhood: a meta-analysis. *Pediatr Infect Dis J.* 2008 Apr;27(4):302-8
- Roberts KB, Wald ER. The Diagnosis of UTI: Colony Count Criteria Revisited. *Pediatrics.* 2018 Feb;141(2):e20173239