URINARY TRACT INFECTIONS IN CHILDREN 2-24 MONTHS: DIAGNOSIS AND MANAGEMENT

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OBJECTIVES

- PRESENTATION AND PREVALENCE OF FEBRILE UTI AMONG CHILDREN AGE 2-24 MONTHS
- DIAGNOSIS OF UTI – CONCENTRATING URINE FOR PYURIA THRESHOLDS
- IMAGING AFTER A FIRST FEBRILE UTI - WHEN/WHAT IS RECOMMENDED
- TREATMENT FOR UTI – DURATION AND MODE OF DELIVERY
- INDICATION FOR PROPHYLAXIS

INCIDENCE

- 7% OF CHILDREN 2-24 MONTHS WITH FEVER WITHOUT A SOURCE
- 8% OF CHILDREN 2-19 YEARS WITH URINARY SYMPTOMS
- HIGHER RATES IN UNCIRCUMCISED BOYS
- RATES DECLINE WITH AGE

PRESENTATION

- PREVERBAL CHILDREN
  - FEVER WITH NO OBVIOUS SOURCE
- VERBAL CHILDREN
  - DYSURIA
  - URGENCY
  - FREQUENCY
  - HEMATURIA
  - ABDO/BACK PAIN
  - NEW DAYTIME INCONTINENCE

DIAGNOSIS AND INVESTIGATIONS

- URINE SAMPLING
  - BAG, CATHETER, SPA, CLEAN CATCH, BLADDER STIMULATION
- URINALYSIS
- URINE CONCENTRATION SHOULD BE INCLUDED INTO THE INTERPRETATION OF U/A
  - 3 WBC/HPF IN DILUTE URINE (SG <1.015)
  - 6 WBC/HPF IN CONCENTRATED URINE (SG >1.015)
  - LEUKOCYTE ESTERASE IS A STRONG INDICATOR REGARDLESS OF CONCENTRATION

DIAGNOSIS AND INVESTIGATIONS CONTINUED

- URINE CULTURES
  - COLLECT BEFORE STARTING ANTIBIOTICS
  - CATHETERIZATIZATION OR SPA
  - COLONY COUNT CRITERIA FOR DIAGNOSIS DEPENDENT ON MODE OF URINE COLLECTION
  - MIXED ORGANISMS ARE USUALLY CONTAMINANTS
- NO BLOOD CULTURE NEEDED

MINIMUM COLONY COUNTS

TABLE 2
Minimum colony counts that are indicative of a urinary tract infection

	CFU/mL	CFU/L	Comments
Clean catch (midstream)	≥105	≥108	Mixed growth is usually indicative of contamination. Sitting a girl backward on the toilet is a good way to spread the labia when collecting midstream urine
In and out catheter specimen*	≥5×104	≥5×107	Mixed growth is usually indicative of contamination. Specimens from indwelling catheters are less reliable
Suprapubic aspiration	Any growth	Any growth	

*Some laboratories report only to the nearest log; therefore, clinical judgment must be applied for reports of growth of >104/mL or >107/L.[6] CFU Colony-forming unit

IMAGING

- TO CONFIRM PYELONEPHRITIS, SEVERE VUR OR STRUCTURAL ANOMALIES
- OPTIONS INCLUDE RBUS, VCUG OR A DMSA SCAN
- CPS RECOMMENDS RBUS FOR FIRST FEBRILE UTI
  - CONVENIENT, INEXPENSIVE, NOT INVASIVE, RADIATION FREE
  - DETECTS HYDRONEPHROSIS AND SEVERE VUR
  - NEJM 2003:
    - IMAGING DOES NOT PREVENT RENAL SCARRING, HTN OR RENAL FAILURE THUS OF LIMITED VALUE
    - NOT NECESSARY IF PRENATAL U/S DONE BETWEEN 30-32 WEEKS GA
    - SUGGEST ROUTINE U/A AND CULTURE WILL ELIMINATE THE NEED FOR IMAGING
- A VCUG IS NOT INDICATED IF RBUS IS NORMAL

TREATMENT

- PO ANTIBIOTICS FOR 10-14 DAYS = IV ANTIBIOTICS FOR 3 DAYS + PO ANTIBIOTICS FOR 10 DAYS = IV ANTIBIOTICS FOR 7-14 DAYS
  - THEREFORE, TREAT WITH PO ABX IF NON TOXIC AND NO STRUCTURAL ABNORMALITY
- MAKE AN EMPIRIC ANTIBIOTIC CHOICE WHILE AWAITING SUSCEPTIBILITIES
- NARROW INPATIENT TREATMENT ONCE SUSCEPTIBILITIES AVAILABLE
- CURRENTLY PO CEFIXIME, IV AMPICILLIN OR GENTAMICIN (TOBRAMYCIN) ARE GOOD OPTIONS
- IF AMINOGLYCOSIDES RE CONTINUED FOR >48HR, MONITOR RENAL FUNCTION

PROPHYLAXIS

- LARGE NNT
- RISK OF DEVELOPING RESISTANCE
- NON COMPLIANCE
- NOT ROUTINELY RECOMMENDED
- MAY BE CONSIDERED FOR GRADE IV-V VUR OR ANATOMIC UROLOGIC ANOMALY
- REASSESS AFTER 3-6 MONTHS
- DISCONTINUE IF RESISTANT ORGANISM ISOLATED
- SEPTRA OR NITROFURANTOIN AT ¼ TO 1/3 DAILY TREATMENT DOSE

SUMMARY

- UTI'S ARE COMMON IN INFANTS AND CHILDREN
- URINE CONCENTRATION SHOULD BE CONSIDERED WHEN INTERPRETING PYURIA
- BLADDER STIMULATION MAY BE USED TO COLLECT A MIDSTREAM SAMPLE IN NON POTTY TRAINED INFANTS
- MINIMUM COLONY COUNTS FOR DIAGNOSIS DEPEND ON MODE OF SAMPLE COLLECTION
- ALTHOUGH RBUS IS CURRENTLY RECOMMENDED, THERE IS DEBATE ABOUT ITS NECESSITY
- PO ANTIBIOTICS ARE JUST AS EFFECTIVE IN NON TOXIC CHILDREN
- ANTIBIOTIC PROPHYLAXIS IS NOT ROUTINELY RECOMMENDED

QUESTIONS?

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