Suspected Urinary Tract Infection

Clinical Assessment/ Management tool for Children

Management - Acute Setting

Patient presents

If fever ≥38°C, see fever pathway

Suspected UTI ?

- Fever with no clear focus
- Vomiting
- Poor feeding
- Lethargy
- Irritability
- Abdominal pain
- Dysuria/frequency
- Loin pain

Do the symptoms and/or signs suggest an immediately life threatening illness?

Yes

- Inform EPIC/PEM Consultant (Mon-Fri 13.00-20.30) and consider Resus

Consider differential diagnoses: sepsis, meningitis, GI obstruction, appendicitis, gastroenteritis. Other differentials for dysuria/discomfort include vulvovaginitis and threadworms.

Green – Low risk	Amber – Intermediate risk	Red – high risk
Systemically well, temp <38°C (all children <3 months of age with presumed UTI need urgent paediatric review)	Temp ≥38°C but haemodynamically stable (see table 1 -normal ranges for HR and RR)	Fever ≥ 38°C in a child under 3 months or features suggestive of sepsis (see sepsis pathway) / haemodynamic instability (see table 1)

Urgent Action

- Urgent senior review - if stable, refer to PSDEC
- Bloods including FBC, U+E, CRP, blood gas and blood culture.
- Fluid resuscitation as required
- Administer IV ABx (See box 2)

Able to obtain urine sample? (see box 1)

Yes

Under 3 Months	3 months to <3 years	≥3 years
• If nitrites or leuk +ve, send for culture (see box 1) and treat empirically (see box 2) • If nitrites and leuk both -ve, send for culture.	• If nitrites and leuk both -ve, UTI unlikely. Do not send for culture* • If nitrites +ve +/- leuk +ve, send for culture (see box 1) and treat empirically (see box 2)	• If nitrites and leuk both -ve, UTI unlikely. Do not send for culture • If nitrites +ve, treat empirically as UTI (see box 2). Send for culture • If leuk +ve but nitrites -ve, consider alternative diagnosis. If good clinical evidence of UTI, send culture (see box 1) and treat empirically awaiting culture results (see box 2)

**Send a urine sample for culture if the child is thought to have pyelonephritis; has a high or intermediate risk of serious illness; has recurrent UTI; has an infection that does not respond to treatment within 24 to 48 hours, if no sample has already been sent; or has clinical symptoms and signs but dipstick tests do not correlate.*

Provide family with **UTI safety netting sheet.**
If recurrent UTIs (see box 3), review risk factors (see box 5).
Think **safeguarding**

No

- Review by ST4+ - is it suitable to provide a collection pot to attend GP (return to ED if weekend/BH)?
- Provide fever safety netting sheet
  - <3 months
  - >3 months

In a child under 3 months, a negative urine dip does not exclude a UTI.

Able to obtain urine sample? (see box 1)

Yes

- If nitrites and leuk both -ve, UTI unlikely. Do not send for culture
- If nitrites and/or leuk +ve, treat empirically as upper UTI (see box 2). Send for culture
- If child ≥3 years of age and dipstick +ve only for leuk, consider alternative diagnosis. If good clinical evidence of UTI, send culture (see box 1) and treat empirically awaiting culture results(see box 2)

No

- If features of pyelonephritis (loin pain, abdominal pain, vomiting, high spiking fever), needs referral to paediatrics.
- If otherwise well, review by ST4+ - is it suitable to provide a collection pot to attend GP (return to ED if weekend/BH)?
- Provide fever safety netting sheet
  - <3 months
  - >3 months

Provide family with **UTI safety netting sheet**.
If recurrent UTI's (see box 3), review risk factors (box 5).
Think **safeguarding**

GMC Best Practice recommends: Record your findings (See "Good Medical Practice" http://bit.ly/1DPXl2b)

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Table 1: Normal Paediatric Values:

(APLS*)	Respiratory Rate at rest (b/min)	Heart Rate (b/min)
< 1 year	30 -40	110 -160
1 -2 years	25 -35	100 -150
> 2 -5 years	25 -30	95 -140
5 -12 years	20 -25	80 -120
Over 12	15 -20	60 -100

* Advanced Paediatric Life Support The Practical Approach Fifth Edition Advanced Life Support Group Edited by Martin Samuels; Susan Wieteska Wiley-Blackwell / 2011 BMJ Books.

Box 1

Urine collection and preservation

- Clean catch is recommended method. Gentle suprapubic cutaneous stimulation using gauze soaked in cold fluid helps trigger voiding*
- Unless urine can get straight to lab preservation in a boric acid (red top) container will allow 48 hours delay

*Quick-Wee Method

Box 2

Treatment (Prescribing Information)

≤3 month: treat as pyelonephritis (refer to paediatrics)

>3 months of age:

If unable to tolerate oral Abs or systemically unwell (suggestive of bacteraemia), requires consideration of IV antibiotics– refer to paediatrics.

- Lower UTI: Trimethoprim (if there is a low risk of resistance), or nitrofurantoin (if eGFR is 45ml/minute or more). Infants and children who are already receiving prophylactic antibiotics, should be treated with an alternative antibiotic. Second-line options (if there is no improvement in UTI symptoms 48 hours after starting first-line treatment, or first choice is not suitable) include nitrofurantoin (if eGFR is 45ml/minute or more) if it has not been used as a first-line option, amoxicillin (only if culture results available and susceptible), or cefalexin.
- Upper UTI/pyelonephritis: Cefalexin or, only if culture results are available and susceptible, co-amoxiclav.
- For more information about treatment, see CHT's Antibiotic Guidance

Box 3

Who needs imaging?

Ultrasound:

- Under 6 months - within 6 weeks, acutely if atypical** or recurrent*** infection
- Over 6 months -not routinely, acutely if atypical** infection, within 6 weeks if recurrent*** infection.

Atypical UTI = seriously ill/ sepsis, poor urine flow, non E-Coli, abdominal or bladder mass, raised creatinine, failure to respond in 48 hours * Recurrent UTIs = ≥3 lower UTIs, ≥2 upper UTIs or 1 upper and 1 lower UTI

How to organise in ED?

- Phone call to parents to explain results, follow-up plan
- Letter to GP to arrange US as per NICE guidance

Box 4

Who needs paediatric follow-up?

- Children with recurrent UTIs not responding to simple advice (see risk factors)
- Children with abnormal imaging or if appropriate imaging cannot be arranged in primary care

Box 5

Risk factors for recurrent UTIs

- Constipation
- Poor fluid intake
- Infrequent voiding esp at school (holding on)
- Irritable bladder (can happen following UTI)
- Neuropathic bladder
  - Examine spine
- Genitourinary abnormalities
  - Examine genitalia

Box 6

Paediatric Urine Microscopy Interpretation & Action

Microscopy results	Interpretation
Pyuria and bacteriuria are both positive	Assume the baby or child has a urinary tract infection (UTI)
Pyuria is positive and bacteriuria is negative	Start antibiotic treatment if the baby or child has symptoms or signs of a UTI
Pyuria is negative and bacteriuria is positive	Assume the baby or child has a UTI
Pyuria and bacteriuria are both negative	Assume the baby or child does not have a UTI

For further information, see NICE guidelines: https://cks.nice.org.uk/topics/urinary-tract-infection-children/

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