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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This guidance was written in collaboration with the SE Coast SCN and involved extensive consultation with healthcare professionals in Wessex . It has been edited by the CHT team to fit local processes.

This document was arrived at after careful consideration of the evidence available including but not exclusively NICE, SIGN, EBM data and NHS evidence, as applicable. Healthcare professionals are expected to take it fully into account when exercising their clinical judgement. The guidance does not, however, override the individual responsibility of healthcare professionals to make decisions appropriate to the circumstances of the individual patient in consultation with the patient and / or carer.

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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 (first line and if no sensitivities available). 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 cefalexin, amoxicillin (only if culture results available and susceptible) and nitrofurantoin (if eGFR is 45ml/minute or more).
- 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:

- Acutely - Atypical infection (regardless of age) or recurrent infection in <6 months old
- Within 6 weeks - Recurrent infection in >6 months, typical infection in <6 months oldt*** 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
- If required acutely, request US and contact Paeds On-call to arrange PSDEC review. They will contact parents with a time slot. If within 6 weeks, 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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