Suspected Urinary Tract Infection
Clinical Assessment/Management tool for Children
Management - Primary Care and Community Settings

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

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

Green – Low risk
- Systemically well, temp <38°C

Amber – Intermediate risk
- Temp ≥38°C but hemodynamically stable (see table 1 - normal ranges for HR and RR)

Red – high risk
- Fever ≥ 38°C in a child under 3 months or features suggestive of sepsis (see sepsis pathway) / hemodynamic instability (see table 1)

Urgent Action
- Refer immediately to emergency care – consider 999
- Alert Paediatrician
- If sepsis, consider antibiotics if transfer time will be >1 hour (benzylpenicillin 300mg age <1 year, 600mg age 1-9 years, 1.2g ≥ 10 years)

If fever ≥38°C, see fever pathway

Able to obtain urine sample? (see box 1)

Yes
- Provide family with UTI safety netting sheet
- Arrange follow-up / imaging as required (see boxes 3&4)
  - If recurrent UTIs (see box 3), review risk factors (see box 5) Think safeguarding

No
- Provide family with UTI safety netting sheet
- Arrange follow-up / imaging as required (see boxes 3&4)
  - If recurrent UTI's (see box 3), r/v risk factors (box 5) Think safeguarding

Under 3 Months
- If nitrites or 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.

3 months to <3 years
- If nitrites and leuk both +ve, UTI unlikely. Do not send for culture.
- If nitrites -ve or leuk +ve, send for culture (see box 1) and treat empirically (see box 2)

≥3 years
- If nitrites and leuk both -ve, UTI unlikely. Do not send for culture.
- If nitrites +ve, treat empirically as UTI (see box 2). No need to send 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)

- Provide family with collection pot (to return with sample within next 6-12 hours). If OOH setting, give family red bottle for urine collection - attend own GP when next open for dipstick + send for culture (see box 1)
- Provide fever safety netting sheet (under 5 years or 5 years and over)

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

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

- If nitrites +ve or leuk +ve, send for culture
- If nitrites and leuk both -ve, UTI unlikely. Do not send for culture.
- If nitrites +ve, treat empirically as UTI (see box 2). No need to send 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)
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- If nitrites +ve, treat empirically as UTI (see box 2). No need to send culture.

- If features of pyelonephritis (loin pain, abdominal pain, vomiting, high spiking fever), needs referral to 2° care.
- If otherwise well, give family a collection pot (to return with sample within next 6-12 hours). If OOH GP setting, consider treating empirically as upper UTI (see box 2) but give family red bottle for urine collection before starting Abs- attend own GP when next open for dipstick+- send for culture.
- Provide fever safety netting sheet (under 5 years or 5 years & over)

No

Hospital Emergency Department / Paediatric Unit

This writing of this guideline involved extensive consultation with healthcare professionals in Wessex.

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.

First version Nov 2017. Most recent update September 2019 - CS50217
Table 1: Normal Paediatric Values:

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Respiratory Rate at rest (b/min)</th>
<th>Heart Rate (b/min)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 1 year</td>
<td>30 - 40</td>
<td>110 - 160</td>
</tr>
<tr>
<td>1 - 2 years</td>
<td>25 - 35</td>
<td>100 - 150</td>
</tr>
<tr>
<td>&gt; 2 -5 years</td>
<td>25 - 30</td>
<td>95 - 140</td>
</tr>
<tr>
<td>5 - 12 years</td>
<td>20 - 25</td>
<td>80 - 120</td>
</tr>
<tr>
<td>Over 12</td>
<td>15 - 20</td>
<td>60 - 100</td>
</tr>
</tbody>
</table>


Box 1

Urine collection and preservation
- Clean catch is recommended method. Gentle suprapubic cutaneous stimulation using gauze soaked in cold fluid helps trigger voiding*
- If absolutely unavoidable pads / bags must be put on clean skin and checked very regularly to minimise contamination risk
- Unless urine can get straight to lab preservation in a boric acid (red top) container will allow 48 hours delay

*Urine collection in infants: Kaufmann et al BMJ open

Box 2

Treatment
- ≤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 (4mg/kg (max 200mg/dose) 12 hourly for 3 days). If previous treatment with trimethoprim in preceding 3 months, use nitrofurantoin if able to swallow tablets (age 12-18 years 50mg 6 hourly) for 3 days or cefalexin 25mg/kg 8 hourly for 3 days (max 1g/dose). If confirmed severe penicillin allergy and unable to swallow nitrofurantoin tablets, prescribe ciprofloxacin 20mg/kg 12 hourly for 3 days (max 750mg/dose).
  - Upper UTI/pyelonephritis: cefalexin (25mg/kg 8 hourly (max 1g/dose) for 7 days). If severe penicillin allergy, use ciprofloxacin 20mg/kg 12 hourly for 7 days (max 750mg/dose).
  - For more information about treatment, see Wessex guidelines for antibiotic prescribing in the community 2017

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.
- DMSA:
  - Atypical** infections under 3 years
  - Recurrent*** infections at all ages
- MCUG:
  - Under 6 months with atypical** or recurrent*** infections
  - Consider in all under 6 months with abnormal ultrasound.
  - Consider 6-18 months if non E-Coli UTI, poor flow, dilatation on USS or family history VUR

**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

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

For further information, see NICE guidelines: https://pathways.nice.org.uk/pathways/urinary-tract-infection-in-under-16s#path=view%3Apathways/urinary-tract-infection-in-under-16s/diagnosing-urinary-tract-infection-in-under-16s.xml&content=view-index