Urinary tract infection – Emergency management in children – Flowchart

Child presents to ED with suspected UTI (see over page for clinical features by age)

No toxic features

Age <3 months?

- Additional investigations may be required if fever ≥ 38°C - refer to Fever guideline.
- In well child with unexplained fever, consider deferring urine screening until 48 hours of fever

Urine collection
- MSU if can void on request, otherwise CCU (see over page)/SPA/urethral catheterisation (CSU)
- Consider discharge with urine jar & GP follow-up for well-looking febrile child >1 year

Presumptive UTI diagnosis? (Box A)

- No
  - Consider alternative diagnosis. Ensure follow up of culture results.
- Yes
  - Specialist advice required? (Box B)

Urine microscopy positive?

- No
  - Additional investigations as per advice
- Yes
  - Administer antibiotics IV*
  - Consider concurrent meningitis especially if age < 28 days

Management / disposition as per advice

Box A: Criteria for presumptive UTI diagnosis
- Both the leucocyte esterase and nitrite tests are positive on dipstick (in child aged over 3 months) OR
- White cells and/or bacteria are seen on urine microscopy (in child of any age)

See over page for interpretation of dipstick testing

Box B: Children requiring specialist advice
Seek senior emergency / paediatric advice as per local practice if:
- Suspect pyelonephritis / peri-nephric abscess (consider bloods, USS)
- Known renal tract anomalies
- Catheter (due to potential for colonisation not infection)
- On prophylactic antibiotics (as influences antibiotic choice)

Administer antibiotics*

Consider discharge. GP review 1-2 days when lab results available.

Refer to inpatient service

Refer to Paediatric Critical Care / inpatient service as indicated

*Follow local empirical antibiotic guidelines if in Townsville, Cairns or Gold Coast HHSs else refer to CHQ Antibiocard. Oral route preferred in child ≥ 3 months if well.
Clinical features of a UTI by age (listed in order of decreasing frequency)

<table>
<thead>
<tr>
<th>Aged &lt;3 months</th>
<th>Child aged ≥3 months and &lt;3 years</th>
<th>Aged ≥3 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fever</td>
<td>Fever</td>
<td>Frequency</td>
</tr>
<tr>
<td>Vomiting</td>
<td>Abdominal pain</td>
<td>Dysuria</td>
</tr>
<tr>
<td>Lethargy</td>
<td>Loin tenderness</td>
<td>Dysfunctional voiding</td>
</tr>
<tr>
<td>Irritability</td>
<td>Vomiting</td>
<td>Changes to continence</td>
</tr>
<tr>
<td>Poor feeding</td>
<td>Poor feeding</td>
<td>Abdominal pain</td>
</tr>
<tr>
<td>Failure to thrive</td>
<td>Lethargy</td>
<td>Loin tenderness</td>
</tr>
<tr>
<td>Abdominal pain</td>
<td>Irritability</td>
<td>Fever</td>
</tr>
<tr>
<td>Jaundice</td>
<td>Haematuria</td>
<td>Malaise</td>
</tr>
<tr>
<td>Haematuria</td>
<td>Offensive urine</td>
<td>Vomiting</td>
</tr>
<tr>
<td>Offensive urine</td>
<td>Failure to thrive</td>
<td>Haematuria</td>
</tr>
</tbody>
</table>

Clean catch urine specimen

High false positive rate if poor collection technique.

The collector should be advised:
- to wash the child’s perineum prior to collection with saline soaked gauze
- the inside of the clean/sterile container used for collection should not be contaminated by touching the collector’s or the child’s skin

Refer to How to collect a clean urine specimen Factsheet

Urine dipstick testing interpretation

<table>
<thead>
<tr>
<th>Leucocytes</th>
<th>Nitrites</th>
<th>Send for M/C/S</th>
<th>Likelihood of UTI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive</td>
<td>Positive</td>
<td>Y</td>
<td>Likely</td>
</tr>
<tr>
<td>Negative</td>
<td>Positive</td>
<td>Y</td>
<td>Possible</td>
</tr>
<tr>
<td>Positive</td>
<td>Negative</td>
<td>Y</td>
<td>Possible</td>
</tr>
<tr>
<td>Negative</td>
<td>Negative</td>
<td>Only if age &lt;3 months</td>
<td>Unlikely (unless aged &lt;3 months)</td>
</tr>
</tbody>
</table>

Considerations
- Not all urinary organisms produce nitrites, so the absence of nitrites does not exclude UTI.
- Urine has to be present in the bladder for enough time for the reaction to occur – non-toilet trained child may have a false negative due to more frequent bladder emptying.
- White cells may come from other anatomically related areas e.g. appendicitis.
- The presence of blood or protein on dipstick testing is not a reliable marker of UTI.
- Dipstick analysis is less reliable in neonates and young infants with the risk of falsely negative testing.

For more information refer to CHQ-GDL-60026 – Urinary tract infection – Emergency management in children.