Care pathway of children with urinary tract infection (UTI) **DRAFT**

Identification of children with UTI

Consider UTI in children with the following signs and/or symptoms

- Fever of unknown cause >38° C and longer than 24-48 hours duration
- Vomiting
- Lethargy
- Irritability
- Malaise
- Poor feeding
- Failure to thrive
- Prolonged jaundice in neonates
- Abdominal/loin pain or tenderness
- Haematuria
- Frequency
- Dysuria
- Dysfunctional voiding
- Changes to continence
- Offensive or cloudy urine

UTI is most common in children under one year of age in whom symptoms may be non-specific.
This table was derived from recommendation 4.3.2

Severity of Illness

Severely ill children (likely to have septicaemia)
Children with suspected UTI and the following the signs and symptoms should be defined as severely ill:
• Signs of dehydration
•Reduced activity/responsiveness
•Pale / mottled / ashen skin or blue
•Ill appearing

Severely ill children should be referred to secondary care

Systemically unwell
Children with suspected UTI, fever >38C and at least one of the following features: Loin or abdominal pain or tenderness, vomiting, irritability, poor feeding, chills and rigors

Systemically Well
Children with suspected UTI but no systemic features,

If symptoms and/or signs of UTI, collect urine

Clean catch urine sample is recommended

If not obtainable

Urine collection pad

If not obtainable in children who are systemically unwell

Supra-pubic aspiration with ultrasound guide or catheter by a paediatric specialist
Antibiotic treatment should not be delayed if urine is not obtained

Testing urine for diagnosis of UTI

Children under 3 → Urine culture, start antibiotic treatment

Children over 3 → Urine dip stick test (Nitrite and Leukocyte esterase)

Urine dipstick	Diagnosis
Nitrite and LE positive	UTI – antibiotic treatment
Nitrite positive and LE negative	Probable UTI – antibiotic treatment
Nitrite negative and LE positive	May or may not be UTI – Management should be based on clinical judgement
Nitrite and LE negative	UTI excluded – no antibiotic treatment

No routine CRP for any children

Treatment of UTI

Systemically well children

Treat with 3 days oral antibiotic

- Unwell at 24-48 hours → Reassess the child
  - Severely ill → Refer to secondary care setting
  - Not improved → Urine culture to identify antibiotic sensitivity if an alternative diagnosis is not made. Consider change in antibiotic therapy
- Well – end management at 3 days

Systemically unwell children

Urine culture. **Treatment should no be delayed while waiting for urine culture.**

Treat with 10 to 14 days oral antibiotic treatment
If not tolerated or severely ill,
➢2-4 days IV antibiotic treatment followed by oral antibiotics for over 8 to 10 days to a total duration of 10 days
In the rare circumstances where oral or IV treatment are not possible, IM treatment should be considered.

Asymptomatic bacteriuria

No routine treatment for asymptomatic bacteriuria in children.

Follow up of children with UTI

Children who are *systemically well* only need ultrasound (within six weeks) if they are younger than six months of age or have had recurrent infection. No other investigations are required for any child who is systemically well unless they have recurrent UTI *and* abnormality on ultrasound in which case late DMSA should be considered.

Children who are *systemically unwell* should be imaged according to the following tables.

0 – 6 months old children

Test	Respond well to treatment	Severe or atypical illness	Recurrent UTI
Early ultrasound	N	Y	Y
Late ultrasound	Y*	N	N
Early DMSA	N	N	N
Late DMSA	N	Y**	Y
MCUG	N	Y	Y

*Perform within 6 weeks. If abnormal consider MCUG
**Late DMSA in children with severe or atypical pyelonephritis and those who responded poorly to treatment is to assess the level of renal damage.

6 months old to toilet trained children

Test	Respond well to treatment	Severe or atypical illness	Recurrent UTI
Early ultrasound	N	Y	N
Late ultrasound	N	N	Y
Early DMSA	N	N	N
Late DMSA	N	Y	Y
MCUG	N	N*	N*

* While MCUG need not be performed routinely it should be considered if the following features are present:

- Poor urine flow
- Non E.coli infection
- Family history of VUR
- Dilatation on ultrasound

Children toilet trained and older

Test	Respond well to treatment	Severe or atypical illness	Recurrent UTI
Early ultrasound	N	Y*	N
Late ultrasound	N	N	Y
Early DMSA	N	N	N
Late DMSA	N	N	Y
MCUG	N	N	N

* Ultrasound in toilet-trained children should be performed with a full bladder with an estimate of bladder volume pre and post micturition.

In children who undergo imaging, carers should be informed of the results of the investigation.

- No imaging test → No follow up
- Normal imaging test → Single UTI episode → No follow up
- Normal imaging test → Recurrent UTI → Follow up by a paediatric specialist
- Abnormal imaging test → Follow up by a paediatric specialist

Definitions

Atypical UTI: Still febrile after 48 hours of appropriate treatment, poor urine flow or non-E.coli
Recurrent UTI: Two or more episodes of UTI with systemic symptoms/signs or three or more episodes of UTI without systemic symptoms/signs.
Early ultrasound: During the acute episode.
Late ultrasound: Within 6 weeks
Early DMSA: During the acute illness
Late DMSA: Six month or more following the acute infection
MCUG: Prophylactic antibiotics should be given for 3 days with MCUG taking place on the second day.

Treatment and advice following UTI

No routine urine testing following an episode of UTI in children
No routine prophylactic antibiotics
No routine surgical management of reflux with or without UTI
Encourage to drink an adequate amount.
Address dysfunctional elimination syndromes and constipation