Ashford and St. Peter's Hospitals
NHS Foundation Trust

Guidelines for the management of UTIs in children

Indication for use: Children aged 0-5 years presenting

To be used in conjunction with the Sepsis guidelines and PUO guidelines

Based on NICE guidelines CG54 and updated QS36 (updated 2017)
https://www.nice.org.uk/guidance/qs36
PIP Paediatrics in Partnership 2016-2018 Guidelines

- Changes 2017- If concern pyelonephritis low threshold for admission and iv co-amoxiclav 7-10 days. If able to tolerate oral then PO co-amoxiclav or ciprofloxacin.
- Trust chose on advice from microbiology consultants to treat simple UTI with 5 days rather than recommended 3 days.
- USS now in all infants with 1 st time typical UTI within 6 weeks
- DMSA scan to be carried out at 4-6 months following acute infection in all children 3 years or under, all with recurrent UTIs

Author	Dr Fiona MacCarthy
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Urinary Tract guidelines

(From update NICE 2016 CG54 and QS36)[1]

1. Diagnosis:

- Infants and children presenting with unexplained fever of 38°C or higher should have a urine sample tested as soon as possible and within 24 hours of presenting.
- Children with an alternative site of infection should not have a urine sample tested, unless existing urological problems/ history of recurrent UTIs/ previous UTI by resistant bugs. However, if they remain unwell then urine testing should be reconsidered.
- Children with symptoms suggestive of UTI should have their urine tested. See Table 1

Table 1. Presenting symptoms and signs in infants & children with UTI

Age Group		**Symptoms and signs** **Most common----------→ Least common**		
Infants younger than 3 months		Fever Vomiting Lethargy Irritability	Poor feeding Failure to thrive	Abdominal pain Jaundice Haematuria Offensive urine
Infants and children aged 3 months or older	**Preverbal**	Fever	Abdominal pain Loin tenderness Vomiting	Lethargy Irritability Haematuria Offensive urine
	Verbal	Frequency Dysuria	Dysfunctional voiding Changes to continence Abdominal Pain Loin tenderness	Fever Malaise Vomiting Haematuria Offensive Urine Cloudy urine

2. Urine collection:

- A clean catch urine sample is recommended

- If not possible then to perform Suprapubic aspirate but only with USS guidance (USS fast scan in A&E majors)
- Alternatively in-out catheterisation
- If infant high risk then do not delay starting treatment for the urine collection.
- Make sure to send sample in SLIM RED TOP container (8ml of urine needed) as otherwise the sample may not be processed!!!!
- If only a small sample of less than 8 ml then it may go in a WHITE top container but write on the form that is an urgent sample of a baby/child and no more urine could be obtained!!!!

3. Urine-testing strategies:

- **For infants under 3 months**

All infants under 3 months with a suspected UTI should have an urgent sample sent for microscopy and culture. Manage these infants as high risk for sepsis and treat accordingly. Most will need a full septic screen and will be treated with cefotaxime and amoxicillin if under 1 month and cetriaxone if over 1 month.

- **For infants older than 3months up to children aged 3 years**

Urgent microscopy and culture is the preferred method for diagnosing UTI in this age group; this should be used where possible.	
If infant has specific urinary symptoms	Urgent microscopy and culture should be arranged and antibiotic treatment should be started.

If the symptoms are non-specific for UTI	For an infant or child with a high risk of serious illness: they should be managed in line with sepsis guidelines. For an infant or child with an intermediate risk of serious illness: Urgent MC&S should be arranged. Antibiotic treatment should be started if microscopy is positive or dipstick is nitrites positive. For an infant or child with a low risk of serious illness: MC&S should be arranged. Antibiotic treatment should only be started if microscopy or culture is positive.

- **For infants 3 years or older**

Dipstick testing for leukocyte esterase and nitrite is diagnostically as useful as M,C&S	
Leuc+ve / Nit +ve	Treat as UTI. Start antibiotics (send urine for M,C&S)
Leuc-ve / Nit +ve	Treat as UTI. Start antibiotics (send urine for M,C&S)
Leuc+ve / Nit -ve	Send urine for M,C&S. Only start antibiotics if there is good clinical evidence of a UTI (obvious urinary symptoms). Look for other sources of infection.
Leuc-ve / Nit -ve	Not UTI. Do NOT send urine for M,C&S. Explore other causes of illness.

4. Guidance for interpretation of microscopy:

Microscopy	Pyuria +ve	Pyuria –ve
Bacteriuria +ve	Treat as UTI	Treat as UTI
Bacteriuria-ve	Treat if clinically indicated	Not UTI

5. Record in the notes:

Poor flow
Hx of previous UTI
Recurrent fever of unknown origin
Antenatally diagnosed renal anomaly
FHx of renal anomaly
Constipation
Dysfunctional voiding
Enlarged bladder
Abdominal mass
Spinal lesion
Poor growth
High blood pressure

6. Antibiotic choices:

Below are recommendations for empirical therapy. It is very important to review antibiotic therapy with culture and sensitivity results (previous and new).

Infants under 3 months	Treat as per sepsis guideline (cefotaxime and amoxicillin) If patient **septic** add gentamicin as a single dose Switch to oral as per sensitivities	**Penicillin allergy** Discuss with Consultant
3 months or older with cystitis/ lower UTI	Treat with **oral** antibiotics for **5 days:** PO trimethoprim or PO nitrofurantoin (avoid if G6PD) are suitable If concerned may evolve into pyelonephritis: PO co-amoxiclav	**Penicillin allergy** PO trimethoprim or nitrofurantoin, amoxicillin If concerned it may evolve into pyelonephritis- PO ciprofloxacin or co-amoxiclav
3 months- 3 years with Upper UTI/ Pyelonephritis **a) Any of following: unwell, fever >38ºC, rigors, abnormal PEWS, vomiting, loin pain, unable to tolerate oral fluids/antibiotics**	Start with IV co-amoxiclav, then switch to a PO antibiotic based on sensitivity result or PO co-amoxiclav (total 10-14 days therapy) If **septic,** iv ceftriaxone and single dose of gentamicin. PO switch based on sensitivity results once available. (total 10-14 days therapy)	**Penicillin allergy** Discuss with Consultant **a) mild allergy** IV ceftriaxone **b) severe allergy** IV/PO ciprofloxacin

b) Normal PEWS, tolerating oral medication/ good fluid intake but clinical concern may develop Pyelonephritis	PO co-amoxiclav for 10-14 days	PO ciprofloxacin

Parents are encouraged to return in 24-48 hours if the child is still unwell

7. Prophylaxis:

- Should not routinely be prescribed for 1st UTI
- Only if there is recurrent UTI to be considered
- Asymptomatic bacteriuria should not be treated with antibiotics
- To be given the day before an MCUG scan and then to complete a total of 3 days full treatment dose of Trimethoprim or nitrofurantoin (not in infants under 3months of if G6PD deficiency)

8. Imaging:

	Infants younger than 6 months			Children 6 months or older		
Test	Responds well in 48h of Tx	Atypical UTI (a non-Ecoli UTI or unwell)	Recurrent UTI (2 or more upper UTI or 3 or more lower UTI)	Responds well in 48h of Tx	Atypical UTI (a non-Ecoli UTI or unwell)	Recurrent UTI (2 or more upper UTI or 3 or more lower UTI)
USS acute	No	Yes	Yes	No	Yes (only if unwell not responding to Abx)	No
USS within 6 weeks	Yes if abnormal consider MCUG	No	Yes	No	No	Yes
DMSA 4-6 months following infection	No	Yes	Yes	No	Yes	Yes
MCUG	No	Yes	Yes	No	No [1]	No [1]

[1] consider if dilatation on USS, poor urine flow, non E.coli UTI or family Hx of VUR.

9. Follow-up:

- Infants who do not undergo imaging investigations should not be routinely followed-up.

- If normal investigations these can be communicated in writing
- If recurrent UTI or abnormal imaging these patients need follow-up
- If bilateral renal impairment, raised blood pressure or proteinuria specialist nephrology follow-up is indicated. Cases of concern can be discussed with Dr Bhatti.
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10. Advice to parents:

- Encourage fluid intake
- Monitor for constipation and treat with diet/ Movicol as indicated
- Cotton underwear
- Avoid bubblebaths

References: 1) Urinary tract infection in under 16s: diagnosis and management Guideline CG54
https://www.nice.org.uk/guidance/cg54?unlid=3167431012016102219409
(accessed October 2016)

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Authors: Dr Fiona MacCarthy, Dr Alison Groves, Deborah Hopper, Dr Jayakeerthi Rangaiah and Dr Farnaz Dashti