Childhood UTI

• Urinary tract infection (UTI) is common in children.
• 5% of febrile children < 2 years of age with no obvious source have UTI
• Up to 7% of all girls and 1-2% of boys have UTI during their school years
• There is a higher prevalence of urinary tract abnormalities in children < 2 years old; in those with “upper tract” symptoms e.g. fever, lethargy, general malaise, vomiting and loin pain; in those with a history of recurrent UTI and in those with a family history of VUR/Renal scarring
• 10% of children already show scarring on presentation to hospital.
• 10% of children with unilateral kidney scarring develop hypertension within 10 years of presentation. 20% of children with bilateral kidney scarring develop hypertension.

Accurate diagnosis of UTI in childhood is important

Presenting signs of UTI
Specific symptoms are more likely in children > 3 years old
Non-specific symptoms are more likely in children < 3 years old

Specific symptoms
• Dysuria
• Frequency
• Loin pain
• Enuresis
• Haematuria

Non-specific symptoms
• Fever (≥ 38°C)
• Poor-feeding
• Anorexia
• Failure-to-thrive
• Screaming episodes

Other indications for examining the urine
• Unexplained vomiting or abdominal pain
• Prolonged neonatal jaundice
• Suspected child abuse
• Hypertension
Urine collection

Ideally Mid-stream/ clean catch urine (MSU/CCU) if treatment is to be started
• Is the ideal specimen for microbiological examination
• Collect in sterile container

Bag Samples should be used only if CCU not possible and treatment can be deferred in view of high contamination frequency:

• Hold the infant/child held upright
• Ensure perineal skin is clean and dry – no antiseptic needed.
• Bag dependent – not covered by nappy
• Remove bag immediately urine passed

UTI screening in the surgery is a 2-stage process

1 Dipstick testing using Multistix*
• Must be performed before specimen placed in red topped boric acid containers
• Major function is to screen out negative samples
• >3 years of age - If negative (to blood, protein, nitrite, leucocyte esterase) no further investigation necessary
• > 3 years of age - If positive for nitrite and/or leucocytes – is reliable for UTI–but must always be confirmed with urine culture

2 Urine culture
• Must be performed in all children <3 years of age since dipstick urinalysis has a lower sensitivity in this age group
• If boric acid containers are used these should be filled to the mark indicated on bottle – no need to refrigerate if stored for <48 hours
A MSSU/CCU must be obtained before treatment is started

• Use Multistix 8SG®, Multistix 10SG® or Multistix GP® Bayer Diagnostics Division.
Women and Children’s Services

Treating before results are available

When to treat
• Having obtained a urine specimen for culture, treat with best guess antibiotic before obtaining results if:
  • Child <3 years of age and/or
  • Clinical signs of pyelonephritis i.e “upper tract” symptoms or
  • Urine positive for nitrite or leucocytes on dipstick screen or
  • Child has known urinary tract abnormalities or previous UTI or FH of VUR/renal scarring

“Best guess” antibiotic

Oral treatment
Trimethoprim 8 mg/kg/day (divided 12h) Co-Amoxiclav 1-6y 5ml of 125/31 x 3 daily
>6y 5ml of 250/62 x 3 daily Cefalexin 1 month-2 years 62.5-125mg BD, 2-12 years
125-250mg TID, 12-18 years 250-500mg TID
All for 7 days

Prophylaxis
After initial therapeutic course, give prophylactic antibiotic therapy to those <3 years until investigation of urinary tract is complete:
Trimethoprim 1-2 mg/kg
Nitrofurantoin 1-2 mg/kg
Co-amoxiclav - one third of treatment dose
Cefalexin 12.5mg/kg (maximum dose 125mg per day)
All given as a single night time dose

Interpretation of results and action

No infection
Child >3 years. Dipstick negative for blood, protein, nitrite, leucocytes and/or negative on culture
No further action

Possible infection
Mixed growth > 10^5 bacteria/ml
Pure growth 10^3 - 10^4 bacteria/ml
Repeat culture
Child well
  - delay treatment
Child unwell
  - Treat

Confirmed infection
Pure growth >10^5 bacteria/ml
Treat on “best guess” basis until sensitivity results known

Disclaimer: The recommendations contained in this guideline do not indicate an exclusive course of action, or serve as a standard of medical care. Variations, taking individual circumstances into account, may be appropriate. The authors of these guidelines have made considerable efforts to ensure the information on which they are based is accurate and up to date. The authors accept no responsibility for any inaccuracies, information perceived as misleading, or the success of any treatment regimen detailed in the guidelines.
Further management

Refer for further evaluation:

- All children <3 years of age with first UTI
- Children > 3 years of age with recurrent UTI particularly those with upper tract symptoms and/or known urinary tract abnormalities

Key Points

- Accurate diagnosis and investigation of UTI in childhood remains important
- Multistix screening in the surgery can exclude UTI in those over 3 years – culture unnecessary if Multistix negative
- All children <3 years with a single confirmed UTI should be referred for further evaluation
- Trimethoprim, Co-amoxiclav or Cefalexin are the first-line choices for initial treatment
- Prophylactic antibiotics should be given after treatment course in children <3 years until results of further evaluation is known

First point of contact should be the UTI service at RHSC, Yorkhill, telephone 0141 201 0205/0719