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.*

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, 2-12years 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 >3years. 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 -10^5 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

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