This decision support tool is based on best practice as of September 2009. For more information or to provide feedback on this or any other decision support tools, e-mail certifiedpractice@crnbc.ca

PEDIATRIC URINARY TRACT INFECTION - CYSTITIS

DEFINITION
A bacterial invasion of the Genitourinary Tract (GU) with resulting infection. Cystitis is an infection of the lower GU tract.

Urinary tract infection is the most common GU disease in children and the most consistently missed serious bacterial infection in infants. It occurs more frequently in girls than in boys except in infancy. UTI is unusual in boys and further investigation is appropriate when it occurs.

POTENTIAL CAUSES
- E. coli
- Klebsiella
- Group B Streptococcus
- Proteus
- Staphylococcus Epidermis
- Pseudomonas
- H. Influenza
- Enterococccus
- S. saprophyctus

PREDISPOSING RISK FACTORS
- Congenital GU tract abnormalities (vesicoureteral reflux, VUR)
- Fecal contamination
- Infrequent voiding
- Perineal infections
- Sexual activity
- Immunosuppression
- Non-circumcised male infants
- Constipation

TYPICAL FINDINGS (DEPENDS ON THE AGE OF THE CHILD)

History for Neonates and Infants
- Non-specific, non urinary symptoms
- May present with sepsis
- Fever
- Irritability
- Poor feeding
- Vomiting
- Diarrhea or constipation
- Jaundice
- Hypothermia
- Failure to thrive
- Decreased activity, lethargy
History for children less than 3 years old
- Abdominal pain
- Fever
- Vomiting
- Frequency, urgency, dysuria, enuresis
- Strong smelling urine
- Urinary retention

History for children 3 years or older
- Frequency
- Dysuria
- Urgency
- Enuresis
- Flank or back pain (upper UTI)
- Vomiting
- Fever
- Sexual activity

Physical Assessment
- Vital signs, TPR, BP
- Weigh until 12 years of age for medication calculations
- May or may not look ill
- Fever
- Jaundice (neonates)
- Suprapubic tenderness
- Tender abdomen (may need to include reproductive assessment in adolescents)
- Costal Vertebral Angle (CVA) tenderness
- Hydration status
- Circumcised male
- Assessment may be required to rule out neurological dysfunction

Diagnostic tests
- Urinalysis for routine and microscopy (R and M) midstream or catheter collection
- Culture and sensitivity (C&S)
- Consider swabs for sexually transmitted disease and Chlamydia
- Dipstick techniques have low sensitivity (65-88%) and are not to be used for infants and children

MANAGEMENT AND INTERVENTIONS

Goals of treatment
- Relieve symptoms
- Eradicate infection
- Prevent recurrence
- Identify underlying factors
- Prevent complications
Non-pharmacological Interventions
- Rest if febrile
- Keep hydrated, increase fluids

Pharmacological Interventions
Note:
- All doses must be calculated by weight up until age 12.
- Paediatric doses should not exceed recommended adult doses.

- To relieve pain:
  - acetaminophen 10-15mg/kg, PO q4-6h prn. Do not exceed 75mg/kg/24hr or a total of 4,000mg/24hr, whichever is less, or
  - ibuprofen 5-10mg/kg, PO q6-8h prn. Do not exceed 40mg/kg/24hr

Treat only if routine and microscopic (R&M) results are positive for nitrites, leukocyte esterase, protein or blood.

- Oral antibiotic therapy:
  - Trimethoprim/sulfamethoxazole (TMP/SMX) suspension, 6 to 12mg/kg/day, PO divided bid for 7-10 days. Maximum 160mg TMP/dose (320mg TMP/day)

- Consult a physician or nurse practitioner if client allergic to sulfa drugs
- Pregnancy: Consult a physician, nurse practitioner or midwife
- Cystitis in pregnancy should be treated with a 7-14 day course of antibiotics.

POTENTIAL COMPLICATIONS
- Recurrent UTI
- Sepsis (in neonates and infants)
- Pyelonephritis
- Renal scarring
- Meningitis

CLIENT/CAREGIVER EDUCATION AND DISCHARGE INFORMATION
- Advise on condition, timeline of treatment and expected course of disease process
- Increase fluid intake while child is unwell (1.5 times usual intake)
- Counsel parent or caregiver about appropriate use of medications (dose, frequency, side effects, need to complete entire course of medications)
- Instruct client, parent or caregiver in proper perineal hygiene (wiping from front to back) to prevent recurrence
- Avoid bubble baths
- Return to clinic if fever continues or symptoms do not improve in 2 days
- Sitting in a warm tub may relieve symptoms of dysuria

MONITORING AND FOLLOW-UP
- Follow up in 24-48 hours, make sure that antibiotics are sensitive to organisms
- If symptoms progress despite treatment, client should return to the clinic for reassessment and consultation with a physician or nurse practitioner
- Arrange follow-up for one week after the completion of therapy
- Discuss follow-up urinalysis with a physician or nurse practitioner
CONSULTATION AND/OR REFERRAL
• All infants less than 4 months of age or who look acutely ill must be referred to a physician or nurse practitioner
• Consult a physician or nurse practitioner for treatment failure after 72 hours
• Children presenting with symptoms of pyelonephritis must be referred to a physician or nurse practitioner
• All children following the first UTI should be referred to a physician or nurse practitioner for abdominal ultrasound to rule out structural pathology
• Pregnancy

DOCUMENTATION
• As per agency policy

REFERENCES


