Primary Health Care Initiatives (PHCI) Project
Contract No. 278-C-00-99-00059-00
Abt. Associates Inc.

URINARY TRACT INFECTIONS (UTI)

LEARNING OBJECTIVES

- Describe the risks of UTI especially in young children
- Discuss the symptoms of UTI in different age groups
- Diagnose UTI correctly
- Develop an effective treatment plan for UTI, including long-term prophylaxis when appropriate

TEACHING STRATEGIES

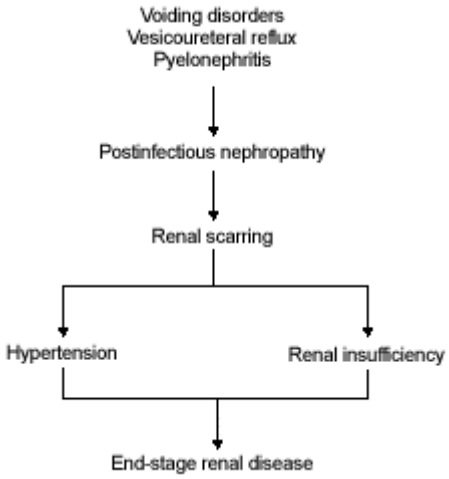
- Use lectures and informal presentation in defining UTI, diagnostic techniques..
- Small groups discussions for counseling and parental education

MATERIALS AND EQUIPMENT NEEDED

- White board or flip chart and markers
- Radiographs showing complications of UTI

LEARNING POINTS

- UTI is one of the most common causes of unexplained fever in children
  - UTI is the cause of up to 15% of unexplained fever in girls less than 2 years of age
- Significance of UTI (especially recurrent UTI) in children
  - UTI in children is usually pyelonephritis (infection of kidney), and not just limited to urinary bladder (cystitis)
  - Can lead to kidney scarring, hypertension, and ultimately renal failure
  - Most severe forms of kidney scarring occur in children less than 2 years of age



- UTI should be suspected and investigated with urinalysis and possible culture in ANY child with a fever or illness not easily explained by another reason

- Clinical presentation of symptoms depends on age of child:

Newborn	Infants & Preschoolers	School Age Children
Jaundice	Diarrhea	Vomiting
Sepsis	Failure to thrive	Fever
Failure to thrive	Vomiting	Bad urine smell
Vomiting	Fever	Abdominal and flank pain
Fever	Bad urine smell	New onset incontinence
	Abdominal and flank pain	Frequent urination – small amouints
	New onset incontinence	Painful urination
		Urgency of urination

- Common causes of UTI in children
  - Most common abnormality is vesico-ureteral reflux (urine reflux from bladder into ureter and kidney)
  - Also associated with bladder or ureteral diverticulae, dilated ureters, duplication of urinary collecting system, partial obstruction of urethra in males
  - Poor hygiene in children (poor cleaning after bowel movement)
  - Voluntary retention of urine (not voiding when appropriate)
  - Tub baths with bubble bath, especially in females
- Because of high incidence of congenital abnormalities and urine reflux in children, must refer to specialist for evaluation in following circumstances:
  - UTI in any child less than 5 years of age
  - Recurrent UTI (greater than 3 episodes/year) in females over 5 years of age
  - Any UTI in a male over 5 years of age
- Urine should be collected for urinalysis and culture if UTI is suspected
  - Urine must be analyzed on fresh specimen to be reliable – transport of urine with delay of over 2 hours results in bacterial growth and unreliability of analysis
  - Urine bag – easiest, but most unreliable because of contamination with skin and bowel bacteria
  - Catheter – very reliable, but may be difficult to obtain in health center
  - Clean voided specimen – generally reliable and easy, but must have older, cooperative child
  - Suprapubic aspirate – very reliable, but requires special technique of aspiration
- Presence of nitrite, or >10 WBC (leukocytes), or 4+ bacteria in fresh urine is relatively good indication of UTI

Management of UTI

- Confirm UTI with culture and sensitivity when possible. Bacteria may be resistant to multiple antibiotics
- If child has systemic symptoms (fever, vomiting, dehydration, abdominal pain) – refer to hospital for evaluation and treatment
- If child has no severe systemic symptoms (temperature <38 C., no toxicity, no vomiting) with UTI, begin treatment with antibiotic and recheck in 48 hours
  - Amoxicillin 25 mg/kg/dose for 3 doses per day
  - Cotrimoxazole 12 mg/kg/dose for 2 doses per day

    - Cefalexin 15-25 mg/kg/dose for 3 doses per day
- Repeat urinalysis (and culture if possible) in 2 – 3 weeks to confirm resolution of UTI
- Recurrent UTI (>3 episodes in one year) or presence of congenital urinary tract abnormalities or urine reflux – should consider long term antibiotic prophylaxis to prevent recurrent infections
    - Cotrimoxazole 6 mg/kg/dose for one dose at bedtime for minimum 3-6 months
    - Nitrofurantoin

PREVENTION ISSUES AND HEALTH EDUCATION MESSAGES

- Alert parents to possible UTI in any febrile episode
- Education regarding symptoms of UTI in older children
- Proper local cleaning especially in girls
- Motivate parents and patients to give long-term prophylaxis when indicated
- Need for continual followup in children with UTI, especially in females, because UTI may persist even in absence of symptoms such as fever or pain

CRITICAL ELEMENTS FOR REFERRAL

- Age below 5 years
- Recurrent UTI (>3/year) in a female over age 5
- Any UTI in a male over age 5
- Significant genitourinary anomalies are suspected
- High fever, toxic or ill appearing, vomiting or dehydration
- Uncertainty about diagnosis or inability to obtain urine specimen for analysis
- Persistent bacteria in urine after appropriate antibiotics

CRITICAL ELEMENTS FOR EVALUATION OF COMPETENCE

- Symptoms of UTI in children, by age group
- Potential risks of untreated or recurrent UTI
- Indications for prophylactic, long-term use of antibiotics in UTI
- Indications for referral for further evaluation and management

CASE STUDY

Sarah is 3-year old girl presented to the health center with vomiting, fever, frequent urination and abdominal pain for 16 hours. On examination, Sarah looked ill, her temperature was 39 C. and the right costophrenic angle was tender to palpation. This is the first episode of this type.

Topics of discussion regarding case study

1. What is the most likely diagnosis?
2. How could you confirm the diagnosis?
3. Should Sarah be referred to hospital?
4. Does Sarah need further investigations?