

## URINARY TRACT INFECTION

### I. INTRODUCTION

Infections of the lower urinary tract are one of the most common types of infection. They usually result from ascending transurethral invasion of the bladder by pathogenic gram-negative aerobic bacilli normally present in the large bowel and on the perineum. *Escherichia coli* represent 80 to 90% of the infectious agents implicated in acute cystitis. Other organisms found are *Klebsiella*, *Proteus*, *Enterobacter*, *Pseudomonas*, *Staphylococcus*, and *D streptococcus*.

A reliable indicator of an active urinary tract infection is a bacterial count over 100,000 organisms of the same species per milliliter in a fresh "clean-catch" midstream specimen. Lower counts may be significant and may require treatment.

### II. MEDICAL EVALUATION

- A. Most clients who report symptoms (such as frequency, dysuria, and urgency) should have a clean-catch midstream specimen sent for urinalysis and culture/sensitivity. This procedure is advisable for postpartum clients with a history of UTI during pregnancy, and for clients with persistent proteinuria.
- B. Risk factors for cystitis include history of urinary tract infection, recent sexual intercourse, and/or recent spermicide use.
- C. The presence of leukocyte esterase (reflecting pyuria) and nitrite (reflecting the presence of *Enterobacteriaceae*, which convert urinary nitrate to nitrite) is indicative of acute infectious cystitis and presumptive treatment should be started for women with symptoms and positive leukocyte esterase and/or nitrites.
- D. Clients with symptoms of pyelonephritis (such as fever, flank pain, abdominal pain and nausea) should be referred promptly for physician evaluation and treatment, since they may require IV antibiotics and hospitalization.

### III. TREATMENT

Presumptive treatment is appropriate for symptomatic clients before culture and sensitivity results are available.

- A. Recommended treatment options (prior to culture):
  - 1. Nitrofurantoin monohydrate macrocrystals (Macrobid ) 100 mg p.o. q 12 h x 3 or 7 days.
  - 2. Trimethoprim-sulfamethoxazole (Bactrim DS® or Septra® DS) 1 tablet p.o. q 12 h x 3, 7, or 10 days.
  - 3. Cephalexin (Keflex®) 500 mg p.o. qid x 7 or 10 days.
  - 4. Ciprofloxacin (Cipro®) 250-500 mg p.o. q 12 h x 1 or 3 days.
- B. Specific therapy may be supplemented by a topical urinary analgesic in clients with severe symptoms: Phenazopyridine (Pyridium®) 200 mg p.o. tid after meals x 2 days. Clients may purchase phenazopyridine 95 mg over-the-counter: trade names include AZO®, Uristat®, and Prodiur®.

- C. In an otherwise healthy woman with no risk factors and little or no history of lower urinary tract infections, a short course of therapy may be given without obtaining a culture.
- D. Treatment for one to three days with Macrobid® or Cipro® would be appropriate. Persistent symptoms of cystitis or urethritis would require urine culture and sensitivity studies.

#### IV. FOLLOW-UP

- A. High-risk clients and those with recurrent urinary tract infections should have follow-up urine cultures one to two weeks after treatment is completed.
- B. A diaphragm with spermicide for contraception should be avoided in clients with documented recurrent urinary tract infections. This method alters normal vaginal bacterial flora and increases the risk for cystitis.
- C. Clients with persistent or recurrent infections, documented by culture, should be referred to a physician for evaluation. Long-term antibiotic therapy may be indicated, or the client may be a candidate for urologic evaluation.

#### REFERENCES

1. ACOG. Precip: Primary and Preventive Care. 3rd Ed., 2004
2. Tierney et al. Current Medical Diagnosis and Treatment. 47th Ed., McGraw-Hill, New York, 2008

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