

## STANDARD NURSE PROTOCOL FOR BACTERIAL CYSTITIS

**NOTE:** Females under age 18 must be established Women's Health patients.

**DEFINITION** Cystitis is a bladder inflammation that may be characterized by dysuria, frequency and urgency. Bacteria and viruses are often the cause. Rarely, fungi, chemical agents and radiation exposure may cause cystitis.

**SUBJECTIVE**

1. Frequency, burning on urination.
2. Urgency, with or without incontinence.
3. Suprapubic pain and/or tenderness.
4. No symptoms of vaginal infection.  
If indicated, do work-up for possible vaginal infection, chlamydia and gonorrhea.
5. No recent history of fever, shaking chills, unilateral flank pain, inability to urinate or a sudden decrease in urine volume. No history of kidney disease.

**OBJECTIVE**

1. Lower abdominal tenderness on palpation.
2. Temperature **less** than 100°F.
3. Diagnostic criterion: Dipstick urinalysis positive for either white blood cells (WBCs) and/or nitrites.

**ASSESSMENT** Bacterial cystitis

**PLAN**      **DIAGNOSTIC STUDIES**

1. Urine pregnancy test, if any possibility of pregnancy.
2. If diagnosis is in question, obtain clean-catch urine for urinalysis and culture and sensitivity.
3. If abnormal vaginal discharge or discharge from the urethra, perform wet prep and perform tests for gonorrhea and chlamydia.

## THERAPEUTIC

### PHARMACOLOGIC

1. Trimethoprim 160 mg/sulfamethoxazole 800 mg (Bactrim DS, Septra DS, Sulfatrim DS).  
1 tablet PO, with food, every 12 hours for 3 days.  
**NOTE:** Do not give if patient has a history of allergy to the drug components; asthma, kidney or liver disease, folic acid deficiency states, G6PD-deficiency, or any other blood dyscrasia; is taking thiazide diuretics, warfarin (Coumadin), phenytoin (Dilantin), or methotrexate; is pregnant; or, is breastfeeding an infant <2 months old, or with or an elevated bilirubin (see Referral/Consultation).

### OR

2. Nitrofurantoin (Macrobid®) 100 mg, 1 capsule PO with food, every 12 hours for 7 days or Macrochantin 50 mg. 1 tab PO four times a day for 7 days.

**NOTE:** Do not give if patient has a history of nitro-furantoin allergy, kidney or liver disease, optic neuritis, G6PD-deficiency or anemia; is taking sulfonpyrazone/ Anturane, probenecid, or magnesium-containing antacids; or is breastfeeding an infant less than one month old or with G6PD-deficiency.

### OR

3. If allergic or otherwise intolerant of treatments above, is at least 18 years old and not pregnant or breast-feeding,
  - a. Norfloxacin (Noroxin®) 400 mg, 1 tablet PO every 12 hours for 3 days if uncomplicated and due to *E. coli*, *K. pneumoniae*, or *P. mirabilis*.
  - b. All other organisms, Norfloxacin 400 mg, 1 tablet PO 2 times a day for 7 – 10 days.

Take at least 2 hours before or 2 hours after food, milk products, iron or zinc supplements, antacids and/or other medications.

**NOTE:** Do not give if patient has a history of quinolone antibiotic allergy, tendon rupture, atherosclerotic cardiovascular disease, kidney or liver disease, neurologic disorder or blood dyscrasia; or is taking theophylline,

caffeine (e.g., in pain and fever-relieving medications), cyclosporine, warfarin (Coumadin®), probenecid, nitrofurantoin or sucralfate (Carafate®).

4. For non-curative symptomatic relief, if patient is age 12 or older, is not pregnant or breast-feeding, and has no history of liver disease:
  - a. Phenazopyridine HCL (Pyridium®) 200 mg, 1 tablet PO 3 times a day after meals as needed for 3-15 days.
  - OR**
  - b. Nonprescription phenazopyridine HCl 95 mg (AzoStandard, Azo-Gesic, Prodiurn) for less than 2 days. Follow package directions.

Discontinue medication immediately if any yellowish or orange discoloration of skin or eyes is noted. This medication may stain contact lenses.

#### **NON-PHARMACOLOGIC MEASURES**

1. Increase fluid intake (cranberry juice might be suggested) and empty bladder frequently.
2. Warm sitz baths.

#### **PATIENT EDUCATION/COUNSELING**

1. The importance of taking the full course of treatment, unless serious side-effects occur.
2. Drug-specific instructions and cautions:
  - a. For trimethoprim/sulfamethoxazole: avoid sun exposure, discontinue drug immediately if develop a rash or signs of liver problems. Drink a full glass of water with each dose.
  - b. For nitrofurantoin: discontinue drug if develop peripheral neuropathy, visual problems, diarrhea, or symptoms of liver or lung problems.
  - c. For norfloxacin: avoid sun exposure, discontinue drug if develop diarrhea, tendon symptoms, rash or other allergic symptoms. Drink a full glass of water. May cause dizziness/drowsiness.
  - d. Phenazopyridine may cause discoloration of urine and may stain panties. Recommend pantyliners.

3. Potential risk factors for cystitis and prevention strategies.
4. Eating or consuming cultured milk products (yogurt, buttermilk) may help prevent vaginal yeast infection while antibiotics are being taken.
5. Seek medical care immediately if medication side-effects or systemic symptoms develop.
6. Post-menopausal women may have increased susceptibility for cystitis because of a decrease in vaginal lactobacilli and an increased pH. Cultured milk products (yogurt, buttermilk) which contain live active cultures are good dietary sources of lactobacilli. Look for product containers labeled "LAC."

#### **FOLLOW-UP**

1. Patient should call the clinic if cystitis symptoms are not improved within 48 hours of starting therapy.
2. If no improvement in 48 hours after starting therapy or if symptoms persist after therapy is complete, either perform complete UA, culture and sensitivity and treat or refer for testing.

#### **REFERRAL/CONSULTATION**

1. If patient is pregnant.
2. Gross hematuria in a specimen uncontaminated by menses.
3. Systemic complaints such as temperature **equal to or greater than** 100°F, fast pulse, shaking chills or unilateral flank pain.
4. Recurrent cystitis within one month, or more than 3 episodes in one year.
5. If follow-up urinalysis reveals unexplained (non-menstrual) microhematuria without WBCs or nitrite.

## REFERENCES

1. American Society of Health-Systems Pharmacists, *American Hospital Formulary Service*, Bethesda, MD, 2009, pp. 431-442.
2. Robert Hatcher, et al., *Contraceptive Technology*, 19th ed., Ardent Media, Inc., New York, 2007.
3. Constance Uphold and Virginia Graham, *Clinical Guidelines in Family Practice*, 4<sup>th</sup> ed., Barmarrae Books, Inc., Gainesville, FL, 2003. (Current)
4. "Facts and Comparisons," *Facts and Comparisons 4.0 Online*, Wolters Kluwer Health, Inc., 2009, <<http://online.factsandcomparisons.com>>.
5. *Lexi-Comp Online*, Lexi-Comp, Inc., 2009, <<http://online.lexi.com>>, (April 21, 2009).
6. **Geri Morgan and Carole Hamilton, *Practice Guidelines for Obstetrics and Gynecology*, 2<sup>nd</sup> ed., Lippincott Williams & Wilkins, Hagerstown, MD, 2002, pp. 207-208.**