

# Urinary Tract Infection (UTI) Decision Protocol

For non-catheterized patients in sub-acute care facilities

**START: Suspected UTI? First, what are the Patient's Symptoms?**

**STOP**

**Mental Status Changes, Foul Smelling Urine,  
Urine Color Changes  
ANTIBIOTICS NOT INDICATED**

**WAIT**

**PLACE RESIDENT ON A MONITORING PROTOCOL**

- ✓ Provide increased fluid intake (unless contraindicated)
- ✓ Monitor & document input / output & vitals each shift for next 24 hrs
- ✓ Seek alternative causes for mental status changes (i.e. dehydration, medications, environmental changes, metabolic problems, cardiovascular, stroke, etc.)
- ✓ Inform family that resident is closely monitored on a protocol

**GO**

**START**

**Acute Dysuria (pain or discomfort when urinating) OR  
Fever (at least 37.9°C or 100°F)  
AND**

**At Least ONE of the following symptoms (if verbal):**  
New or worsening urgency,  
Frequency, Subrapubic Pain, Gross Hematuria, Costovertebral Angle Tenderness, Urinary incontinence

**Monitoring with no improvement:  
Contact Prescriber and Communicate using S-BAR  
(Situation, Background, Assessment and Recommendation)**

**Using Antibiotics when not indicated may lead to:**

- ✓ Poor "gut health"
- ✓ *C. difficile* diarrhea
- ✓ Adverse Drug Events
- ✓ Allergic reactions
- ✓ Drug interactions

**Obtain a Clean Catch Urine & Send to Lab for Urinalysis:**

**If Pyuria (>10 cells high powered) AND  
Leucocyte esterase OR Nitrate positive  
~ THEN ~**

**Request Culture and Susceptibility to Guide Therapy**

**Antibiotics are indicated (see below)**

<b>Bactrim DS*</b> Sulfamethoxazole / Trimethoprim		<b>Macrobid</b> Nitrofurantoin		<b>Cipro</b> Ciprofloxacin	
Dose	Duration	Dose	Duration	Dose	Duration
1T PO Q12H	3-7 days	100 mg PO Q12H	5-7 days	500 mg PO Q12H	3-7 days

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## ANTIBIOTIC FACTS AND DOSING FOR UTIs (NOTE THESE DOSES AND DURATION DIFFER IN OTHER INFECTION TYPES)

DRUG	RENAL ADJUSTMENT	ADVERSE EFFECTS	MONITORING AND ADMINISTRATION
<b>NITROFURANTOIN (Macrobid) (PO)*</b> *only for treatment of lower urinary tract in residents with no catheter	CrCl ≥ 30 100 mg Q12H CrCl < 30 Contraindicated	Agranulocytosis (1-5%), Elevated hepatic enzymes (1-5%), Hemolytic anemia (1-5%), Leukopenia (1-5%), Megaloblastic anemia (1-5%), Thrombocytopenia (1-5%)	<ul style="list-style-type: none"> <li>✓ Diarrhea; Monitor for <i>C.difficile</i></li> <li>✓ EKG Changes</li> <li>✓ Hemolytic anemia</li> <li>✓ Hepatic function</li> <li>✓ Peripheral neuropathy may worsen</li> <li>✓ Pulmonary function tests</li> <li>✓ Pulmonary hypersensitivity reaction</li> <li>✓ Renal function</li> </ul>
<b>TRIMETHOPRIM/SULFAMETHOXAZOLE (PO)*</b>	CrCl ≥ 50 1-2 DS Q8-12H CrCl 30-50 1-2 DS Q12H CrCl 10-29 1-2 DS Q12H CrCl <10 1-2 DS Q24H CrCl < 15 Not recommended	Rare (<1%): Erythema multiforme, Stevens-Johnson syndrome, Toxic epidermal necrolysis, hyperkalemia, hyponatremia, clostridium difficile diarrhea,	<ul style="list-style-type: none"> <li>✓ CBC</li> <li>✓ Serum Potassium (K)</li> <li>✓ Renal function (SCr)</li> <li>✓ Caution if pt is on warfarin</li> </ul>
<b>CEPHALEXIN (PO)</b>	CrCl >30 500 mg Q6H CrCl <30 500 mg Q12H  x 5-7 days	Elevated hepatic enzymes (1-7%), Nausea (1-6%), Vomiting (1-6%), Diarrhea (1-19%), Drug-induced eosinophilia (2.7-8.2%) Rare but severe (<1%): Anaphylactic shock, anaphylactoid reactions	<ul style="list-style-type: none"> <li>✓ Prothrombin time in patients at risk</li> <li>✓ Renal function (SCr)</li> <li>✓ Signs of overgrowth of non-susceptible organisms</li> </ul>
<b>CIPROFLOXACIN (PO)</b>	CrCl >30 500 mg Q12H CrCl 10-29 500 mg Q24H CrCl <10 500 mg Q24H	<b>LIMITATIONS OF USE: RESERVE FLUOROQUINOLONES FOR PATIENTS WHO DO NOT HAVE OTHER AVAILABLE TREATMENT OPTIONS FOR UNCOMPLICATED URINARY TRACT INFECTIONS</b>	<ul style="list-style-type: none"> <li>✓ Caution if pt. is on warfarin</li> <li>✓ <b>Diarrhea</b>; Monitor for for <i>C.difficile</i></li> <li>✓ <b>Cardiac</b>: prolonged QT interval, torsades de pointes, tachycardia</li> <li>✓ <b>Musculoskeletal/connective tissue</b>: tendon rupture, muscle injury, rhabdomyolysis</li> <li>✓ <b>Skin/subcutaneous tissue</b>: stevens-johnson syndrome, toxic epidermal necrolysis, erythema multiforme, photosensitivity/ phototoxicity, leukocytoclastic vasculitis renal and urinary disorders: interstitial nephritis</li> <li>✓ <b>Blood/lymphatic system</b>: pancytopenia, aplastic anemia, leukopenia, hemolytic anemia, eosinophilia hepatobiliary:</li> <li>✓ <b>Psychiatric</b>: psychosis, paranoia, suicidal ideation,</li> <li>✓ <b>Nervous system</b>: exacerbation of myasthenia gravis, anosmia, ageusia, parosmia, dysgeusia, peripheral neuropathy, dysphonia, central nervous system effects (hallucinations, anxiety, depression, insomnia, severe headaches, and confusion)</li> <li>✓ <b>Immune system disorders</b>: hypersensitivity reactions, anaphylactic/anaphylactoid reactions,</li> <li>✓ <b>Eye disorders</b>: uveitis, vision disturbance (including diplopia), visual acuity reduced, vision blurred, scotoma otologic:, tinnitus</li> </ul>
<b>LEVOFLOXACIN (PO)</b>	250 mg QD x3 -7days  No dosage adjustment required for urinary tract infection (UTI)	Nausea (7%), headache (6%), diarrhea (5%), insomnia (4%), constipation (3%), dizziness (3%) dyspepsia (2%),	(Continued from previous row)
<b>FOSFOMYCIN (PO)</b>	CrCl >20: Females: 3g x 1 dose Males: 3g q 2-3 days x3 doses  CrCl <20 Not Recommended	Diarrhea (9-10.4%), headache (3.9-10.3%), nausea (4.1-5.2%), vaginitis (5.5-7.6%) Rare but severe (<1%): Anaphylactoid reaction, angioedema	<b>Do not administer dry powder.</b> Pour the entire contents of a sachet containing the equivalent of 3 g of fosfomycin into 3—4 oz (1/2 cup) of water; do not use hot water. Stir to dissolve. Take immediately after dissolving.

\*DS = "Double Strength", 800 mg Sulfamethoxazole, 160 mg Trimethoprim; SS = "Single Strength", 400 mg Sulfamethoxazole, 80 mg Trimethoprim; 10 days if delayed clinical response

# Urinary Tract Infection (UTI) Protocol

## for Sub-Acute Care Facilities

Patient is on antibiotics and C&S, UA and labs returned within 48 hours: REEVALUATE

**START:** Are there  $\geq 10^5$  CFU/mL of bacteria (same species) in clean catch urine specimens (no catheters) ?

YES

NO

Re-evaluate patient's symptoms

Bacteria cultured susceptible to antibiotics and lab values support the continuation of UTI treatment?

YES

NO

Change antibiotics

Are the patient's symptoms improving?

YES

NO

Continue appropriate antibiotics for recommended days of therapy

Reevaluate with attention to upper urinary tract or obstruction; discontinue or change antibiotic based on culture susceptibilities

### Urinalysis & Urine Culture (non-catheterized residents)

- Urinalysis and urine cultures should not be performed for asymptomatic residents.
- The minimum laboratory evaluation for suspected UTI should include urinalysis for determination of leukocyte esterase and nitrite level by use of a dipstick and a microscopic examination for WBCs.  
If pyuria ( $>10$  WBCs/high-power field) or a positive leukocyte esterase or nitrite test is present on dipstick, only then should a urine culture (with antimicrobial susceptibility testing) be ordered.
- Appropriately collected urine specimen collection from women will often require an in-and-out catheterization.

Our Treatment Pathways are based on national guidelines and consensus statements, expert opinions from the Infectious Diseases Specialists (pharmacy and medicine), and microbiology data from local Rhode Island microbiology laboratories.

The recommendations provided are meant to serve as treatment guidelines. They should not replace clinical judgment or Infectious Diseases consultation when indicated. The recommendations may not be appropriate at other settings. We have attempted to verify that all information is correct but because of ongoing research, recommendations may change. We welcome your thoughts and comments. Please contact [Kerry LaPlante](#), PharmD, FCCP, FIDSA at the University of Rhode Island for any comments or questions

Please also visit our website for additional pathways: <http://web.uri.edu/antimicrobial-stewardship/>

### References

1. KP High, et al, Clinical Practice Guideline for the Evaluation of Fever and Infection in Older Adult Residents of Long-Term Care Facilities: 2008 Update by the Infectious Diseases Society of America *Clinical Infectious Diseases* 2009;48:149–71
2. NS Stone, et, al. Surveillance Definitions of Infections in Long-Term Care Facilities: Revisiting the McGeer Criteria *Infect Control Hosp Epidemiol.* 2012 Oct; 33(10): 965–977.
3. Hooten TM, et al. Diagnosis, prevention, and treatment of catheter-associated urinary tract infections in adults: 2009 International Clinical Practice Guidelines from the Infectious Diseases Society of America. *Clin Infect Dis* 2010;50:625–663.
4. LaPlante, K. (n.d.). *2016-17 Providence VAMC Antimicrobial Guide Empiric Therapy & Treatment Recommendations for Adult Patients* [Guidebook].
5. Micromedex. Drug Monograph. Ann Arbor (MI): Truven Health Analytics. [June 2017]