

Table 16.3 Treatment of Urinary Tract Infections Once Cultures are Available as Recommended by Infectious Diseases Society of America

Medication	Indications	Dosing	Side effects affecting rehab	Other side effects or considerations
Sulfonamides				
Trimethoprim-sulfamethoxazole (Bactrim, Septra)	Effective treatment of UTIs caused by most aerobic enteric bacteria (not <i>Pseudomonas aeruginosa</i>).	1 double-strength tablet every 12 h. Adjust dose for renal insufficiency.	Cog: ++ S: 0 A: ++ Motor: ++ D: + Com: ++ F: ++	Rash, allergy, folate deficiency, leukopenia, thrombocytopenia, hemolytic anemia with G6PD deficiency, elevated liver enzymes, Stevens-Johnson syndrome, tremors, nervousness, myoclonus, aseptic meningitis, ataxia, peripheral neuritis, insomnia, delirium, arthralgias, myalgias, hallucinations, depression, nervousness, acute psychosis, metabolic acidosis, hypoglycemia, hepatotoxicity, decreased creatinine clearance, renal failure, interstitial nephritis, crystalluria. Increases effect of warfarin (Coumadin). Decreases effects of oral contraceptives. Increases drug levels of amantadine, dapsone, digoxin, methotrexate, phenytoin, rifampin, and zidovudine; increases phenytoin levels. Decreases cyclosporine levels. Leukopenia with use of azathioprine; hyperkalemia with use of potassium-sparing diuretics; increased folate loss with use of methotrexate.
Quinolone antibiotics: Effective treatment for pyelonephritis and prostatitis.				
Ciprofloxacin (Cipro)	Non-extended spectrum; effective for treating pyelonephritis, prostatitis, and gram-negative bacteria, including <i>Pseudomonas aeruginosa</i> .	250-500 mg every 12 h. Adjust dose for renal insufficiency.	Cog: +++ S: 0 A: ++ Motor: +++ D: +++ Com: ++ F: +++	Drug fever, rash, headache, abdominal pain, pain in the feet and extremities, dizziness, insomnia, malaise, seizures, Achilles tendon rupture or tendinitis, increased risk of arrhythmia and cardiac arrest, taste perversion, abnormal dreams, vision changes, confusion, behavior changes, hallucinations, speech disorders, arthralgias, myalgias, bone marrow suppression, dysphagia, glossitis, gastritis, nausea, vomiting, stomatitis, <i>Clostridium difficile</i> colitis, altered coordination and gait, exacerbation of myasthenia gravis, allergic reactions, liver dysfunction, renal dysfunction, Stevens-Johnson reaction. Avoid combining with fluvoxamine (Luvox) and duloxetine (Cymbalta); Cipro increases antidepressant levels and can cause hypertensive crisis, hypotension, syncope, and serotonin syndrome. Increases effects of warfarin (Coumadin). Absorption is decreased when taken with aluminum, magnesium, antacids containing calcium, or iron or zinc supplements. Increases caffeine, theophylline, and cyclosporine levels. Cimetidine and probenecid increase ciprofloxacin levels. Increased seizure risk when

From L. Carl, J. Gallo, and P. Johnson, 2014, *Practical Pharmacology in Rehabilitation: Effect of Medication on Therapy* (Champaign, IL: Human Kinetics).

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				used with forcarnet and nonsteroidal anti-inflammatory drugs. Increases risk for QT prolongation, arrhythmia, and cardiac arrest. Avoid use in children and pregnant women; causes tooth discoloration and cartilage abnormalities. Increases levofloxacin levels. Increased effects on the central nervous system when used with nonsteroidal anti-inflammatory drugs or probenecid.
Levofloxacin (Levaquin)	Extended spectrum; effective for treating gram positive bacteria (except MRSA, MRSE, and VRE) and gram-negative bacteria, including <i>Pseudomonas aeruginosa</i> .	250-750 mg/day. Pyelonephritis: 750 mg once/day for 5 days. Adjust dose for renal insufficiency.	Cog: +++ S: 0 A: ++ Motor: +++ D: +++ Com: ++ F: +++	Taste perversion, abnormal dreams, vision changes, confusion, behavior changes, hallucinations, speech disorders, arthralgias, myalgias, bone marrow suppression, dysphagia, glossitis, gastritis, nausea, vomiting, stomatitis, <i>Clostridium difficile</i> colitis, altered coordination and gait, exacerbation of myasthenia gravis, allergic reactions, liver dysfunction, tendon rupture, renal dysfunction, Stevens-Johnson reaction, headache, abdominal pain, pain the feet and extremities, dizziness, insomnia, malaise, seizures, Achilles tendon rupture or tendinitis, increased risk of arrhythmia or cardiac arrest. Increases risk for QT prolongation with increased risk for arrhythmia and cardiac arrest. Increases effects of warfarin (Coumadin). Absorption is decreased when taken with aluminum, magnesium, antacids containing calcium, or iron or zinc supplements. Increased effects on the central nervous system when used with nonsteroidal anti-inflammatory drugs or probenecid. Increases levofloxacin levels. Avoid use in children and pregnant women; causes tooth discoloration and cartilage abnormalities.
Penicillins				
Amoxicillin–clavulanic acid (Augmentin) Ampicillin–sulbactam (Unasyn) IV	Extended-spectrum aminopenicillin useful for empiric treatment of UTI; effective against <i>Escherichia coli</i> and <i>Enterococcus</i> .	500 mg every 8 h. Adjust dose for renal insufficiency.	Cog: + S: + A: + Motor: ++ D: ++ Com: + F: +	Drug fever, rash, increased liver enzymes, nausea, vomiting, diarrhea, allergic reaction, <i>Clostridium difficile</i> colitis, bone marrow depression, dizziness, insomnia, confusion, agitation, convulsions, behavioral changes, tooth discoloration. More gastrointestinal upset and diarrhea than with use of amoxicillin. Increased rash when used with allopurinol.
Cephalosporin				
Cephalexin (Keflex)	First-generation cephalosporin useful for empiric	500 mg every 6 h. Adjust for renal	Cog: + S: + A: +	Drug fever, rash, dyspepsia, gastritis, abdominal pain, allergic reactions, skin reactions, dizziness, hallucinations, fatigue, confusion, agitation,

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	treatment of UTI; effective against <i>Escherichia coli</i> (the most common cause of UTI) but does not cover <i>Enterococcus</i> .	insufficiency.	Motor: + D: ++ Com: + F: +	diarrhea, interstitial nephritis, bone marrow suppression. No drug interactions identified.
Urinary antiseptics				
Nitrofurantoin (Macrochantin)	Useful for the treatment of lower urinary tract infection.	100 mg every 12 h.	Cog: 0 S: 0 A: 0 Motor: ++ D: + Com: 0 F: ++	Stomach upset, acute hypersensitivity reactions with pneumonitis (reversible), chronic irreversible reactions (chronic hepatitis, peripheral neuropathy, interstitial fibrosis of lung). Absorption is decreased when used with antacids containing aluminum, magnesium, or calcium. Probenecid can increase nitrofurantoin levels. Avoid use in pregnant women within 1-2 wk of delivery, nursing mothers, those with kidney disease, and those with creatinine clearance <30 ml/min.
Trimethoprim	Useful for the treatment of lower urinary tract infection.	100 mg every 12 h or 200 mg once/day. Adjust for renal insufficiency.	Cog: 0 S: 0 A: 0 Motor: 0 D: ++ Com: 0 F: 0	Folate deficiency, nausea, vomiting, glossitis, bone marrow depression, skin reactions. Increased leukopenia when used with azathioprine, nystagmus when used with phenytoin, hyperkalemia when used with potassium-sparing diuretics, and hyponatremia when used with thiazide diuretics. Increases levels of amantadine, dapsone, digoxin, methotrexate, phenytoin, rifampin, and zidovudine. Increases effects of warfarin (Coumadin). Low potential for allergic reaction.

Cog = cognition; S = sedation; A = agitation or mania; Motor = discoordination; D = dysphagia; Com = communication; F = falls; MRSA = methicillin resistant staphylococcus aureus; MRSE = methicillin resistant staphylococcus epidermidis; VRE = vancomycin resistant enterococcus; UTI = urinary tract infection; IV = intravenous.

The likelihood rating scale for encountering the side effects is as follows: 0 = Almost no probability of encountering side effects. + = Little likelihood of encountering side effects. +/+ = Low probability of encountering side effects; however, probability increases with increased dosage. ++ = Medium likelihood of encountering side effects. +++ = High likelihood of encountering side effects, particularly with high doses. ++++ = Highest likelihood of encountering side effects; best to avoid in at-risk patients.