

## Drug interactions

Anti-infective Agent	Interacting Drug(s)	Adverse Effect
Acyclovir/valacyclovir	Nephrotoxins <sup>a</sup>	Additive nephrotoxicity
	Phenytoin, valproic acid	Decr seizure control
Amantadine	Anticholinergics <sup>b</sup>	Additive anticholinergic toxicity
	Bupropion	Additive neurotoxicity
	Trimethoprim	Incr amantadine conc
Amikacin	(See Aminoglycosides <sup>c</sup> .)	
Aminoglycosides <sup>c</sup> (parenteral)	Nephrotoxins <sup>a</sup>	Additive nephrotoxicity
	Neuromuscular blocking agents	Incr neuromuscular blockade
	Indomethacin, ibuprofen	Incr aminoglycoside conc
	Carbo-/cisplatin, ethacrynic acid	Additive ototoxicity
Amphotericin B	Nephrotoxins <sup>a</sup>	Additive nephrotoxicity
	Cisplatin, corticosteroids, diuretics	Additive hypokalemia
Atovaquone	Metoclopramide, rifamycins, tetracycline	Decr atovaquone conc
Carbapenems	Valproic acid	Decr conc of valproic acid

Anti-infective Agent	Interacting Drug(s)	Adverse Effect
Caspofungin	Cyclosporine	Incr caspofungin conc
	Tacrolimus, sirolimus	Decr tacrolimus/sirolimus conc
	Rifampin, EIAED <sup>d</sup>	Decr caspofungin conc
Cefdinir	Iron	Decr anti-infective oral absorption
Cefdinir, cefpodoxime, cefuroxime (oral), cefditoren	Antacids, H <sub>2</sub> antagonists <sup>e</sup> , PPI <sup>f</sup>	Decr anti-infective oral absorption
Ceftriaxone	Calcium intravenous	Precipitation, cardiopulmonary embolism
Cephalexin, ceftibuten	Zinc	Decr anti-infective oral absorption
Chloramphenicol <sup>h</sup>	Phenytoin, PPI <sup>f</sup> , sulfonyleureas	Incr conc of interacting drug
	EIAED <sup>d</sup> , rifamycins	Decr chloramphenicol conc
Cidofovir	Nephrotoxins <sup>a</sup>	Additive nephrotoxicity
Ciprofloxacin	Caffeine, clozapine, diazepam, duloxetine, glyburide, methadone, olanzapine, sildenafil, theophylline, warfarin	Incr conc of interacting drug
	Phenytoin	Incr or decr conc of phenytoin
	Foscarnet	Additive seizure toxicity
	Antacids, bismuth, calcium, iron, sucralfate, zinc	Decr anti-infective oral absorption
Clarithromycin <sup>g</sup>	(See Erythromycin.)	
Clindamycin	Neuromuscular blocking agents	Incr neuromuscular blockade
Dapsone	Rifampin	Decr dapsone conc
	Trimethoprim	Incr dapsone and trimethoprim conc
Daptomycin	Statins	Additive myopathy
Doxycycline	Antacids, bismuth, calcium, iron, magnesium, sucralfate, zinc	Decr oral absorption
	EIAED <sup>d</sup> , rifamycins	Decr doxycycline conc

Anti-infective Agent	Interacting Drug(s)	Adverse Effect
Erythromycin <sup>®</sup> , clarithromycin, telithromycin	Theophylline	Incr conc of interacting drug
	Azole antifungals, diltiazem, verapamil	Incr anti-infective conc, additive cardiotoxicity
	Rifamycins	Decr anti-infective conc
Fluconazole <sup>®</sup>	Celecoxib, clopidogrel, cyclophosphamide, ibuprofen, naproxen, ifosfamide, phenytoin, PPI <sup>†</sup> , sulfonyleureas, warfarin	Incr conc of interacting drug-CYP 2C9 and 2C19 inhibition
	Losartan	Decr losartan activity
	Rifampin	Decr fluconazole conc
Foscarnet	Pentamidine	Hypocalcemia
	FQ	Additive seizure toxicity
	Nephrotoxins <sup>a</sup>	Additive nephrotoxicity
Ganciclovir/valganciclovir	Imipenem	Additive seizure toxicity
	Hemotoxins <sup>b</sup>	Additive hemotoxicity
Gentamicin	(See Aminoglycosides <sup>c</sup> .)	
Griseofulvin	EIAED <sup>d</sup>	Decr griseofulvin conc
Imipenem	Cyclosporine, ganciclovir	Additive neurotoxicity
Isoniazid	Acetaminophen, carbamazepine	Hepatotoxicity
	Antacids	Decr conc of isoniazid
	Celecoxib, cyclophosphamide, ibuprofen, naproxen, ifosfamide, phenytoin, sulfonyleureas, warfarin	Incr conc of interacting drug-CYP 2C9 inhibition
	Cycloserine	Dizziness, drowsiness
	Carbamazepine, valproate	Incr conc of interacting drug
	Atomoxetine, linezolid	Poss MAO inhibition toxicity
	Amphetamines, buspirone, mirtazapine, SRI <sup>e</sup> , tramadol	Poss serotonin syndrome

Anti-infective Agent	Interacting Drug(s)	Adverse Effect
Itraconazole, ketoconazole <sup>j</sup>	Anthracyclines, aripiprazole, benzodiazepines <sup>k</sup> , bosentan, buspirone, busulfan, CCB <sup>l</sup> , carbamazepine, chlorpheniramine, corticosteroids, cyclophosphamide, cyclosporine, digoxin, docetaxel, ergotamine, etoposide, fentanyl, fexofenadine, fluoxetine, haloperidol, ifosfamide, irinotecan, loperamide, loratadine, methadone, phenytoin, pimozide, quetiapine, quinidine, rifabutin, sertraline, sildenafil, sirolimus, statins <sup>m</sup> , tacrolimus, tiagabine, trazadone, vinca alkaloids, warfarin, zolpidem, zonisamide	Incr conc of interacting drug-CYP 3A4-7 inhibition
	Antacids, H2 antagonists <sup>n</sup> , PPI <sup>f</sup>	Decr azole conc, itraconazole oral solution less affected
	Sucralfate	Decr ketoconazole conc
	EIAED <sup>g</sup> rifamycins	Decr azole conc
	Erythromycin, FQ, ziprasodone	Incr conc of interacting drugs with poss incr cardiotoxicity
	Methotrexate	Incr methotrexate conc
Levofloxacin	See Ciprofloxacin for drugs that decr oral absorption of FQ.	
Linezolid	Atomoxetine, isoniazid	Poss MAO inhibition toxicity
	Sympathomimetics	Poss hypertension
	Amphetamines, buspirone, mirtazipine, SR <sup>h</sup> , tramadol	Poss serotonin syndrome
	Rifampin	Decr linezolid conc
Metronidazole	Amiodarone, busulfan, carbamazepine, cyclosporine, 5-fluorouracil, lithium, phenytoin, tacrolimus, warfarin	Incr conc of interacting drug
	EIAED <sup>g</sup>	Decr metronidazole conc
Micafungin	Cyclosporine, sirolimus	Incr conc of interacting drug
Minocycline	Antacids, bismuth, calcium, iron, magnesium, sucralfate, zinc	Decr oral absorption
Nafcillin	Cyclosporine, CCB <sup>l</sup>	Decr conc of interacting drug
	Warfarin	Decr hypothermic effect

Anti-infective Agent	Interacting Drug(s)	Adverse Effect
Norfloxacin	Cyclosporine	Incr cyclosporine conc
	See Ciprofloxacin for drugs that decr oral absorption of FQ.	
Oseltamivir	Methotrexate	Incr methotrexate conc
Penicillins	Methotrexate	Incr methotrexate conc
Posaconazole <sup>g</sup>	Phenytoin, H <sub>2</sub> antagonists <sup>f</sup> , PPI <sup>f</sup>	Decr conc of posaconazole
	Methotrexate	Incr methotrexate conc
Praziquantel	EIAED <sup>d</sup>	Decr conc of praziquantel
Quinupristin/dalfopristin <sup>a</sup>	(See Itraconazole.)	
Rifampin, Rifabutin	Numerous, including amiodarone, anticonvulsants, antidepressants, antipsychotics, barbiturates, benzodiazepines <sup>h</sup> , beta-adrenergic blockers, buspirone, coxibs, calcium channel blockers <sup>i</sup> , oral contraceptives, corticosteroids, digoxin, immunosuppressants, NSAIDs, opioids, statins <sup>h</sup> , sulfonylureas, warfarin, zolpidem	Decr conc of interacting drug; see also <i>Clinical Pharmacokinetics</i> . 2003;42(9):819–850.
Streptomycin	(See Aminoglycosides <sup>e</sup> .)	
Telithromycin <sup>a</sup>	(See Erythromycin.)	
Terbinafine	Most SRI <sup>j</sup> , tricyclic antidepressants	Incr conc of interacting drug
	Rifampin	Decr terbinafine conc
Tetracycline	Antacids, bismuth, calcium, iron, magnesium, sucralfate, zinc	Decr anti-infective oral absorption
	Atovaquone	Decr atovaquone conc
	Isotretinoin	Intracranial hypertension
TMP/SMX	Azathioprine, methotrexate	Additive hematological toxicity <sup>h</sup>
	Rifamycins	Decr TMP/SMX conc
	Amantadine, dapsone, phenytoin, sulfonylureas, warfarin	Incr conc of interacting drug
	ACE Inhibitors, ARB, spironolactone	Hyperkalemia
Tobramycin	(See Aminoglycosides <sup>e</sup> .)	

Anti-infective Agent	Interacting Drug(s)	Adverse Effect
Vancomycin	Indomethacin, ibuprofen	Incr vancomycin conc
Voriconazole <sup>g,i</sup>	Methadone	Incr conc of interacting drug
	EIAED <sup>d</sup> , rifamycins	Decr voriconazole conc

<sup>a</sup>Potentially nephrotoxic drugs include aminoglycosides, acyclovir, cidofovir, foscarnet, ACE inhibitors, cyclosporine, diuretics, NSAIDs, contrast agents, pentamidine, tacrolimus, tenofovir, vancomycin.

<sup>b</sup>Examples of anticholinergics: atropine, belladonna, benztropine,clidinium, dicyclomine, diphenhydramine, glycopyrrolate, homatropine, hyoscyamine, promethazine, propantheline, scopolamine.

<sup>c</sup>Gentamicin, tobramycin, amikacin, streptomycin.

<sup>d</sup>EIAED: carbamazepine, phenobarbital, phenytoin, and primidone.

<sup>e</sup>Famotidine, ranitidine.

<sup>f</sup>Pantoprazole, rabeprazole, omeprazole, lansoprazole, esomeprazole.

<sup>g</sup>Antibiotic is known to have or may potentially have the same interactions as itraconazole and ketoconazole due to similar inhibition of CYP3A4-7 drug metabolism.

<sup>h</sup>Notable hemotoxic drugs include antineoplastics, clozapine, dapsone, flucytosine, mycophenolate, pentamidine, primaquine, pyrimethamine, TMP/SMX, zidovudine.

<sup>i</sup>SRI: bupropion, citalopram, duloxetine, escitalopram, fluoxetine, fluvoxamine, nefazodone, paroxetine, sertraline, venlafaxine.

<sup>j</sup>Antibiotic is known to have or may potentially have the same interactions as fluconazole due to similar inhibition of CYP2C9 and CYP2C19 drug metabolism.

<sup>k</sup>CYP3A4 oxidized benzodiazepines: alprazolam, chlordiazepoxide, clonazepam, clorazepate, diazepam, midazolam, and triazolam.

<sup>l</sup>Amlodipine, bepridil, diltiazem, felodipine, isradipine, nicardipine, nifedipine, nimodipine, verapamil.

<sup>m</sup>Atorvastatin, lovastatin, simvastatin