

Antibiotics and Timing of Administration

- It is estimated that 50-70 % of nursing homes patients will be prescribed a systemic antibiotic over the course of a year.¹ A patient's routine medications can interfere with certain antibiotics, decreasing their absorption significantly. If an antibiotic does not reach optimal concentrations in the body, it may not work as well as it should, possibly hindering the treatment response and resulting in treatment failure.
- The table below lists common drug interactions related to **timing of administration** and recommended spacing.²
- NOTE: If it is not possible to separate the dosing accordingly, it is recommended to omit the offending medication while on antibiotic therapy (i.e. decrease iron dosing to daily from 3 times daily during antibiotic therapy).

Antibiotic	Offending Medication	Recommendation	Mechanism
Ciprofloxacin (Cipro)	–Magnesium, –Magnesium/aluminum- containing antacids, –Zinc salts	Take Ciprofloxacin at least 2 hours before or 6 hours after offending medications	The gastrointestinal (GI) absorption of Quinolones (Oral) may be decreased due to formation of poorly soluble chelates with magnesium. Reduced GI acidity may be an additional mechanism.
Levofloxacin (Levaquin)	–Magnesium, –Magnesium/aluminum- containing antacids, –Zinc salts	Take Levofloxacin at least 2 hours before or 2 hours after offending medications	Same as Cipro
Moxifloxacin (Avelox)	–Magnesium, –Magnesium/aluminum- containing antacids, –Zinc salts	Take Moxifloxacin at least 4 hours before or 8 hours after offending medications	Same as Cipro
All quinolones (Ciprofloxacin, Levofloxacin, Moxifloxacin)	–Sucralfate	The combination of Sucralfate and Quinolones should be avoided. If the combination must be used, administer Quinolones at least 2 hours before or 4 hours after Sucralfate	The aluminum in Sucralfate may complex with Quinolones to decrease gastrointestinal absorption.

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All quinolones (Ciprofloxacin, Levofloxacin, Moxifloxacin)	—Iron and Calcium preparations (Including multivitamins that contain iron and/or calcium, dairy products)	If the combination cannot be avoided, administration of Quinolones should occur at least 2 hours before or 6 hours after Iron/Calcium Note: Moxifloxacin does not interact with Calcium like the other Quinolones and no adjustments are recommended.	The formation of insoluble chelates with iron/calcium decreases gastrointestinal absorption of Quinolones.
Doxycycline/ Tetracycline	—Magnesium, Magnesium/ Aluminum-containing antacids	Take Doxycycline or Tetracycline 2 hours before or 6 hours after offending medication.	Magnesium Salts decrease gastrointestinal absorption of Tetracyclines due to formation of a poorly soluble chelates.
Doxycycline/ Tetracycline	—Iron products (including multivitamins that contain iron)	Give iron 3 hours before or 2 hours after the antibiotic	The formation of poorly soluble chelates with Iron Salts (Oral) decreases gastrointestinal absorption and enterohepatic recycling of Doxycycline.
Tetracycline	—Milk Products	Take on an empty stomach at least 1 hour prior to meals/milk or 2 hours after	Milk products decrease absorption by 50-80%
Cefpodoxime (Vantin)/Cefuroxime (Ceftin)	—Antacids/H2 antagonists (famotidine)	Administer antibiotic at least 2 hours before or after offending medication	Increased gastric pH may decrease the dissolution and impair the absorption of Cephalosporins.

References:

1. <http://www.cdc.gov/longtermcare/prevention/antibiotic-stewardship.html>
2. <https://www.clinicalkey.com/pharmacology/monographs>