Monographs for Commonly Administered Intravenous Medications
in Home and Community Care

Ciprofloxacin

Drug Class[1]	Antibiotic – Quinolone	
Spectrum[1,2]	**Refer to product monograph for complete spectrum** *Staphylococcus aureus*, *Streptococcus pneumoniae*, *Enterobacteriaceae*, *Haemophilus influenza*, *Neisseria gonorrhoeae*, *Neisseria meningitidis, Moraxella catarrhalis*, *Pseudomonas aeruginosa*, *Legionella pneumophilia*	
Cross Sensitivities / Allergies[1]	Other quinolone antibiotics	
Indications and duration[1]	• Respiratory tract • Urinary tract • Skin or skin structure • Septicemia	• Bone / osteomyelitis • Intra-abdominal (in combination with Metronidazole) • Other conditions based on culture and sensitivity results
Outpatient Considerations[1]	• For patients receiving ciprofloxacin IV, first dose should be given in the hospital or other setting where the patient can be monitored during the infusion. Rarely a serious hypersensitivity or anaphylaxis can occur. • Must be able to access laboratory monitoring (either at outpatient laboratory or by arranging in-home lab) if using an interacting oral medication (see Potential Drug Interactions section). • Administration via central venous access device is preferred.[3] • Oral ciprofloxacin may be an option and should be considered after 3 to 5 days of IV therapy depending on indication, gastrointestinal absorption and clinical status. For conversion of IV to oral therapy:[4] 400 mg IV q12h = 500 mg orally q12h; 400 mg IV q8h = 750 mg orally q12h	
Prescribing Considerations and Dosage in Adults[1,2,4]	**At time of ordering please provide the following to the pharmacist:** • **Height, weight** • **Most recent serum creatinine, with date obtained** • **Indication (infection being treated)** Usual dose is 200-400 mg IV q12h; Maximum dose is 400 mg IV q8h. ***Dose or interval requires adjustment in renal impairment.*** • Avoid using in patients with myasthenia gravis, history of seizures, liver disease or known prolonged QT interval.	

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Administration[1,4]	• Dispensed in an ambulatory cassette/multi-dose bag intended for an infusion pump, programmed to deliver total daily dose via preprogrammed boluses over 24 hours. • Prior to connecting the patient to therapy, double check pump programming versus the order. Recheck after each order change. • To reduce the risk of phlebitis, administer into a large vein and infuse over at least 60 minutes. • Flush line with D5W or NS before and after administration due to incompatibility with many drugs. • Contact pharmacy infusion provider for specific questions pertaining to administration. •	
Stability / Compatibilities[1,3]	*Compatible in:* • 0.9% Sodium Chloride (NS) • Dextrose 5% in Water (D5W) Incompatible with many drugs.	Follow the stability as specified by the infusion provider (as it is based on the dilution and temperature). Ensure appropriate storage conditions as specified are being met.
Monitoring parameters[1,5]	**Laboratory:** • Complete blood counts weekly • See Potential Drug Interactions section below for additional monitoring as needed	**Clinical by Nursing:** • Monitor site for phlebitis, burning, pain, erythema and swelling • Ciprofloxacin can cause central nervous system stimulation and psychiatric effects (psychosis, suicidal thoughts, depression), even after one dose. If this happens, the drug must be discontinued and appropriate measures put into place (e.g., mental health consultation). • Ask daily about any onset of severe diarrhea. Contact prescriber to reassess therapy and possibly order stool cultures to rule out *C. difficile* and implement treatment, if necessary • Rarely can cause liver dysfunction or skin rash. Notify prescriber right away if rash, itchiness or jaundiced appearance. • If patient complains of pain, inflammation or has a rupture of a tendon – ciprofloxacin must be discontinued right away. • May affect blood glucose levels. Encourage patients to monitor blood sugar more frequently while receiving ciprofloxacin – review hypo and hyperglycemia

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		management strategies. Review home medications and compare against the selected drug interactions listed below. Report to prescriber if patient is using an interacting drug and obtain further orders. For more comprehensive drug interaction screening, contact the patient's community pharmacist(s).
Selected Clinically Significant Drug Interactions[1]	**Warfarin** - can increase the effect of warfarin, increasing the International Normalized Ratio (INR). Vigilant monitoring is required, especially at initiation of antibiotic and after treatment is complete. **Tizanidine** – combination with ciprofloxacin is contraindicated. Causes hypotension, somnolence and drowsiness. **Theophylline** – combination can decrease theophylline clearance leading to theophylline toxicity. Avoid combination if possible. If not, theophylline levels need to be monitored throughout the antibiotic course and afterwards until stable. **Methotrexate-** combination can lead to methotrexate toxicity. Avoid if possible. If using, complete blood count, creatinine and liver function must be monitored. **Phenytoin** – monitor phenytoin levels during combination therapy. The addition of ciprofloxacin has been shown to increase or decrease phenytoin levels – mechanism unknown. **Class IA or III antiarrhythmics** (e.g., quinidine, amiodarone, sotalol) – may prolong the QT interval when used in combination with ciprofloxacin **Ropinirole** – ciprofloxacin can decrease the metabolism of ropinirole, thus increasing levels of ropinirole leading to side effects **Clozapine** – case reports indicate ciprofloxacin can reduce the metabolism of clozapine leading to clozapine toxicity. Avoid combination if possible. **Sildenafil** (e.g., Viagra)– Concomitant administration may increase levels of sildenafil. Patients should be advised to refrain from using sildenafil while receiving ciprofloxacin.	
Patient Education[1]	*Advise patient to report to their doctor or nurse if they have:* • New onset watery, foul smelling diarrhea and abdominal cramping. Ciprofloxacin can cause *C. difficile* diarrhea • Pain or swelling at your infusion site immediately to your nurse • New pain in tendons or joints • Signs of bleeding (if taking an anticoagulant) *Advise the patient to:* • Drink plenty of fluids during treatment course, unless the doctor has ordered otherwise. • Avoid excessive exposure to the sunlight (increased photosensitivity). Minimize	

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	skin exposure and use sunscreen with UVA and UVB coverage. • For patients with diabetes: monitor blood sugar more closely while using ciprofloxacin. Oral medications or insulin may need to be adjusted to prevent high or low blood sugar levels.
Other	For information on pregnancy and nursing please contact the Motherisk Helpline found at http://www.motherisk.org/women/contactUs.jsp

References:

1. Ciprofloxacin product monograph. Saint-Laurent (QC): Hospira Healthcare Corporation; 2012 Sep 27 [cited 2016 Feb 4]. Obtained through Health Canada Drug Product Database; search term "ciprofloxacin" as active ingredient, available from: http://webprod5.hc-sc.gc.ca/dpd-bdpp/index-eng.jsp
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3. Drugs To Be Infused Through A Central Line (PICC Line). Salem (OH): Integrated Vascular Services LLC. [cited 2016 Apr 2]. Available from: http://www.ivs1.com/images/centralline.pdf
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5. Chou HW, Wang JL, Chang CH, Lee JJ, Shau WY, Lai MS. Risk of severe dysglycemia among diabetic patients receiving levofloxacin, ciprofloxacin, or moxifloxacin in Taiwan. Clin Infect Dis. 2013 Oct;57(7):971-80.

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