

SHC “Tips” for Discharging Patients on Parenteral Antibiotics

Purpose

This document addresses frequently asked drug-related questions about outpatient parenteral antimicrobial therapy (OPAT). This document is not a clinical guideline and not a substitute for clinical evaluation and consultation with the infectious diseases service.

Infectious Diseases Consultation

If OPAT is being considered, consultation with the Infectious Diseases service is strongly recommended to assist with patient management strategies (e.g., monitoring plans), as well as in considering the need for ongoing antibiotic administration and the alternative use of oral therapy when possible. Infectious Diseases consultation is strongly recommended for patients requiring >1 week of intravenous therapy and for some who require clinical evaluation prior to antibiotic (IV or PO) cessation (e.g. intraabdominal abscess, osteomyelitis).

Consider Oral Therapy

Intravenous therapy is not a benign intervention and has been associated with higher rates of complications and therapy discontinuation.¹ Highly bioavailable oral antimicrobials that penetrate the site of infection have been utilized for serious infections and have been shown to be non-inferior to IV antimicrobials in many infections.²

Clinicians should routinely assess for the need for antibiotic therapy and for opportunities to transition patients to oral antimicrobials. In many instances, oral therapy can circumvent the need for OPAT. The choice of the oral antimicrobial will vary based on the organism susceptibility (if any) and the level of evidence available to support the regimen. Infectious diseases consultation can assist with this determination.

Examples of Antibiotics with Highly Bioavailable Formulations	
Fluoroquinolones (e.g., Ciprofloxacin, Levofloxacin)	Trimethoprim/sulfamethoxazole
Metronidazole	Linezolid
Doxycycline	Rifampin
Clindamycin	

Simplifying OPAT Regimens^{3, 4}

If more frequent dosing of a regimen is prohibitive to home health or nursing facility, once daily dosed antibiotics, or programmed infusions (intermittent or continuous) via an ambulatory pump may be considered. For patients on intermittent hemodialysis, certain antimicrobials can be dosed post-dialysis. Specifically feasible options for a given patient will ultimately depend on the home health agency, administering facility, insurer, and/or other entities.

Once Daily Options	Programming Continuous or Intermittent Infusions	Post-Dialysis Antimicrobials (for patients on intermittent hemodialysis only)
Ceftriaxone Daptomycin Ertapenem	Many B-lactams (depending on stability data)	Cefazolin Cefepime Ceftazidime Daptomycin Ertapenem Vancomycin

For specific dosing recommendations, please see the [SHC Antibiotic Dosing Guide](#).

Master Reference Table for Outpatient Antibiotics (IV or PO if anticipate extended duration)

	Dosing Considerations ^a						Monitoring Considerations ^b	
Drug	Consider Oral Therapy (Direct IV to PO Conversion)	Once-daily Injection (Select Cases)	Intravenous Push (IVP), Programmed Intermittent (PI) Infusion, or Continuous Infusion (CI)			Post-HD Injection (IHD patients only)	Drug Level Monitoring (TDM)	Other
Aminoglycosides								
-Amikacin							✓	Audiometry ^c
-Gentamicin							✓	Audiometry ^c
-Tobramycin							✓	Audiometry ^c
Azithromycin	✓							
Beta-lactams								
-Ampicillin				PI	CI			
-Ampicillin/ sulbactam				PI	CI			
-Aztreonam			IVP	PI	CI			
-Cefazolin			IVP	PI	CI	✓		
-Cefepime			IVP	PI	CI	✓		
-Ceftazidime			IVP	PI	CI	✓		
-Ceftazidime/ avibactam				PI	CI			
-Ceftolozane/ tazobactam				PI	CI			
-Ceftriaxone		✓	IVP					
-Ertapenem		✓	IVP			✓		
-Imipenem								
-Meropenem			IVP					
-Nafcillin				PI	CI			
-Penicillin G				PI	CI			
-Piperacillin/ tazobactam				PI	CI			
Clindamycin	✓							
Daptomycin		✓	IVP			✓		CK
Fluoroquinolones								
-Ciprofloxacin	✓							
-Levofloxacin	✓							
Metronidazole	✓							

Master Reference Table (cont.)

Drug	Dosing Considerations ^a					Monitoring Considerations ^b	
	Consider Oral Therapy (Direct IV to PO Conversion)	Once-daily Injection (Select Cases)	Intravenous Push (IVP), Programmed Intermittent (PI) Infusion, or Continuous Infusion (CI)		Post-HD Injection (IHD patients only)	Drug Level Monitoring (TDM)	Other
Oxazolidinones							
-Linezolid	✓						
-Tedizolid	✓						
Rifampin	✓						
Trimethoprim/ sulfamethoxazole	✓						
Vancomycin					✓	✓	

^aThese dosing considerations are regimens that have published clinical use. Whether the selected regimen applies to a specific patient will need to be further evaluated.

^bFrequency should be tailored based on individual patient risk factors of drug-induced adverse effects

^cFor prolonged courses, consider checking baseline and every few weeks (frequency dependent on patient risk and concern for ototoxicity)

^dWhile AUC monitoring may be the preferred method for assessing vancomycin efficacy, trough monitoring may be more practical in the outpatient setting. If available, recent TDM should be used to guide outpatient trough monitoring.

Post-Dialysis Dosing for Patients Receiving Intermittent Hemodialysis Three Times per Week

Antimicrobial	Dosing
Cefazolin	2g/2g/3g* IV post-HD only
Cefepime	2g IV post-HD only
Ceftazidime	1g IV post-HD only
Daptomycin	Refer to SHC Dosing Guide for indication-specific dosing recommendations
Ertapenem	500-1000mg IV post-HD
Vancomycin	Dosing should be tailored to patient demographics, indication and prior dosing/level history (if any)

*The 3g dose is to be given post-HD and during the longest interval between HD sessions (i.e. 72 hour interdialytic period). For example, a patient receiving HD MWF would receive 2g cefazolin post-HD on Monday, 2g cefazolin post-HD on Wednesday, and 3g cefazolin post-HD on Friday

Stability Data for Various Antimicrobials that May be Considered for Programmed Infusions^{3, 4}

Antimicrobial Agent	Stability by Storage Condition after Reconstitution		Concentration Studied
	Refrigerated	Room Temperature	
Ampicillin ^{6, 7}	72 hours	24 hours	24 mg/mL
Ampicillin/sulbactam ^{8, 9}	72 hours	32 hours	30 mg/mL
Aztreonam ¹⁰	7 days	48 hours	125 mg/mL
Cefazolin ¹⁰	10 days	24 hours	125 mg/mL
Cefepime ¹⁰	7 days	24 hours	110 mg/mL
Ceftazidime/avibactam ⁸	24 hours	12 hours	167/42 mg/mL
Ceftolozane/tazobactam ⁸	7 days	24 hours	100/50 mg/mL
Meropenem ^{9, 11}	4 days	12 hours	10 mg/mL
Piperacillin/tazobactam ^{8, 9}	7 days	48 hours	Refrigerated: 90/11.2 mg/mL Room Temperature: 125/15.6 mg/mL

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