

Laboratory Monitoring of Outpatient Parenteral Antimicrobial Therapy (OPAT)

Guidance Overview

This document is intended to provide recommendations and guidance for laboratory monitoring for patients discharging on intravenous antimicrobials. Principles from the Infectious Diseases Society of America (IDSA) OPAT guidelines along with more recent evidence are incorporated in these recommendations, and annotations provide supporting evidence where UNMC recommendations differ from IDSA guidelines. Note that frequencies listed are minimal laboratory monitoring criteria for patients with normal and/or stable drug clearance. Different criteria and more frequent monitoring may be requested at the discretion of the clinician. Guidance on indications for OPAT can be found [here](#). In cases where OPAT is being considered, infectious diseases consultation should be obtained.

For laboratory monitoring guidance for patients discharging on oral antimicrobials, refer to the CoPAT guidance document. Please note that many antimicrobial agents not listed in this guidance have intravenous formulations (e.g. acyclovir, azithromycin, clindamycin, fluoroquinolones, linezolid, metronidazole, trimethoprim-sulfamethoxazole, etc.), but are highly bioavailable and should not be administered intravenously outside the hospital except in extraordinary circumstances (e.g. extensive bowel resections precluding treatment with oral medications). If the intravenous formulation for an antimicrobial not listed here is required, contact the [OPAT team](#) for specific monitoring guidance.

Table: Laboratory Monitoring Recommendations for OPAT

Anti-infective Agent	UNMC/NMC Recommendations	
	Laboratory Monitoring Frequency	Other Comments
Antimicrobials		
Aminoglycosides <ul style="list-style-type: none"> • Amikacin • Gentamicin • Tobramycin 	<ul style="list-style-type: none"> • CBC-diff once weekly • BMP at least once weekly^a • TDM (trough) at least once weekly per Pharmacokinetics dosing protocol 	<ul style="list-style-type: none"> • Recommend audiogram, flagged for ototoxic medication monitoring, at baseline and about every 3 weeks while on long-term therapy • See selected references² for evidence supporting UNMC/NMC monitoring recommendations
Aztreonam	<ul style="list-style-type: none"> • CBC-diff once weekly • CMP once weekly 	
Carbapenems <ul style="list-style-type: none"> • Ertapenem • Imipenem 	<ul style="list-style-type: none"> • CBC-diff once weekly • BMP once weekly 	<ul style="list-style-type: none"> • See selected references³⁻⁶ for evidence supporting UNMC/NMC monitoring recommendations

<ul style="list-style-type: none"> Meropenem Imipenem-relebactam Meropenem-vaborbactam 		
Cephalosporins* <ul style="list-style-type: none"> Cefepime Cefoxitin Ceftaroline Ceftazidime Ceftazidime-avibactam Ceftolazone-tazobactam 	<ul style="list-style-type: none"> CBC-diff once weekly BMP once weekly 	<ul style="list-style-type: none"> *See separate entries below for specific cephalosporins with different laboratory monitoring recommendations
Cefazolin	<ul style="list-style-type: none"> CBC-diff at baseline then every 2 weeks BMP at baseline then every 2 weeks 	<ul style="list-style-type: none"> See selected references^{3,4,6,7} for evidence supporting UNMC/NMC monitoring recommendations
Ceftriaxone	<ul style="list-style-type: none"> CBC-diff at baseline then every 2 weeks CMP at baseline then every 2 weeks 	
Daptomycin	<ul style="list-style-type: none"> CBC-diff once weekly BMP once weekly Baseline and once weekly CK 	
Penicillins <ul style="list-style-type: none"> Ampicillin Ampicillin-sulbactam Nafcillin Oxacillin Penicillin G Piperacillin-tazobactam 	<ul style="list-style-type: none"> CBC-diff once weekly BMP once weekly (if using nafcillin or oxacillin, CMP once weekly) 	<ul style="list-style-type: none"> See selected references^{3,4} for evidence supporting UNMC/NMC monitoring recommendations
Rifampin	<ul style="list-style-type: none"> CBC-diff once weekly CMP once weekly 	<ul style="list-style-type: none"> Recommended monitoring as part of combination therapy with an IV antimicrobial (PO recommended) If treating LTBI, refer to CDC guidance for monitoring recommendations
Tetracyclines <ul style="list-style-type: none"> Omadacycline Tigecycline 	<ul style="list-style-type: none"> CBC-diff once weekly CMP once weekly 	
Vancomycin	<ul style="list-style-type: none"> CBC-diff once weekly BMP once weekly TDM (trough) at least once weekly per Pharmacokinetics dosing protocol 	
Long-acting Glycopeptides <ul style="list-style-type: none"> Dalbavancin Oritavancin 	<ul style="list-style-type: none"> CBC-diff and BMP at baseline if not obtained in previous 7 days If administering 1-2 doses; no additional laboratory monitoring necessary If administering >2 doses; CBC-diff and BMP with each dose 	<ul style="list-style-type: none"> See selected references^{8,9} for evidence supporting UNMC/NMC monitoring recommendations
Antifungals		

Amphotericin B	<ul style="list-style-type: none"> • CBC-diff once weekly • CMP twice weekly^a • Mg and Phos twice weekly^a 	<ul style="list-style-type: none"> • Recommend pre-dose hydration with normal saline infusion for nephrotoxicity mitigation • See selected references¹⁰ for evidence supporting UNMC/NMC monitoring recommendations
Echinocandins <ul style="list-style-type: none"> • Anidulafungin • Caspofungin • Micafungin 	<ul style="list-style-type: none"> • CBC-diff once weekly • CMP once weekly 	
Antivirals		
Acyclovir	<ul style="list-style-type: none"> • CBC-diff once weekly • BMP once weekly 	<ul style="list-style-type: none"> • Recommend supplemental oral or IV hydration for nephrotoxicity mitigation • Recommend PO valacyclovir
Cidofovir	<ul style="list-style-type: none"> • CBC-diff once weekly • BMP twice weekly^a • Mg and Phos twice weekly^a 	<ul style="list-style-type: none"> • Recommend pre- and post-dose hydration with NS, and oral probenecid administration • See selected references^{11,12} for evidence supporting UNMC/NMC monitoring recommendations
Foscarnet	<ul style="list-style-type: none"> • CBC-diff once weekly • BMP twice weekly^a • Mg and Phos twice weekly^a 	<ul style="list-style-type: none"> • Recommend pre-hydration prior to dose with NS or D5W • See selected references^{11,13} for evidence supporting UNMC/NMC monitoring recommendations
Ganciclovir	<ul style="list-style-type: none"> • CBC-diff once weekly • BMP once weekly 	<ul style="list-style-type: none"> • Recommend • See selected references^{11,14} for evidence supporting UNMC/NMC monitoring recommendations

Abbreviations: BMP = basic metabolic profile; CBC-diff = complete blood cell count with differential; CK = creatinine kinase; D5W = dextrose 5% in water; Mg = magnesium; NS = normal saline; PO = oral; TDM = therapeutic drug monitoring

^a Twice weekly labs may be required per ID or OPAT clinician discretion, ideally obtained on Mondays and Thursdays

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