Summary of ID-restricted and Non-formulary Agents for Multidrug-Resistant Gram-negative Pathogens

Table 1. Pharmacy Information

Drug name (Brand name)	Status	Formulary niche description	Cost/day
Ceftolozane/Tazobactam (Zerbaxa)	Formulary ID-restricted	MDR P. aeruginosa (preferred empiric agent)	$983.88
Ceftazidime/Avibactam (Avycaz)	Formulary ID-restricted	CRE (preferred empiric agent) MDR P. aeruginosa second line	$1113.36
Meropenem/Vaborbactam (Vabomere)	Formulary ID-restricted	CRE, confirmed KPC-producer	$1195.02
Polymyxin B	Formulary ID-restricted	MDR P. aeruginosa in combination MDR Acinetobacter in combination CRE in combination	~$1
Colistin -- Intravenous	Formulary ID-restricted	MDR P. aeruginosa in combination MDR Acinetobacter in combination CRE in combination	~$1
Tigecycline	Formulary ID-restricted	MDR Acinetobacter in combination CRE in combination	$150
Minocycline	Formulary	MDR Acinetobacter	$334
Cefiderocol (Fetroja)	Formulary ID-restricted	Not established 2nd line for P. aeruginosa	$1314
Plazomicin (Zemdri)	Non-formulary	Urinary CRE pathogens when aminoglycoside is considered safe	$756
Eravacycline (Xerava)	Non-formulary	MDR Acinetobacter CRE in combination	$140
Aztreonam/Avibactam (Emblaveo)	Formulary ID-restricted	MDR Stenotrophomonas maltophilia Class-B (NDM-1) producing pathogens	$1230.16
Fosfomycin -- Intravenous	Non-formulary	Not established	$515.04
Sulbactam/Durlobactam (Xacduro)	Non-formulary	MDR Acinetobacter	$1985.24

ID-restricted = ID Consult Required

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Table 2. Pathogen Activity

Color codes indicate expected activity based on in vitro activity. Susceptibility estimates based on DUH CY2024-2025 review of carbapenem non-susceptible (carb-NS) Gram-negative pathogens are presented as Number susceptible/Number tested (% susceptible) in the cells below when available. Always confirm expected activity with susceptibility testing.

Red=inactive; yellow= may be active; green=active; white = unknown

Drug name	*Carb-NS Enterobacterales**				*Acinetobacter spp.*	*P. aeruginosa*	*S. maltophilia*
	Non-CP CRE	Carba-R**					
		KPC (11)	IMP/VIM /NDM (5)	OXA-48 (1)	MDR including OXA-23/24/58	Carb-NS	
Ceftolozane/Tazobactam						37/49 (75)	
Ceftazidime/Avibactam						31/50 (62)	Same as ceftaz
Meropenem/Vaborbactam (Vabomere)	Same as mero						
Tigecycline							
Minocycline							
Polymyxin B							
Colistin -- Intravenous							
Cefiderocol						19/21 (90)	
Plazomicin							
Eravacycline							
Aztreonam/Avibactam							
Fosfomycin -- Intravenous							
Sulbactam/Durlobactam							

*CRE as defined here includes Klebsiella, E. coli, Enterobacter, and Citrobacter species. Number in parenthesis are the number of tests positive for this gene in 2025 clinical CRE isolates excluding rectal screening specimens.

** Genotypic testing for carbapenemases using the Carba-R will be done on E. coli, Klebsiella spp, Enterobacter spp and Citrobacter spp when ertapenem is I/R from non-CSF sources or when meropenem is I/R from CSF.

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Table 3. Antibiotic Susceptibility Testing (AST)

Drug name	Pathogen-AST Method	Cascade vs. By Request	In-House vs. Send Out	Logistical considerations in obtaining test including TAT
Ceftolozane/Tazobactam	P. aeruginosa- MIC	Cascade	In-House	TAT: initial testing.
Ceftazidime/Avibactam	Enteric GNR and P. aeruginosa- MIC	Cascade	In-House	TAT: initial testing.
Meropenem/Vaborbactam	Enteric GNR- MIC	Cascade	In-House	TAT: initial testing.
Polymyxin B	P. aeruginosa-MIC A. baumanii-MIC	Request	Send Out	TAT: 7-10 days. Colistin MICs predict polymyxin B MICs.
Colistin	P. aeruginosa -MIC A. baumanii -MIC	Request	Send Out	TAT: 7-10 days. Colistin MICs predict polymyxin B MICs.
Tigecycline	Enteric GNR- MIC	Request	In-House	Enteric GNR MIC TAT: 2 days.
Minocycline	A. baumanii, Burkholderia sp., S. maltophilia-MIC	Cascade	In-House	TAT: 2 days.
Cefiderocol	Enteric GNR, P. aeruginosa, A. baumanii, S. maltophilia-Disk diffusion	PA, SM: Cascade Others: Request	In-House	TAT: 2 days.
Plazomicin	P. aeruginosa, S. maltophilia, A. baumanii, Enteric GNR-MIC	Request	Send Out	TAT: 7-10 days.
Eravacycline	Enteric GNR - MIC	Request	Send Out	TAT: 7-10 days.
Omadacycline	Enteric GNR- MIC	Request	Send Out	TAT: 7-10 days.
Aztreonam/Avibactam	CR Enteric GNR by class B enzyme-Disk diffusion.	Request	Send Out*	TAT: 7-10 business days, requires prior authorization. No CLSI testing method for *S.maltophilia*.
Fosfomycin (PO)	E. coli-Disk diffusion	Request	In-House	TAT: 2 days. CLSI Interpretation ONLY for urine specimen *E. coli*.
Fosfomycin (IV)	K. pneumoniae – MIC (broth microdilution)	Request	Send out	TAT: 4-10 days.
Sulbactam/Durlobactam	Acinetobacter species	Request	Send Out	TAT: 7-10 days.

GNR=Gram negative rod; CR= carbapenem resistant; *https://health.maryland.gov/laboratories/Pages/ARLNhome.aspx

Detailed description of reporting cascade logic is available on the DUHS Labs Website: https://clinlabs.duke.edu/clinical-microbiology

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