

4 Principles of Antimicrobial Use

Table 1.2. PK/PD indices of various drug classes^a

Antimicrobial class	PK-PD index (comment)			
	Time-dependent activity	Concentration-dependent activity		
	Time above MIC	AUC	AUC/MIC ratio	Uncertain
Antibiotics	All beta-lactams		Aminoglycosides Vancomycin/teicoplanin Daptomycin (or C_{max}/MIC) Fluoroquinolones Macrolides Metronidazole/tinidazole Telavancin/dalbavancin/ oritavancin Minocycline Tigecycline Polymyxin/colistin (uncertainty depending on pathogen)	Tetracyclines/doxycycline Trimethoprim Sulfonamides (possibly $T > MIC$) Fusidic acid Fosfomycin Chloramphenicol Methenamine Nitrofurantoin Lincomycin/clindamycin Linezolid (both $T > MIC$ and AUC/MIC have correlated in various studies) Quinupristin–Dalfopristin
Anti-TB agents		Thiacetazone Streptomycin/ kanamycin (similar to other aminoglycosides)	Isoniazid Rifampicin (or C_{max}/MIC) Ethambutol (or C_{max}/MIC)	Pyrazinamide Rifaximin Rifapentine (probably similar to rifampicin) Paraaminosalicylic acid (PAS) Ethionamide/prothionamide Capreomycin Cycloserine
Antifungals			Triazoles Echinocandins (or C_{max}/MIC)	Polyenes (Amphotericin) (possibly C_{max}/AUC) Flucytosine
Antiparasitic drugs		Atovaquone (some uncertainty) Nifurtimox (some uncertainty) Lumefantrine (? halofantrine)	Spiramycin (some uncertainty)	Chloroquine Quinine Mefloquine Primaquine Piperaquine Proguanil/chlorproguanil Artemisinins Nitazoxanide Paromomycin Suramin/eflornithine/melarsoprol Ivermectin Praziquantel Albendazole/mebendazole/ thiabendazole Miltefosine. Pentamidine

^aAntiviral agents not included due to limited data.

Abbreviations: AUC/MIC, ratio of the area-under-the-concentration-time curve divided by the MIC of the target pathogen; C_{max}/MIC , ratio of the maximum serum drug concentration divided by the MIC of the target pathogen; PK-PD, pharmacokinetic-pharmacodynamic; $T > MIC$, time above MIC.