Clinically Useful Antibiotics - β-lactams

J. Durbin, C. Hermos, Z. Wangu

rev 4-2023

	Drug ↓ / Organism →	G+ Staph Aureus MSSA	G+ Staph Aureus MRSA	G+ Streptococci β	G+ Streptococci Pneumo	G+ Streptococci Entero	G- H. influenzae β-lac +	G- H. influenzae β-lac -	G- Neisseria Mening	G- Neisseria GC	G- M. catarrhalis β-lactamase +	Enteric G- (E. coli, Proteus, Etc.) (Scale 0-4)	Pseudomonas Aeruginosa	Anaerobes Oral (Strep, Staph, Bacteroides)	Anaerobes Gut B. fragilis
Penicillins	**Penicillin** (PCN-resistant S. pneumo due to altered PCN cell wall binding proteins) ☹			⊕	+				+						
	Ampicillin IV **Amoxicillin PO** (better absorption) ☺			⊕	⊕	⊕		⊕				1/2+		±	
	Ampicillin + Sulbactam (Unasyn) **Amox + Clav** (Augmentin) PO ☹	+		+	+	+	⊕	+			⊕	2+		⊕	⊕
	Dicloxacillin (Dynapen) PO **Nafcillin** (Unipen, Nafcil) semi-synthetic PCNs **Oxacillin** (Prostaphlin) semi-synthetic PCNs (NF)	⊕		+											
	Piperacillin + Tazobactam (Zosyn) **	+		+	+	±	+	+			+	3+	⊕	+	⊕
Cephalosporins	1 IV: **Cefazolin** (Kefzol, Ancef) PO: **Cephalexin** (Keflex) ☺	⊕		⊕								1+			
	2 IV: **Cefuroxime** (Zinacef) not really used in Peds PO: **Cefuroxime** (Ceftin) ☹ not really used in Peds	+		+	⊕		⊕	⊕			⊕	2+			
	IV: **Cefoxitin** (Mefoxin)									+		2+			+
	3 IV: **Ceftriaxone** (Rocephin) q24h **Cefotaxime** (Claforan) 1st month of life (shortage in US since 2015)	±		⊕	⊕		⊕	⊕	⊕	⊕	+	3+			
	PO: **Cefpodoxime** (Vantin) ☹ **Cefdinir** (Omnicef) ☺ (NF)	±		+	+		+	+			+	3+			
	IV: **Ceftazidime** (Fortaz, Tazicef) - no longer drug of choice for febrile neutropenia (use cefepime, pip-tazo instead)	±		±	±		+	+				3+	⊕		
	4 **Cefepime** (Maxipime) q12h	+		+	+		+	+			+	3-4+	+		
	5 **Ceftaroline (Teflaro)** - Spectrum similar to CTX, plus covers MRSA, VISA (vanc-intermediate Staph aureus), PCN/CTX-resistant S pneumo		⊕		+										
Monobactams	**Aztreonam** (Azactam) (Use with allergy to PCN/Cephalo)						+	+			+	3+	⊕		
Carbapenems	**Ertapenem** (Invanz) q12-24h - only carbapenem that doesn't cover Pseudomonas!	+		+	+		+	+			+	4+		+	+
	Imipenem/Cilastatin (Primaxin)** - used for ESBL **Meropenem (Merrem)** - used for ESBL	+		+	+	±	+	+			+	4+	⊕ +	+	+

+ - Generally useful ± - Potentially useful ⊕ - A drug of choice ☺ - Tastes good :(- Tastes bad - ask pharmacy to flavor NF - Nonformulary at UMass ** - Generally used only for pseudomonas / resistant GNR

Clinically Useful Antibiotics - Non-β-lactams

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rev 4-2023

	Drug ↓ / Organism →	G+ Staph Aureus MSSA	G+ Staph Aureus MRSA	G+ Streptococci β	G+ Streptococci Pneumo	G+ Streptococci Entero	G- H. influenzae β-lac +	G- H. influenzae β-lac -	G- Neisseria Mening	G- Neisseria GC	G- M. catarrhalis β-lactamase +	Enteric G- (E. coli, Klebs, Proteus, Etc.) (Scale 0-4)	Pseudomonas Aeruginosa	Anaerobes Oral	Anaerobes Gut	Atypicals (M.pneumoniae, Legion, Chlamydia pneu)
Aminoglycosides	**Amikacin** (Amikin)											4+				
	Gentamicin (Garamycin) (Used with azithro for GC in cephalo-allergic pts)									Yes as part of dual tx		4+	±			
	Tobramycin (Nebcin) (Better than gentamicin for Pseudomonas)											4+	+			
Macrolides	**Azithromycin** (Zithromax) ☺ (used for same organisms as Erythro; also toxo & MAI; no longer treatment of choice for chlamydia, dual therapy for GC no longer recommended)	±		±	±		+	+			+	First-line for traveler's diarrhea				⊕, but no longer first-line for *C trachomatis* (except in neonates). *M genitalium* may be resistant.
	Clarithromycin (Biaxin) (NF)	±		±	±		+	+			+					⊕
	Erythromycin (rarely used) (bacteriostatic, mostly used for Legionella, Pertussis, Mycoplasma, Chlamydia, side effects include GI upset, phlebitis)	±		±	±											
Fluoroquinolones	**Ciprofloxacin** (Cipro) (cartilage damage in baby beagles)	±		±	±		+	+	prophylaxis	No	+	3+	⊕			+
	Levofloxacin (Levaquin) (good for G+, q24 hrs dosing)	+	Limited use in select cases only	+	+		+	+		No	+	3+	±			+
	Moxifloxacin (Avelox) (NF)	+	Limited use in select cases only	+	+		+	+		No	+	3+	±	+	+	+ including resistant *M genitalium*
Tetracyclines	**Doxycycline** (Vibramycin, Doryx) (drug of choice for most stages of Lyme in all ages, incl up to 21 d of tx for </=8 yrs)	+	+		±					⊕	+	2+				⊕, first-line for *C trachomatis* (except in neonates). *M genitalium* may be resistant.
	Minocycline (Minocin) (used for acne, can be associated with severe side effects incl delayed reactions, lupus-like syndrome)															
	Tetracycline (Sumycin) (rarely used)													+	+	
Miscellaneous	**Chloramphenicol** (Chloromycetin) (idiosyncratic rare irreversible aplastic anemia; dose-related toxicity causing reversible BM suppression)	±		+	+	±	+	+	+		+	2-3+		+	+	
	Clindamycin (Cleocin) ☹ (bacteriostatic, not for endocarditis, not good for SNA; C. diff risk)	+ (84%)	± (85%)	+	±									⊕	+	
	Daptomycin (Cubicin) Not for PNA		+			±										
	Linezolid (Zyvox) expensive		+			+										
	Metronidazole (Flagyl) ☹													±	⊕	
	Trimethoprim-Sulfamethoxazole (Bactrim, Sulfatrim ☹, Septra)	+	+		±		+	+			+	2+				
	Vancomycin (Vancocin) (not absorbed PO, good for SNA)	+	⊕	+	+	+										

+ - Generally useful ± - Potentially useful ⊕ - A drug of choice ☺ - Tastes good ☹ - Tastes bad - **ask pharmacy to flavor** NF - Nonformulary at UMass