

## A Stepwise Approach to Empiric Antibiotic Coverage

1) Identify bacterial coverage for common antibiotic classes; 2) Choose empiric antibiotics based on a "bacterial syndrome"

General Antibiotic Coverage									
Drug Class	Sub-group	GP	GN	Ana	Other	IV	PO	Comments/ Toxicity	Monitoring
Penicillin	Natural PCN	√				PCN Benzathine (IM)	Pen-VeeK	Bone Marrow Suppression (BMS) Nephrotoxic Interstitial nephritis	CBC/ diff Cr UA
	PCNase-resistant	√ +MSSA				Nafcillin	Oxacillin Methicillin (d/c' d in US)		
	Extended-spectrum	√ +Listeria	√			AminoPCN (Ampicillin) CarboxyPCN (Ticarcillin) UreidoPCN (Piperacillin)	Amoxicillin		
	β-lactamase inhibitor	√	√ + Pseudomonas	√		Ampicillin-Sulbactam (Unasyn) Ticarcillin-Sulbactam (Timentin) Piperacillin-Tazobactam (Zosyn)	Amoxicillin-Clavulanate (Augmentin)		
Cephalosporin	1 <sup>st</sup> Gen	√√√√	√		Enterococcus	Cefazolin (Ancef) Cefalothin	Cefalexin (Keflex) Cefadroxil (Duricef)	Nephrotoxic BMS	Cr CBC/ diff
	2 <sup>nd</sup> Gen	√√√	√√			Cefuroxime Cefoxitin	Cefuroxime (Ceftin) Cefprozil (Cefzil)		
	3 <sup>rd</sup> Gen	√√	√√√ +Pseudomonas			Ceftriaxone (Rocephin) Cefotaxime (Claforan) <small>&lt;14 wks post-conception</small>	Cefdinir (Omnicef) Cefixime (Suprax) Cefpodoxime (Vantin)		
	4 <sup>th</sup> Gen	√	√√√√			Ceftazidime (Fortaz) Cefepime			
Aminoglycoside			√√			Gentamicin, Tobramycin, Amikacin	---	Nephrotoxic Ototoxic	Cr; P&T <b>(OAE)</b>
Carbapenem		√√√	√√√	√√√		Meropenem	---		
Fluoroquinolone		√√	√√√	√√	Atypicals	Ciprofloxacin, Levofloxacin	Ciprofloxacin, Levofloxacin	>16yo or non-walking: (tendon rupture); photosensitivity	
Glycopeptide		√√ +MRSA +CONS			C.dificile	Vancomycin	Vancomycin	Nephrotoxic	Cr Trough
Lincosamine		√√ +MRSA		√√	Toxic Shock Syndrome	Clindamycin	Clindamycin (Cleocin)	Hepatotoxic; Liquid: \$\$\$; bad taste, hard-to-find; C.dificile colitis	AST, ALT
Macrolide		√√			Atypicals	Azithromycin	Azithromycin (Zithromax) Clarithromycin (Biaxin) Erythromycin	GI upset	
Metronidazole				√√√	C.dificile Protozoa	Metronidazole (Flagyl)	Metronidazole (Flagyl)	Encephalopathy; Aseptic meningitis; Optic/ periph neuropathy	
Monobactam		√√√	√√√	√√√		Aztreonam	---		
Oxazolidinone		√√√ +MRSA				Linezolid (Zyvox)	Linezolid (Zyvox)	Hepatotoxic; BMS; \$\$\$; Optic/ periph neuropathy	AST, ALT CBC/ diff
Sulfonamide		√√ +MRSA GAS	√√		P.carinii	TMP/SMX (Bactrim)	TMP/SMX (Bactrim)	Stevens-Johnson; Photosensitivity	
Tetracycline		√√ +MRSA	√√	√√	Rickettsiae	Doxycycline	Doxycycline	Teeth discoloration <8yo; Photosensitivity	

## Empiric Parenteral Anti-Infectives for Common Bacterial Syndromes

Step 2	Step 1		Step 3	Step 4	Step 5		
SOURCE	SYNDROME		COMMON BACTERIA	GRAM STAIN	EMPIRIC IV ANTI-INFECTIVES		
Respiratory Tract	Acute Otitis Media		Strep pneumo & Resistant	GPC chains	Ampicillin		
			Moraxella catarrhalis	GNC			
			H.flu (non-typeable)	GNR			
	Pneumonia	Community-Acquired	See AOM	See AOM	Ampicillin	PCNase-resistant PCN; 1 <sup>st</sup> Ceph	
			(MSSA)	GPC Clusters Coag (+)			
			(MRSA)	GPC Clusters Coag (+)			
			(Mycoplasma)				
		Aspiration	Anaerobes		Clindamycin; Amp-Sulbactam		
	Sinusitis		See AOM	See AOM	Amp-Sulbactam		
			Anaerobes	GP & GN Anaerobes			
			(MSSA)	GPC Clusters Coag (+)			
			(MRSA)	GPC Clusters Coag (+)			
	Orbital Cellulitis	WithOUT Intracranial Extension	See AOM	See AOM	3 <sup>rd</sup> Ceph; Amp-Sulbactam		
			MSSA	GPC Clusters Coag (+)			
			MRSA	GPC Clusters Coag (+)			
Anaerobes			GP & GN Anaerobes				
		WITH Intracranial Extension	See AOM	See AOM	3 <sup>rd</sup> Ceph	Meningitic dosing	
MSSA			GPC Clusters Coag (+)				
		MRSA	GPC Clusters Coag (+)	Vancomycin			
		Anaerobes	GP & GN Anaerobes	Metronidazole (CNS >Clinda)			
Meningitis		Strep pneumo & Resistant	GPC	Vancomycin	Meningitic dosing		
		N.meningitidis	GNC	3 <sup>rd</sup> Ceph			
Tracheitis		See PNEUMONIA	See PNEUMONIA	Anti-Pseudomonal β-lactamase inhibitor PCN; Fluoroquinolone			
		Pseudomonas	GNR				
		(MRSA)	GPC Clusters Coag (+)				
Oropharynx	Tonsillitis		GAS (Group C & D Strep)	GPC Chains	PCN	Amoxicillin	
			Dental Infection Peritonsillar Abscess Retropharyngeal Abscess		See TONSILLITIS	See TONSILLITIS	Clindamycin
	MSSA	GPC Clusters Coag (+)					
	MRSA	GPC Clusters Coag (+)					
			Fusibacterium; Bacteroides Strep mutans; Actinomyces	Anaerobes	Amp-Sulbactam (not MRSA)		
		(GN Aerobes)	(GN Aerobes)				
Skin	Cellulitis/ Abscess Periorbital Cellulitis		GAS	GPC Chains	Clindamycin; Doxycycline (>8yo)		
			MSSA	GPC Clusters Coag (+)			
			MRSA	GPC Clusters Coag (+)			
	Lymphadenitis		See CELLULITIS/ ABSCESS (Anaerobes)	See CELLULITIS/ ABSCESS GP & GN Anaerobes	Clindamycin; Amp-Sulbactam		
	MSK (Osteomyelitis, Septic Arthritis, Pyomyositis)		See CELLULITIS/ ABSCESS (Kingella kingae)	See CELLULITIS/ ABSCESS Facultative GNR	Clindamycin; Vancomycin 3 <sup>rd</sup> Ceph		
	Line/Hardware Infection		See CELLULITIS/ ABSCESS	See CELLULITIS/ ABSCESS	Vancomycin		
Staph epidermidis			GPC Clusters Coag (-)				
(GNRs)			GNR				
GI Tract	UTI		E.coli; Enterobacter; Klebsiella	GNR	LF	3 <sup>rd</sup> Ceph	
			Proteus (Pseudomonas)		NLF	Ceftazidime	
			(Enterococcus)	GPC	Ampicillin		
				GNR	3 <sup>rd</sup> Ceph (Cefotax only)		
Maternal Vaginal Flora	Neonatal Fever (Serious Bacterial Infection)		GBS	GPC Chains	Aminoglycoside Ampicillin		
			Listeria	GPR/ GPCB			
			HSV	VIRAL	Acyclovir		
OTHER	Febrile Neutropenia	Respiratory	Strep pneumo & Resistant	GPC Chains	Ceftazidime		
		GI	GNRs Pseudomonas	GNR			
		Skin	(MRSA)	GPC Clusters Coag (+)			
	Rickettsial	RMSF	Rickettsia rickettsiae	Rickettsiae	Doxycycline (any age)		
		Ehrlichiosis	Ehrlichia chaffeensi				
	Septic-appearing		MRSA	GPC Clusters Coag (+)	Vancomycin		
			Community-Acquired GNR	GNR	3 <sup>rd</sup> Ceph + Aminoglycoside		
			Nosocomial GNR	GNR (inc. Pseudomonas)	Ceftazidime + Aminoglycoside		
			ESBL/SBL	GN	Meropenem		
Toxic Shock Syndrome			Toxin	Clindamycin (anti-toxin)			