


## Beta-Lactam Cross-reactivity Side-Chain Chart

		PCN					1st Gen			2nd Gen			3rd Gen							4 <sup>th</sup>	5 <sup>th</sup> Gen		Carb		Mono		
		Penicillin G/V	Oxacillin	Amoxicillin	Ampicillin	Piperacillin	Cefadroxil	Cephalexin	Cefazolin	Cefaclor	Cefoxitin	Cefprozil	Cefuroxime	Cefdinir	Cefditoren	Cefixime	Cefotaxime	Cefpodoxime	Ceftazidime	Ceftibuten	Ceftriaxone	Cefepime	Ceftaroline	Ceftolozane	Ertapenem	Meropenem	Aztreonam
PCN	Penicillin G/V					C	C		C		C																
	Oxacillin																										
	Amoxicillin					X	C		C		X																
	Ampicillin				C	C	X		X		C																
	Piperacillin				C	C	C		C		C																
1 <sup>st</sup> Gen	Cefadroxil	C		X	C	C		C		X																	
	Cephalexin	C		C	X	C	C		X		C																
	Cefazolin																										
2 <sup>nd</sup> Gen	Cefaclor	C		C	X	C	C	X			C																
	Cefoxitin											X				C											
	Cefprozil	C		X	C	C	X	C		C																	
	Cefuroxime									X				C		C	C				C						
3 <sup>rd</sup> Gen	Cefdinir													X													
	Cefditoren										C					X	X	C		X	X	C					
	Cefixime											X										C					
	Cefotaxime								C		C		X			X	C			X	X	C					
	Cefpodoxime										C		X			X		C		X	X	C					
	Ceftazidime										C					C	C			C		C	C			X	
	Ceftibuten																						C				
Ceftriaxone										C		X			X	X	C			X	C						
4 <sup>th</sup>	Cefepime									C		X			X	X	C			X		C					
5 <sup>th</sup> Gen	Ceftaroline											C	C	C	C	C	C	C	C	C	C		C				
	Ceftolozane																C						C			C	
Carb	Ertapenem																										
	Meropenem																										
Mono	Aztreonam																X						C				

Select a b-lactam with a dissimilar R1/R2 side chain (clear box)

- The R1 side chain is the major factor for cross-reactivity due to antibody recognition between cephalosporins and penicillins.
- Cross-reactivity with cefazolin or carbapenems is very unlikely
- Cross-reactivity with monobactam (aztreonam) is absent, with the exception of ceftazidime
- Independent hypersensitivity reactions (HSR) not related to a cross-reaction due to antibody recognition may occur (e.g. oxacillin: often non-IgE mediated)

HSR - maculopapular rash, acute interstitial nephritis, and immune-mediated hepatitis

**X** : AVOID, Cross-reaction likely.  
Identical R1 or R2 side chain

**C** : CAUTION, Cross-reaction less likely.  
Similar R1 or R2 side chain

Zagursky RJ, Pichichero ME. J Allergy Clin Immunol Pract 2018;6:72-81. Romano A, et al. J Allergy Clin Immunol Pract 2018;6(5):1662-72. Rev1.2019