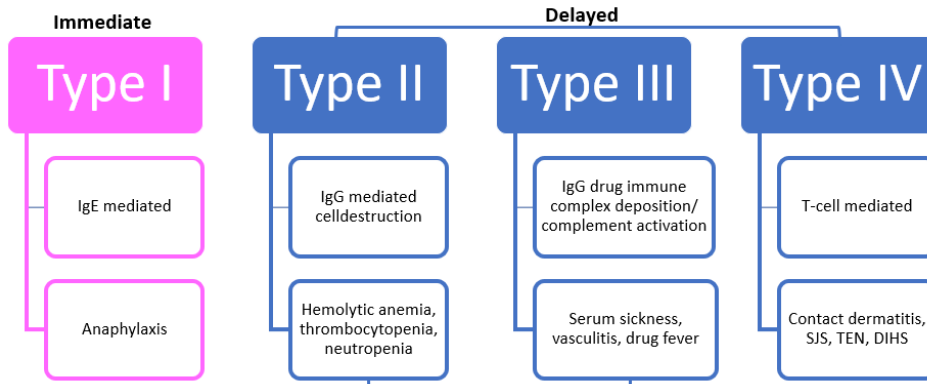


## Beta-Lactam Allergy Tip Sheet

### Hypersensitivity Type, Mechanism, and Clinical Manifestations



Ig = immunoglobulin; SJS = Stevens Johnson Syndrome; TEN = Toxic Epidermal Necrolysis; DIHS = drug-induced hypersensitivity symptoms

Solensky, et al. Ann Allergy Asthma Immunol. 2010; 105:259-73.

Legendre, et al. Clin Infect Dis. 2014; 58(8):1140-8.

### Beta-Lactam Cross Reactivity Chart

Beta-Lactam Cross Reactivity		PCNs				1st Gen CPNs		2nd Gen CPNs		3rd Gen CPNs			4th Gen CPN	Advanced CPNs		CARB	MONO										
		Penicillin G/V	Oxacillin	Amoxicillin	Ampicillin	Piperacillin	Cefadroxil	Cephalexin	Cefazolin	Cefaclor	Cefoxitin	Cefprozil	Cefuroxime	Cefdinir	Cefotaxime	Cefpodoxime	Ceftazidime	Ceftriaxone	Cefepime	Ceftaroline	Ceftolazone	Cefiderocol	Ertapenem	Meropenem	Aztreonam		
PCNs	Penicillin G/V	Black																									
	Oxacillin		Black																								
	Amoxicillin			Black																							
	Ampicillin				Black																						
1st Gen CPNs	Piperacillin					Black																					
	Cefadroxil						Black																				
	Cephalexin							Black																			
	Cefazolin								Black																		
2nd Gen CPNs	Cefaclor								Black																		
	Cefoxitin									Black																	
	Cefprozil										Black																
	Cefuroxime											Black															
3rd Gen CPNs	Cefdinir											Black															
	Cefotaxime												Black														
	Cefpodoxime													Black													
	Ceftazidime														Black												
4th Gen CPN	Ceftriaxone														Black												
	Cefepime															Black											
Advanced CPNs	Ceftaroline																Black										
	Ceftolazone																	Black									
	Cefiderocol																		Black								
CARB	Ertapenem																			Black							
	Meropenem																				Black						
MONO	Aztreonam																					Black					

**NO STRUCTURAL SIMILARITY** Cross reaction unlikely, no R1 or R2 side chain similarity

**LOW STRUCTURAL SIMILARITY** Cross reaction less likely, similar R1 or R2 side chain

**HIGH STRUCTURAL SIMILARITY** Cross reaction likely, identical R1 or R2 side chain

PCNs = penicillins

CPNs = cephalosporins

CARB = carbapenems

MONO = monobactams

## Medical Liability Concerns

- Fear of litigation has been identified as a potential reason clinicians avoid using  $\beta$ -lactams in a patient with a penicillin allergy.
- Since 1959, 27 medical malpractice or negligence cases have been published in which a patient with a penicillin allergy received a  $\beta$ -lactam and experienced an adverse reaction.
- Defendants (providers) were found liable in 3 of 7 cases in which a penicillin-based antibiotic was prescribed to a patient with a known penicillin allergy.
- Defendants were not found liable in any cases in which a cephalosporin or carbapenem was prescribed excluding 1 case in which physicians settled out of court.
- Judges have cited a lack of scientific evidence demonstrating cephalosporins or carbapenems are contraindicated for patients with a penicillin allergy.
- Legal Case Reference: Systematic review of professional liability when prescribing  $\beta$ -lactams for patients with a known penicillin allergy. *Ann Allergy Asthma Immunol.* 2018;121(5):530-536.

## Selected References

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