


Northwestern Medicine In-patient and Out-patient β -Lactam Cross-reactivity Chart for Drug Challenges


The risk of penicillin-cephalosporin cross-reactivity is lower than previously reported and predicted by (dis)similar β -lactam side chains.


Clarification of **drug allergy history, clinical reasoning, and shared decision making** with the patient, when applicable, is advised when assessing the decision to drug challenge with a β -lactam.


The NM β -lactam cross-reactivity side chain chart is a guide and should be used with the NM β -lactam Allergy Risk Assessment and Clinical Pathway for [Outpatients](#) or [Non-Critically Ill Inpatients](#) when assessing the decision to drug challenge with a β -lactam. Recommendations are based on published literature written by content experts that have considered similarities in structures, in vitro or skin test-based patterns of cross reactivity, challenge results, and clinical evidence, where available.

		PENICILLINS					1 ST GEN CEPHALOSPORINS			2 ND GEN CEPHALOSPORINS				3 RD GEN CEPHALOSPORINS						4 TH	ADVANCED CEPHALOSPORINS			CARB	MONO
		Penicillin	Naf/Oxacillin Dicloxacillin	Amoxicillin	Ampicillin	Piperacillin	Cefadroxil	Cephalexin	Cefazolin	Cefaclor	Cefoxitin	Cefprozil	Cefuroxime	Cefdinir	Cefixime	Cefotaxime	Cefpodoxime	Ceftazidime	Ceftriaxone	Cefepime	Ceftaroline	Ceftolozane	Cefiderocol	Erta/Imipenem Meropenem	Aztreonam
PENICILLINS	Penicillin	▲	▲	✖	✖	▲	▲	▲	▲		▲	▲													
	Nafcillin/Oxacillin Dicloxacillin	▲	▲	▲	▲	▲																			
	Amoxicillin (po)	✖	▲	▲	✖	▲	✖	▲	▲		✖														
	Ampicillin	✖	▲	✖	▲	▲	✖		✖		▲														
	Piperacillin	▲	▲	▲	▲	▲																			
1 ST GEN CEPHALOSPORINS	Cefadroxil (po)	▲		✖	▲	▲	✖		▲		✖														
	Cephalexin (po)	▲		▲	✖	▲	▲		✖		▲														
	Cefazolin																								
2 ND GEN CEPHALOSPORINS	Cefaclor (po)	▲		▲	✖	▲	✖		▲		▲														
	Cefoxitin											✖													
	Cefprozil (po)	▲		✖	▲		✖	▲	▲		▲														
	Cefuroxime (po)									✖		▲	▲	▲	▲	▲	▲	▲							
3 RD GEN CEPHALOSPORINS	Cefdinir (po)												✖												
	Cefixime (po)												✖												
	Cefotaxime										▲			▲	✖	▲	✖	✖							
	Cefpodoxime										▲			✖	▲	▲	✖	✖							
	Ceftazidime										▲			▲	▲	▲	▲	▲				✖		✖	
	Ceftriaxone										▲			✖	✖	▲	▲	✖							
4 TH GEN CEPHALOSPORINS	Cefepime										▲			✖	✖	▲	✖	▲							
ADVANCED CEPHALOSPORINS	Ceftaroline																								
	Ceftolozane																								
	Cefiderocol																✖							✖	
CARBAPENEMS	Ertapenem, Meropenem, Imipenem																								
MONOBACTAMS	Aztreonam																								

Khan DA, Banerji A, Blumenthal KG, et al. Drug allergy: A 2022 practice parameter update. *J Allergy Clin Immunol* 2022;150(6): 1333-1393.
 Zagursky RJ, Pichichero ME. Cross-reactivity in β -lactam Allergy. *J Allergy Clin Immunol Pract* 2018;6:72-81.
 Romano A, et al. Cross-Reactivity and Tolerability of Cephalosporins in Patients with IgE-Mediated Hypersensitivity to Penicillins. *J Allergy Clin Immunol Pract* 2018;6(5):1662-72.
 Romano Antonino. Immediate cephalosporin hypersensitivity: Allergy evaluation, skin testing, and cross reactivity with other beta-lactams. Update. August 2023

 = AVOID
 Cross reaction known or Identical R1 or R2 side chain

 = CAUTION
 Cross reaction less likely or selective. Similar R1 ring or branch

 = SUGGEST
 Cross-reaction least likely Dissimilar R1 or R2 side chain

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