

Louth: Antimicrobial Guidelines - Louth Hospitals: Antimicrobial Guidelines: Penicillin Hypersensitivity

Types of Drug Hypersensitivity Reactions

Drug hypersensitivity reactions (DHR) may be either immunoglobulin E (IgE)-mediated (immediate) or non-IgE-mediated (non-immediate) hypersensitivity reactions.

Type of DHR	Immediate	Non-immediate
Time of onset	< 1 hour usually; Always < 6 hours	> 24 hours usually; Always > 1 hour
Mechanisms	IgE-mediated	IgG, IgM, T cells
Examples of Manifestations	Urticaria Angioedema Rhinitis Conjunctivitis Bronchospasm GI symptoms Anaphylaxis	Delayed urticaria Maculopapular eruptions Fixed drug eruptions Vasculitis Toxic Epidermal Necrolysis Stevens-Johnson Syndrome Acute generalised exanthematous pustulosis DRESS Hepatitis Tubulointerstitial nephritis Cytopenias Drug fevers

Incidence of Penicillin and Related Hypersensitivity

Cross-reactivity between penicillins and first and early second-generation cephalosporins has been reported to occur in up to 10%, and for third-generation cephalosporins in 2–3%, of penicillin-allergic patients. In patients with a history of immediate-onset hypersensitivity to penicillins, there is approximately 1% risk of immediate-onset hypersensitivity to meropenem.

Choice of Antibiotics in Penicillin and Related Hypersensitivity

Penicillins and cephalosporins are contraindicated in patients with a history of immediate-onset or severe hypersensitivity reactions to penicillin. Cephalosporins may be used with caution in patients with a history of non-immediate penicillin hypersensitivity reactions.

Aztreonam may be used with caution in patients with a history of immediate or non-immediate penicillin hypersensitivity - aztreonam may be less likely than other beta-lactams to cause hypersensitivity in penicillin-sensitive patients.

Meropenem may be used with caution and close clinical monitoring in patients with a history of immediate or non-immediate penicillin hypersensitivity after risk/benefit consideration.

Documentation of Penicillin and Related Hypersensitivity

Penicillin hypersensitivity and the nature of the reaction should be recorded both in the patient’s medical notes and on the drug chart. It is crucial to differentiate between immediate-onset and delayed-onset penicillin hypersensitivity reactions as there are significant implications for antimicrobial selection specific to each reaction type. The patient should be informed of the reaction and any necessary future precautions where appropriate. This is the responsibility of the clinician in charge of the patient.

References

- Beaumont Hospital Antimicrobial Guidelines 2018. Available from RCSI Hospitals Antimicrobial Guidelines Smartphone Application, accessed 12/03/18. Obtained with permission from Consultant Microbiologist.

- NICE Guideline CG183. Drug allergy: diagnosis and management of drug allergy in adults, children and young people. 2014. Available from www.nice.org.uk .
- Irish Medication Safety Network. Briefing Document: Reducing preventable harm to patients with known drug allergies, 2012. Available from www.imsn.ie .
- BMJ Group and Pharamceutical Press. British National Formulary online. Available from www.medicinescomplete.com , accessed 12/03/18.
- McKenna C. Medicines Information Enquiry on cross-reactivity of penicillin and meropenem, Mar 2014. On file in OLOL Pharmacy.
- Frumin J, Gallagher JC. Allergic cross-sensitivity between penicillin, carbapenem, and monobactam antibiotics: what are the chances? Ann Pharmacother 2009;43:304-15.
- [Cunha BA](#) , Hamid NS, Krol V et al. Safety of meropenem in patients reporting penicillin allergy: lack of allergic cross reactions [J Chemother.](#) 2008;20(2):233-7.
- Romano A, Viola M, Gueant-Rodriquez RM et al. Brief communication: tolerability of meropenem in patients with IgE-mediated hypersensitivity to penicillins. Ann Intern Med 2007;146(4):266-9.
- Romano A, Gaeta F, Valluzzi RL et al. Absence of cross-reactivity to carbapenems in patients with delayed hypersensitivity to penicillins. Allergy 2013;68(12):1618-21.