Penicillin allergy

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1 Penicillin allergy is commonly reported, but 9 out of 10 times, penicillin will be tolerated if administered

About 10% of people report a penicillin allergy, but 90%–95% of those individuals are not truly allergic.[1] Reasons for this include mislabelling intolerances as allergies and waning of immunoglobulin E–mediated allergy over time.[2,3]

2 The label of penicillin allergy is bad for patients and the health care system

More than just a problem for prescribers of antibiotics, the label of penicillin allergy is associated with the use of costly and less effective second-line and broad-spectrum antibiotics,[1–3] a 55% increased risk of acquiring methicillin-resistant *Staphylococcus aureus*, and a 35% increased risk of *Clostridium difficile* infection (Appendix 1, available at www.cmaj.ca/lookup/suppl/doi:10.1503/cmaj.181117/-/DC1).[4]

3 Patients reporting penicillin allergy can be easily risk stratified to determine whether they require specialist evaluation

A known adverse effect of a penicillin (e.g., nausea) should not be documented as an allergy; likewise, avoidance of penicillin is unnecessary in those with a family history of penicillin allergy without a personal history of one, or in those who have since tolerated penicillin (low-risk). In those who have experienced severe delayed hypersensitivity reactions such as drug reaction with eosinophilia and systemic symptoms or Stevens–Johnson syndrome and toxic epidermal necrolysis (high-risk), β-lactams should be strictly avoided; allergy skin testing is contraindicated. Patients reporting probable or unclear immunoglobulin E reactions that may present as rapid-onset urticaria, angioedema or anaphylaxis (intermediate risk) should be referred (Appendix 1).[2,3]

4 Penicillin allergy is lost over time, with resolution in 80% of people over 10 years, and in 50% over 5 years

Those with remote (> 10 yr) reactions are unlikely to still be allergic and should be tested before challenge with penicillin.[1–3] If there is an acute indication for antibiotics, expert consultation is preferable to guide testing versus empiric therapy.

5 Allergy referral and testing is vastly underused, but is safe, accurate, rapid and cost-effective

Allergy testing over 1–2 hours using a combination of skin and challenge testing by trained personnel has been shown to be safe and effective for children, adults, inpatients and outpatients, with a negative predictive value close to 100%.[1–3]

References

1. Sacco KA, Bates A, Brigham TJ, et al. Clinical outcomes following inpatient penicillin allergy testing: a systematic review and meta-analysis. *Allergy* 2017;72:1288-96.
2. Shenoy ES, Macy E, Rowe T, et al. Evaluation and management of penicillin allergy: a review. *JAMA* 2019;321:188-99.
3. Joint Task Force on Practice Parameters; American Academy of Allergy, Asthma and Immunology; American College of Allergy, Asthma and Immunology; Joint Council of Allergy, Asthma and Immunology. Drug allergy: an updated practice parameter. *Ann Allergy Asthma Immunol* 2010;105:259-73.
4. Blumenthal KG, Lu N, Zhang Y, et al. Risk of meticillin resistant *Staphylococcus aureus* and *Clostridium difficile* in patients with a documented penicillin allergy: population based matched cohort study. *BMJ* 2018;361:k2400.

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