

Best Practice Message

June 2022

Focus on Efficacy: Penicillin allergy labels

Practice changing moments

- Up to 5-25% of the population report as having a penicillin allergy although up to 98% of these patients can safely tolerate penicillin based therapies.
- Inappropriate penicillin allergy labels lead to the prescribing of less effective or broader spectrum treatments, increased drug resistance and more adverse events.
- Consider review of allergy labels to confirm the label is required to reduce potential harm from unnecessary labelling
- Prior to adding a new allergy label, confirm reaction with patient and if not reflective of a true allergy, reassure patient that an allergy label is not needed.

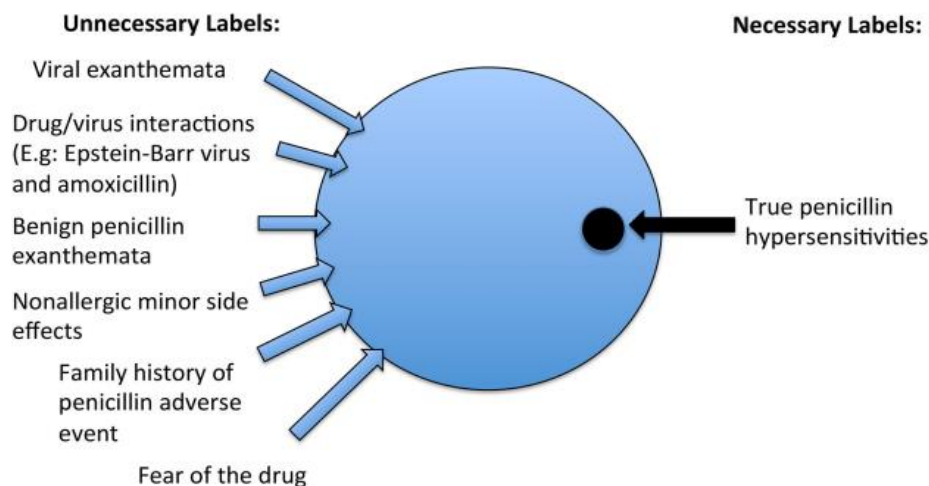
Introduction

Penicillin allergy is the most commonly documented allergy reported with an approximate 5-25% of patients in the developed world reporting an allergy to penicillin or other β -Lactams^{1,2}. This carries a large economic burden reported internationally with an estimated saving of \$2000 per patient per year in the US by de-labelling penicillin allergies.³ New Zealand studies have shown that drug cost for patients with a penicillin allergy are 2.5 times higher than those without⁴. However, studies show that up to 98% of patients with a penicillin allergy label would be deemed non-allergic following allergy testing.^{5,6}

Not all allergy labels are the same

Internationally, allergy labels are often filled with incomplete or misleading details. This can leave prescribers at risk of faulty conclusions of the appropriateness of the label, where the difference between an immune-mediated allergic reaction and a manageable adverse reaction is unclear. Up to a third of penicillin allergy labels lack specific details in adult patients.² This may lead to patients receiving suboptimal therapy⁷. Every effort should be made to clarify with the patient as to the nature of the reaction given the small number of patients who would have a true allergy requiring drug avoidance in future.

Figure 1. Events that lead to application of a penicillin allergy. In the vast majority of cases labels result from events that are low risk for allergy.²



Unintended consequences of inappropriate allergy labels

Time to first dose has been shown to have an impact on mortality for pneumonia with administration of antibiotics within four hours of admission to be associated with a 30 day mortality reduction. However, patients with listed penicillin allergies commonly experience delays in receiving treatment compared to non-allergic patients of almost two hours⁷.

Patients who have penicillin allergy labels are also commonly treated with more expensive broader spectrum treatments which lead to; longer hospital stays, greater readmission rates, higher mortality rates and colonisation with multidrug-resistant organisms^{4,9,10}.

Early intervention is better

Most penicillin allergy labels are acquired in childhood suggesting that early intervention to clarify reactions and ascertain the likelihood of a true allergy can have longstanding implications for patients. Studies have shown it is considerably more difficult for patients to accept de-labelling of allergies in adulthood compared to childhood with up to 41% of adult patients continuing to avoid penicillin based antibiotics following de-labelling strategies.²

De-labelling in practice

Patients can be stratified into four main groupings based on severity and onset of penicillin allergy;

Table 1: stratified risk based on patient's initial reaction to offending penicillin based product.

High risk	Do not challenge with penicillins.	Anaphylaxis, mucosal ulceration, pustular, blistering or desquamating rash, haematological reactions, severe kidney or liver injury, or any reaction requiring hospitalisation.
Moderate risk	Not to be challenged with penicillins without immunology/infectious disease advice.	Respiratory symptoms (wheeze, tight throat), Urticaria, angioedema, immediate rash reaction, Delayed rash or unknown reaction <10 years ago.
Low risk	May be suitable for penicillin challenge in hospital setting.	Delayed rash or unknown reaction >10 years ago, unspecified childhood reaction.
Negligible risk	Can be de-labelled without challenge.	Expected GI side effects (nausea, vomiting), Thrush, reversible kidney/liver/neurological dysfunction, allergy reported but same antibiotic tolerated subsequently, family history (but no personal history) of penicillin allergy.

A similar stratification was trialled in a pharmacist-led intervention in Middlemore hospital which found that 80% (199) of patients who were labelled as having a penicillin allergy could be de-labelled. Of these patients 80% (160) were able to be de-labelled without challenge. In the year following, only 2% of patients who were de-labelled experienced a delayed hypersensitivity reaction⁴. Consider clarifying allergy details in patients with a reported penicillin allergy and, in patients with negligible risk of true allergy remove the label in discussion with patient.

Before adding a new allergy label for a patient, it is important that full information about the reaction is sought to ensure that the label is appropriate and included in the label. If a label is not required it is also important to stress this to the patient that they should not avoid penicillins unnecessarily.

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Acknowledgements: Thanks to Brendan Duck for content contribution and guidance.