

2023-01-17

Is penicillin allergy de-labelling about to find its place in UK antimicrobial stewardship strategy?

Powell, N

<http://hdl.handle.net/10026.1/20232>

10.7861/clinmed.2022-0518

Clinical Medicine

Royal College of Physicians

All content in PEARL is protected by copyright law. Author manuscripts are made available in accordance with publisher policies. Please cite only the published version using the details provided on the item record or document. In the absence of an open licence (e.g. Creative Commons), permissions for further reuse of content should be sought from the publisher or author.

Is penicillin allergy de-labelling about to find its place in UK antimicrobial stewardship strategy?

Neil Powell

Mathew Upton

Bridie Kent

Sarah Tonkin-Crine

Jonathan Sandoe

Abstract

Penicillin allergy records are common, often incorrect, limit antibiotic treatment options and associated with patient and health system harm. The large numbers of patients with penicillin allergy records and the paucity of allergists have led researchers to explore non-allergist delivered assessment of penicillin allergy records and removal of those inconsistent with allergy (called de-labelling). A recent systematic review and meta-analysis of the literature concludes non-allergist delivery of penicillin allergy de-labelling to be safe and effective. Several countries outside Europe have endorsed non-allergist de-labelling and produced national guidelines and toolkits for de-labelling, but until recently the UK lacked such guidance. In September 2022 the British Society of Allergy and Clinical Immunology (BSACI) produced their guidelines endorsing non-allergist delivered penicillin allergy de-labelling. These BSACI guidelines, coupled with the ongoing NIHR funded penicillin allergy de-labelling studies, will enable this important patient safety and antimicrobial stewardship intervention to become standard of care for NHS patients.

Penicillin allergy records are common, often incorrect and limit antibiotic treatment options for patients.¹ Moreover, there are several patient and health system harms associated with penicillin allergy records which include increased length of hospitalisation, higher rates of ICU admission and hospital readmission, higher risk of multidrug-resistant or opportunistic infection, increased mortality risk, higher drug and/or hospital-related costs.²

Penicillin allergy assessment has traditionally been a role of allergists/immunologists and involves an accurate clinical history, serum testing for specific IgE to penicillin and penicillin skin testing. If these tests are negative then an oral penicillin challenge test dose is prescribed and the patient observed for an hour.³ The paucity of allergy services globally vs the prevalence of penicillin allergy labels has led to exploration of non-specialist means of 'de-labelling' (assessing penicillin allergy and removing incorrect labels where appropriate). Relatively recently it has been recognised that undertaking a 'direct oral challenge' i.e a drug provocation test without prior skin testing, can be carried out for low-risk patients and is a safe and effective de-label strategy. Recognition of the associated harms of incorrect penicillin allergy records for patients and healthcare systems has driven researchers to explore the safety of non-allergist delivered penicillin allergy de-labelling interventions.

A new systematic review of the literature included sixty-nine studies from around the world with the majority from the USA (70%) and Australia / New Zealand (16%) and relatively few from Europe (5.8%) and the UK (2.9%).⁴ The dominance of USA and Australian studies may be due to the early

recognition of penicillin allergy de-labelling as an antibiotic stewardship priority by authorities in these countries and subsequent publication of guidelines for non-allergists to deliver penicillin allergy assessment services.^{1,5} In 2021 the World Health Organisation published their endorsement of antibiotic allergy assessment as an effective antimicrobial stewardship strategy providing a global position statement for other countries to follow.⁶

While the UK recognised the importance of removing incorrect penicillin allergy records in the context of antibiotic stewardship and medication safety in 2015, and the UK antimicrobial stewardship guidelines alluded to direct de-label when the allergy history is not consistent with allergy, there was an absence of guidance on how it should be done.^{7,8} Moreover, the current European Academy of Allergy and Clinical Immunology (EAACI)⁹ and previous British Society of Allergy and Clinical Immunology (BSACI) penicillin allergy guidelines³ did not endorse non-allergist allergy assessment and de-label. However, there have been recent developments in the UK with Scotland publishing their non-allergist de-label toolkit aimed at hospital physicians in 2021¹⁰ and BSACI publishing guidelines for non-allergist de-labelling in hospitals. Both these publications provide toolkits for non-allergy healthcare workers to undertake penicillin allergy de-labelling in the UK.¹¹

Although behind in guidance, the UK's NIHR have recognised the importance of this topic and funded several studies exploring how to embed penicillin allergy assessment into the NHS, exploring the resource implications and the potential barriers and enablers to implementing penicillin allergy de-labelling patient pathways, as well as quantifying the patient and healthcare benefits of penicillin allergy de-labelling.¹²⁻¹⁵

The early adoption of penicillin allergy assessment by non-allergists in the USA, Australia and New Zealand and the provision of toolkits to enable non-allergists to deliver this service has facilitated early adoption in these countries. The publication of the recent BSACI guidelines will empower non-allergists to design penicillin allergy assessment interventions and NIHR funded studies will assess how best to implement such interventions in the context of the NHS. Together, these new activities will enable the UK health-system to engage in this important patient safety and antibiotic stewardship priority and facilitate widespread adoption of penicillin allergy assessment and de-label as a standard of care for NHS patients.

References

1. Shenoy ES, Macy E, Rowe T, Blumenthal KG. Evaluation and Management of Penicillin Allergy: A Review. *JAMA* 2019; **321**(2): 188-99.
2. Krah NM, Jones TW, Lake J, Hersh AL. The impact of antibiotic allergy labels on antibiotic exposure, clinical outcomes, and healthcare costs: A systematic review. *Infection Control and Hospital Epidemiology* 2021; **42**(5): 530-48.
3. Mirakian R, Leech SC, Krishna MT, et al. Management of allergy to penicillins and other beta-lactams. *Clin Exp Allergy* 2015; **45**(2): 300-27.
4. Neil Powell JS, Declan Kohl, Rhys Owens, Shadia Ahmed, Crispin Musicha, Mathew Upton, Bridie Kent, Sarah Tonkin-Crine, Jonathan Sandoe. The effectiveness of interventions that support penicillin allergy assessment and delabelling of adult and paediatric patients by non-allergy specialists: a systematic review and meta-analysis. *The International Journal of Infectious Diseases* 2022; **In Press**.
5. Committee ADA. ASCIA Consensus Statement for the Assessment of Suspected Allergy to Penicillin Antibiotics. 2020.
https://www.allergy.org.au/images/stories/hp/info/ASCIA_HP_Consensus_Penicillin_Allergy_2020.pdf (accessed 12th May 2022).
6. Europe WROf. Antimicrobial stewardship interventions: a practical guide. . 2021

<https://apps.who.int/iris/bitstream/handle/10665/340709/9789289054980-eng.pdf> (accessed 2nd July 2021).

7. Health Do. Start Smart - Then Focus Antimicrobial Stewardship Toolkit for English Hospitals. 2015.

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/417032/Start_Smart_Then_Focus_FINAL.PDF (accessed April 2021).

8. Excellence NifHac. Drug allergy: diagnosis and management Clinical guideline [CG183] 2014. 2014. <https://www.nice.org.uk/guidance/cg183> (accessed May 2021).

9. Romano A, Atanaskovic-Markovic M, Barbaud A, et al. Towards a more precise diagnosis of hypersensitivity to beta-lactams - an EAACI position paper. *Allergy* 2020; **75**(6): 1300-15.

10. Sneddon J, Cooper L, Ritchie N, et al. An algorithm for safe de-labelling of antibiotic allergy in adult hospital in-patients. *Clinical and experimental allergy : journal of the British Society for Allergy and Clinical Immunology* 2021.

11. Savic L, Ardern-Jones M, Avery A, et al. BSACI guideline for the set-up of penicillin allergy de-labelling services by non-allergists working in a hospital setting. *Clinical & Experimental Allergy; n/a*(n/a).

12. care RNifHa. Penicillin allergy status and its effect on antimicrobial prescribing, patient outcomes, and antimicrobial resistance. Short title: ALABAMA: Allergy AntiBiotics And Microbial resistAnce. 2017. <https://www.fundingawards.nihr.ac.uk/award/RP-PG-1214-20007> (accessed 3rd Nov 2022).

13. Research NifHac. A Multicentre Study to Investigate a Protocol-Driven Multidisciplinary Service Model to Tackle 'Spurious Penicillin Allergy' in Secondary Care (SPACE study). 2021. <https://fundingawards.nihr.ac.uk/award/NIHR129069> (accessed 3rd Nov 2022).

14. Research NifHaC. Removing Erroneous Penicillin Allergy Labels (REPeAL). 2020. <https://fundingawards.nihr.ac.uk/award/NIHR300542> (accessed 3rd November 2022).

15. Research NifH. Improving safety for surgical patients through better diagnosis of drug allergies. 2021. <https://fundingawards.nihr.ac.uk/award/NIHR301454> (accessed 3rd Nov 2022).