

An urgent need for capacity building towards establishment of drug allergy management systems in the Indian sub-continent

Mamidipudi Thirumala Krishna,^{a,*} Guwani Liyanage,^b Rajeev Shrestha,^c Rachel E. Jordan,^d and Devasahayam Jesudas Christopher^e

^aInstitute of Immunology and Immunotherapy, University of Birmingham and Department of Allergy and Immunology, University Hospitals Birmingham NHS Foundation Trust, Birmingham, UK

^bDepartment of Paediatrics, University of Sri Jayewardenepura, Colombo, Sri Lanka

^cDepartment of Pharmacology, Kathmandu University School of Medical Sciences & Center for Infectious Disease Research and Surveillance, Dhulikhel Hospital, Kathmandu University Hospital, Kavre, Nepal

^dInstitute of Applied Health Research, University of Birmingham, Birmingham, UK

^eDepartment of Pulmonary Medicine, Christian Medical College, Vellore, Tamil Nadu, India

Inaccurate drug allergy labels are a common clinical problem worldwide. In High-Income countries (HICs), penicillins are most frequently implicated leading to prescription of alternative antibiotics which are linked to enhanced risk of antimicrobial resistance and estimated annual excess healthcare costs of several million USD.^{1,2} In the Indian sub-continent, there is a very high rate of multidrug resistant organisms, including multi-drug resistant TB, making spurious drug allergy labels very relevant, although data regarding drug allergy in this region are sparse. An estimated 10% and 15–20% of the general population and inpatients in the USA carry a penicillin allergy label (PAL). Whilst the true prevalence of PALs is not known in Low-Middle Income Countries (LMICs), a recent multinational survey reported that prevalence of drug allergy labels in Asia Pacific countries is 9% (range, 7–10%) among the general population and 16% (range, 8–30) among inpatients.³ A survey among 2000 adults at a pulmonary unit in India indicated that prevalence of unverified drug allergy was 5.6%, with antibiotics, nonsteroidal anti-inflammatory drugs (NSAIDs) and radiocontrast media as the leading culprits.⁴ A prospective clinical audit in Colombo involving 459 adult patients in secondary care showed a much higher prevalence of 12%, with antibiotics and NSAIDs most frequently implicated.

There are no ‘point-of-care’ diagnostic tests for drug allergy.⁵ Current practice in HICs involves specialist allergist input with careful history, scrutiny of clinical records, allergy skin tests and a challenge procedure.⁵ However, there is a huge unmet demand for allergists in the Indian subcontinent and this is compounded by allergy not having an independent speciality status.⁶ Consequently, clinical pathways for drug allergy management are yet to be established and there are no guidelines for healthcare professionals (HCPs) to undertake drug allergy labelling and de-labelling.

Research in HICs in the context of PALs has shown that a computerised decision support system (CDSS) alongside education, training and upskilling non-Allergy HCPs enables stratifying patients as ‘low-risk’ and ‘high-risk’.^{1,2} ‘Low-risk’ patients are highly unlikely to have an immune-mediated reaction, and a direct oral penicillin challenge (without allergy tests) has been safely employed for de-labelling.¹ ‘High-risk’ patients need skin tests and an oral challenge procedure for an accurate diagnosis. There is emerging evidence for multi-professional non-allergist and allied health professional-led penicillin allergy de-labelling programmes in Asia Pacific countries,³ which may be the way forward. Gaining insight into the views and perspectives of patients, HCPs and stakeholders in the context of cultural, religious and behavioural factors is essential. Locally adapted strategies are critical to overcome the limitations of local health services and facilitate access to skin test reagents and *in vitro* tests.

Contributors

MTK conceived the idea and developed the concept with co-authors. MTK drafted the manuscript with input from co-authors who approved final version.

Declaration of interests

MTK has the following declarations: Co-author of BSACI guidelines for penicillin allergy; Research grant from the University of Birmingham for Antibiotic Allergy Research (PALAR study) in Low-Middle Income Countries; Research in the UK funded by NIHR for penicillin allergy de-labelling in secondary care (SPACE study)—not directly related to this manuscript. Other co-authors have none to declare.

Acknowledgements

Funding: None.

References

- 1 Shenoy ES, Macy E, Rowe T, Blumenthal KG. Evaluation and management of penicillin allergy: a review. *JAMA*. 2019;321(2):188–199.

*Corresponding author. Institute of Immunology and Immunotherapy, College of Medical and Dental Sciences, Institute of Biomedical Research, University of Birmingham, Edgbaston, Birmingham B15 2TT, UK.

E-mail address: m.t.krishna@bham.ac.uk (M.T. Krishna).

© 2023 The Author(s). Published by Elsevier Ltd. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).



The Lancet Regional Health - Southeast Asia 2024;20: 100320

Published Online 8

November 2023

<https://doi.org/10.1016/j.lanssea.2023.100320>

1016/j.lanssea.2023.100320

- 2 Blumenthal KG, Wickner PG, Hurwitz S, et al. Tackling inpatient penicillin allergies: assessing tools for antimicrobial stewardship. *J Allergy Clin Immunol*. 2017;140(1):154–161.e6.
- 3 Li PH, Pawankar R, Thong BYH, et al. Disparities and inequalities of penicillin allergy in the Asia-Pacific region. *Allergy*. 2023;78(9):2529–2532.
- 4 Christopher DJ, Natania A, Daniel J, Balamugesh T, Isaac B, Krishna MT. Prevalence of drug allergy labels in a tertiary pulmonary service in South India. *Clin Exp Allergy*. 2023;53(7):781–784.
- 5 Mirakian R, Leech SC, Krishna MT, et al. Management of allergy to penicillins and other beta-lactams. *Clin Exp Allergy*. 2015;45(2):300–327.
- 6 Krishna MT, Mahesh PA, Vedanthan P, Moitra S, Mehta V, Christopher DJ. An appraisal of allergic disorders in India and an urgent call for action. *World Allergy Organ J*. 2020;13(7):100446.