Drug allergy management in Egypt, Sri Lanka and the Caribbean

Alqahtani, Abdulaziz; Jagpal, Parbir; Kudagammana, Thushara; Vedanthan, Pudupakkam K; Krishnamurthy, Kandamaran; Hariharan, Seetharaman; El Shabrawy, Reham Mohamed; Maharaj, Sandeep; Marriott, John; Thirumala Krishna, Mamidipudi

DOI:
10.1111/cea.14437

Received: 16 October 2023 | Revised: 24 November 2023 | Accepted: 25 November 2023

DOI: 10.1111/cea.14437

RESEARCH LETTER

WILEY

Drug allergy management in Egypt, Sri Lanka and the Caribbean: A qualitative study

To the Editor,

There is a huge burden of penicillin allergy labels (PALs) and up to 95% of PALs are inaccurate.[1–3] There is an unmet need for allergy specialists, particularly in low-middle income countries (LMICs), where there are alarming rates of antimicrobial resistance (AMR).[4,5] A relatively simple method of risk stratification by non-allergy healthcare professionals (HCPs) employing a computerised decision support system (CDSS) has been successfully employed in the context of penicillin allergy de-labelling.[6]

The aim of this study was to gain insights into drug allergy management pathways as well as the views and perspectives of HCPs regarding drug allergies in Sri Lanka, Barbados, Trinidad and Tobago and Egypt. Drug allergy management pathway refers to the systems, framework and governance underpinning drug allergy labelling and de-labelling including mechanisms of documentation and counselling of patients, referral pathways to an allergy specialist and conducting root cause analysis of serious and/or near-miss adverse drug events.

Synchronous virtual focus group discussions were conducted using an on-line video platform. The topic guide was designed by the investigators from participating countries. The study is reported in accordance with the 'consolidated criteria for reporting qualitative research' (COREQ) checklist. Approval was obtained from institutional review boards in participating centres. Additional information about study method and findings are available in the following repository: [10.5281/zenodo.10040902].

Four major themes emerged from thematic analysis: (a) structure of healthcare services, (b) clinical governance, (c) clinical allergy practice and (d) willingness to use a CDSS. Sunburst chart illustrating the themes and subthemes (Figure 1) was constructed.

Key findings are summarised as follows: All HCPs in the four countries confirmed that the public sector provides free healthcare services for the majority of the population, while private healthcare services are typically accessible to individuals with sufficient funds or health insurance. Participants reported that due to the lack of drug allergy-related data, there may not be a sense of urgency or importance placed on addressing the unmet need. They expressed concern about the lack of standardised policies and guidelines for managing drug allergy. Participants felt a lack of clarity among HCPs regarding making the distinction between drug allergies and other types of adverse drug reactions. While undergraduates and postgraduates in Sri Lanka received training in drug allergy, there is no formal training for HCPs in other countries. There are no drug allergy specialists in Trinidad and Tobago and Barbados, and the number of clinicians specialising in allergy and/or with a special interest in drug allergy in Egypt and Sri Lanka are not sufficient to meet the demand. Participants from the four countries agreed that allergy cases are identified from clinical history or reviewing reports (e.g. written record of allergy status, previous adverse drug event, etc.). Drug allergy recording systems are mainly paper-based in all countries, and electronic medical records comprising patient demographics and clinical records (including laboratory, radiology, prescription and adverse drug events/allergy status) are evolving, and there are no standardised systems to capture drug allergy events. Participants from Trinidad and Tobago and Barbados mentioned that inaccurate PALs occur due to patients assuming they are allergic either because of a family history or not having their perception investigated, thereby serving as a barrier for antimicrobial stewardship. In Egypt, there was some disagreement among participants regarding incorrect PALs. Some participants reported that inaccurate PALs occur because antibiotics can be obtained without a valid prescription, and there is a lack of proper investigation for patients who claim to be 'allergic', others thought that there is no mislabelling. Participants in Sri Lanka confirmed that inaccurate PALs occur, citing the availability of antibiotics without a prescription. Participants from all the countries confirmed a lack of equitable drug allergy management systems, mainly due to lack of allergy specialists and resources. In Sri Lanka and Egypt, patients with 'serious' and 'multiple allergies' are referred to a specialist. Participants from Barbados and Trinidad and Tobago reported that patients were encouraged to wear an 'allergy red band'. Participants from Egypt and Sri Lanka stated that patients with history of anaphylaxis are advised to carry an adrenaline injection and an alert card. In contrast, participants from Trinidad and Tobago highlighted that the accessibility to adrenaline injections was limited due to high cost. There were mechanisms in Trinidad and Tobago and Barbados to report adverse drug events to regional authorities.

Sri Lankan participants confirmed that they had a well-developed area in anaesthesia and a national questionnaire and checklist to capture drug allergy reactions pre-operatively. While there are no pathways for referral for peri-operative anaphylaxis in Egypt, Trinidad and Tobago and Barbados, there are mechanisms to document 'allergy status' pre-operatively via history-taking. There are

also mechanisms in place to conduct root-cause analysis for perioperative anaphylaxis in all participating countries.

The majority of the participants across all countries believed that digital technologies such as CDSS would facilitate drug allergy management and improve quality of clinical care. They thought it would facilitate and standardise the process of risk stratification as well as enable the differentiation of allergy from an intolerance. They, however, highlighted the requirement of appropriate information technology skills for HCPs using CDSS and expressed some concerns since their healthcare system predominantly relies on paper-based records.

This study has limitations. The findings may not be entirely generalisable as a focus group-based approach was employed. However, through purposive sampling, we ensured a broad representation of participants in order to capture wider views and perspectives. Our topic guide was constructed carefully based on published guidelines from high income countries (HICs),[7–9] investigators experience and following discussions with lead investigators in participating countries. However, investigator and moderator bias cannot be excluded alongside potential influence of group dynamics. Despite these limitations, common themes and sub-themes emerged, providing ideas to shape further research in this area of unmet need.

This study highlights critical gaps in drug allergy management systems in participating countries. Implementing a locally adapted CDSS alongside education and training of non-allergy HCPs might improve the quality of clinical care and generate an impetus for further research into identification of facilitators and barriers.

Summary box

- Egypt, Sri Lanka, Barbados and Trinidad and Tobago lack equitable drug allergy management pathways.
- Computerised decision support systems alongside basic training and education might facilitate accurate labelling and de-labelling.

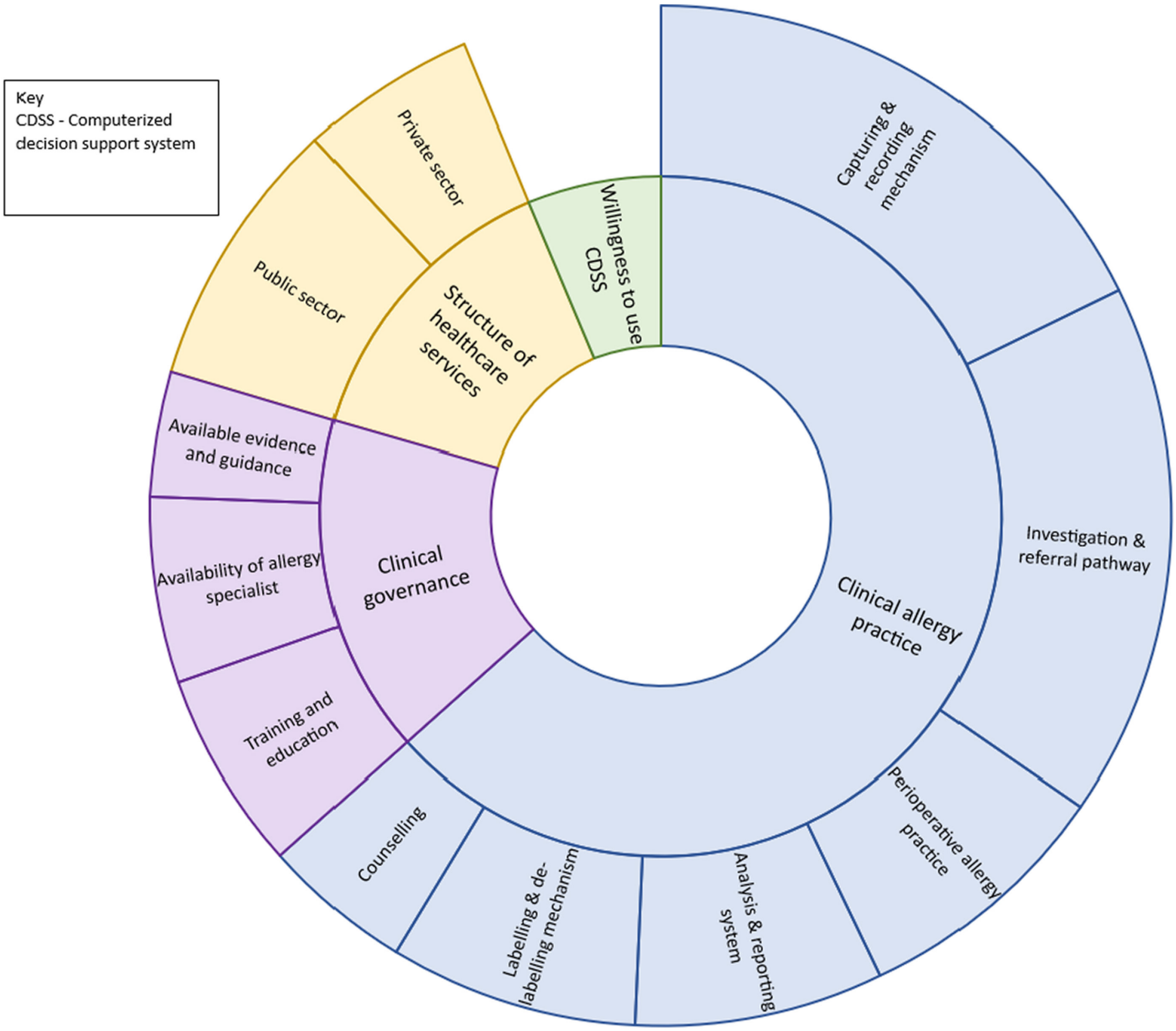

FIGURE 1 Sunburst chart showing the themes and subthemes, and their relative significance, as indicated by segment size.

KEYWORDS

anaphylaxis, drug allergy, drug allergy de-labelling, drug allergy labelling, drug allergy management, penicillin allergy

AUTHOR CONTRIBUTIONS

MTK and JFM conceptualised and designed the study with input from RMEMA, PKV, TK, SM, HS and KK. AHA led the qualitative analysis with input from JFM, MTK and PKJ. AHA drafted the manuscript with input from MTK and JFM. All authors critically reviewed the manuscript and approved the final version.

ACKNOWLEDGEMENTS

The authors thank all participants from Trinidad and Tobago, Barbados, Egypt, and Sri Lanka for their active involvement and valuable insights.

FUNDING INFORMATION

None.

CONFLICT OF INTEREST STATEMENT

None declared by other authors. MTK received research funds from NIHR, MRC CiC, FSA and GCRF unrelated to work presented in this manuscript.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

ETHICS STATEMENT

This study received ethical approval from institutional review board of respective participating sites.

Abdulaziz H. Alqahtani[1,2]
Parbir Jagpal[1]
Thushara Kudagammana[3]
Pudupakkam K. Vedanthan[4]
Kandamaran Krishnamurthy[5]
Seetharaman Hariharan[6]
Reham Mohamed El Shabrawy Mohamed Ali[7]
Sandeep B. Maharaj[8]
John F. Marriott[1]
Mamidipudi Thirumala Krishna[9]

[1]*The School of Pharmacy, Institute of Clinical Sciences, University of Birmingham, Birmingham, UK*
[2]*College of Pharmacy, Taif University, Taif, Kingdom of Saudi Arabia*
[3]*Faculty of Medicine, University of Peradeniya, and Teaching hospital, Peradeniya, Sri Lanka*
[4]*Department of Medicine, University of Colorado, Aurora, Colorado, USA*
[5]*The Queen Elizabeth Hospital, The University of West Indies, and ARS Medicae, Barbados, West Indies*
[6]*Anaesthesia & Critical Care Medicine, The University of the West Indies, St. Augustine, Trinidad, West Indies*
[7]*Medical Microbiology and Immunology, Faculty of Medicine, Zagazig University, Zagazig, Egypt*
[8]*The University of the West Indies, St. Augustine, Trinidad and Tobago*
[9]*Institute of Immunology and Immunotherapy, University of Birmingham and Department of Allergy and Immunology, University Hospitals Birmingham NHS Foundations Trust, Birmingham, UK*

Correspondence
Abdulaziz H. Alqahtani, The School of Pharmacy, Medical and Dental School, University of Birmingham, Edgbaston, Birmingham, UK.
Email: axa1734@student.bham.ac.uk

John F. Marriott and Mamidipudi Thirumala Krishna are joint senior authors.

ORCID

Abdulaziz H. Alqahtani https://orcid.org/0000-0002-4584-1554
Kandamaran Krishnamurthy https://orcid.org/0000-0001-5592-7020

REFERENCES

1. Shenoy ES, Macy E, Rowe T, Blumenthal KG. Evaluation and Management of penicillin allergy: a review. *JAMA*. 2019;321(2):188-199. doi:10.1001/jama.2018.19283
2. Sacco KA, Bates A, Brigham TJ, Imam JS, Burton MC. Clinical outcomes following inpatient penicillin allergy testing: a systematic review and meta-analysis. *Allergy*. 2017;72(9):1288-1296. doi:10.1111/all.13168
3. West RM, Smith CJ, Pavitt SH, et al. 'Warning: allergic to penicillin': association between penicillin allergy status in 2.3 million NHS general practice electronic health records, antibiotic prescribing and health outcomes. *J Antimicrob Chemother*. 2019;74(7):2075-2082. doi:10.1093/jac/dkz127
4. Acharya KP, Wilson RT. Antimicrobial Resistance in Nepal. *Front Med (Lausanne)*. 2019;6:105. doi:10.3389/fmed.2019.00105
5. Radji M, Fauziah S, Aribinuko N. Antibiotic sensitivity pattern of bacterial pathogens in the intensive care unit of Fatmawati hospital, Indonesia. *Asian Pac J Trop Biomed*. 2011;1(1):39-42. doi:10.1016/S2221-1691(11)60065-8
6. 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. doi:10.1016/j.jaci.2017.02.005
7. Mirakian R, Ewan PW, Durham SR, et al. BSACI guidelines for the management of drug allergy. *Clin Exp Allergy*. 2009;39(1):43-61. doi:10.1111/j.1365-2222.2008.03155.x
8. Chiriac AM, Banerji A, Gruchalla RS, et al. Controversies in drug allergy: drug allergy pathways. *J Allergy Clin Immunol Pract*. 2019;7(1):46-60 e4. doi:10.1016/j.jaip.2018.07.037
9. 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. doi:10.1111/cea.12468