# PENICILLIN ALLERGY AWARENESS AND DE-LABELLING

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## 1. Introduction

Approximately 10% of hospital inpatients are labelled as penicillin allergic but the vast majority have not experienced a true allergic reaction.

Having a label of penicillin allergy results in patients receiving sub-optimal alternative antibiotics when they have an infection potentially leading to poorer outcomes:

- morbidity
- healthcare costs
- antimicrobial resistant infections e.g. MRSA, VRE, C. diff
- hospital stays
- readmission rates
- critical care admissions

It is beneficial to assess whether patients have experienced a true allergic reaction and consider removing the allergy label in those that have not. [1] This is a well-established process reported in peer reviewed journals and supported by several national and international allergy groups. [1, 2] For patients with a history of low-risk allergy, it is possible to de-label the patient of their allergy by carrying out a supervised oral challenge. This can be undertaken by non-allergy specialists. Two studies published in the Journal of Antimicrobial Chemotherapy in 2019 showed that a pharmacy-led penicillin allergy de-labelling service based in the hospital setting was a safe option to promote antimicrobial stewardship and appropriate allergy labelling and reduces the prescribing of restricted antimicrobials. [3,4] In one of the studies, the researchers found that 98% of patients who were de-labelled had no adverse events to repeated administration of penicillin. [3]

This could also benefit the health service financially. A UK study estimated that de-labelling 50% of patients with a self-reported penicillin allergy would save £5,501/year in antibiotic costs and £503,932/year through reduced excess bed days per hospital. [5]

## 2. Aim & Objectives

- To introduce a penicillin allergy de-labelling service in Cavan and Monaghan Hospital (CMH).
- To increase the documentation of a medication name/ NKDA in the medication allergy assessment box in medication records by 10% over a 6-month period.
- To increase the documentation of drug and nature of reaction for patients with a self-reported penicillin allergy in the medication allergy assessment box by 10% over a 6-month period.

## 3. Methods

The Antimicrobial Stewardship (AMS) Team adapted the Scottish Antimicrobial Prescribing Group (SAPG) penicillin allergy toolkit for local use complying with local governance requirements. The toolkit is designed to be used by non-allergy specialists and supports the identification and removal of penicillin allergy labels in patients who do not have a history of Type 1 or 4 hypersensitivity reactions. [2]
The AMS Pharmacists undertook education on the toolkit and on penicillin allergy awareness with staff e.g. grand round, Medical, Surgical and ED journal clubs, pharmacy meetings, AMS newsletter, clinical nurse manager meetings, ward safety pauses. It was also the primary focus for the local European Antimicrobial Awareness Day (EAAD) event in 2022. We received a €2,500 grant from the Health Service Executive (HSE) Antimicrobial Resistance & Infection Control (AMRIC) Team to support the project.



**Figure 1:** ***Pictures from EAAD Stand in CMH, Nov. 2022.***

The toolkit is available on the electronic CMH Antimicrobial AMS Application and includes the following:

- Protocol
- Risk algorithm to identify suitable patients including a standard procedure for the challenge test
- Patient information leaflets
- Pre-test information including consent form
- Information for patients after the test (negative and positive)
- Advice on how to manage a patient who develops an allergic response
- Frequently asked questions for clinicians
- Standard letters for patients' G.P. and Community Pharmacist to communicate test results. [2]

## 4. Results

Baseline audit of all adult medical and surgical inpatients, Oct 2022 (*n=67*), and re-audit, April 2023 (*n=128*).

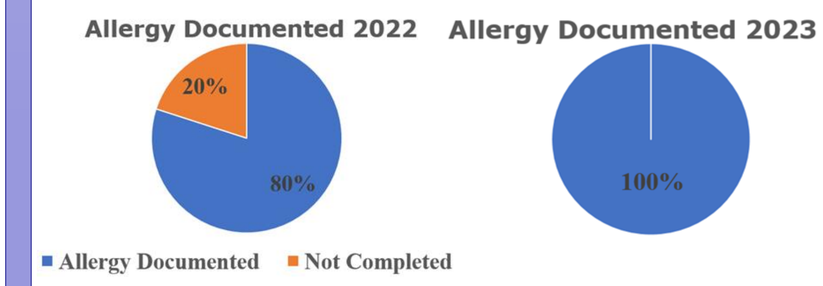


**Figure 2:** ***Percentage of Medication Records with Medication Name/NKDA in Allergy Box.***

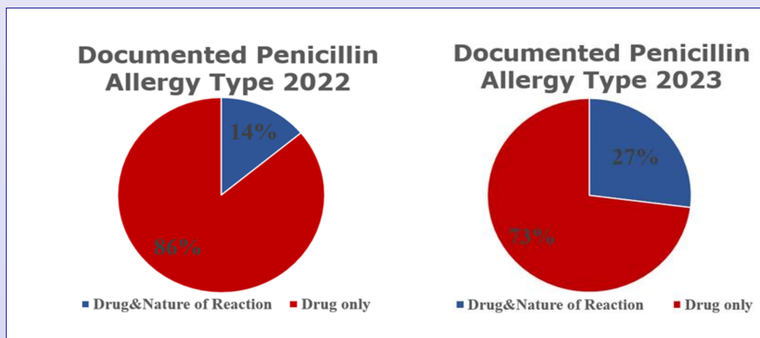


**Figure 3:** ***Percentage of Medication Records with Penicillin Name and Nature of Adverse Drug Reaction.***

The AMS Pharmacists also maintained a password-protected record of patients assessed by them from 18/10/22 – 28/03/24. Sixty-one patients were screened, 37 were deemed eligible for de-labelling, of these 34 were successfully de-labelled. Two did not provide consent. Both had a history of suffering from GI symptoms when taking penicillin. One patient was taking antihistamines that were required to be held for 24 hours prior to the oral challenge (as per protocol) and was discharged before the oral challenge test could be given.
Of the 34 patients de-labelled, 20 were de-labelled according to protocol. None had any adverse drug events. Twelve patients did not require a test dose as they were deemed no more likely to have a penicillin allergy than another member of the population. Two were not de-labelled in accordance with the approved protocol (both receiving penicillin when reviewed).

## 5. Discussion/Conclusion

The study succeeded in introducing a penicillin allergy de-labelling service as well as increasing appropriate allergy history taking and documentation. Completion of the drug name/NKDA section in the allergy box increased from 80% to 100% over the study period. Documentation of the nature of the adverse drug reaction also increased from 14% to 27% for patients with a documented penicillin allergy.
Both succeeded in their aim of achieving 10% improvement.

However, progress is yet to be made in improving staff engagement with great variations being evident. The introduction of the service has helped foster relationships between healthcare professionals with the process requiring a multidisciplinary input. It has also helped improve communication and concordance with patients, empowering them with information to enable them to make decisions about their treatment. A limitation of this study is that it was a single centre study involving a small patient number making it difficult to extrapolate results.

**Suggested areas for further work:**

**Research:** long term outcomes in patients de-labelled, behavioural factors that drive effectiveness, collaborative drug allergy research networks;

**Resource:** healthcare professional and public education, appropriate specialist and non-specialist allergy service resources with established pathways for referral to both, national risk assessment toolkit that can be used in primary and secondary care;

**IT:** electronic hospital inpatient records and universal healthcare record with dedicated allergy sections.

## 6. Other information

We would like to thank the HSE AMRIC Team for supporting this project. Authors of this presentation have nothing to disclose concerning possible financial or personal relationships with commercial entities that may have a direct or indirect interest in the subject matter of this presentation. **Author email:** maurat.hegarty@hse.ie

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