Pharmacist-Led Penicillin Allergy Assessment & Management in Primary Care

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BACKGROUND

- **Penicillin allergies** are the most commonly self-reported drug allergy with estimates approaching **~10% of the population**.[1,2] *Of 21,000 rostered patients at SETFHT, we identified 1,320 with a documented penicillin allergy.*
- **Most people with a reported penicillin allergy can safely be treated with a penicillin-related antibiotic**, since many people outgrow the allergy over time or never had a true allergy to begin with (non-allergic reactions are often mislabeled as allergies).[1,3]
- Penicillin-related antibiotics are commonly avoided in people with a penicillin allergy due to fear of a reaction, leading to the **use of second-line antibiotics**, which may be **less effective**, have a **greater risk of adverse events** including C. difficile infections, are **more costly** and have a greater risk of causing **antimicrobial resistance**.[4,5]
- Oral amoxicillin challenges are considered the 'gold standard' to test for penicillin allergy. Among low-risk patients**, oral provocation challenges have been done safely and efficiently** in inpatient and outpatient settings.[6,7]

OBJECTIVES

- To **assess feasibility** of a pharmacist-led penicillin allergy assessment and de-labelling clinic in a primary care setting.
- To decrease the number of inappropriate penicillin allergy labels, with the goal of ultimately **improving overall antibiotic prescribing** across our clinic.

TABLE 1. ALLERGY ASSESSMENT MANAGEMENT ALGORITHM [8]

Penicillin or amoxicillin allergy description	Recommendation for Testing
Type II-IV HSR • Systemic symptoms; hospitalization often required (e.g., SJS, TEN, AIN, hemolytic anemia)	**Testing NOT advised.**
Type I (IgE-mediated) HSR • CLEAR HISTORY OF NEAR FATAL ANAPHYLAXIS > 10 YEARS AGO (e.g., hypotension, respiratory failure, cardiac arrest) *OR* • Other IgE-mediated reactions: angioedema, wheezing, laryngeal edema	**Refer to allergist for consideration of skin testing.**
Mild Reaction • Itching without a rash • Minor rash (pruritic or non-pruritic rash with no other systemic symptoms) *OR* **Unknown reaction WITHOUT any recollection or documentation of:** • Need for ER visit or hospitalization • Anaphylaxis or other IgE-mediated symptoms • Other concerning symptoms: mucosal involvement (ocular, oral, GI, respiratory, genital), kin desquamation or blistering, joint involvement, cytopenias or organ involvement (renal, liver, lungs)	OK to proceed with TESTING by oral amoxicillin provocation challenge protocol.
History not suggestive of true allergy: • EMR lists allergy, but patient denies • Nausea, vomiting, diarrhea or other intolerance • Never had or never reacted to penicillin or amoxicillin before, but a family member is allergic • Tolerated the same antibiotic they are reported to be allergic to	Ok to remove the allergy from EMR WITHOUT need for testing.

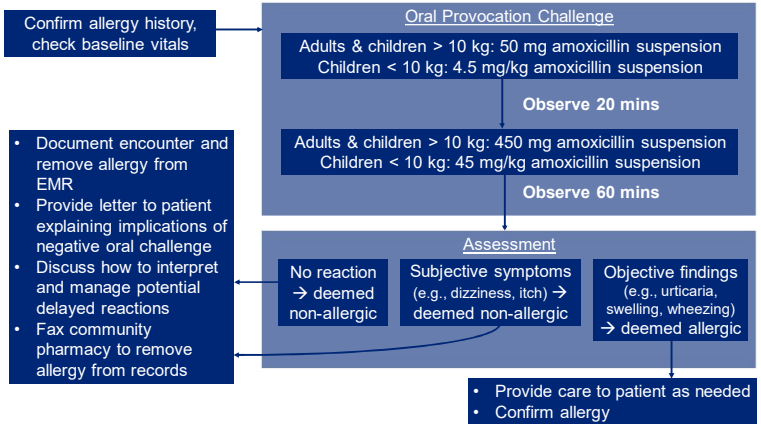
HSR: hypersensitivity reaction SJS: Stevens-Johnson Syndrome TEN: Toxic Epidermal Necrolysis
AIN: Acute Interstitial Nephritis EMR: Electronic Medical Record

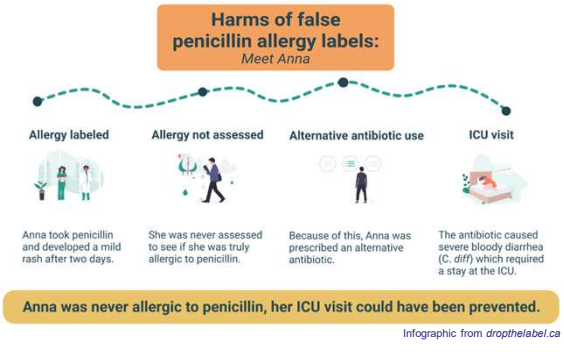
METHODS

- **PROCESS:**

Patient with a penicillin allergy identified via EMR search or referred by a provider → Telephone call booked with RPh to determine eligibility (see below) → RPh books patient into penicillin allergy de-labelling clinic

- **PATIENT ELIGIBILITY:**
  - Age > 18 months
  - Reported penicillin/amoxicillin allergy with low-risk features (see Table 1)
- **RESOURCES:**
  - **Clinic staffing:** RPh, NP
  - **Time:** one clinic half-day per month + additional administrative time (~1-2hrs/wk)
  - **Additional supports:** administrative & IT staff, infectious disease MD available for consultation as needed, access to emergency room across the street
  - **Supplies:** amoxicillin liquid, oral syringes, medicine cups, Epi-pens (adult & Jr.), Benadryl, BP machine, AED
- **ORAL AMOXICILLIN PROVOCATION PROTOCOL:**

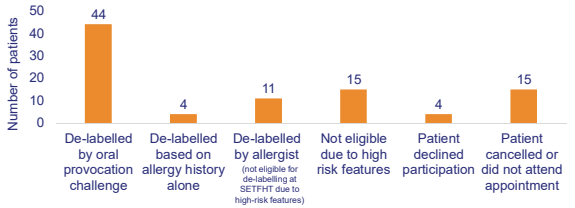




Infographic from *dropthelabel.ca*

RESULTS

- From Jan 2023 to present, **59 patients were de-labelled:**
  - 48 patients by direct, oral challenge at SETFHT.
  - 11 patients by referral to an allergist.
- Of 93 patients who spoke with the RPh, **26 were deemed ineligible** due to high-risk allergy features. Of these patients, **11 were referred to an allergist and were de-labelled.**



- Of the 44 patients administered oral amoxicillin, **3 patients experienced minor, subjective symptoms** (headache, lightheadedness, tingling). These symptoms self-resolved and did not impact the outcome of allergy testing. **One delayed reaction was reported** (minor, localized rash), but was **deemed unrelated** to the amoxicillin oral challenge.

LESSONS LEARNED & NEXT STEPS

- Poor uptake was noted when patients were identified by EMR search and called/emailed; this was also resource intensive.
- Provider-based referral resulted in much greater uptake. To prompt providers to refer patients, we embedded a reminder in commonly used EMR forms (e.g., preventative health, diabetes).
- To reduce no-shows, reminders are now sent to patients prior to their appointment.
- Going forward, we plan to modify our EMR search strategies (e.g., limit search to include only patients with an upcoming appointment, send an email blast to all patients with a penicillin allergy, etc.).
- Once the penicillin allergy de-labelling program has been in place for 1 year, we plan to retrospectively assess antibiotic use.

CONCLUSIONS

- Patients with a history of suspected, low-risk penicillin allergy can be safely de-labelled with a direct, oral amoxicillin challenge.
- Implementing a direct, oral penicillin allergy de-labelling program is feasible in the primary care setting and does not require extensive resources.

REFERENCES

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