



# Penicillin Allergy Delabeling Quality Improvement Project Among People With HIV

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## INTRODUCTION

**Penicillin allergy mislabeling (PAM) is prevalent**

- Leads to suboptimal antibiotic use
- Increases antimicrobial resistance
- Increases costs associated with antimicrobial use

**PAM has not been characterized in patients with HIV (PWH)**

Our project aimed to:

- Characterize penicillin allergy labels among PWH at UCSD
- Assess the impact of PAM on syphilis and gonorrhea treatment
- Decrease PAM among PWH

## METHODS

**Cross-sectional study of PWH at Owen Clinic (2018-2022) with penicillin allergy label:**

- Demographic data
- Type of allergic reaction
- Other beta-lactam antibiotics tolerated
- Referred to Allergy Clinic
- Treatment received for syphilis and/or gonorrhea

**Quality improvement intervention:**

- Recommendation to de-label patients without a type I hypersensitivity reaction
- Updated the penicillin allergy label to easily display other beta-lactams the patient had previously tolerated
- Developed a triage system to refer patient to Allergy Clinic

## RESULTS

### Allergy Referral Flow Chart

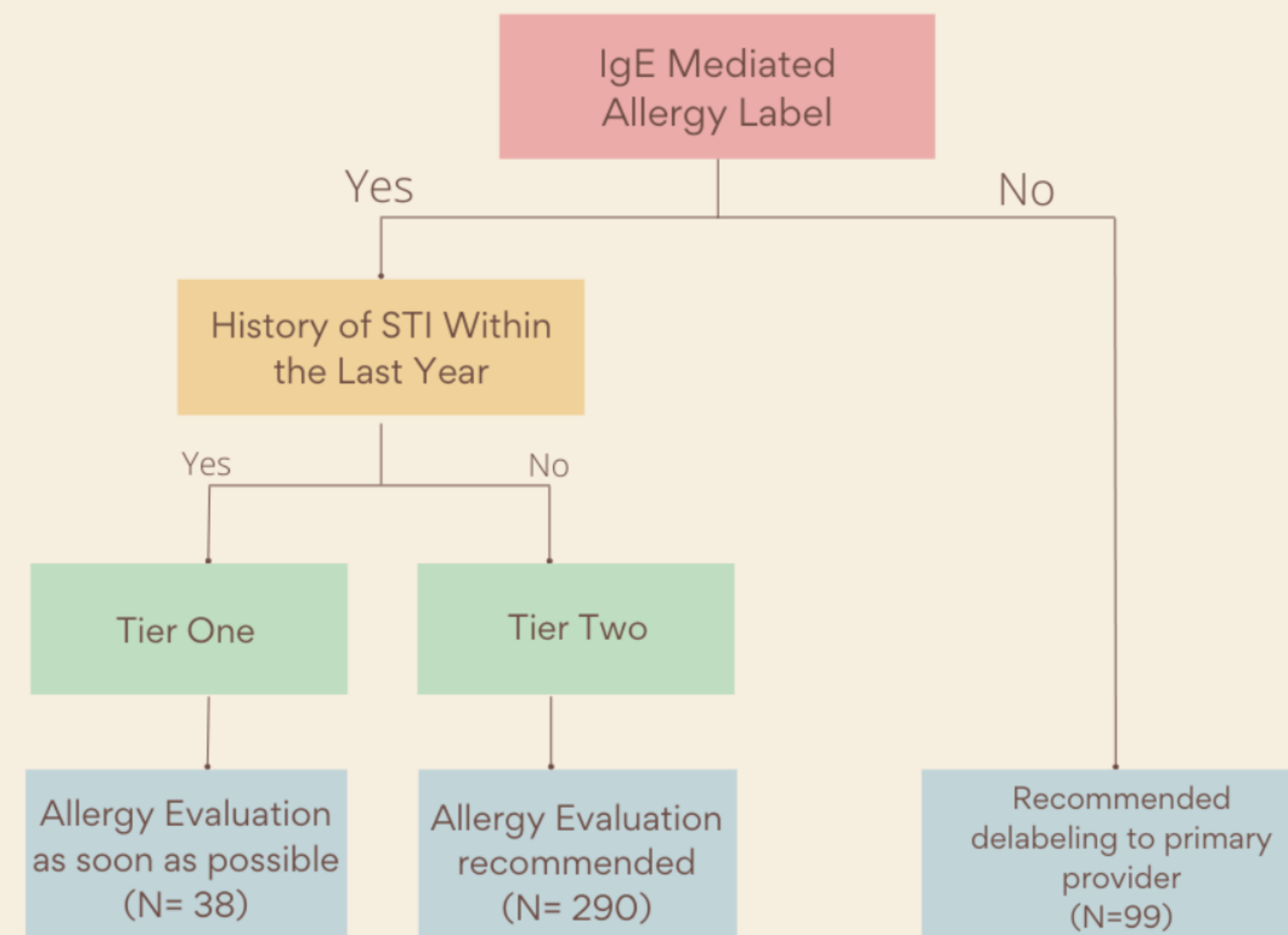


Figure 1

Table 2. Characterization of Penicillin Allergy Labels: Penicillin allergy classification, prevalence of referral to Allergy Clinic for penicillin testing, and proportion of patients with a penicillin allergy label who subsequently tolerated other beta-lactam antibiotics.

	Total (N=427)	IgE Mediated* (N=328)	Non-IgE Mediated** (N=99)
Listed PCN Allergy	427	328 (76.8%)	99 (23.2%)
Referred to Allergy Clinic	52 (12.2%)	39 (11.8%)	13 (13.1%)
Tolerated Cephalosporin	212 (49.6%)	159 (48.5%)	53 (53.5%)
Tolerated Carbapenem	15 (3.5%)	14 (4.3%)	1 (1.0%)
Tolerated other penicillin (without desensitization)	56 (13.1%)	35 (10.7%)	21 (21.2%)

\*IgE-mediated reaction defined as any allergic reaction listed as anaphylaxis, urticaria, itching, shortness of breath, swelling, rash

\*\*Non-IgE mediated reaction defined as any allergic reaction not meeting criteria for IgE-mediated, (e.g., nausea, headache, not specified)

## RESULTS

Table 3 Antibiotic Regimen Used for Treatment of Most Recent STI

Sexually transmitted infection	Antibiotic Treatment	N (%)
Syphilis N=140	Penicillin	32 (22.8%)
	Doxycycline	91 (65.0%)
	Other%	5 (3.6%)
Gonorrhea N=88	Ceftriaxone	65 (73.9%)
	Gentamicin	7 (8.0%)
	Other	16 (18.1%)

- 427/4,702 (9.1%) of PWH had a penicillin allergy label (Table 2)
- Most patients had a type I reaction yet tolerated another beta-lactam (Table 2)
- Referrals to Allergy Clinic were rare (Table 2)
- Most patients with syphilis received 2nd line treatment with doxycycline but those with gonorrhea received 1st line ceftriaxone-based therapy (Table 3)
- We created an algorithm to recommend allergy referral and/or de-labeling (Figure 1)
- We updated penicillin allergy labels for 77.9% (209/268) of eligible patients

## CONCLUSION

- We identified numerous opportunities to improve penicillin allergy labels
- We plan to study improvements in accuracy of penicillin allergy labels and antimicrobial selection in the patient population over the next year
- We determined there is a need for an allergy evaluation pathway