

Impact of Inpatient Penicillin Skin Testing on Antimicrobial Stewardship Practices

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Background

Current literature estimates that 10% of patients report an allergy to penicillin.⁵ Of these patients, more than 95% of patients are actually likely tolerant to penicillins and cephalosporins.¹ Additionally, IgE antibodies can decline over time, and therefore even in patients with a history of IgE related reactions to penicillin, after about 10 years the patient may have a negative penicillin skin test.⁵ Pharmacist driven penicillin skin testing will guide clinicians to choose optimal therapy, reduce the use of broad spectrum agents, as well as reduce the impact those broad spectrum agents have on furthering antimicrobial resistance patterns.

Purpose

The primary objective of this study is to report the number of allergies clarified after placing penicillin skin testing. Secondary objectives are to report the percentage of patients whose negative skin tests resulted in de-escalation, to measure the reduction in use of broad spectrum antimicrobials using days of therapy/1000 patient days, and to measure the financial impact of therapy changes that occur as a result of penicillin skin test results.

Methods

➤ Design:

- Prospective observational study assessing impact of pharmacist-driven penicillin skin testing for inpatients

➤ Inclusion and Exclusion Criteria:

- Inclusion Criteria:
 - Adult patients with a recorded penicillin allergy on profile
- Exclusion Criteria:
 - Patients with a history of extreme hypersensitivity to penicillins such as Steven-Johnson syndrome, toxic epidermal necrolysis, or mucocutaneous eruption with epidermal detachment
 - Pediatric patients defined as less than 18 years of age
 - Pregnant and/or lactating patients
 - Surgical patients who are receiving only pre or post-op antibiotics

➤ Outcomes:

- Primary: Report number of allergies clarified through penicillin skin testing
- Secondary: Percentage of patients whose negative penicillin skin tests resulted in de-escalation, reduction in broad spectrum antimicrobials, financial impact of any therapy changes that occur as a result of a skin test

➤ Workflow:

Prior to Testing

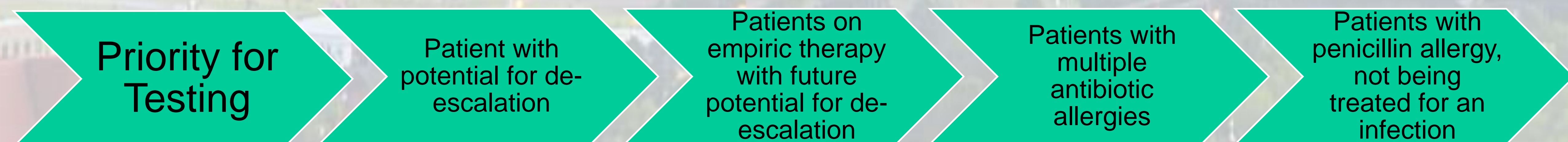
- AMS pharmacist and/or resident identifies potential patients for testing for the day
- Visit patient to discuss process and gain consent
- Check in with nurse to confirm patient will be available for the next two-three hours.

Test

- Place skin prick test on all patients: Histamine, Saline, Pre-Pen, Penicillin G 10,000 units/ml (wait 15 minutes to read)
- Read skin prick test, if negative, place intradermal test: Saline, Pre-Pen x2, Penicillin G x2 (wait 15 minutes to read)
- Read intradermal test, if negative and patient able to tolerate PO, give oral or IV challenge, monitor for 2 hours

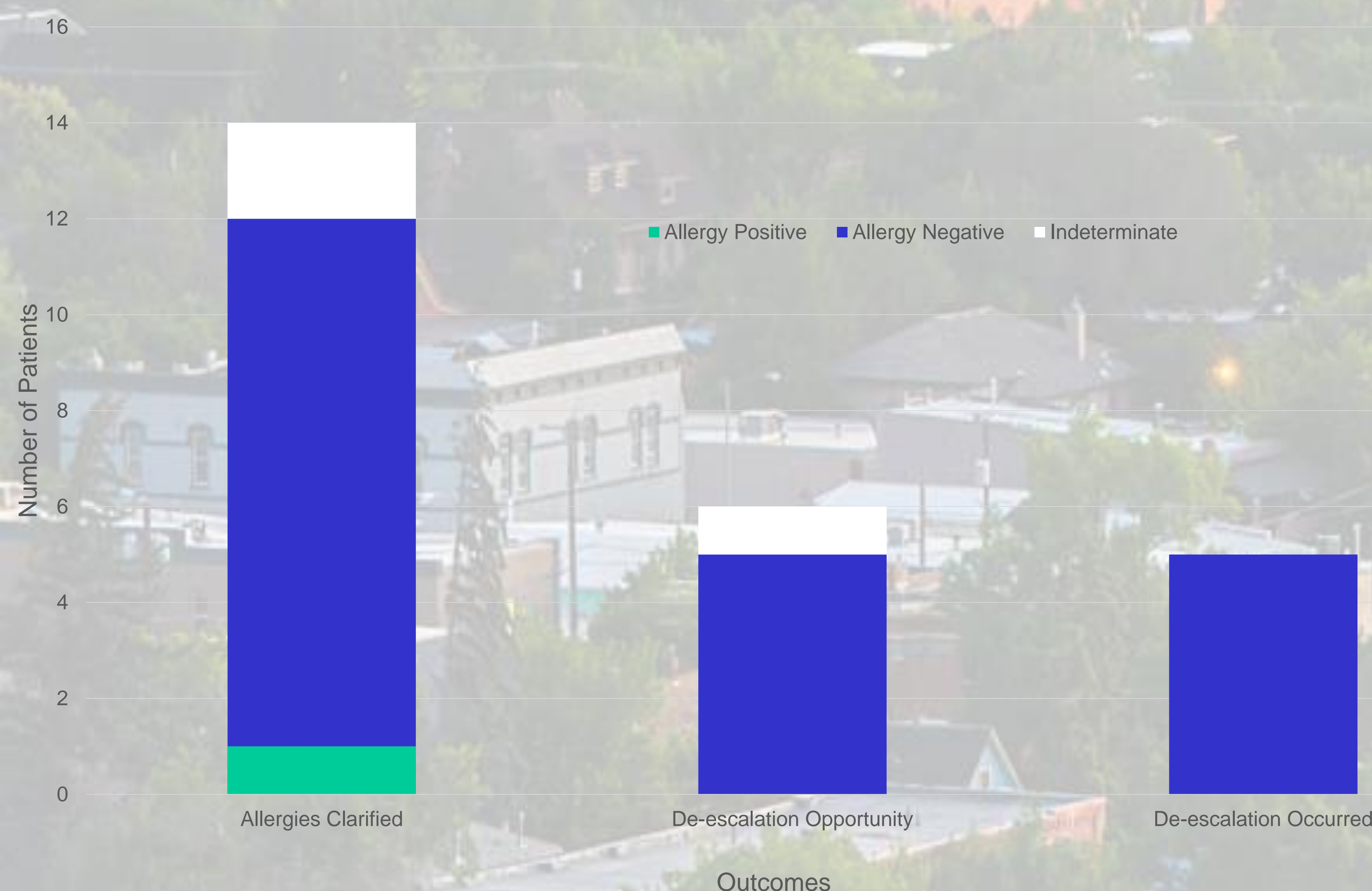
Follow Up

- Record results on pre-populated note in EMR
- Adjust allergy on profile
- Provide patient with a card containing their results
- Notify physician of any changes in allergy status



Preliminary Results

Summary of Outcomes



Cost Data from Changes in Therapy

Therapy	Average Cost to Patient
Broad Spectrum (initiated prior to penicillin skin test)	\$247.63/day
Narrowed Therapy (when adjusted after result of test)	\$100.70/day

Evaluation

Pharmacist administered penicillin skin testing has thus far allowed for early identification of patients who may benefit from testing in order to optimize antimicrobial therapy. As providers become more aware of the benefits of performing the test, patients are being identified earlier in their treatment course. Moving forward, the service will continue to encourage provider and pharmacist collaboration in order to optimize antimicrobial therapy.

Discussion

Future Plans:

- Continue to incorporate penicillin skin testing into the normal workflow for the Antimicrobial Stewardship team
- Train all pharmacists in penicillin skin testing
- Expand penicillin skin testing to other units as time allows, (Emergency Department, Pre-Op Clinics)

Disclosures

Authors of this presentation have no disclosures concerning possible financial or personal relationships with commercial entities that may have a direct or indirect interest in the subject matter of this presentation.

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