Washington State Department of HEALTH

ANTIBIOTIC ALLERGY DE-LABELING JOURNAL CLUB

Antibiotic Awareness Week 2023

Erica Stohs, MD, MPH
erica.stohs@doh.wa.gov

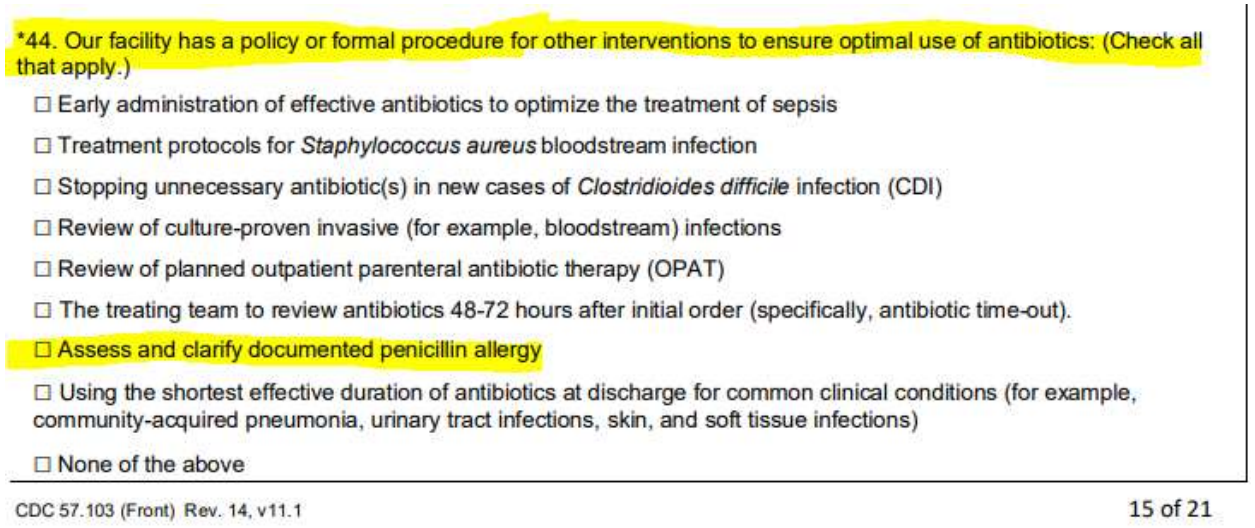
OBJECTIVES

1. Review a recent randomized clinical trial addressing patients with low-risk penicillin allergy

2. Highlight a beta-lactam allergy delabeling intervention in a community hospital

Washington State Data

- NHSN Patient Safety Component - Annual Hospital Survey:



*44. Our facility has a policy or formal procedure for other interventions to ensure optimal use of antibiotics: (Check all that apply.)

- ☐ Early administration of effective antibiotics to optimize the treatment of sepsis
- ☐ Treatment protocols for *Staphylococcus aureus* bloodstream infection
- ☐ Stopping unnecessary antibiotic(s) in new cases of *Clostridioides difficile* infection (CDI)
- ☐ Review of culture-proven invasive (for example, bloodstream) infections
- ☐ Review of planned outpatient parenteral antibiotic therapy (OPAT)
- ☐ The treating team to review antibiotics 48-72 hours after initial order (specifically, antibiotic time-out).
- ☐ Assess and clarify documented penicillin allergy
- ☐ Using the shortest effective duration of antibiotics at discharge for common clinical conditions (for example, community-acquired pneumonia, urinary tract infections, skin, and soft tissue infections)
- ☐ None of the above

CDC 57.103 (Front) Rev. 14, v11.1 15 of 21

- **Percentage of hospitals in WA answering "Yes" in 2022 = 29%**
  - 26% of critical access hospitals
  - 18% of all other acute care facilities
  - Survey had a 92% response rate from all WA hospitals

2022 Patient Safety Annual Hospital Survey Form (cdc.gov)

Journal Articles

Research

JAMA Internal Medicine | Original Investigation

Efficacy of a Clinical Decision Rule to Enable Direct Oral Challenge in Patients With Low-Risk Penicillin Allergy

The PALACE Randomized Clinical Trial

Ana Maria Copaescu, MD; Sara Vogrin, MBiostat; Fiona James, BBiomedSci; Kyra Y. L. Chua, PhD; Morgan T. Rose, MBBS; Joseph De Luca, MBBS; Jamie Waldron, MD; Andrew Awad, MD; Jack Godsell, MBBS; Elise Mitri, BPharm; Belinda Lambros, MAdvNursPrac; Abby Douglas, PhD; Rabea Youcef Khoudja, MD; Ghislaine A. C. Isabwe, MD; Genevieve Genest, MD; Michael Fein, MD; Cristine Radojicic, MD; Ann Collier, MD; Patricia Lugar, MD; Cosby Stone, MD; Moshe Ben-Shoshan, MD; Nicholas A. Turner, MD; Natasha E. Holmes, PhD; Elizabeth J. Phillips, MD; Jason A. Trubiano, PhD

Doi: 10.1001/jamainternmed.2023.2986

ASHE 2023. Doi: 10.1017/ash.2023.461

Original Article

Beta-lactam comprehensive allergy management program in a community medical center

Lakhini Vyas PharmD, BCPS[1], Karan Raja PharmD, BCPS, BCIDP, AAHIVP[1,2], Susan Morrison MD[3], Donald Beggs MD[3], Mark S. Attalla PharmD, MBA[1], Mitesh Patel PharmD, BCCCP[1] and Mona Philips RPh, MAS[1]

Efficacy of a Clinical Decision Rule to Enable Direct Oral Challenge in Patients With Low-Risk Penicillin Allergy

The PALACE Randomized Clinical Trial

Reported penicillin allergies are common, <5% are truly allergic

Penicillin allergy labels prevent patients from getting preferred antibiotics

Penicillin allergy testing can be onerous

Copaescu AM et al. JAMA Int Med 2023;183(9):944-52.

Efficacy of a Clinical Decision Rule to Enable Direct Oral Challenge in Patients With Low-Risk Penicillin Allergy

The PALACE Randomized Clinical Trial

Objective

- Is oral penicillin challenge non-inferior to standard of care (penicillin skin testing followed by oral challenge) in patients with low-risk penicillin allergy?

Design

- Open-label, multicenter randomized clinical trial
- Non-inferiority margin: 5%

Setting

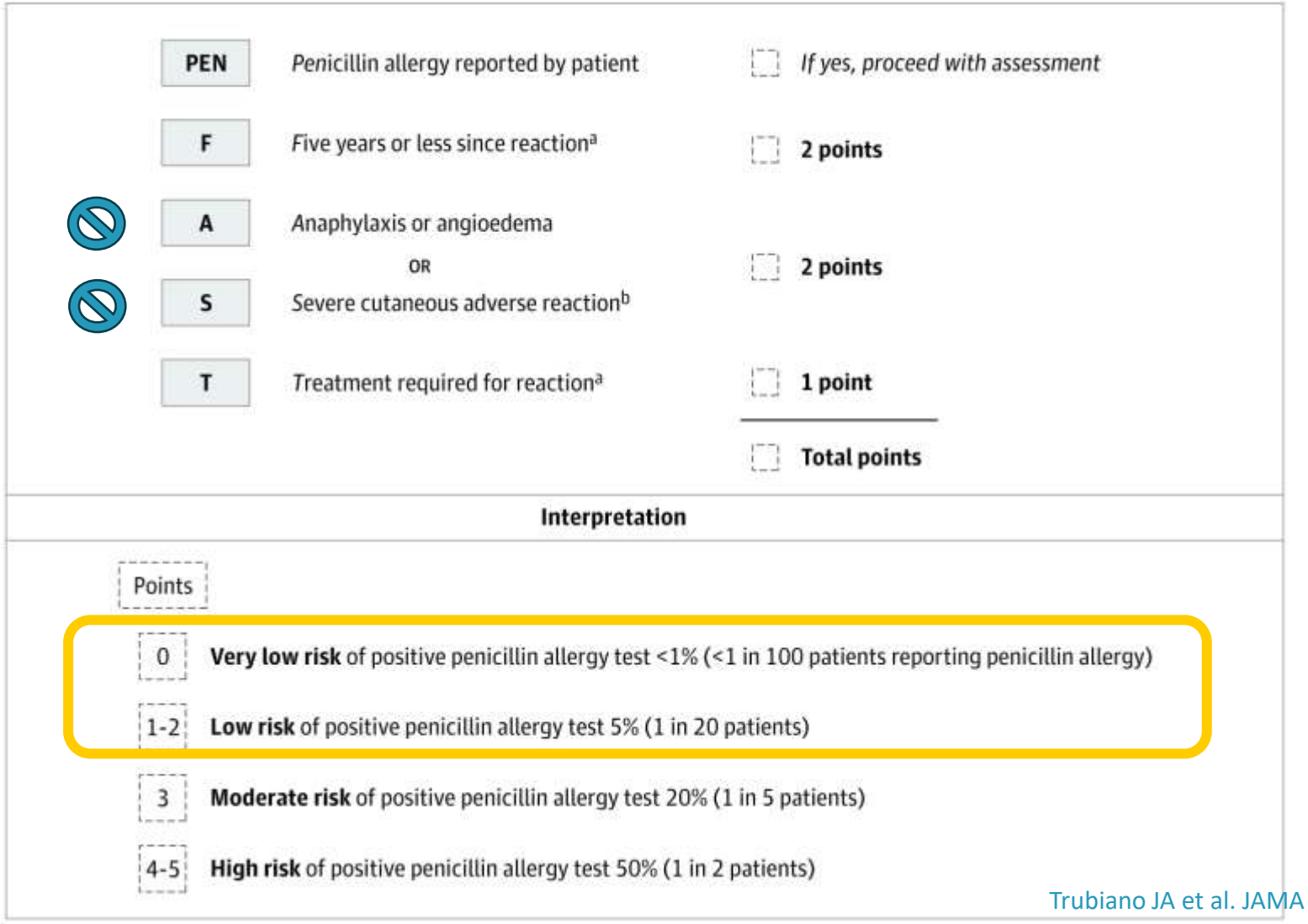
- Outpatient clinics in 6 medical centers in North America and Australia
- June 2018 – December 2022

Copaescu AM et al. JAMA Int Med 2023;183(9):944-52.

Efficacy of a Clinical Decision Rule to Enable Direct Oral Challenge in Patients With Low-Risk Penicillin Allergy

The PALACE Randomized Clinical Trial

PEN-FAST externally validated tool



	PEN	*Penicillin allergy reported by patient*	☐ *If yes, proceed with assessment*
	F	*Five years or less since reaction*[a]	☐ **2 points**
⊘	A	*Anaphylaxis or angioedema*	
		OR	☐ **2 points**
⊘	S	*Severe cutaneous adverse reaction*[b]	
	T	*Treatment required for reaction*[a]	☐ **1 point**
			☐ **Total points**

Interpretation

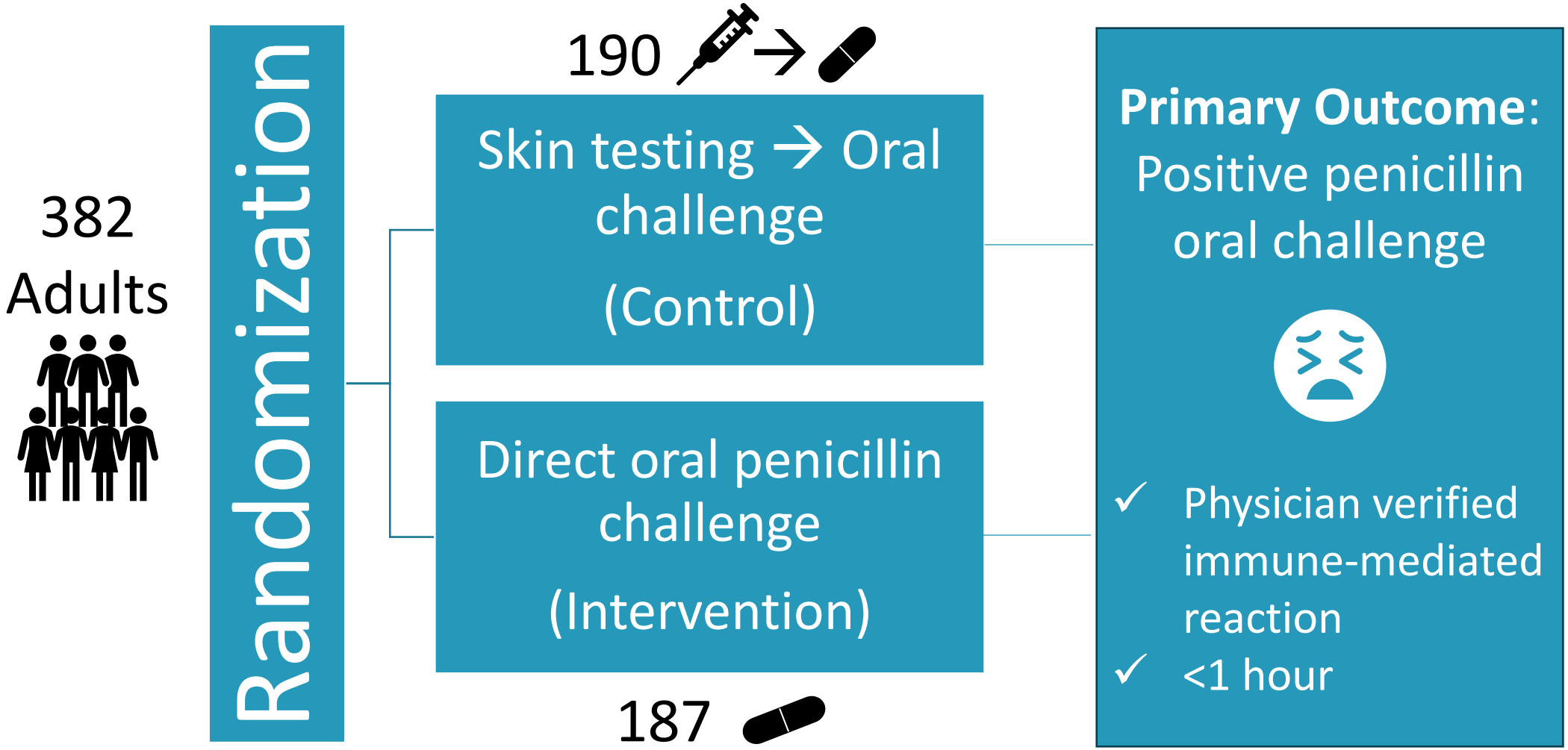
Points	
0	**Very low risk** of positive penicillin allergy test <1% (<1 in 100 patients reporting penicillin allergy)
1-2	**Low risk** of positive penicillin allergy test 5% (1 in 20 patients)
3	**Moderate risk** of positive penicillin allergy test 20% (1 in 5 patients)
4-5	**High risk** of positive penicillin allergy test 50% (1 in 2 patients)

⊘ Patients reporting adverse events (headache, nausea) not eligible

Trubiano JA et al. JAMA Int Med 2020;180(5):745-52.

Efficacy of a Clinical Decision Rule to Enable Direct Oral Challenge in Patients With Low-Risk Penicillin Allergy

The PALACE Randomized Clinical Trial



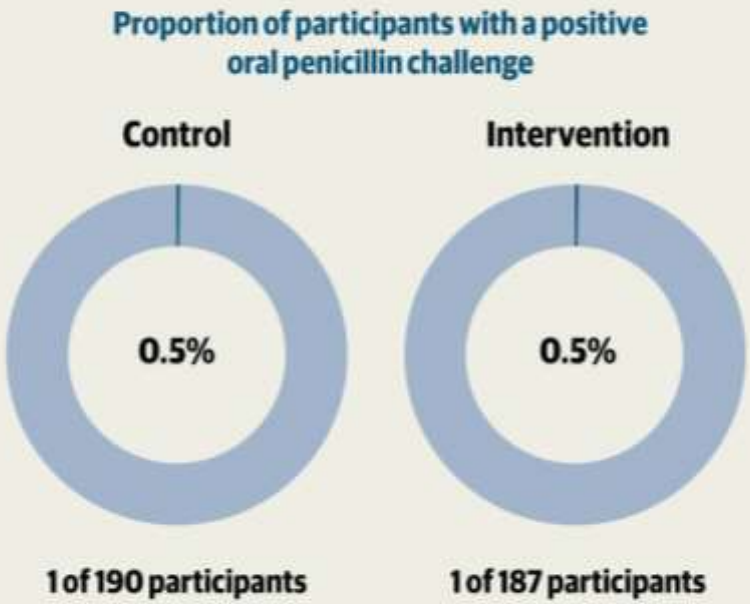
Copaescu AM et al. JAMA Int Med 2023;183(9):944-52.

Efficacy of a Clinical Decision Rule to Enable Direct Oral Challenge in Patients With Low-Risk Penicillin Allergy

The PALACE Randomized Clinical Trial

FINDINGS

The intervention was found to be noninferior to the control for the primary outcome in adults with low-risk penicillin allergy



Risk difference, 0.0084 (90% CI, -1.22 to 1.24) percentage points, which is less than the noninferiority margin

Other Findings:

- No difference in delayed immune reactions up to 5 days
- Penicillin allergy was removed in 186/190 of the control and 186/187 of the intervention group.
- 94% of participants had a PEN-FAST score <2.

Take-Aways:

- For patients with PEN-FAST score of 0-1 → Direct oral challenge
- Shorter time in clinic
- Less expensive
- Less labor-intensive
- Adaptable to inpatient and outpatient settings

Copaescu AM et al. JAMA Int Med 2023;183(9):944-52.

Beta-lactam comprehensive allergy management program (CAMP) in a community medical center

Beta-lactam antibiotics = most common drug allergy class

Many “allergies” are misclassified adverse drug reactions or intolerances

Limited data about allergy de-labeling programs in community hospitals

Vyas L et al. ASHE 2023;3(1):e189.

Beta-lactam comprehensive allergy management program (CAMP) in a community medical center

Objective

- Facilitate complete beta-lactam allergy history documentation in the electronic medical record (EMR)
- Increase beta-lactam utilization

Design

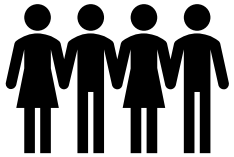
- Quasi-experimental (before & after) study
- Interrupted time-series analysis

Setting

- Non-teaching, urban community medical center within a multi-hospital system in NJ
- Inpatients with documented beta-lactam allergy + on abx

Vyas L et al. ASHE 2023;3(1):e189.

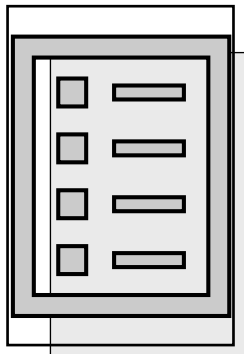
Beta-lactam comprehensive allergy management program (CAMP) in a community medical center



Pre-intervention
12/1/18 – 4/1/19
n = 184

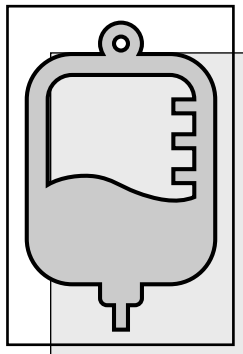
CAMP
1/4/21

Post-intervention
1/4/21 – 5/4/21
n = 208



Primary outcome

- Complete allergy histories documented in the EMR



Secondary outcome

- Inpatient beta-lactam DOT per 1000-days-present

Vyas L et al. ASHE 2023;3(1):e189.

Table S1. Medication Allergy History Interview Tool

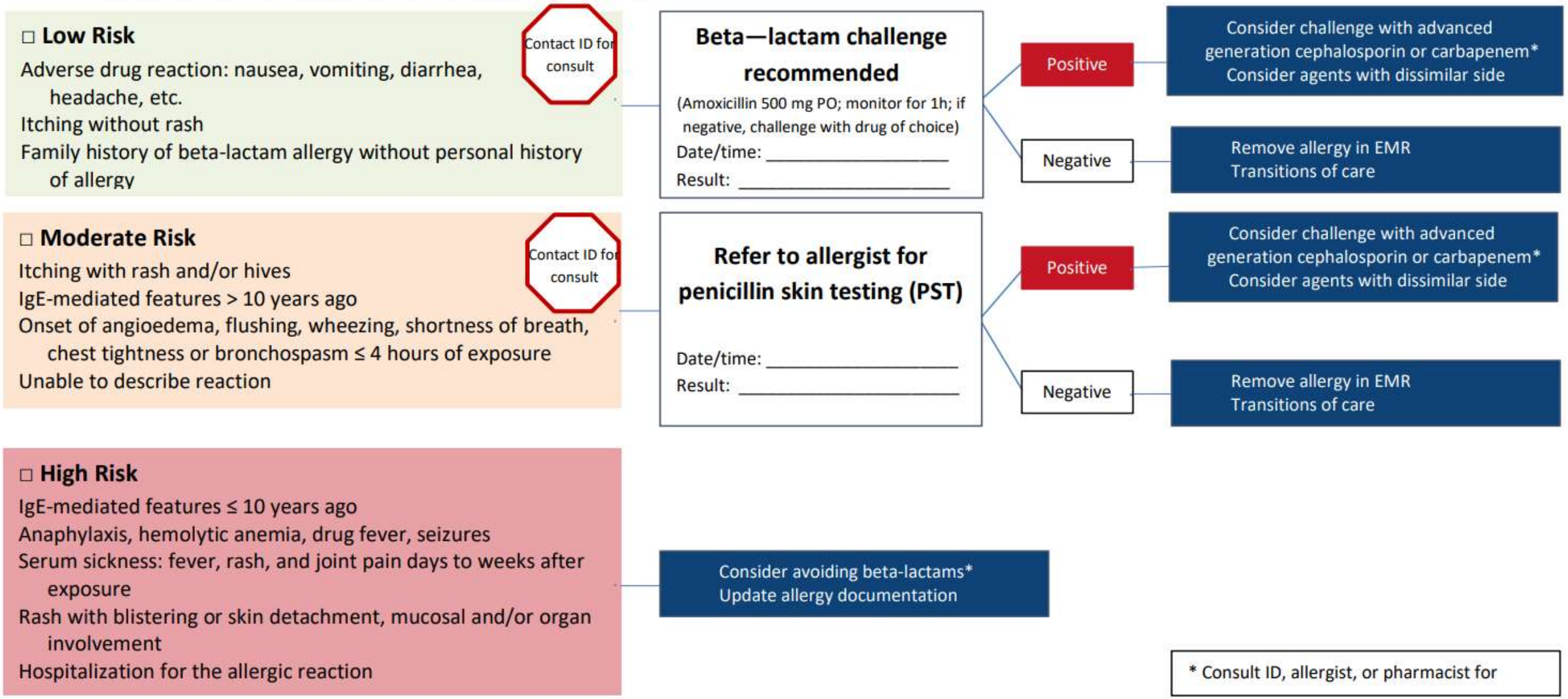
Patient Questionnaire[20-21]
What medication or medication class was the allergy to?
What route of administration was the medication? (e.g. IV, PO, IM, SC)
What were you taking the medication for? What else were you sick with at the time? (e.g. viral infection, bacterial infection, etc.)
How many doses of the medication did you take before the reaction?
What was the reaction? If rash, do you have a photo?
How long ago did the reaction occur?
How long after taking the antibiotic did the reaction occur?
How and when did the reaction resolve?
Were you hospitalized and/or given medication to treat the reaction?
Were you taking any other medications at the time of reaction?
What antibiotics do you normally take when you are sick? (e.g. penicillin, amoxicillin, amoxicillin-clavulanate, ceftriaxone, cefepime, doxycycline, ciprofloxacin, etc.)
Do you have a family history of beta-lactam allergy without a personal history of the allergy?
Were you ever referred to an allergy specialist? If yes, when and what was the result?
Other comments:

Median interview time: 10 minutes (IQR: 5-15)

Responses documented in the EMR.

Vyas L et al. ASHE 2023;3(1):e189.

Figure S1: Medication Allergy Assessment Algorithm



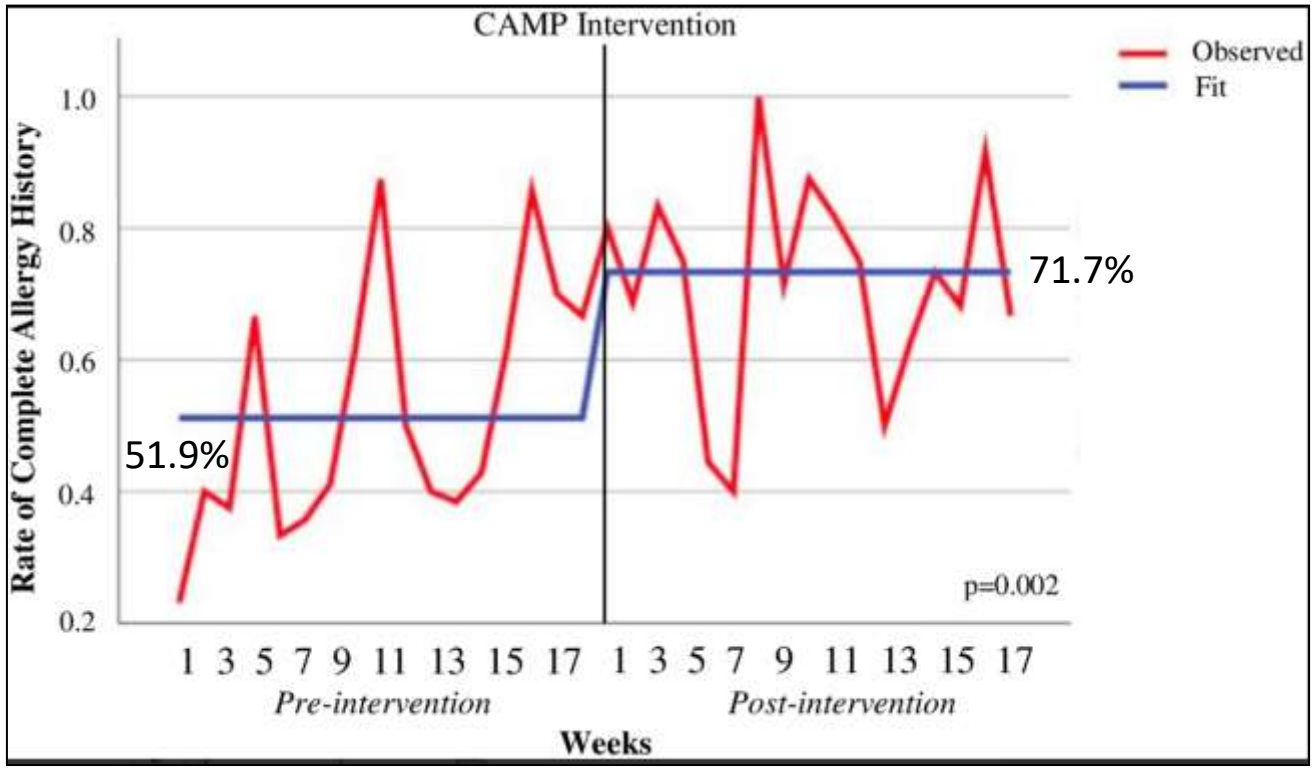
Vyas L et al. ASHE 2023;3:e189, 1-7.

Vyas L et al. ASHE 2023;3(1):e189.

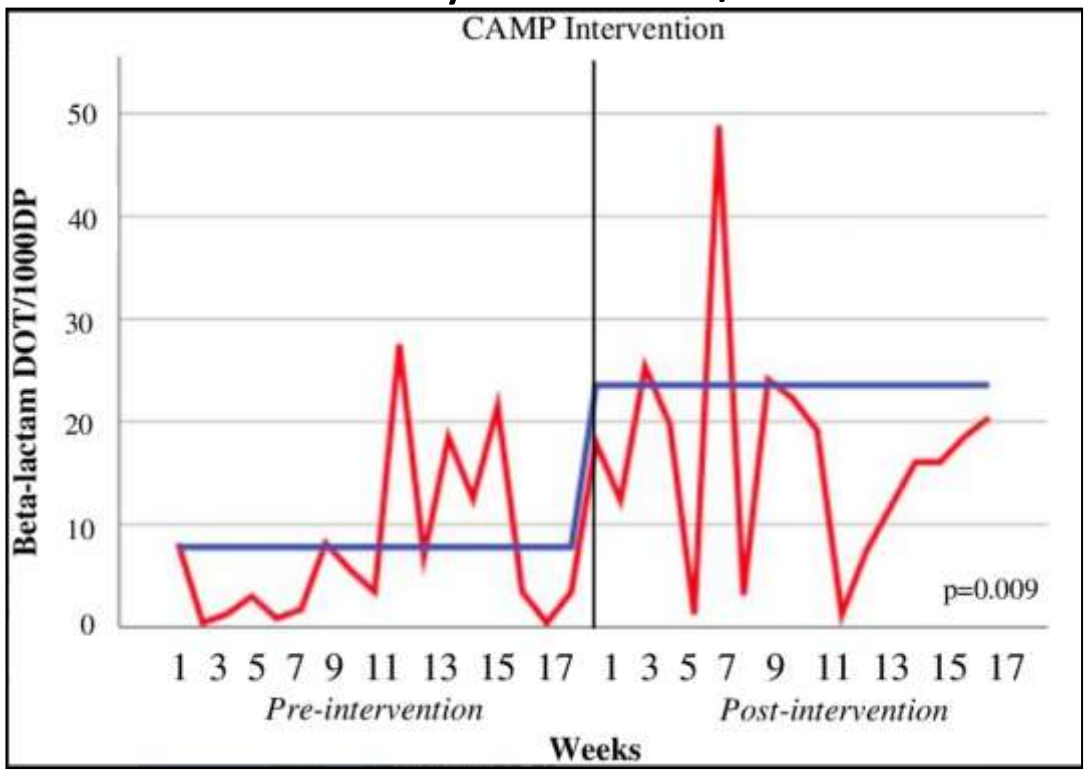
Beta-lactam comprehensive allergy management program (CAMP) in a community medical center

Results:

Complete allergy histories increased by 19.8%



Average weekly beta-lactam use increased by 9.34 DOT/1000DP



Vyas L et al. ASHE 2023;3(1):e189.

Beta-lactam comprehensive allergy management program (CAMP) in a community medical center

Other Results:

Antibiotic Utilization in DOT per 1000 days-present

Beta-lactam class	Before	After
Penicillins	6.5	43.3
Cephalosporins	74.4	181.8
Carbapenems	46.0	60.6

- Greater confidence in proceeding directly to oral challenge in low-risk patients

Take-Aways:

- Non-teaching community hospitals can successfully implement penicillin / beta-lactam allergy interventions
- History-taking is a simple intervention
- Patients at low-risk for beta-lactam allergy can proceed directly to oral challenge
- Don’t forget to communicate antibiotic allergy removal across the care spectrum!

Vyas L et al. ASHE 2023;3(1):e189.

References

1. Copaescu AM, et al. “Efficacy of a clinical decision rule to enable direct oral challenge in patients with low-risk penicillin allergy: the PALACE randomized clinical trial.” *JAMA Internal Medicine* 2023;183(9):944-952. doi:10.1001/jamainternmed.2023.2986

2. Vyas L, et al. “Beta-lactam comprehensive allergy management program in a community medical center.” *Antimicrobial Stewardship & Healthcare Epidemiology* 2023;3(1), e189. doi:10.1017/ash.2023.461

Thank you!

Let us know about the work you are doing.

ams@doh.wa.gov

Penicillin Allergy Delabeling | Washington State Department of Health

To request this document in another format, call 1-800-525-0127. Deaf or hard of hearing customers, please call 711 (Washington Relay) or email civil.rights@doh.wa.gov.