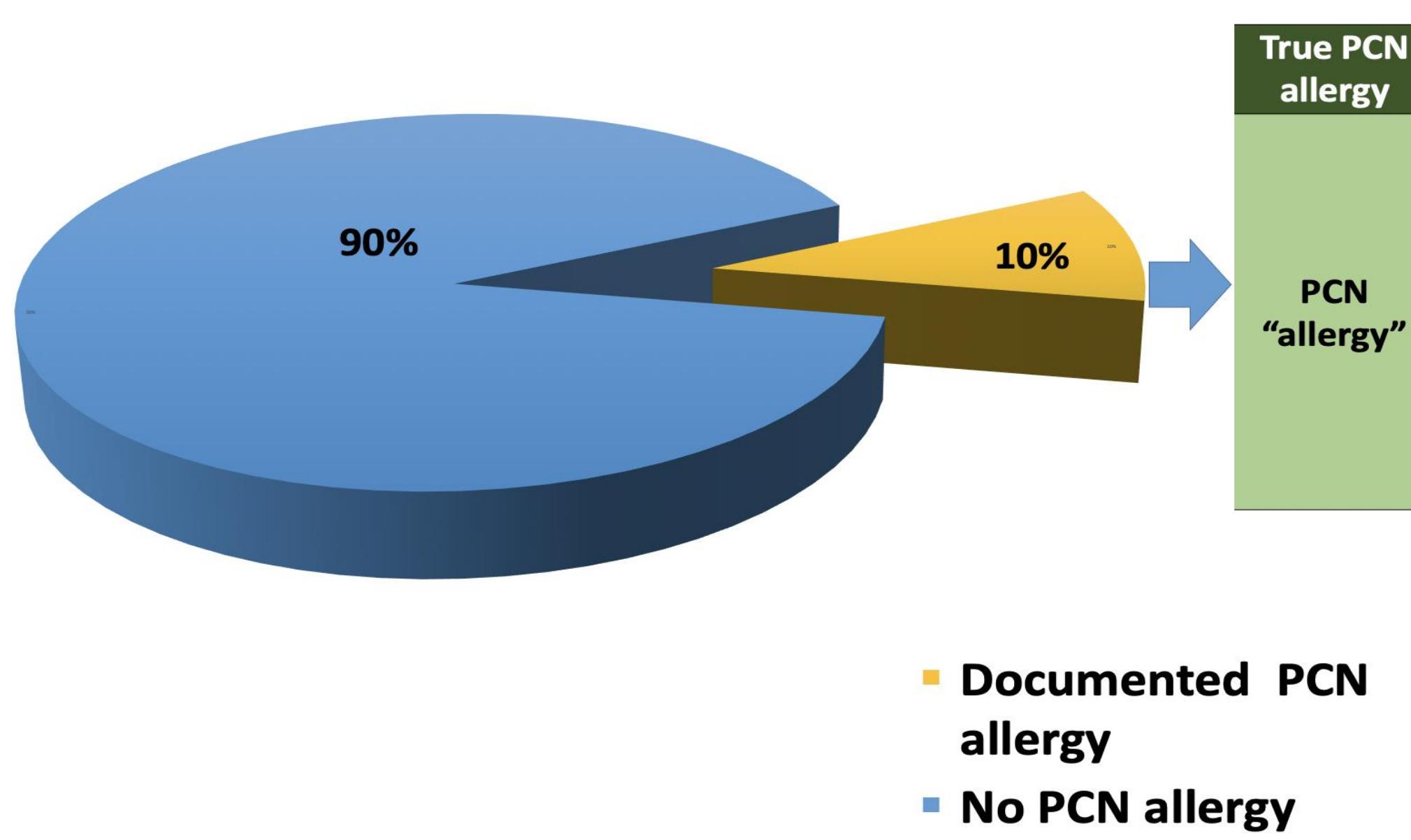


# Impact of inaccurately reported penicillin allergy on surgical site infection rates

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## BACKGROUND

- Penicillin (PCN) allergy remains the most commonly reported drug allergy among hospitalized patients, with a prevalence of 10% in the United States<sup>1</sup>
- Up to 90% of these patients do not have true IgE-mediated reactions to penicillin and common side effects of beta-lactams such as nausea, vomiting, and diarrhea are mistaken as an allergy and documented incorrectly in the Electronic Health Record (EHR)<sup>1,2</sup>



- The overall cross reactivity between penicillin and first generation cephalosporins in individuals who report a penicillin allergy is approximately 1%, and in those with a confirmed penicillin allergy ~ 2%. Cross reactivity between penicillin and other generations of cephalosporins is negligible<sup>3</sup>
- In patients who have previously had a true penicillin allergy, there is an expected 10% decrease per year of a subsequent reaction. Therefore, with the avoidance of PCN, 80% to 100% of patients will ultimately test negative for penicillin allergy 10 years after the initial positive reaction
- The mainstay of surgical prophylaxis in non-PCN allergic patients are cephalosporins for many common surgical procedures including orthopedic, gynecological, vascular, cardiac and thoracic
- Appropriate use of perioperative antibiotics such as cefazolin can decrease the incidence of surgical site infections (SSIs); however, patients with a reported penicillin allergy are often treated with non-beta lactam antibiotics which can lead to the following: <sup>2,4,5</sup>
  - Inappropriate use of alternative antibiotics that are not first-line
  - Higher rates of post-operative infection
  - Higher costs
  - Increased adverse events

## OBJECTIVES

- Determine the frequency and impact of provider utilization of alternate antibiotic options for surgical prophylaxis due to documented PCN allergy in the EHR
- Define the potential opportunity for impact of a pharmacist-driven PCN allergy de-labeling protocol for EHR correction and subsequent surgical prophylaxis antibiotic selection in surgical patients

## METHODS

- Prospective observational cohort study conducted at a 400-bed advanced tertiary medical center over a period of two months

Data collection 12/15/2020 to 02/15/2021

Chart review using medical records

Patient receiving guideline recommended first line agents  
N=?

Alternate therapy due to reported penicillin allergy  
N=?

### Inclusion criteria:

- Age 18 and older
- Documented PCN allergy in the EHR
- Received antibiotics for surgical procedure where cephalosporins are recommended first-line options (orthopedic, vascular, gynecological, cardiac and thoracic)

### Primary Outcome

Difference in the rate of surgical site infection in patients who receive guideline recommended first line agents vs those that receive alternative recommendations due to PCN allergy

### Secondary Outcomes

- Alternative antibiotic utilization
- Antibiotic costs
- Length of stay
- Incidence of Clostridioides difficile infection (CDI)
- Ability of pharmacist to de-label or clarify PCN allergy in EHR by performance of patient review

## RESULTS

- A total of 100 patients were included in this study, with 50 participants in each arm (penicillin allergy group vs non-penicillin allergy). In the penicillin allergy group, there were 42% females, 58% males, and with a mean age of 67.3. In the non-penicillin allergy group, there were 48% females, 52% males, and with a mean age of 71.03.
- For the primary outcome There was no difference in the rate of surgical site infection in patients who received guideline recommended first line agents compared to those that received alternative regimens due to a reported PCN allergy.
- For the secondary outcome that assessed length of stay, length of stay in the penicillin allergy group was longer, 4.8 days vs 3.2. There were no cases of (CDI) in either of the groups within 30 days.

## CONCLUSIONS

This analysis did not show a difference in surgical site infections when patients who received first-line recommendations were compared to those who did not. However, allergy clarification, verification, and de-labeling is still an important task for pharmacy to be involved with. Based on the potential number of patients who could be de-labeled, pharmacy should have a protocol to address this matter.

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## DISCLOSURES

Authors of this presentation have the following 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:

Nasim Farahani: Nothing to disclose (NFarahani@baptisthealth.net)

Kristin Boyar: Nothing to disclose (KBoyar@baptisthealth.net)