



### Background

Penicillin (PCN) allergy is a serious adverse reaction that prevents use of first line therapy. 10% of the population reports a PCN allergy, however less than 1% is truly allergic. Elimination of false allergies significantly impacts patient's lives and decreases antimicrobial resistance and cost. Penicillin Skin Testing (PST) is a tool to support antimicrobial stewardship and to accurately de-label patients

### Purpose

The primary objective of the study was to implement PST in the outpatient surgical clinic at Inova Mount Vernon Hospital (IMVH). The secondary objective was to decrease the use of vancomycin as the pre-op antimicrobial agent.

### Methods

- Pharmacy worked with nursing to develop a protocol for PST in the outpatient surgical clinic at IMVH to offer PST service for patients that are labeled having PCN allergy (fig 1).
- This project was conducted Monday-Thursday when the clinic was open.
- The initial step was to collaborate with surgeons to develop a standard work for PST and have it approved by IMVH pharmacy and therapeutics committee (fig 1).
- Pharmacy and nursing received training on administration and reading the test results on site.
- Extending the training to all pharmacy staff, pharmacy residents, and nurses later occurred to hardwire the project.
- Pharmacists interviewed and screened patients. Nurses administered the test and then pharmacists read the results. Final documentation, patient counseling, and de-labeling were all performed by pharmacy.(fig 1)

### Study design:

- Retrospective chart review conducted May 2019- Jan 2020.

### Inclusion criteria for PST:

- Patient is  $\geq 18$  years old.
- Patients are eligible for the protocol if they have a listed history of a reaction to any penicillin antibiotic.
- Penicillin or a  $\beta$ -lactam antibiotic is the drug of choice for treatment in this patient.
- Patient consents to this procedure.

### Exclusion criteria for PST:

- Patient reports an immediate reaction (within 1 hour) to a penicillin antibiotic within the last 5 years.
- Patient is pregnant or nursing.
- Patient has taken a first generation H1 receptor antagonist (i.e. diphenhydramine) in the past 24 hours, OR a second generation H1 receptor antagonist (i.e. loratadine, fexofenadine, cetirizine) in the past 72 hours.
- Patient reports a hypersensitivity reaction other than a Type I reaction (hemolytic anemia, interstitial nephritis, Stevens-Johnson syndrome, etc.).
- Patient has an intolerance to the antibiotic (i.e. stomach upset), not a true allergy.
- Patient has severe immunosuppression (i.e. Neutropenia, HIV+ with CD4 < 200, Immunosuppressives for organ transplant), not including diabetes or corticosteroid use.

### Preliminary Results

Figure 1. PST Pharmacist-nursing Algorithm established for test administration, reading, and result documentation

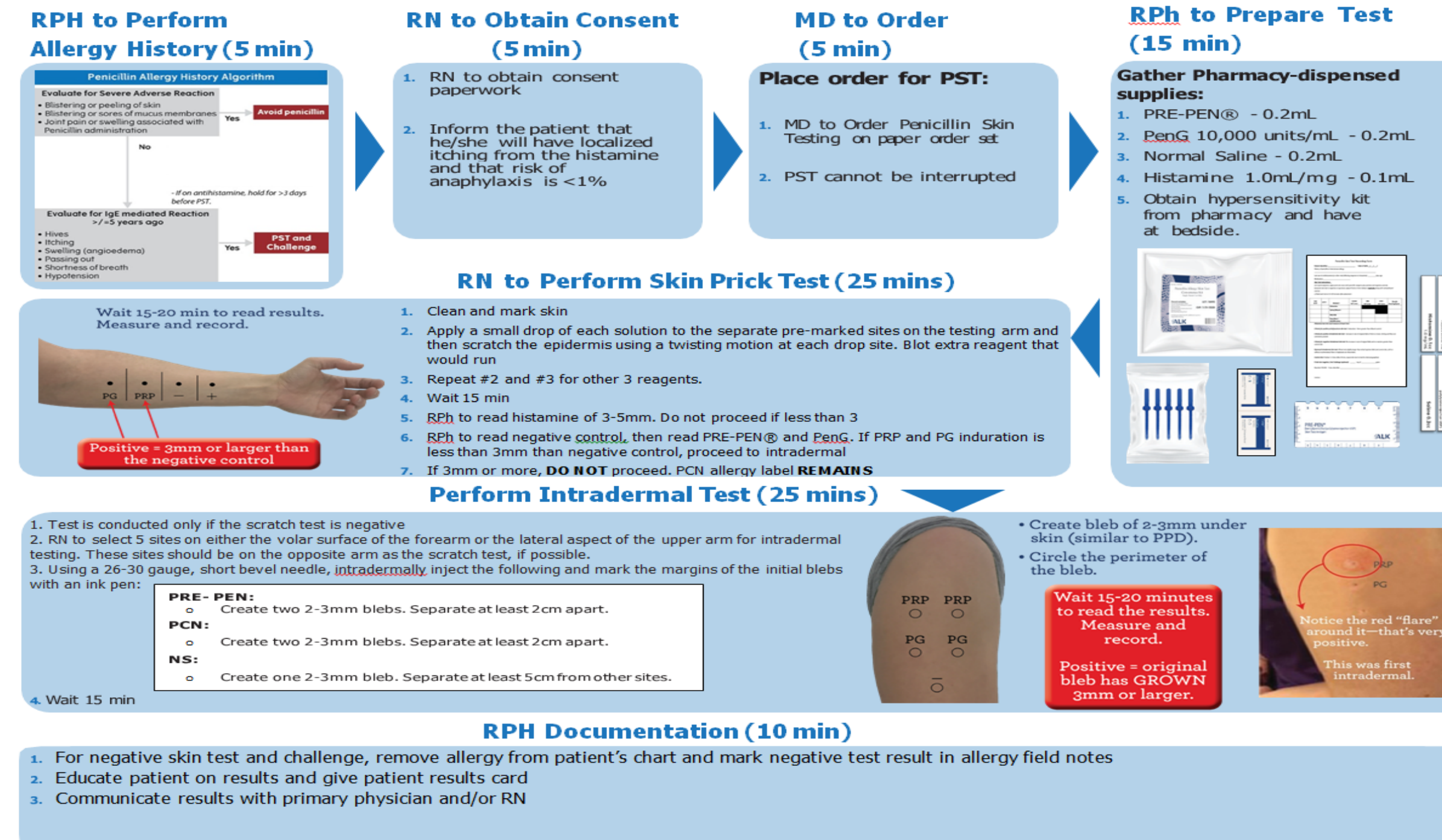


Figure 2. Number of monthly PST performed

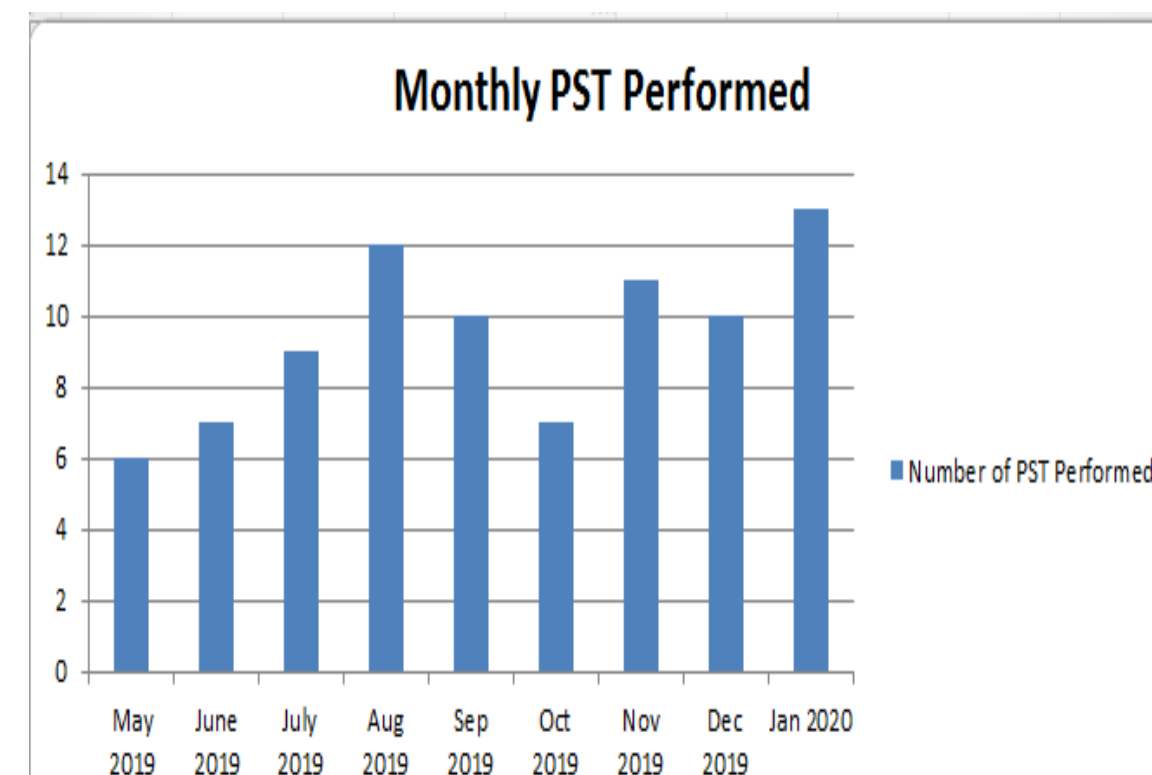
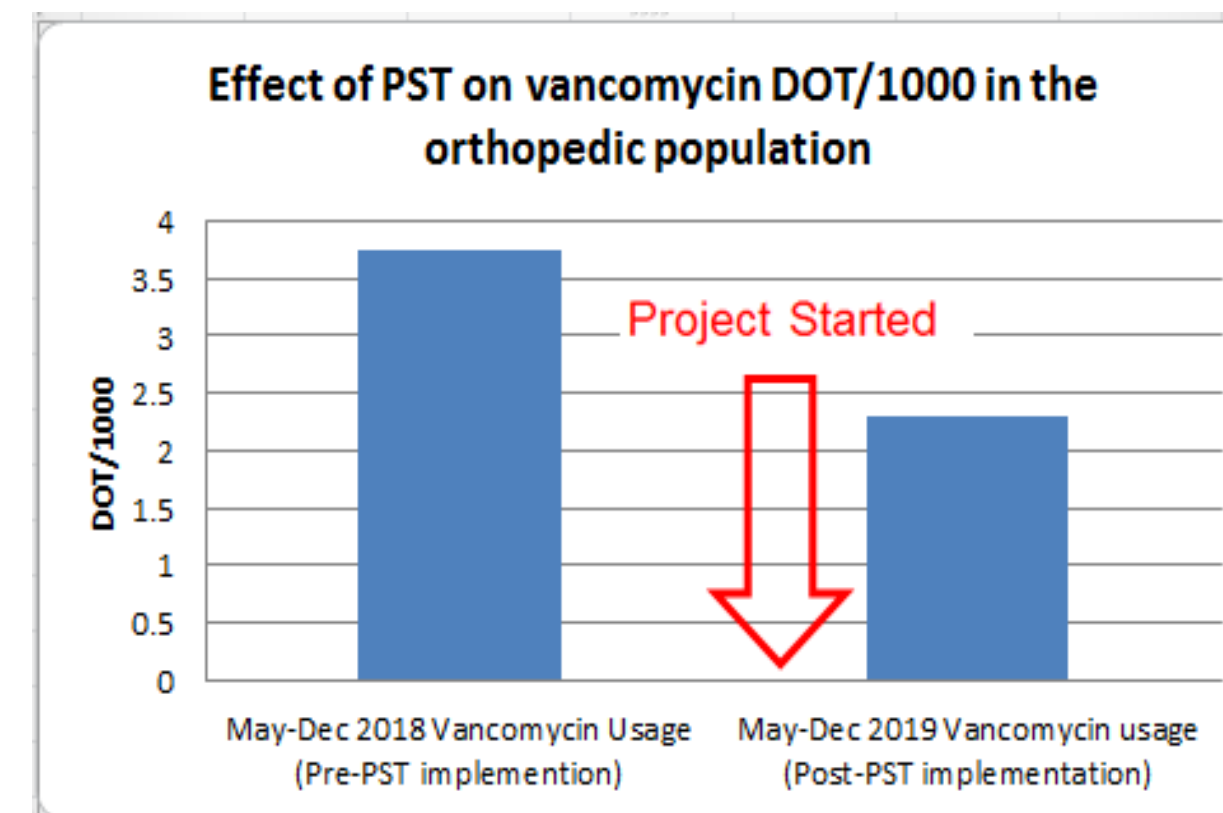


Figure 3. Pre-op Vancomycin DOT/1000



Days of Therapy (DOT)/1000= administration of aztreonam on a calendar day \* 1000 / Number of Patients present

### Discussion

- A total of 85 PST was performed on patients who met criteria in the surgical clinic. (fig 2)
- All patients who agreed to be tested signed a consent form.
- Only 1 patient had a reaction in the first step of the test and was deemed positive. The allergy alert was kept in the electronic chart.
- Overall 84 tests were negative and allergy was removed from the chart.
- 100% of patients were counseled and given a patient card with the results for use in community setting. (fig 4)
- All 84 patients who were de-labeled received cefazolin as pre-op prophylaxis before their orthopedic surgery.
- A 39% decrease (p <0.005) in pre-op vancomycin usage was observed after appropriately de-labeling surgical patients (fig 3)

- 2018 May-Dec Average DOT/1000 patient Days=3.75
- 2019 May-Dec Average DOT/1000 patient Days=2.3

### Penicillin Allergy Test : PATIENT RESULTS CARD

Name: \_\_\_\_\_  
Date: \_\_\_\_\_

On the above date, I received a penicillin allergy skin test and the results were:

Negative  
 Positive  
 Ambiguous\*  
 Received oral challenge or beta-lactam therapy

\*Consult physician for further details.

Figure 4. Patient Result Card

### Limitations

- Barriers to this study include patients agreeing to take the test and limited staff able to perform the test in a timely manner.

### Conclusions

- Elimination of uncertain allergy histories is crucial in assisting providers to choose narrower spectrum drug of choice that are cheaper and less toxic.
- After implementing the PST in the outpatient surgical clinic, pharmacy was able to appropriately de-label patients and increase patient satisfaction.
- PST service impacted the choice of pre-op antimicrobial agents thus leading to decrease in overall vancomycin usage.

### Disclosures

Authors of this presentation have nothing 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.

### References

- Ann Allergy Asthma Immunol. 2010Oct;105(4):259-273.