### INTRODUCTION

- Surgical site infections (SSI) result in substantial morbidity and mortality; reducing SSIs is a national healthcare priority.
- Cefazolin is the recommended perioperative antibiotic in cardiothoracic surgery; patients with a penicillin allergy receive less effective perioperative antibiotics and have an increased SSI risk.
- Although penicillin allergy is reported by >10% of surgical patients, >95% of patients do not have a true penicillin allergy.

### PROJECT AIM

- To implement and assess a perioperative penicillin allergy evaluation program for outpatient cardiothoracic surgery patients at an academic tertiary care referral center.

### PROJECT DESIGN

- **Patient Selection**
  - Outpatients with cardiothoracic surgery recommended and a penicillin allergy history were referred to Allergy.
  - All patients, except those whose allergy histories warranted avoidance (e.g., history of a severe delayed immunologic reaction such as Stevens-Johnson syndrome or recent [≤5 years ago] anaphylaxis) were booked for a visit.

- **Allergy Evaluation**
  - Patients were advised to hold their beta-blockers for at least 6 hours and antihistamine medications for 5 days prior to their Allergy appointment.
  - After a history and physical exam, penicillin skin testing was performed using Pre-Pen® and dilutions of penicillin G (Fig 1).
  - If the skin tests were negative, amoxicillin 500 mg was given, followed by a 60 minute observation time.

- **Outcomes**
  - General feasibility of this approach.
  - Frequency of negative penicillin allergy evaluations.
  - Frequency of use of cefazolin.
  - Adverse and allergic reactions.

### RESULTS

- Of 59 cardiothoracic surgery patients referred, 48 (81%) were assessed by Allergy and ultimately had surgery (Fig 2).
- Penicillin allergies were most commonly cutaneous (e.g., hives, rash; Fig 3).
- 48 (100%) were not allergic; 47 (98%) received cefazolin.
- Cefazolin use was significantly greater in patients evaluated by Allergy compared to those who were not (98% vs 14%, p<0.001).
- There were no adverse or allergic reactions resulting from allergy testing or administration of cefazolin perioperatively.

### CONCLUSION

- Penicillin allergy evaluation is a safe and effective way to improve perioperative antibiotic choice in cardiothoracic surgery patients.

### NEXT STEPS

- To evaluate the frequency of successful referral for cardiothoracic surgery patients with penicillin allergy.
- To expand Allergy evaluation to other surgical disciplines.
- To assess the impact of this approach on SSIs.