Impact of Pharmacist Driven Penicillin Skin Testing on Antimicrobial Stewardship Practices

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ABSTRACT #1063

Disclosures

- IRB Exempt Status Approved
- Co-investigators: Thomas Richardson, Heidi Simons, Shea Fanning, Summer Monforte
- Conflicts of Interest: None
- Project Sponsorship: None

St. Peter's Health

- Located in Helena, Montana
  - ~120 bed community hospital

Background

- 10% of patients report an allergy to penicillin[1]
- 95% of these patients likely tolerant to penicillins and cephalosporins[2]
- Studies have shown unclarified or inaccurate penicillin allergies leads to
  - Higher post-operative SSI rates
  - Worse clinical outcomes for certain types of infections and disease states
  - Increased rates of C. diff, MRSA, and VRE in patients with recorded penicillin allergies

1. Trubiano JA, Adkinson NF, Phillips EJ. Penicillin Allergy Is Not Necessarily Forever. JAMA. 2017;318(1):82-83
2. Blumenthal KG, Wickner PG, Hurwitz S, et al. Tackling inpatient penicillin allergies: Assessing tools for antimicrobial stewardship. J Allergy Clin Immunol. 2017;140(1):154-161.e6

Rationale for Implementation

- "In patients with a history of beta-lactam allergy, we suggest that ASPs promote allergy assessments and penicillin (PCN) skin testing when appropriate"

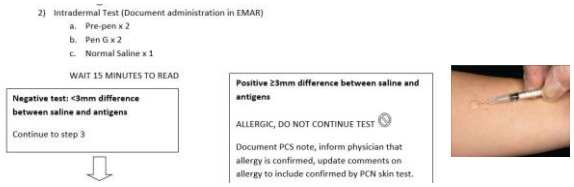
Barlam TF, Cosgrove SE, Abbo LM, et al. Executive Summary: Implementing an Antibiotic Stewardship Program: Guidelines by the Infectious Diseases Society of America and the Society for Healthcare Epidemiology of America. Clin Infect Dis. 2016;62(10):1197-1202

Objectives

- Record number of penicillin allergies clarified through skin testing
- Report number of patients with negative skin tests whose antimicrobial therapy was subsequently de-escalated
- Estimate financial impact of penicillin skin testing

Administrative Process

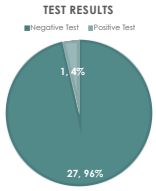
- Pharmacist Penicillin Skin Test Protocol → Approved through P&T
  - Engage stakeholders (Allergist, MDs, RNs)
  - Educate MDs, RNs (Procedure, Reactions, Results)
- Patient Consent Form → Approved through Forms Committee
- Acquire Supplies
  - Develop system for compounding penicillin dilution
  - Determine cost/benefit of kits
  - Pre-pen
- Develop system for documentation in hospital's EMR
- Incorporate penicillin skin testing into pharmacist workflow



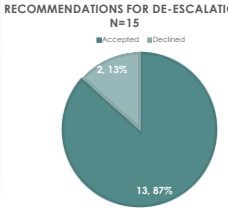
Results

Patients Tested	N=31
Skin Test+Oral/IV Challenge Negative	27
Scratch Test Positive	1
Indeterminate Test	3*

*3 of these patients had taken antihistamines recently
Average time from last antihistamine dose: 15 hours (1-32)
Patients who took antihistamine prior to testing: 11



Results, cont..



- Examples of interventions:
  - Meropenem + clindamycin → Unasyn for facial abscess
  - Ertapenem + Azithromycin → Ceftriaxone + azithromycin for CAP
  - Prevented use of daptomycin for staphylococcal coverage in cellulitis

Results, cont.

- Overall cost to patients ~$200
  - Lumped into DRG

Antimicrobial Therapy	Days of Therapy	Total Costs Accrued by Patients	Average Antimicrobial Cost/Day
Prior to skin test	51	$9552.16	$187.30
After negative skin test	49	$5514.75	$112.55

Conclusion

- Incorporating PCN skin testing into AMS services can:
  - Clarify allergies to optimize antimicrobial therapy
  - Assist AMS efforts to de-escalate broad spectrum therapy
  - Reduce costs from use of more costly options in certain cases
  - Expected benefit to patients in outpatient setting and in future readmissions

Future Development

- Add PCN skin testing to the following areas:
  - Pre-operative patient care
  - Ambulatory care
  - ER
- Cephalosporin skin testing

Questions?

- Contact: sharmon@sphealth.org