



Involvement of Allergy and Immunology in Peri-Operative β -Lactam Allergy Management

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Background

- 1st generation cephalosporins: gold standard antimicrobials peri-operatively
- β -Lactam Allergy: alternative antibiotics
- Retrospective cohort study found that pts with a Penicillin allergy had a 50% increased odds of SSI
- While ~10% of patients report a history of Penicillin allergy, ~90% are not truly allergic
- Cross-reactivity rate between 1st generation cephalosporins or cephalosporins with similar R1 side chains and penicillins is about 1%

Cost of antimicrobials at RUMC

- Cefazolin 2g IV --- \$1.33
- Vancomycin 1250mg IV --- \$3.00
- Clindamycin 900mg IV --- \$2.50

Prevalence of β -Lactam Allergy at RUMC Peri-Operative Clinic

- 433/2610 (17%)

Questionnaire

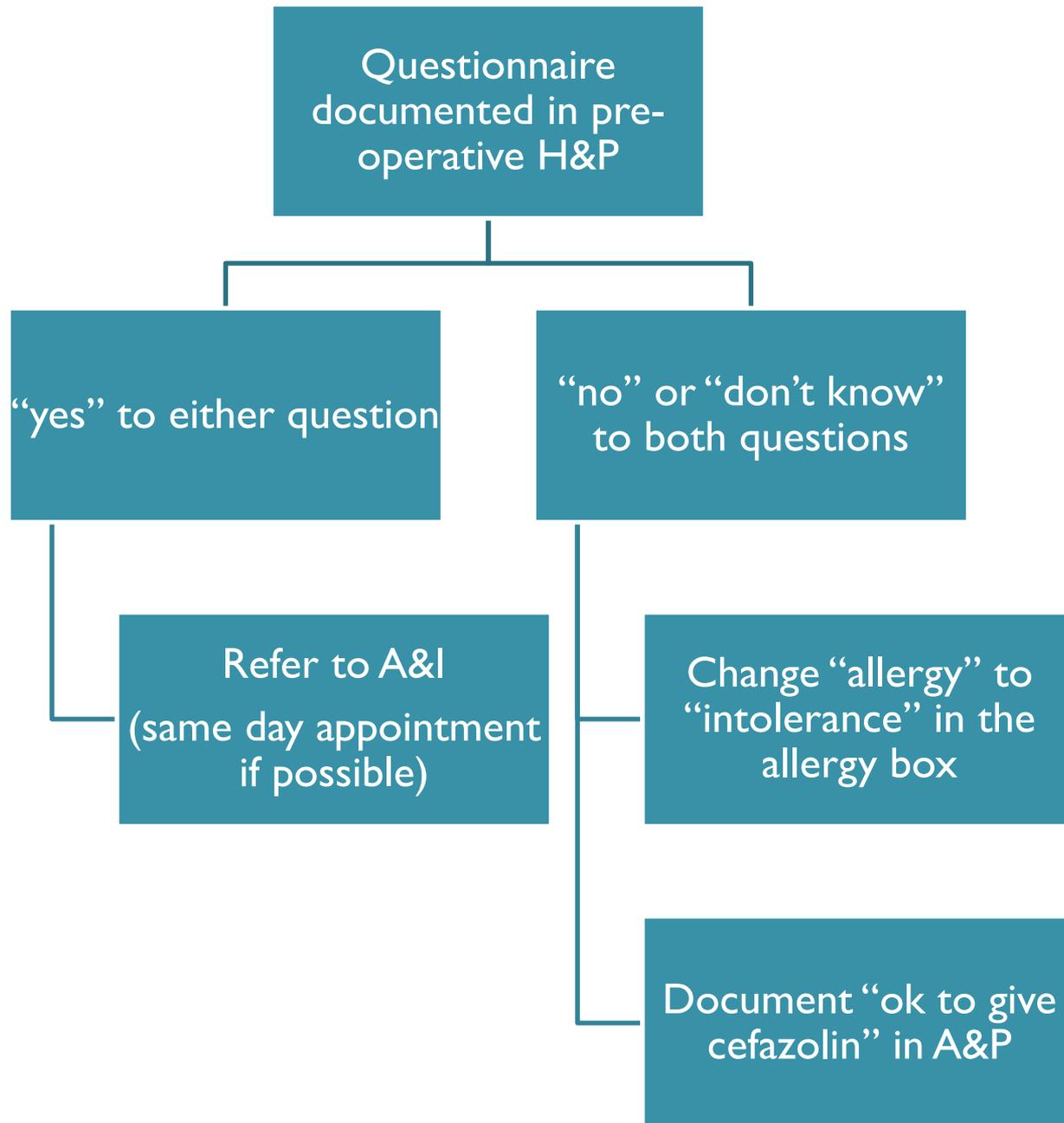
- 1: Do you have any allergic reaction to Cefazolin?
 - If yes: refer to A&I and hold Cefazolin
 - If no/Don't know: go to question 2
- 2: Did you have any of the following reactions to a penicillin?
 - Urticaria/hives that begin within 2 HOURS of drug taken
 - Shortness of breath / wheezing
 - Facial / throat / tongue swelling
 - Passed out / blood pressure dropped
 - Needed epinephrine
 - Fever or other severe systemic illness
 - Blistering rash involving skin or mucous membranes
 - If yes to any: refer to A&I and hold Cefazolin
 - If no or don't know to all: safe to administer Cefazolin

Hypothesis

- Use of a screening tool developed by A&I team at RUMC to de-label β -Lactam allergy in patients undergoing a procedure is associated with:
 - more patients receiving cefazolin
 - lower rate of SSI
 - lower cost of antimicrobials
 - unchanged rate of ADR

Subject selection

- Inclusion Criteria:
 - Patients with documented β -Lactam Allergy
 - Patient seen in pre-operative clinic 3 months prior to and 3 months after implementation of screening tool
 - January 22, 2019
 - Patients 18 years and older
- Exclusion Criteria:
 - Patients 18 years and younger



Baseline Characteristics of Cohort

| | Pre-Pilot | Post-Pilot |
|---|-----------|------------|
| Allergy: | | |
| Penicillins | 37 | 45 |
| Cephalosporins | 8 | 3 |
| Penicillins & Cephalosporins | 5 | 2 |
| Sex: | | |
| Female | 24 | 35 |
| Male | 26 | 15 |
| Surgery/Procedure: | | |
| Orthopedic | 14 | 21 |
| Ear, Nose, & Throat | 12 | 6 |
| Neurosurgery | 14 | 9 |
| Obstetrics & Gynecology | 4 | 6 |
| Ophthalmology | 2 | 2 |
| Urology | 2 | 3 |
| Dermatology | 1 | 3 |
| General (abdominal) | 1 | 0 |

Results

| Post-Pilot Screening Questionnaire | # of pts | % |
|---|-----------------|----------|
| Question #1 (Allergic reaction to Cefazolin) | | |
| Yes | 3 | 6% |
| No | 12 | 24% |
| Unknown | 14 | 28% |
| Not asked | 21 | 42% |
| Question #2 (IgE mediated/systemic rxn to PCN) | | |
| Yes | 15 | 30% |
| No | 8 | 16% |
| Unknown | 6 | 12% |
| Not asked | 21 | 42% |

| Referral to A & I | | |
|------------------------------|------------------|-------------------|
| | Pre-Pilot | Post-Pilot |
| Referred | 1 | 14 |
| Went to Appointment | 1 (100%) | 6 (43%) |
| Deferred | 0 | 8 (57%) |

| A & I Testing Results | | |
|-----------------------------------|-----------|------------|
| | Pre-Pilot | Post-Pilot |
| Penicillin Skin Test | 0 | 5 |
| Negative | | 5 |
| Positive | | 0 |
| Amoxicillin Oral Challenge | 0 | 5 |
| Negative | | 5 |
| Positive | | 0 |

| Perioperative Antibiotics | | |
|------------------------------------|-----------|------------|
| | Pre-Pilot | Post-Pilot |
| Cefazolin (+/- additional) | 7 (14%) | 11 (22%) |
| Cefoxitin (+/- additional) | 0 | 1 (2%) |
| Cefepime (+/- additional) | 0 | 2 (4%) |
| | | |
| Alternative, broad-spectrum | 32 (64%) | 25 (50%) |
| None or no surgical record | 11 (22%) | 11 (22%) |

| Adverse Drug Reactions & SSI | | |
|---|-----------|------------|
| | Pre-Pilot | Post-Pilot |
| Adverse Drug Reactions | | |
| Yes | 0 | 0 |
| No | 41 | 43 |
| N/A | 8 | 7 |
| Unknown | 1 | 0 |
| Surgical Site Infections | | |
| Yes | 1 (2%) | 3 (6%) |
| No | 41 | 40 |
| N/A | 7 | 6 |
| Unknown | 1 | 1 |

Summary

- Number of patients who were referred to and saw A&I and underwent Penicillin ST and Amoxicillin OC increased
- All patients who underwent Penicillin ST and Amoxicillin OC had no IgE mediated symptoms
- Number of patients who received a cephalosporin increased
- No difference in ADR
- Higher number of SSI in post-pilot group

Limitations

- Retrospective chart review
- Preliminary data
- IM attendings forgot/not informed about questionnaire
- Providers hesitant to modify allergy box
- Unclear documentation
- Failure to read Peri-Operative H&P
- Limited testing during A&I appointment
- All procedures included in analysis
- Drug allergy management differs among A&I attendings

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