

Improving Cephalosporin Utilization in the Emergency Department for Penicillin Allergic Patients

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Background

- Penicillin (PCN) allergies impact acute-care antibiotic prescribing practices, limit the use of first-line antibiotic agents and are associated with poor patient outcomes.
- Cephalosporins (CPN) are inconsistently prescribed to patients reporting PCN allergies despite reported low allergy cross-reactivity.
- The purpose of this study is to assess the impact of an education intervention on prescribing practices for CPN use in PCN allergic patients in the emergency department (ED).

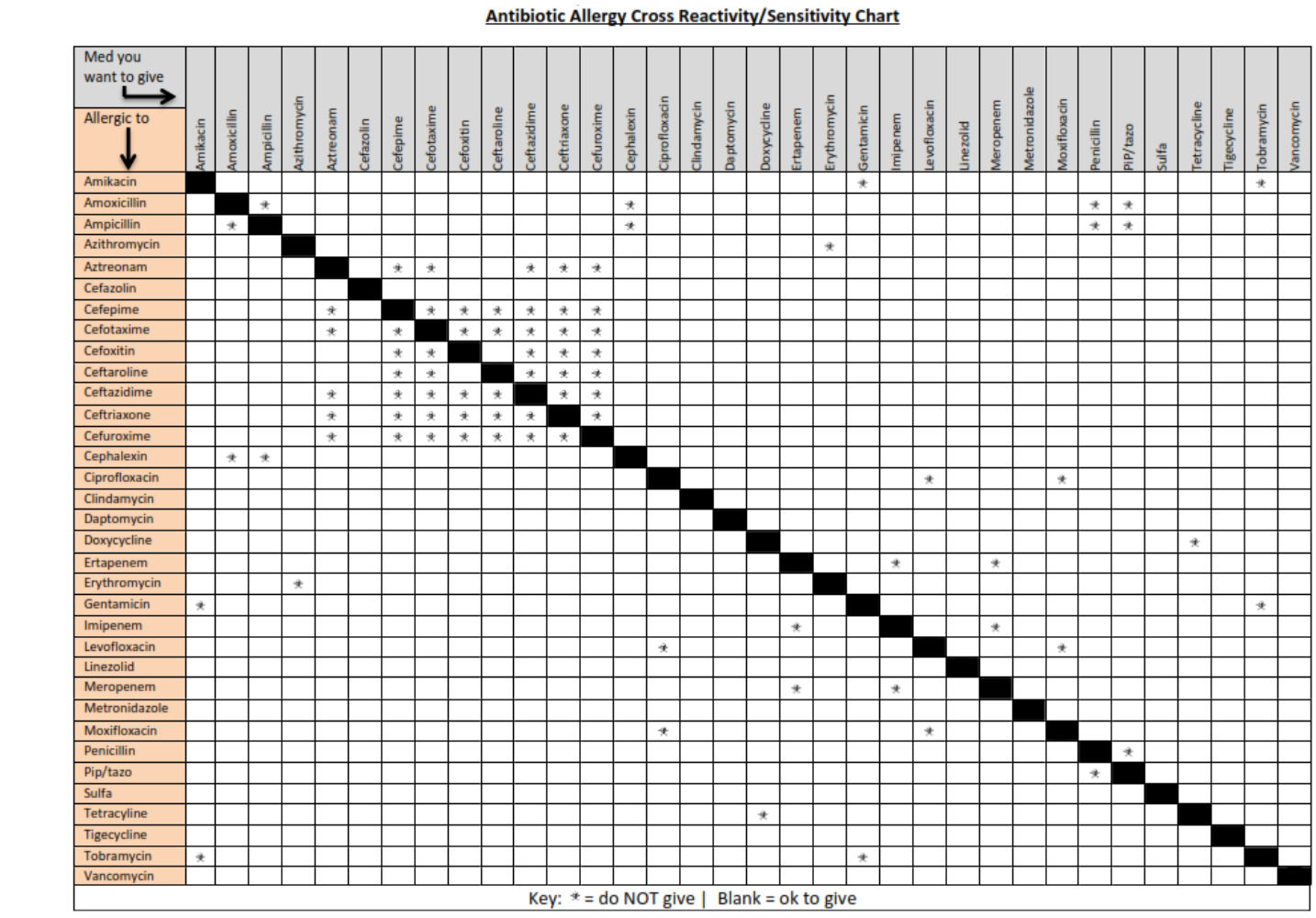
Research Objectives

- Compare the patient characteristics between the pre-intervention and post-intervention groups
- Compare the PCN allergy characteristics between the pre-intervention and post-intervention groups
- Compare CPN use in the ED, defined as receipt of a CPN despite a documented PCN allergy between the pre-intervention period versus the post-intervention period
- Compare the rate of adverse reactions related to CPN use between the pre-intervention and post-intervention groups
- Compare the admission status of patients between the pre-intervention and post-intervention groups

Methods

- This is a retrospective study evaluating CPN use in all PCN allergic patients at University Hospital ED from 07/01/2018 to 07/31/2019 comparing pre-intervention (7/1/18 -12/31/18) and post-intervention period (2/1/19 -7/31/19).
- The intervention consisted of a locally developed guideline directing ED physicians to optimal CPN use given a designated PCN allergy along with educational in-person lectures on the guidelines during 1/19.
- We compared patient characteristics, CPN use, PCN allergy notation and adverse reactions between the pre-intervention and post-intervention groups.

Intervention: Education & Guideline (Select Content)



Discussion

- We found there was no significant difference in CPN use in PCN allergic patients in the ED after our educational intervention.
- Subsequent CPN use did not improve even with improved documentation of CPN tolerance in PCN allergic patients,
- No adverse events related to CPN use were reported.
- Our study suggests further strategies to promote appropriate CPN use in PCN allergic patients are needed. This may include strategies such as the integration of PCN allergy guideline into the electronic medical record with additional real-time clinical decision support.

Limitations

- Our study was small with a limited time-frame for follow-up.
- As this was a retrospective study, data was not collected in a standardized manner and may have been subject to potential biases.

Conclusion

- Education interventions on CPN use in PCN allergic patients require support with other strategies and tools.
- This intervention provides groundwork to initiate efforts to further improve CPN use in PCN allergic patients.

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Results*

*Descriptive statistics were utilized to describe our study results. A p-value ≤ 0.05 is statistically significant.

	Pre-Education (n=53)	Post-Education (n=70)
Male	19	28
Black or African American	32	37
Diabetes mellitus	17	14
Hypertension	24	23
Chronic kidney disease	2	3
Congestive heart failure	4	7
Coronary artery disease	4	5
Chronic obstructive pulmonary disease	6	2
Medicare/Medicaid Status	17	16

**Found to be not statistically significant

	Pre-Education (n=53)	Post-Education (n=70)
PCN Allergy	49	63
AminoPCN Allergy	5	8
Offending PCN Agent Not Specified	41	57
PCN Allergy Reaction		
"Unknown"	11	11
"Rash"	15	28
"Hives"	14	21
"Anaphylaxis"	5	3
"Angioedema"	2	1
"Pruritus"	6	6
Timing of PCN Allergy		
>10 years ago	7	9
5-10 years ago	1	1
< 5 years ago	1	2
Unknown	44	58
Previous Treatment with CPN at UH		
Previous Treatment with CPN at UH	15	16
Cefazolin	7	7
Cephalexin	2	0
Ceftriaxone	8	10
Cefoxitin	1	0
Cefotaxime	0	1
Cefepime	4	5

**Found to be not statistically significant

	Pre-Education (n=53)	Post-Education (n=70)
CPN Given in ED		
Cefazolin	6	7
Cephalexin	4	6
Cefoxitin	0	1
Ceftriaxone	32	45
Cefepime	11	11
CPN Use Documentation		
Allergy Pretreatment given before CPN	5	9
Allergy Information changed indicating CPN tolerance after administration	24	34
Pharmacist documented CPN tolerance	23	34

**Found to be not statistically significant

