

Beta-lactam allergy documentation following graded challenges or antimicrobial stewardship team interventions

Stefanie Stramel, PharmD, MS; Kanizeh Hernandez, PharmD, BCPS; Graham Snyder, MD, SM; Howard Gold, MD; Monica V. Mahoney, PharmD, BCPS-AQ ID; Christopher McCoy, PharmD, BCPS-AQ ID

Beth Israel Deaconess Medical Center, Boston, Massachusetts

Introduction/Problem

- Antibiotic allergies listed within a patient’s medical record may dissuade providers from ordering a first-line agent in order to prevent adverse events associated with a drug-induced allergic reaction; however, this may result in inferior clinical outcomes and potentially increased adverse effects^{1,2}
- Patient history is an essential component to clarify the details of reported allergies, but this is often confounded by “unknown” information about the reaction, or reactions having occurred greater than 10 years prior to the current presentation
- A direct challenge, graded challenge or desensitization are evidence-based methods to administer the beta-lactam of choice

Aim/Goal

Primary Objective

The purpose of this study was to evaluate the frequency of documentation in the allergy field of tolerance to an antibiotic after a graded challenge or desensitization, referred to as “re-labeling”

Secondary Objective

A secondary objective was to quantify how often “re-labeling” led to change in future antibiotic prescribing practice

The Team

- Howard Gold, MD, Medical Director of Antimicrobial Stewardship
- Christopher McCoy, PharmD, BCPS AQ-ID, Associate Director of Antimicrobial Stewardship
- Monica Mahoney, PharmD, BCPS AQ-ID, Pharmacy Infectious Diseases Clinical Coordinator
- Kanizeh Hernandez, PharmD, BCPS, Clinical Pharmacist
- Stefanie Stramel, PharmD, MS, PGY1 Pharmacy Resident

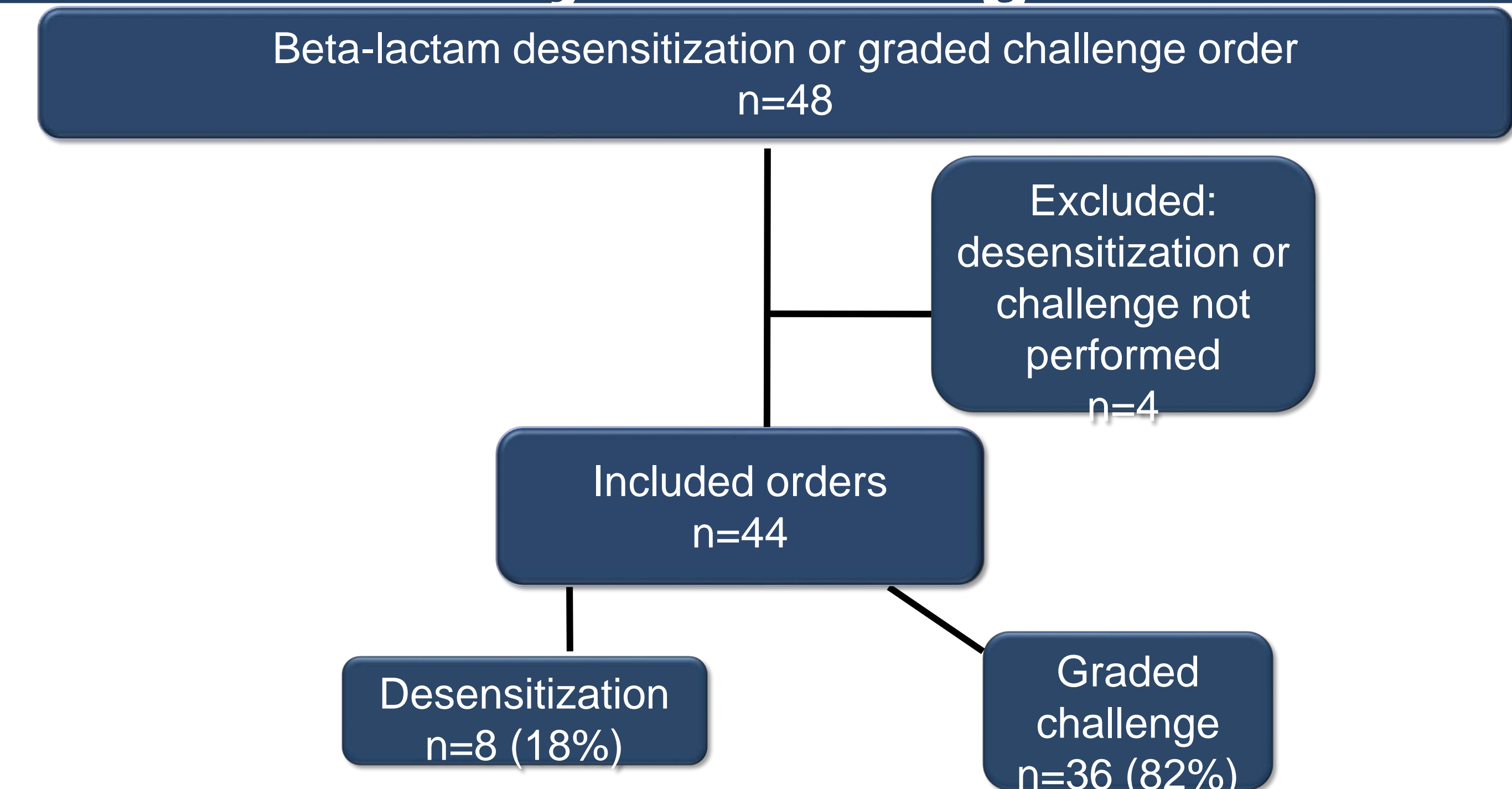
The Interventions

Three electronic sources were retrospectively reviewed for outcomes during the time period January 1st, 2015 and October 31st, 2017:

- Provider order entry (POE) database – identify all beta-lactam graded challenge or desensitization orders, and associated antibiotic orders
- Electronic health record – documented beta-lactam allergies including changes made in allergy status, outcomes of the challenge, antibiotic indications, and subsequent readmissions
- Stewardship interventions database – identify documented stewardship team involvement in the decision making related to these orders

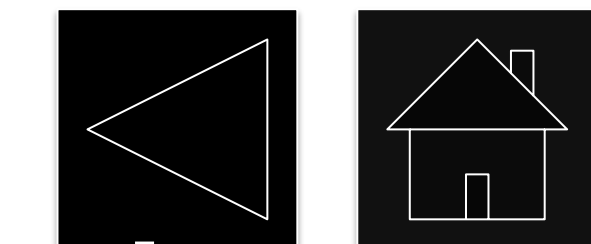
Characteristics of patients, antibiotic indications and orders, documented allergy, and measures of success of the interventions were described among patients undergoing beta-lactam desensitization or graded challenge

Study Flow Diagram



For more information, contact:

Stefanie Stramel, PharmD, MS, PGY1 Pharmacy resident, sstramel@bidmc.harvard.edu



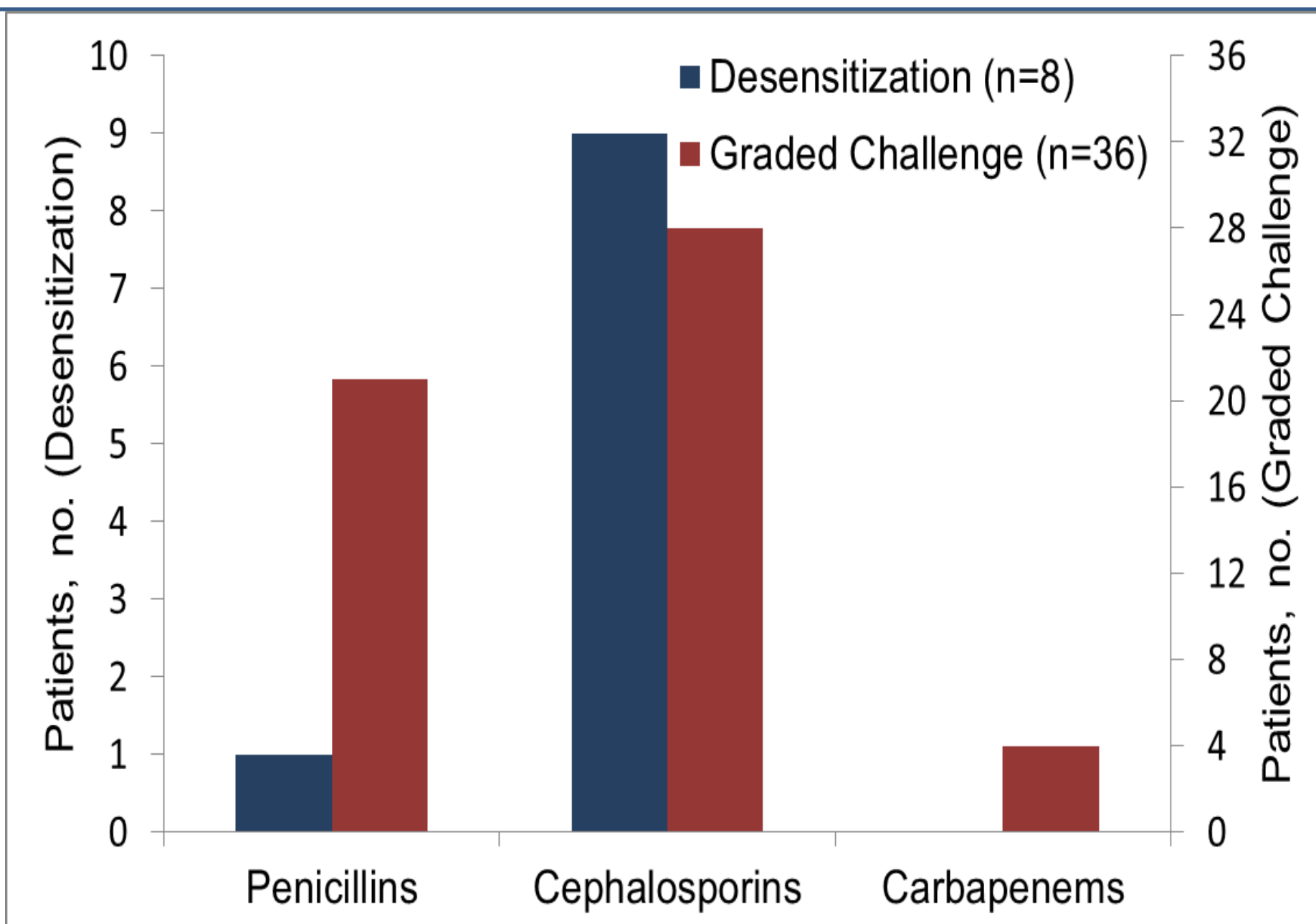
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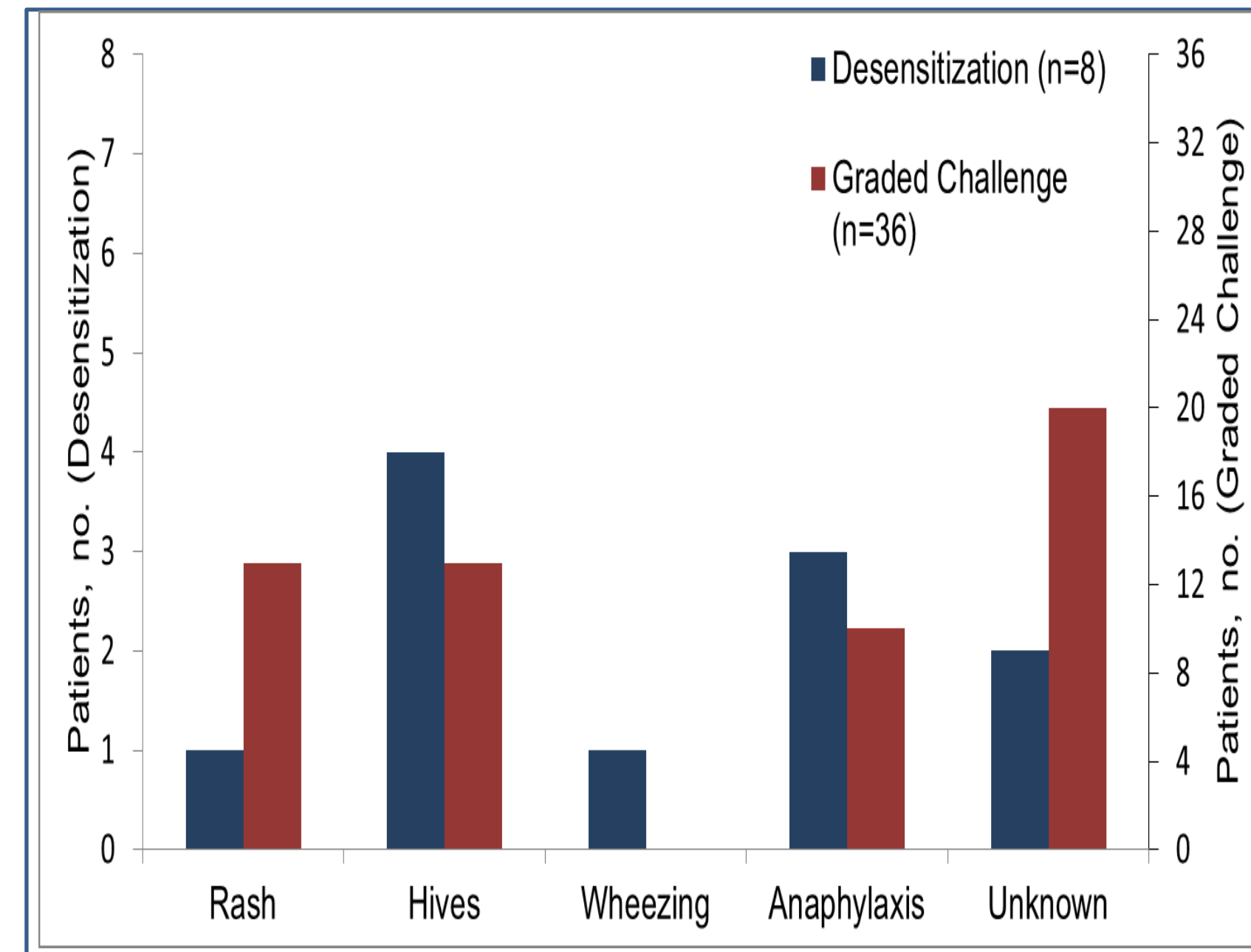
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Results Continued

Baseline Characteristics			
Characteristic	All patients (n=44) n (%)	Desensitization (n=8) n (%)	Graded challenge (n=36) n (%)
Sex (male)	19 (43.2)	1 (12.5)	17 (47.2)
Mean age, years (range)	58 (18-94)	54 (50-84)	58 (18-95)
Infectious Diseases Consult prior to intervention	24 (54.5)	7 (87.5)	17 (47.2)
Intensive Care Unit admit at time of intervention	17 (38.6)	7 (87.5)	10 (27.8)



*Note: One patient in the desensitization and eleven patients in the graded challenges group had allergies to more than one medication class



*Note: listed medications exceeded number of patients; 2 desensitization patients had 2 or more allergies and 12 graded challenge patients had 2 or more allergies

	Desensitization n (%)	Graded Challenge n (%)
Successful completion	8 (100)	36 (100)
Reaction during protocol*	2 (25)	5 (14)
Rescue Medications**	2 (25)	4 (11)

*Reactions during the desensitization were classified as moderate and did not preclude the completion of the protocol. Reactions during graded challenge were all classified as mild and also did not preclude completion.
 **Rescue medications were diphenhydramine +/- famotidine

Relabeling	Desensitization n (%)	Graded Challenge n (%)
Modified allergy field	0 (0)	14 (39)
By pharmacist	-	12
By prescriber	-	2
Subsequent admissions	Desensitization n (%)	Graded Challenge n (%)
Readmission	3 (37.5)	22 (61.1)
Antibiotics not given during subsequent admission	0 (0)	2 (3.6)
Antibiotics given during subsequent admissions	3 (100)	20 (94.4)
Beta-lactam administered	3 (100)	17 (85.0)
Beta-lactam avoidance	0 (0)	3 (15.0)

Lessons Learned

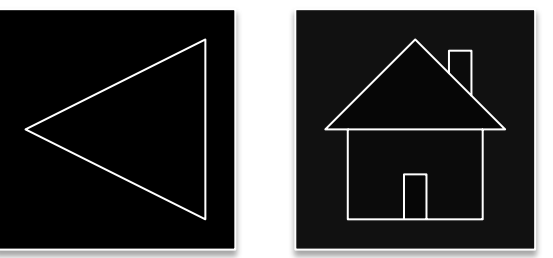
- Although desensitization and graded challenges were successful for 100% of patients, relabeling practices were poor
- Relabeling was primarily performed by pharmacists
- In patients readmitted, beta-lactam avoidance was 0% and 15% in patients who underwent desensitization and graded challenge, respectively

Next Steps

- Engage Nurses and prescribers in the process of relabeling through educational programs and a written protocol
- A re-evaluation after implementation of a re-labeling protocol and education
- Application for automatic re-labeling through programming of POE

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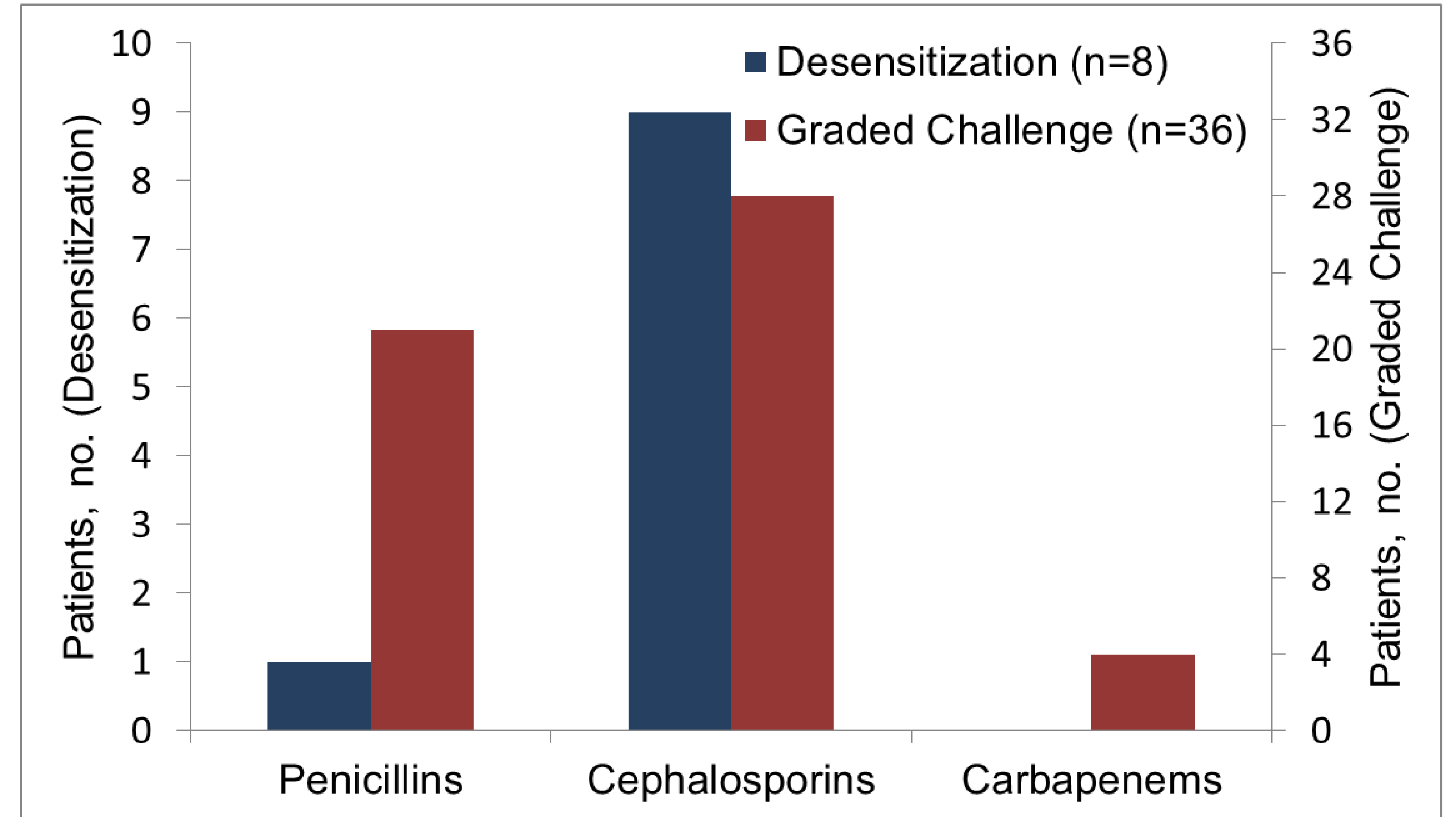
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Antibiotics listed in the allergy field



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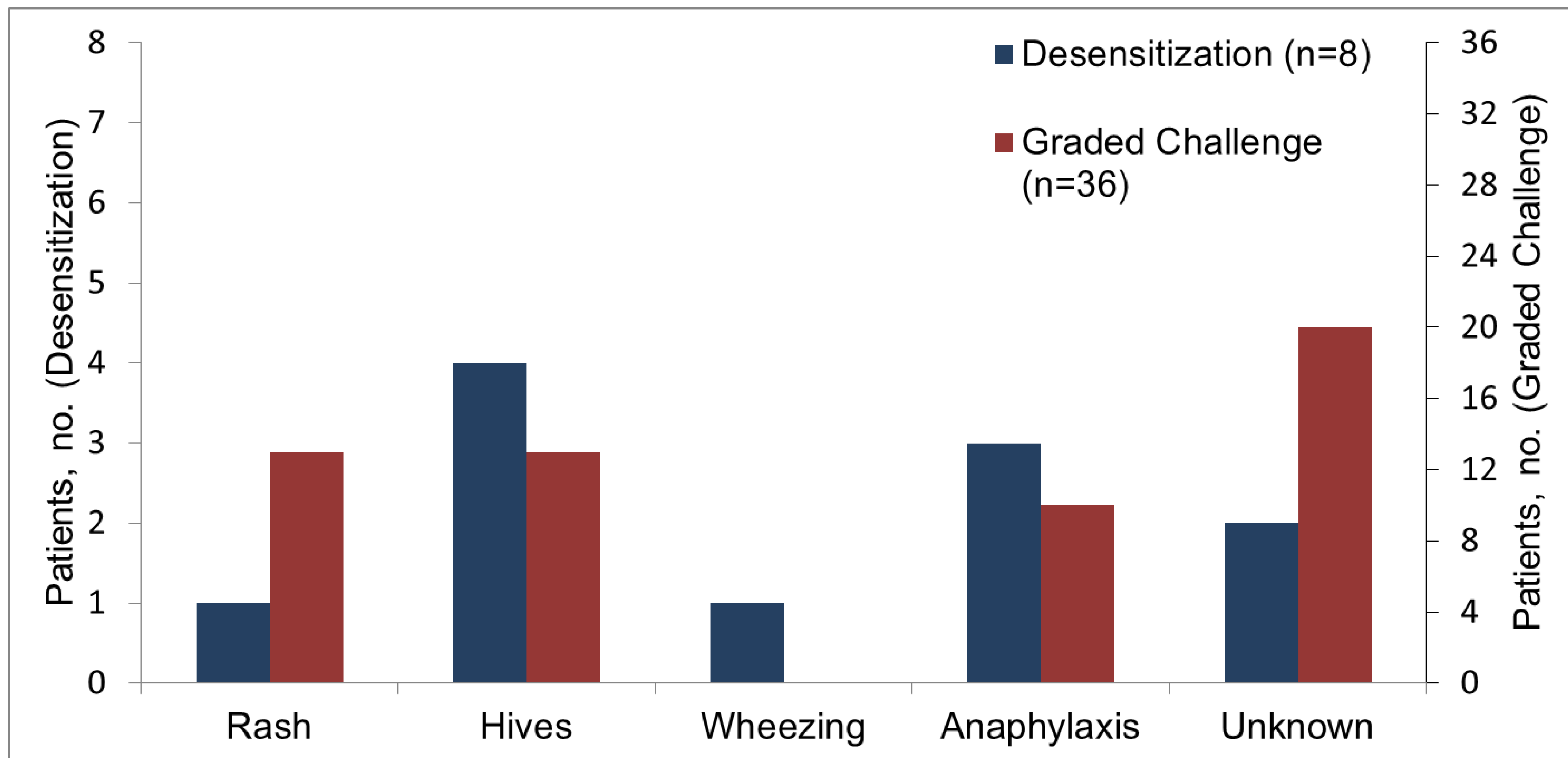
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Allergic reaction details prior to desensitization or graded challenge



Success rates

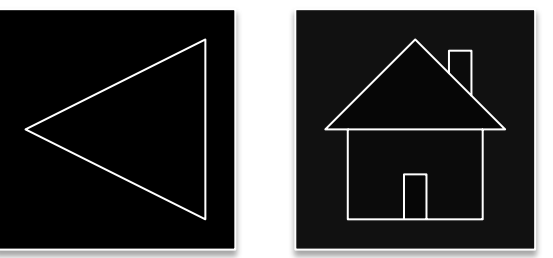
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Results for relabeling and subsequent admissions

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