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Background

- Approximately 10% of the population report a penicillin allergy but less than 1% have a true type-1 hypersensitivity IgE mediated reaction.
- Penicillin allergy remains the most common drug allergy reported.
- Recent studies show that direct oral amoxicillin challenge is a safe method to delabel low-risk patients using institutional screening stratification tools.
- There is no verified universal screening tool to perform this function, underscoring the need to address this clinical gap.

Objective

- This prospective study aimed to assess the efficacy of our institutional screening questionnaire at correctly stratifying penicillin allergy risk status and determine whether direct graded oral amoxicillin challenge can be safely used to delabel pediatric patients with low-risk penicillin allergy status.

Methods

- Pilot prospective study verifying penicillin allergy status among patients 3-18 years old admitted in our institution took place from September 2021-March 2022.
- Risk stratification into no-risk, low-risk and high-risk penicillin allergy status was determined with screening questionnaire. (Figure 1)
- No-risk status patients were delabeled without challenge testing.
- Low-risk status patients underwent direct graded oral amoxicillin challenge using an institutional algorithm and delabeled based on their response to the medication provocation testing.
- High-risk status patients were referred to allergy clinic for further evaluation.

1. Did your child ever have a reaction to a penicillin antibiotic? Y/N
2. Has your child since taken a penicillin antibiotic without any reaction? (if Y to # 1) Y/N
3. Was your child's penicillin allergy confirmed with an allergy test by a physician? Y/N
4. Manifestations your child had after he/she took this antibiotic: list of manifestations
5. How soon did the symptoms start after starting the medication?
Within 2 hours after 1st dose, > 2 hours but <24 hours after 1st dose, > 24 hours after 1st dose, > 7 days after 1st dose
6. How was the reaction treated? Epinephrine, none, Benadryl/Zyrtec/steroid
7. Did the patient need medical care for the reaction from any of the following: urgent care, hospital admission, PCP, allergist, none
8. How long ago was the last reaction to penicillin? Past year, more than a year ago but less than 5 years ago, more than 5 years ago

Figure 1. Institutional screening questionnaire for eligible patients

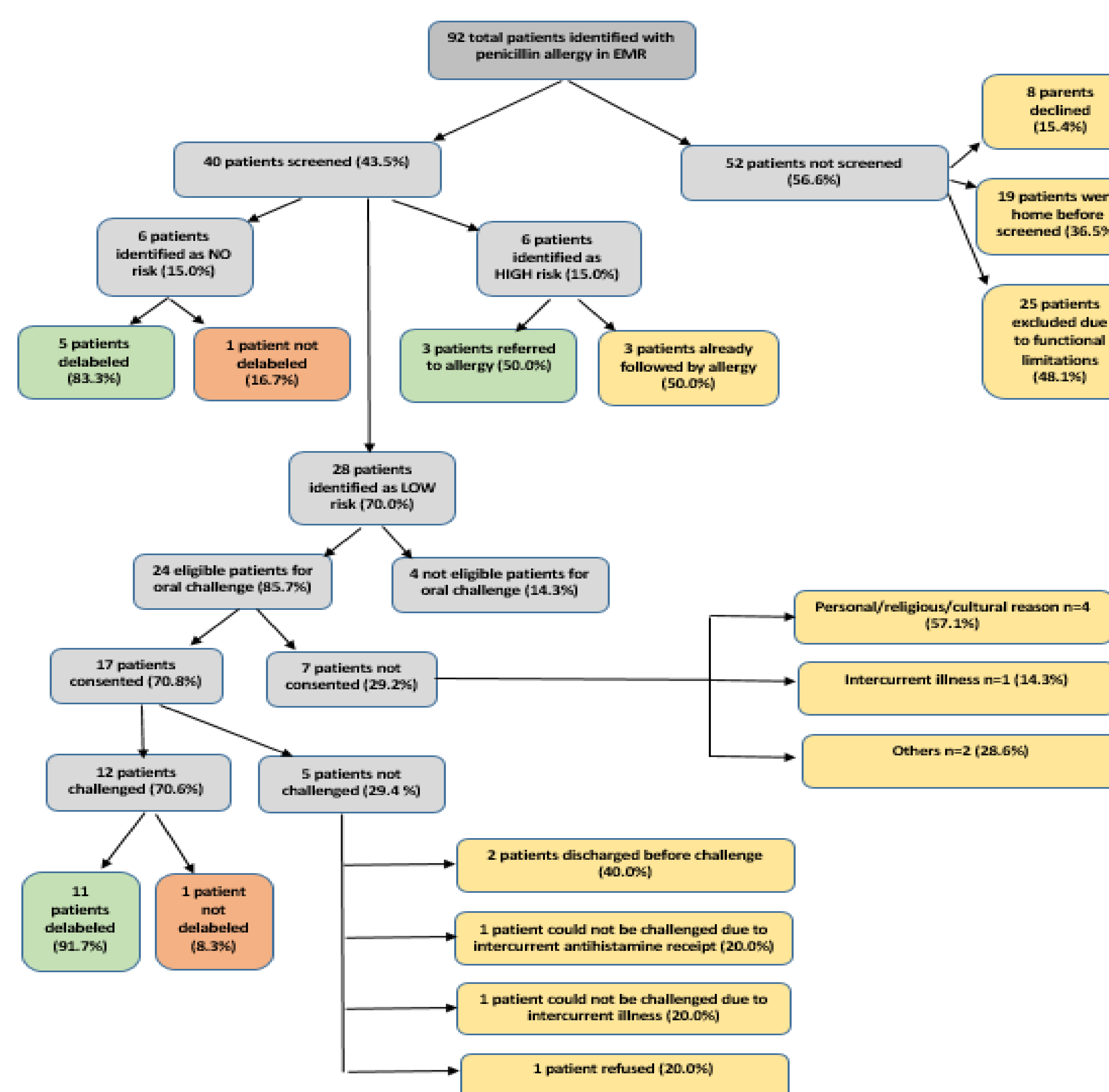


Figure 2. Flowchart depicting disposition of pediatric patients with penicillin allergy based on penicillin allergy risk status

Results

- Ninety-two patients were identified with penicillin allergy during the study period. (Figure 2)
- Forty (43.5%) of the 92 patients were screened using our institutional screening questionnaire.
- Fifty-two patients (56.5%) of the 92 patients were not screened: 8 parents declined (15.4%), 19 patients (36.5%) went home before being screened, and 25 patients (48.1%) were ineligible for screening.
- Of the 40 screened patients, 6 (15.0%) were identified as no-risk, 28 (70.0%) were identified as low-risk, and 6 (15.0%) were identified as high-risk.
- Eleven (91.7%) of the 12 who underwent oral challenge were successfully delabeled and one was not delabeled because of an equivocal reaction.
- Five (83.3%) of the 6 no-risk patients were successfully delabeled.
- Three (50.0%) of 6 high-risk patients were referred for further allergy evaluation.
- Overall, 16 (40.0%) of the 40 patients who were screened were successfully delabeled.

Conclusion

- Our institutional risk stratification screening tool effectively identifies penicillin allergy risk status and direct graded oral amoxicillin challenge is a safe initiative to delabel inpatient pediatric patients who have low-risk penicillin allergy status.

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