

## Penicillin Testing in Infants

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*Each month we present highlights from the Ask the Expert section of the American Academy of Allergy, Asthma & Immunology (AAAAI) Web site written by the Ask the Expert editors. For more questions and answers, visit [www.aaaai.org/ask-the-expert.aspx](http://www.aaaai.org/ask-the-expert.aspx).*

### Question:

Should penicillin skin testing be performed in an infant? Is it reliable?

I saw a 7-month-old male infant in clinic yesterday. Pediatrician referred him for questionable penicillin allergy.

The patient's medical history shows that he was prescribed a course of Augmentin late October of 2019 for otitis media. Per his mother's report, the patient threw up after she tried to give him the dose several times during the course, and then toward the end of the course, he developed hives all over his body. The hives lasted 1 to 2 days and then resolved. He was then re-evaluated per primary medical doctor, and antibiotics were determined to be needed further for continued ear infections and he was started on cefdinir. After a 2 day course of cefdinir, he redeveloped full body hives, and his mother reports that his voice was hoarse; thus cefdinir was stopped. He was then treated with Zithromax, which he tolerated and seemed better.

Primary medical doctor is asking if he is penicillin or cefdinir allergic and if I can perform skin testing.

Is penicillin skin testing reliable in infants? Most studies I could find were in older children.

I already explained that cefdinir testing is not an option.

I am uncomfortable performing oral challenge in this age group for something so elective if skin test to penicillin is negative.

What are your thoughts on this? How would you proceed?

### Answer:

Thank you very much for submitting to Ask the Expert. I am unaware of literature specifically addressing penicillin testing in infants. So, I reached out to Dr David A. Khan for his expertise in drug allergy. His response is below.

You are correct that there are not a lot of data on penicillin skin testing specifically in infants. However, skin testing for IgE-mediated reactions in this age group is certainly valid for other allergens such as food allergy. Perhaps the more relevant question is whether skin testing is needed. Studies have shown that true penicillin allergy is rare in children and that most rashes are due to infectious exanthems.<sup>1</sup> Because the reaction to amoxicillin/clavulanate was cutaneous only, it would be classified as a benign rash. Recent studies in children have shown that penicillin skin tests add little to the evaluation of benign penicillin reactions compared with direct challenge.<sup>2,3</sup> One of the largest studies by Mill et al<sup>2</sup> performed direct amoxicillin challenge in 818 children with an interquartile age from 2 to 7 years, which would indicate that 25% of children were <2 years of age at the time of testing.

Given all of this, direct amoxicillin (or amoxicillin/clavulanate) challenge with a graded dose starting at 1/10th of the dose followed 30 minutes later by 90% of the full dose would seem appropriate. However, if you feel that penicillin skin testing is a more appropriate initial test, the results should be valid even in this age.

I'd like to thank Dr David A. Khan for his thorough and insightful response.

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