

# Evidence-Based Emergency Medicine

## *Clinical Synopsis*

### TAKE HOME MESSAGE

Patients reporting a history of non-type I allergy to penicillin can safely be administered penicillin

## METHODS

### DATA SOURCES

An English-language MEDLINE search from 1996 to 2000 was conducted, and the bibliographies were reviewed for additional references.

### STUDY SELECTION

Original studies describing the accuracy or precision of skin testing in the diagnosis of an immunoglobulin E-mediated penicillin allergy were included. Fourteen studies met the inclusion criteria; 4 studies compared clinical history with skin test results in patients with and without a history of penicillin allergy.

### DATA EXTRACTION AND SYNTHESIS

Confidence intervals for the likelihood ratios of having a positive skin test result, given a positive history of penicillin allergy, and having a negative skin test result, given a history of no penicillin allergy, were compared. Sensitivity and specificity for a history of penicillin allergy versus skin testing were also presented.

An installment of the Rational Clinical Examination Abstract series:

## Does This Emergency Department Patient Have a Penicillin Allergy?

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### Commentary

This systematic review emphasizes obtaining an accurate history to decide whether or not the patient who reports a penicillin allergy is likely to have had a type 1 reaction. The review suggests that those who report a history of a nonlife-threatening type 1 reaction should be skin tested, whereas those whose reaction is not likely to be type 1 may be administered penicillin without skin testing.

Although investigators have recently demonstrated the feasibility of emergency department skin testing,<sup>1</sup> this is uncommon practice in most settings. Furthermore, in 2 studies, a significant portion of patients with negative skin-testing results had an immediate reaction to penicillin challenge,<sup>2,3</sup> reminding us that the criterion standard for predicting reactions is drug challenge, not skin testing. This suggests that those with a potentially serious allergy

should simply avoid penicillin whenever possible.

However, the majority of patients reporting a penicillin allergy report a maculopapular, nonurticarial rash or other non-type 1 reactions; a detailed history can identify these patients accurately. This select group appears to have a likelihood of reaction (roughly 5%) consistent with the chance of reaction in a general population, making use of penicillin appropriate and safe.

## RESULTS

The Table below reflects results from 4 studies (n=9,526) of moderate quality.

### Patient history of penicillin allergy as a predictor of positive skin test result

Positive LR (95% CI)	Negative LR (95% CI)
1.9 (1.5–2.5)	0.5 (0.4–0.6)

LR, Likelihood ratio; CI, confidence interval.

1. Raja AS, Lindsell CJ, Bernstein JA, et al. The use of penicillin skin testing to assess the prevalence of penicillin allergy in an emergency department setting. *Ann Emerg Med.* 2009;54:72-77.
2. Torres MJ, Mayorga C, Leyva L, et al. Controlled administration of penicillin to patients with a positive history but negative skin and specific serum IgE tests. *Clin Exp Allergy.* 2002;32:270-276.
3. Messaad D, Sahla H, Benahmed S, et al. Drug provocation tests in patients with a history suggesting an immediate drug hy-

persensitivity reaction. *Ann Intern Med.* 2004;140:1001-1006.

This is a Rational Clinical Examination abstract, a regular feature of the *Annals'* Evidence-Based Emergency Medicine (EBEM) series. Each features an abstract of a Rational Clinical Examination review from the *Journal of the American Medical Association* and a commentary by an emergency physician knowledgeable in the subject area. The source for this Rational Clinical Examination abstract is: Sal-

kind AR, Cuddy PG, Foxworth JW. Is this patient allergic to penicillin: an evidence-based analysis. 2001;85(19):2498-05. The *Annals* EBEM editors assisted in the preparation of the abstract of this Rational Clinical Examination abstract.

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