

# Are Cephalosporins Safe If You're Allergic to Penicillin?

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Penicillins and cephalosporins are both antibiotics that are structurally similar to each other. As a result, people who have a history of penicillin allergy often ask whether they can take a cephalosporin.

Before answering this question, though, it's important to first determine whether or not a person is truly allergic to penicillin—a common misconception that can affect care and treatment options.

## Penicillin: A Beta-Lactam Antibiotic

Penicillin is perhaps the most well-known member of a group of antibiotics called beta-lactams. All of the beta-lactam antibiotics contain a particular structure (called the beta-lactam ring) within their molecular makeup.

Besides penicillin, other beta-lactams include:

- Penicillin derivatives like amoxicillin
- Cephalosporins like Keflex (cephalexin)
- Carbapenems like Primaxin (imipenem)

## Penicillin Allergy: An IgE-mediated Response

The most common allergic reaction to penicillin is an immunoglobulin E (IgE)-mediated, type 1 hypersensitivity response. This means that when exposed to penicillin, a person's immune system (if allergic) will develop IgE antibodies. These antibodies travel and bind to certain cells within a person's body, prompting them to release chemicals. These chemicals are what then cause the symptoms of an allergic reaction.

Symptoms and signs of a penicillin allergy usually start within minutes to an hour or two of taking the drug and may include one or more of the following:

- Skin Itching and/or hives
- Itching or tingling of the lips or tongue
- Angioedema (swelling of the mouth, eyes, lip, or tongue)
- Wheezing and shortness of breath
- Difficulty swallowing
- Low blood pressure
- Lightheadedness
- Fast heart rate

## **Why Determining a True Penicillin Allergy Is Important**

According to the Centers for Disease Control and Prevention, about 10% of all Americans report an allergy to a penicillin-class antibiotic, yet less than 1% are truly allergic based on skin testing. Perhaps they were erroneously labeled as penicillin-allergic in their chart or their allergy resolved with time—about 80% of people with a penicillin allergy lose their hypersensitivity after 10 years (meaning they are not allergic anymore).

Since many people who think they are allergic to penicillin are not, it's important for you and your healthcare provider to tease this potential misconception out. This is because broad-spectrum antibiotics are often given as an alternative to penicillin.

Broad-spectrum antibiotics can increase your risk for antibiotic resistance in the future and are often more costly. In addition, the alternative antibiotic prescribed by your healthcare provider may not actually be the best one for your infection.

## **Confirming a Penicillin Allergy: Skin Testing Is the Gold Standard**

In order to determine whether you have a penicillin allergy, your healthcare provider will take a drug allergy history and, based on that information, determine whether penicillin skin testing (which requires an allergy referral) is needed.

For example, perhaps you developed nausea or a yeast infection when last taking penicillin. This is not a true allergy, but rather a nonallergic side effect.

Or maybe you have never taken penicillin, but you have a family member who has a penicillin allergy. This, again, is not an allergy on your part. In these cases, your healthcare provider will likely go ahead and treat your infection with a penicillin or a cephalosporin (if applicable).

On the flip side, if you are unsure about your prior reaction to penicillin, or if your healthcare provider remains uncertain whether the reaction was allergic, an evaluation by an allergist should be done.

## Safety of Taking a Cephalosporin With a Penicillin Allergy

Let's say you see an allergist, and your skin test is positive for a penicillin allergy. In this case, you should avoid all penicillins. However, you may still be able to take a cephalosporin under the close guidance of your allergist.

Only a small percentage of people (around 10%) with a penicillin allergy will react to a cephalosporin. However, the reaction can be severe.

The type of cephalosporin you are taking will also be considered. This is because, while research shows a low risk of reacting to a cephalosporin in people with a penicillin allergy, there is one exception: first-generation cephalosporins like cephalexin (Keflex) and cefazolin (Ancef) cause higher rates of allergic reactions in people with a penicillin allergy than in people without a penicillin allergy.

On the flip side, second- and third-generation cephalosporins, such as cefuroxime (Ceftin), cefprozil (Cefzil), cefdinir (Omnicef), and cefpodoxime (Vantin), do not appear to cause more allergic reactions in people with a penicillin allergy.

## A Word From Verywell

The bottom line: while most people with a history of a penicillin allergy can tolerate cephalosporins, many healthcare providers use caution when prescribing one, since reaction to them has the potential to be severe.

In addition, it's important to understand that there are many factors involved in the decision to prescribe a cephalosporin, such as the type of infection that needs to be treated and the appropriateness or availability of non-penicillin, non-cephalosporin antibiotics.

If you have been diagnosed with a penicillin allergy or are unsure about your prior reaction to penicillin, talk with your healthcare provider or get a referral to an allergist for further evaluation.

## 6 Sources

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