

## Penicillin

Penicillin is a widely used antibiotic that is effective in killing bacteria. They are relatively safe and have low toxicity. Anaphylaxis is the only serious adverse effect. Because of a beta-lactam ring in their structure, they are called beta-lactam antibiotics, along with these other medications, cephalosporins, carbapenems, and aztreonam.



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### Mechanism of Action

## Weakens Cell Wall

## Breaking Cell Wall

Penicillin inhibits bacterial cell wall synthesis and interferes with cell wall replication of susceptible organisms, which results in cell lysis and death.

## Indications

## Gram-Positive Infections

## Graham-cracker Positive-angel

Penicillin is used in the treatment of many gram positive respiratory infections, meningitis, infectious endocarditis, scarlet fever, gas gangrene, and otitis media. It is also administered for syphilis caused by a spirochete.

## Prophylaxis

## Purple-axes

Prophylactic administration is given to prevent recurrent attacks of rheumatic fever and prevention of bacterial endocarditis in patients with prosthetic heart valves, congenital heart disease, and mitral valve prolapse. Prophylaxis is usually initiated before dental procedures or any procedure which may expose the blood to direct invasion by organisms.

## Side Effects

### Pain at IM Injection Site

### Pain-bolt at In-Muscle Injection Site

Be sure to administer deep IM or using Z track to reduce pain at injection site. Aspirate before injection, as injection into an artery can lead to gangrene, necrosis, and tissue sloughing. If accidental injection into a peripheral nerve occurs, patient may experience a reversible sensory and motor dysfunction of the extremity.

## Allergic Reaction

## Allergy-alligator Reaction

An allergic reaction can range from a rash to anaphylaxis. Anaphylactic reactions are often immediate and occur within 2 to 30 minutes following the administration of the medication, therefore, educate the patient to remain at the doctor's office for 30 minutes after receiving an injection to monitor for a reaction. If patient has history of penicillin allergy, they should not receive a penicillin medication again.

## Considerations

### **Skin Tests**

#### [Skin-suit-man Testing himself](#)

Skin tests are used to determine patient's current risk. It is thought that allergy to penicillin may decrease over time. There is a small risk of cross sensitivity with cephalosporins.

### **Allergy ID**

#### [Allergy-alligator ID-bracelet](#)

Patients should wear a medic alert bracelet or carry some type of ID notifying health care personnel of allergy.

### **Medication Education**

#### [Medication Educator](#)

Oral penicillin medication should be taken with a full glass of water 1 hour before meals or 2 hours after. Patients need to complete the entire course of treatment. Teach the patient to report signs of allergy to health care providers, such as a skin rash, itching, or hives. Oral suspensions need to be thoroughly shaken and stored in the refrigerator.