

## Ampicillin and Amoxicillin

Ampicillin and amoxicillin are broad spectrum penicillin antibiotics that work by inhibiting enzymes that are key in bacterial cell wall synthesis, eventually leading to cell lysis or rupture. Unlike other penicillins, these medications are effective against both gram positive and some gram negative bacteria. Despite their broad spectrum; however, these medications are ineffective against *Staphylococcus aureus*, unless combined with a beta lactamase inhibitor. Side effects of ampicillin and amoxicillin can include rash and diarrhea.



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### Mechanism

#### Aminopenicillin

##### Amigo-pencil

Penicillins inhibit several enzymes that are key in bacterial cell wall synthesis. Disruption of this process weakens the bacterial cell wall, allowing water to enter the cell, eventually causing cell lysis or rupture. For this reason, penicillins are considered bactericidal.

#### Broad Spectrum Penicillin

##### Broad Spectrum-of-colors Pencil-villain

Ampicillin and amoxicillin are considered broad-spectrum penicillins, due to their effectiveness against both gram positive and some gram negative bacteria. Despite their broad spectrum, these medications are ineffective against *Staphylococcus aureus*.

### Indications

#### Gram-Positive and Some Gram-Negative Infections

##### Graham-cracker Positive-angel with Partial Gram-cracker Negative-devil

Ampicillin and amoxicillin are indicated in the treatment of infections caused by gram positive bacteria including *Streptococcus pneumoniae*, and *Clostridium tetani*, and some gram negative bacteria such as *Haemophilus influenzae*, *E. coli*, *Salmonella*, and *Shigella*.

### Side Effects

#### Rash

##### Rash

Patients may develop a rash when taking these medications. Because this can be a sign of an allergic reaction, the patient should seek medical attention, or contact their healthcare provider immediately.

#### Diarrhea

##### Toilet

Diarrhea is a common side effect associated with these medications; however, amoxicillin produces less diarrhea in patients than ampicillin. Patients should be encouraged to eat food products containing probiotics, such as yogurt to decrease the incidence of diarrhea while taking antibiotics.

## Considerations

### No Effect Against Staph Aureus

#### NOFX Staff of Oreos

These medications can be inactivated by beta-lactamases, and are therefore ineffective against infections caused by *Staphylococcus aureus*.

### Often combined with Beta Lactamase Inhibitor

#### Combined with Black-mace Beta-fish with Inhibiting-chains

Amoxicillin and ampicillin can be combined with a beta lactamase inhibitor, such as clavulanic acid, to create a treatment that is effective against *Staphylococcus aureus* infections. When combined, clavulanic acid and amoxicillin are marketed as Augmentin, while the combination of ampicillin and sulbactam is called Unasyn.

### Allergic Reaction

#### Allergy-alligator Reaction

An allergic reaction from ampicillin or amoxicillin can range from a rash to anaphylaxis. Anaphylactic reactions are often immediate and occur within 2-30 minutes following the administration of the medication. If the patient has a history of allergy to these medications, they should be prescribed an alternate antibacterial drug.