Ampicillin and Sulbactam for Injection, USP

**PRECAUTIONS**

**General**

**Hepatotoxicity**

Ampicillin and Sulbactam for Injection, USP should be used with caution in patients with evidence of hepatic dysfunction. If hepatic impairment is severe, the dosage should not exceed 4 grams per day.

**Drug Interactions**

**Probenecid**

Probenecid may decrease the renal excretion of ampicillin and sulbactam, resulting in increased serum levels. However, this has not been shown to be clinically significant.

**Sulbactam**

Sulbactam, a beta-lactamase inhibitor, does not significantly affect the renal excretion of ampicillin and sulbactam.

**Children**

The use of Ampicillin and Sulbactam for Injection, USP is contraindicated in individuals under the age of one year. The safety and efficacy of this drug in pediatric patients have not been established.

**Pharmacology**

**Beta-lactamase**

Ampicillin and sulbactam are bactericidal agents that are bacteriostatic. Sulbactam irreversibly inhibits beta-lactamase, thereby extending the antibacterial spectrum of ampicillin.

**Ampicillin**

Ampicillin inhibits cell wall synthesis by irreversibly inactivating transpeptidases, enzymes involved in mucopeptide biosynthesis. Ampicillin has a broad spectrum of bactericidal activity against bacteria that are proven or strongly suspected to be caused by bacteria.

**Sulbactam**

Sulbactam is a beta-lactamase inhibitor that binds irreversibly to class C beta-lactamases, such as those produced by Pseudomonas aeruginosa. Sulbactam alone possesses little antibacterial activity.

**PK/PD**

The mean serum half-life of both drugs is approximately 1 hour in healthy volunteers. The protein binding of ampicillin is approximately 20%, with sulbactam approximately 38% reversibly bound. The following average levels of ampicillin and sulbactam in serum were determined: peak ampicillin serum levels ranging from 109 to 209 μg/mL, trough ampicillin serum levels ranging from 8 to 16 μg/mL, peak sulbactam serum levels ranging from 6 to 12 μg/mL and trough sulbactam serum levels ranging from 2 to 4 μg/mL. During therapy, if superinfections occur (usually involving Clostridium difficile), appropriate anti-infective therapy should be administered. Monotherapy with a beta-lactamase inhibitor (sulbactam) should be avoided.

**Ampicillin and Sulbactam for Injection, USP** is contraindicated in patients with a previous history of hypersensitivity to ampicillin or sulbactam. Ampicillin and Sulbactam for Injection, USP should be used only to treat infections determined to be susceptible to ampicillin. Ampicillin and Sulbactam for Injection, USP should not be used to treat infections caused by bacteria that are suspected or known to be resistant to ampicillin or sulbactam.

**Ampicillin and Sulbactam for Injection, USP** is not indicated for the treatment of infections caused by bacteria that are known or suspected to be resistant to ampicillin or sulbactam.

**Clinical and Laboratory Standards Institute (CLSI)**

The Clinical and Laboratory Standards Institute (CLSI) has recommended breakpoints for the testing of ampicillin and sulbactam-treated patients. However, these breakpoints have not been established for pediatric patients treated with Ampicillin and Sulbactam for Injection, USP.

**Antimicrobial Disk Diffusion Susceptibility Tests; Approved Standard - 11th ed.**

The molecular weight, degree of protein binding and pharmacokinetics profile of ampicillin are comparable to those of sulbactam, and sulbactam is not a competitive inhibitor of the ampicillin-enzyme complex.

**Safety and Efficacy**

Ampicillin and Sulbactam for Injection, USP are bactericidal agents that are bacteriostatic. Sulbactam irreversibly inhibits beta-lactamase, thereby extending the antibacterial spectrum of ampicillin. If superinfections occur (usually involving Clostridium difficile), appropriate anti-infective therapy should be administered. Monotherapy with a beta-lactamase inhibitor (sulbactam) should be avoided.
Ampicillin and Sulbactam for Injection, USP

DESCRIPTION

Ampicillin and Sulbactam for Injection, USP is a sterile off-white dry powder for intravenous (IV) or intramuscular (IM) injection. Ampicillin is a semi-synthetic penicillin antibiotic, while sulbactam is a beta-lactamase inhibitor that delays the breakdown of ampicillin by beta-lactamase-producing bacteria.

INDICATIONS

Ampicillin and Sulbactam for Injection, USP is indicated for the treatment of infections caused by susceptible bacteria. It is effective in treating systemic infections, upper respiratory tract infections, skin and skin structure infections, and infections of the urinary tract.

CONTRAINDICATIONS

Ampicillin and Sulbactam for Injection, USP is contraindicated in patients with a history of allergy to penicillins or cephalosporins. It is also contraindicated in patients with known sulbactam hypersensitivity.

WARNINGS

Diarrhea is a common problem caused by antibacterials which usually ends when the antibacterial action ceases. However, sometimes it may not stop even after the antibiotics are stopped. Do not alter the dosage or duration of treatment without consulting your healthcare provider.

ADVERSE REACTIONS

Adverse reactions to ampicillin, sulbactam, or both may occur. The most commonly reported adverse reactions include rash, fever, headache, dizziness, and nausea.

STORAGE

Ampicillin and Sulbactam for Injection, USP should be stored at room temperature and protected from light. The vials should be used within the expiration date printed on the package.

HOW SUPPLIED

Ampicillin and Sulbactam for Injection, USP is available in a sterile off-white dry powder for intravenous (IV) or intramuscular (IM) injection. The NDC number is 44567-211-10, and the vial contains 3 g of ampicillin as the sodium salt plus 0.5 g of sulbactam as the sodium salt.

SULUBACTAM DISK DIFFUSION AND MIC DETERMINATIONS

Organisms Inhibition zone diameter

<table>
<thead>
<tr>
<th>Organism</th>
<th>Inhibition Zone Diameter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Escherichia</td>
<td>5-14</td>
</tr>
<tr>
<td>Enterococcus</td>
<td>5-14</td>
</tr>
<tr>
<td>Branhamella catarrhalis</td>
<td>5-14</td>
</tr>
<tr>
<td>Clostridium</td>
<td>5-14</td>
</tr>
<tr>
<td>Bacteroides</td>
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</tbody>
</table>

ANTIMICROBIAL DISK DIFFUSION AND MIC DETERMINATIONS


ANTIMICROBIAL DISK DIFFUSION AND MIC DETERMINATIONS

<table>
<thead>
<tr>
<th>Organism</th>
<th>MIC (mg/L)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Escherichia</td>
<td>0.125</td>
</tr>
<tr>
<td>Enterococcus</td>
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</tr>
<tr>
<td>Branhamella catarrhalis</td>
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<td>Bacteroides</td>
<td>0.50</td>
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CONCERNING DOSAGE

The recommended daily dose of Ampicillin and Sulbactam for Injection, USP in pediatric patients is as follows:

- For children and infants: 1 to 2 g per day in divided doses every 6 hours.
- For children over 2 months: 1 to 2 g per day in divided doses every 6 hours.
- For adults: 1 to 2 g per day in divided doses every 6 hours.

The course of therapy should not exceed 10 days. Ampicillin and Sulbactam for Injection, USP should be given by slow intravenous or intramuscular injection, and the duration of therapy should be determined by the response to treatment.

PHARMACOKINETICS

Ampicillin and sulbactam are both rapidly absorbed following intravenous administration. Peak serum levels are generally achieved within 1 to 2 hours after administration. Ampicillin has a half-life of approximately 1 to 2 hours, while sulbactam has a half-life of approximately 2 to 3 hours.

SULUBACTAM SERUM LEVELS

Peak sulbactam serum levels ranging from 6 to 24 mcg/mL are attained. Ampicillin serum levels are similar to those produced by the administration of equivalent amounts of ampicillin alone. Peak ampicillin serum levels ranging from 109 to 125 mcg/mL are attained. Ampicillin serum levels are similar to those produced by the administration of equivalent amounts of ampicillin alone. Peak ampicillin serum levels ranging from 109 to 125 mcg/mL are attained.