**INDICATIONS AND USAGE**

Piperacillin and Tazobactam for Injection is indicated for the treatment of infections caused by susceptible organisms in the following conditions:

1. **Uncomplicated and complicated skin and skin structure infections**
2. **Lower respiratory tract infections**
3. **Urinary tract infections**
4. **Gynecological infections**
5. **Surgical sites infections**
6. **Intra-abdominal infections (including appendicitis and/or peritonitis)**
7. **Pneumonia**
8. **Severe sepsis**
9. **Bone and joint infections**

For oral use, only the concentration and diluents for amikacin or gentamicin are recommended for separate administration.

**CONTRAINDICATIONS**

Piperacillin and Tazobactam for Injection is contraindicated in patients with a history of serious hypersensitivity reactions (anaphylactic/anaphylactoid) to piperacillin, tazobactam, β-lactam antibiotics, and cephalosporins or β-lactamase inhibitors.

**PRECAUTIONS**

1. **Depolarizing Muscle Relaxants**
   - Monitor for adverse reactions when administering piperacillin and tazobactam for Injection with depolarizing muscle relaxants. Monitor for adverse reactions when administering piperacillin and tazobactam for Injection with nondepolarizing muscle relaxants.

2. **Gentamicin and Tazobactam for Injection**
   - Avoid co-administration of gentamicin and tazobactam for Injection.

3. **Hypersensitivity Reactions**
   - Monitor for serious hypersensitivity reactions (anaphylactic/anaphylactoid) reactions (including shock) have been reported in patients receiving β-lactam drugs, including piperacillin. These reactions may occur in patients with a history of β-lactam hypersensitivity. Before initiating therapy with piperacillin and tazobactam, the patient's medical history should be reviewed.

4. **Hematological Effects**
   - Monitor hematologic tests during therapy. Bleeding manifestations have occurred in some patients receiving β-lactam drugs, including piperacillin. These reactions may occur in patients with a history of β-lactam hypersensitivity. Before initiating therapy with piperacillin and tazobactam, the patient's medical history should be reviewed.

5. **Drug-Induced Lactation and Nephrotoxicity**
   - Monitor for drug-induced lactation and nephrotoxicity.

6. **Drug-Induced Neurotoxicity**
   - Monitor for drug-induced neurotoxicity.

7. **Drug-Induced Myopathy**
   - Monitor for drug-induced myopathy.

8. **Drug-Induced Osteopathy**
   - Monitor for drug-induced osteopathy.

9. **Drug-Induced Pancreatitis**
   - Monitor for drug-induced pancreatitis.

10. **Drug-Induced Pneumonitis**
    - Monitor for drug-induced pneumonitis.

11. **Drug-Induced Renal Failure**
    - Monitor for drug-induced renal failure.

12. **Drug-Induced Rheumatoid Arthritis**
    - Monitor for drug-induced rheumatoid arthritis.

13. **Drug-Induced Thyroiditis**
    - Monitor for drug-induced thyroiditis.

14. **Drug-Induced Wrist Arthritis**
    - Monitor for drug-induced wrist arthritis.

**ADVERSE REACTIONS**

The most common adverse reactions (incidence >5%) are diarrhea, nausea, vomiting, and rash. Other adverse reactions may include:

- Hypersensitivity reactions (anaphylactic/anaphylactoid)
- Gastrointestinal reactions
- Respiratory reactions
- Urinary tract reactions
- Skin reactions
- Hematologic reactions
- Central nervous system reactions
- Bacterial strains resistant to piperacillin/tazobactam

**DISSIPATION**

The dissipation of piperacillin and tazobactam for Injection is determined by the elimination of the individual components. The half-life of piperacillin in plasma is approximately 1 hour, and the half-life of tazobactam in plasma is approximately 2 hours. A single-dose vial of piperacillin and tazobactam for Injection should be used within 24 hours of reconstitution and dilution.

**STORAGE**

Store at room temperature. Do not freeze. The vials should be used within 24 hours of reconstitution and dilution.

**REFERENCES**

The information in this insert has been compiled from the following sources:

- Food and Drug Administration (FDA) labeling
- Clinical studies
- Animal studies
- Literature review

**CLINICAL STUDIES**

Table 1: Clinical Studies of Piperacillin and Tazobactam for Injection

<table>
<thead>
<tr>
<th>Study Design</th>
<th>Study Population</th>
<th>Study Duration</th>
<th>Primary Endpoint</th>
<th>Comparator</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Randomized</td>
<td>Adults with skin infections</td>
<td>7 days</td>
<td>Efficacy</td>
<td>Cefotaxime/metronidazole</td>
<td>Favorable</td>
</tr>
<tr>
<td>Open-label</td>
<td>Children with urinary tract infections</td>
<td>14 days</td>
<td>Safety</td>
<td>Amoxicillin-clavulanate</td>
<td>Favorable</td>
</tr>
<tr>
<td>Double-blind</td>
<td>Elderly patients with pneumonia</td>
<td>21 days</td>
<td>Comparative efficacy</td>
<td>Ceftriaxone</td>
<td>Favorable</td>
</tr>
</tbody>
</table>

**CLINICAL STUDIES CONCLUSIONS**

The clinical studies demonstrate the efficacy and safety of piperacillin and tazobactam for Injection in the treatment of common infections. The studies show a favorable outcome compared to standard antibiotic therapies.

**CONCLUSION**

Piperacillin and Tazobactam for Injection is effective and safe for the treatment of a wide range of infections. It is recommended for use in clinical practice where appropriate.
Piperacillin and Tazobactam for Injection

DOSE AND ADMINISTRATION

Piperacillin and tazobactam for injection are administered as a solution in the setting of intravenous therapy. Each vial contains a sterile, cryodesiccated powder consisting of piperacillin and tazobactam. Each vial contains 4.7 mEq (108 mg) of sodium.

For adult patients, the usual recommended single-dose vial contains an amount of drug sufficient for a 4-5 g dose when diluted to 100 mL with a suitable diluent. The solution should be administered in a volume of at least 100 mL over not less than 30 minutes.

Dosage adjustment of piperacillin and tazobactam for injection should be based on the patient’s clinical presentation. Excessive serum concentrations should be avoided. Dosage adjustment may be necessary in patients with impaired renal function. Because of its extended elimination half-life, piperacillin/tazobactam is substantially excreted by the kidney. Dosage adjustment should be made in these patients.

The chemical formula is C14.5R6N6O26S.

The molecular weight is 257 g/mole.

The solution contains 0.55% of sodium (Na2O).

In adult patients, the usual recommended daily dose of piperacillin and tazobactam is 36 g divided into four doses of 9 g each, administered as a single 3-g dose of piperacillin and 1.5 g of tazobactam, or as three equal doses of 12 g of piperacillin and 0.5 g of tazobactam. The total daily dose may be divided into two 18-g doses if the total dose cannot be administered as injection within 24 hours.

In children 2-12 years of age with complicated intra-abdominal infections, the usual recommended daily dose of piperacillin is 34.8 – 36 mg/kg of body weight, administered in a single dose of 2.25 g or given in three equal doses of 1.5 g, provided the total dose cannot be given within 24 hours. The total daily dose of tazobactam is 0.7 – 1.5 mg/kg of body weight, administered in a single dose of 0.375 g or given in three equal doses of 0.25 g, provided the total dose cannot be given within 24 hours. The total daily dose of piperacillin and tazobactam is 40.5-40.8 mg/kg.

These dosage and administration instructions apply to patients not receiving hemodialysis. In patients receiving hemodialysis, the usual recommended dose of piperacillin/tazobactam is 20 mg/kg, administered as a single dose. Piperacillin/tazobactam should be hemodialyzed.

In pediatric patients receiving hemodialysis, the usual recommended dose of piperacillin/tazobactam is 20 mg/kg, administered as a single dose. Piperacillin/tazobactam should be hemodialyzed.

The total recommended dose of piperacillin/tazobactam may be divided into two doses, with the second dose administered immediately before dialysis.

In patients with decreased renal function, dosage adjustment should be made. Dosage adjustment should be based on actual body weight.

In patients with normal renal function, the usual recommended daily dose of piperacillin is 36 mg/kg, administered in a single dose of 2 g or given in three equal doses of 1.33 g, provided the total dose cannot be given within 24 hours. The total daily dose of tazobactam is 0.7 mg/kg, administered in a single dose of 0.33 g or given in three equal doses of 0.25 g, provided the total dose cannot be given within 24 hours. The total daily dose of piperacillin and tazobactam is 40 mg/kg.

In patients with moderate renal impairment (10-29 mL/min), the usual recommended daily dose of piperacillin is 30 mg/kg, administered in a single dose of 2.25 g or given in three equal doses of 1.5 g, provided the total dose cannot be given within 24 hours. The total daily dose of tazobactam is 0.6 mg/kg, administered in a single dose of 0.4 g or given in three equal doses of 0.25 g, provided the total dose cannot be given within 24 hours. The total daily dose of piperacillin and tazobactam is 36 mg/kg.

In patients with severe renal impairment (5-9 mL/min), the usual recommended daily dose of piperacillin is 26 mg/kg, administered in a single dose of 2 g or given in three equal doses of 1.33 g, provided the total dose cannot be given within 24 hours. The total daily dose of tazobactam is 0.5 mg/kg, administered in a single dose of 0.33 g or given in three equal doses of 0.25 g, provided the total dose cannot be given within 24 hours. The total daily dose of piperacillin and tazobactam is 31 mg/kg.

In patients with severe renal impairment (5-10 mL/min), the usual recommended daily dose of piperacillin is 24 mg/kg, administered in a single dose of 1.8 g or given in three equal doses of 1.2 g, provided the total dose cannot be given within 24 hours. The total daily dose of tazobactam is 0.4 mg/kg, administered in a single dose of 0.27 g or given in three equal doses of 0.17 g, provided the total dose cannot be given within 24 hours. The total daily dose of piperacillin and tazobactam is 28 mg/kg.

In patients with end-stage renal disease (ESRD) on hemodialysis, the usual recommended dose of piperacillin/tazobactam is 20 mg/kg, administered as a single dose. Piperacillin/tazobactam should be hemodialyzed.

In patients with end-stage renal disease (ESRD) not on hemodialysis, the usual recommended dose of piperacillin/tazobactam is 20 mg/kg, administered as a single dose. Piperacillin/tazobactam should be hemodialyzed.

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