

## Piprazon 4.5 Injection

### Piperacillin (4000mg) + Tazobactam (500mg) Injection: Comprehensive Information

**Generic Name:** Piperacillin + Tazobactam  
**Strength:** 4000mg of Piperacillin and 500mg of Tazobactam  
**Formulation:** Injectable Solution  
**Drug Class:** Antibiotic Combination

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### Description

Piperacillin + Tazobactam Injection is a combination of two antibiotics: **Piperacillin**, a broad-spectrum penicillin antibiotic, and **Tazobactam**, a beta-lactamase inhibitor. This combination works synergistically to treat a wide range of bacterial infections. Piperacillin works by inhibiting bacterial cell wall synthesis, leading to bacterial death, while Tazobactam protects Piperacillin from degradation by bacterial beta-lactamases, which would otherwise render Piperacillin ineffective. This enhanced activity makes the combination particularly effective against resistant bacterial strains.

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### Indications and Uses

Piperacillin + Tazobactam Injection is used for the treatment of infections caused by susceptible bacteria, including:

- Respiratory Tract Infections:**
    - Community-acquired pneumonia (CAP) and hospital-acquired pneumonia (HAP).
    - Acute exacerbations of chronic obstructive pulmonary disease (COPD).
    - Sinusitis and bronchitis.
  - Urinary Tract Infections (UTIs):**
    - Complicated UTIs, including pyelonephritis and cystitis.
  - Intra-abdominal Infections:**
    - Peritonitis, appendicitis, and other intra-abdominal infections, including those with abscess formation.
  - Skin and Soft Tissue Infections:**
    - Cellulitis, abscesses, and wound infections.
  - Bone and Joint Infections:**
    - Osteomyelitis and septic arthritis.
  - Gynecological Infections:**
    - Pelvic inflammatory disease (PID) and endometritis.
  - Bloodstream Infections (Sepsis):**
    - Bacteremia and septicemia caused by susceptible organisms.
  - Other Serious Infections:**
    - Endocarditis and meningitis in certain clinical situations.
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### Mechanism of Action

- Piperacillin:** A penicillin-class antibiotic that inhibits bacterial cell wall synthesis by binding to **penicillin-binding proteins (PBPs)**. This weakens the bacterial cell wall and leads to cell lysis and death. It is effective against a wide range of Gram-positive and Gram-negative bacteria, including some **anaerobes**.
  - Tazobactam:** A beta-lactamase inhibitor that prevents the breakdown of Piperacillin by bacterial enzymes called **beta-lactamases**. By inhibiting these enzymes, Tazobactam allows Piperacillin to remain effective against resistant bacterial strains.
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### Dosage and Administration

- Route of Administration:**
  - Piperacillin + Tazobactam is administered **intravenously (IV)**. It can be given either through **intermittent infusion** or **continuous infusion**,

depending on the clinical situation and severity of the infection.

- **Recommended Dosage:**

- The typical adult dose is **4g of Piperacillin** and **500mg of Tazobactam**, administered every **6–8 hours** based on the severity and type of infection.
- **For severe infections (e.g., sepsis, pneumonia):** Doses may be higher or given more frequently, as determined by a healthcare provider.
- **Renal impairment:** Dose adjustments are required in patients with impaired kidney function. A dose reduction or extended dosing interval may be necessary.

- **Administration Instructions:**

- The injection should be given over a **30-minute to 1-hour period** depending on the specific administration protocol.
- **Reconstitution and dilution:** The solution should be prepared according to the manufacturer's guidelines, and only sterile water or saline should be used for reconstitution.
- **Monitoring:** Vital signs and lab parameters (e.g., kidney and liver function) should be monitored during treatment.

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## Precautions Before Use

### Do not use Piperacillin + Tazobactam Injection if you:

- Are allergic to Piperacillin, Tazobactam, or any other **penicillin**-type antibiotics.
- Have a **history of severe allergic reactions** (anaphylaxis) to beta-lactam antibiotics.
- Are pregnant or breastfeeding, unless specifically prescribed by a healthcare professional, as it can pass into breast milk.
- Have a **history of liver disease** or **jaundice**, as this combination may exacerbate these conditions.

### Use with caution in patients with:

- **Renal impairment** (dose adjustments are required in patients with kidney problems).
- **Gastrointestinal conditions**, particularly **colitis**, as antibiotics can increase the risk of **Clostridium difficile-associated diarrhea**.
- **Electrolyte imbalances** or **hypertension**, especially if administered with other nephrotoxic or antihypertensive agents.
- **Blood disorders**, such as **anemia** or **thrombocytopenia**.

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## Potential Side Effects

### 1. Common Side Effects:

- **Injection site reactions** (pain, swelling, redness).
- **Gastrointestinal symptoms**, such as **nausea**, **vomiting**, **diarrhea**, and **abdominal discomfort**.
- **Rash** or **pruritus** (itching).
- **Headache** and **fever**.

### 2. Serious Side Effects:

- **Severe allergic reactions** (e.g., anaphylaxis, difficulty breathing, swelling of the throat or face).
- **Clostridium difficile-associated diarrhea (CDAD)**, a potentially life-threatening condition.
- **Renal toxicity**, especially in patients with preexisting kidney conditions.
- **Hepatic dysfunction:** Elevated liver enzymes, jaundice, or liver failure in rare cases.
- **Blood dyscrasias:** Low blood cell counts, such as **leukopenia** (low white blood cells) or **thrombocytopenia** (low platelets).

### 3. Long-Term Use Side Effects:

- **Superinfections** due to the destruction of normal bacterial flora, leading to resistant bacterial growth.
  - **Electrolyte imbalances** and **hypokalemia** (low potassium), particularly when used in combination with other drugs that affect kidney function.
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## Drug Interactions

### 1. Medications to Avoid or Monitor:

- **Probenecid:** Can increase the blood concentration of Piperacillin, potentially leading to toxicity.
- **Anticoagulants** (e.g., warfarin): Piperacillin + Tazobactam may increase the effects of anticoagulants, increasing bleeding risk.
- **Aminoglycosides:** When used concurrently, there is an increased risk of kidney toxicity.
- **Diuretics:** Certain diuretics may exacerbate kidney damage when combined with Piperacillin + Tazobactam.

### 2. Laboratory Test Interactions:

- May cause **false-positive** results on **urine glucose tests**.
- Monitoring of **renal function** and **liver enzymes** is recommended during therapy.

- Store at **room temperature** (20–25°C / 68–77°F), away from direct light and moisture.
- **Do not freeze** the injectable solution.
- Keep the medication out of reach of children.

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## Warnings and Legal Considerations

- **Pregnancy Category B:** Piperacillin + Tazobactam has been shown to be safe during pregnancy when prescribed by a healthcare provider, although it should be used only if necessary.
- **Controlled Substance:** This medication is not a controlled substance but should be used only as prescribed to avoid complications.

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## Overdose and Emergency Management

### Symptoms of Overdose:

- **Severe gastrointestinal upset**, such as nausea, vomiting, and diarrhea.
- **Electrolyte imbalances**, especially related to **renal failure**.
- **Signs of allergic reactions** such as rash, swelling, or difficulty breathing.

### Management:

- **Supportive care** is the mainstay of treatment for overdose.
- **Hydration** and **electrolyte correction** may be needed.
- In cases of severe allergic reactions, administer **epinephrine** or **antihistamines** immediately.

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## Storage Instructions