**ertapenem (er-ta-pen-em)**

**INN:**

**Classification:**
Therapeutic: anti-infectives
Pharmacologic: carbapenems

**Pregnancy Category:** B

**Indications**

Moderate to severe: complicated intra-abdominal infections, complicated skin and skin structure infections, community acquired pneumonia, complicated urinary tract infections (including pyelonephritis), acute pelvic infections including postpartum endometritis, septic abortion, and post-surgical gynecologic infections. Prophylaxis of surgical site infections following elective colorectal surgery.

**Action**

Binds to bacterial cell wall, resulting in cell death. Ertapenem resists the actions of many enzymes that degrade most other penicillins and penicillin-like anti-infectives.

**Therapeutic Effects:**

Bactericidal action against susceptible bacteria.

**Spectrum:**

Active against the following aerobic gram-positive organisms: Staphylococcus aureus (methicillin-susceptible strains only), Staphylococcus epidermidis, Streptococcus agalactiae, S. pneumoniae (penicillin-susceptible strains only), and S. pyogenes. Also active against the following gram-negative aerobic organisms: Escherichia coli, Haemophilus influenzae (beta-lactamase negative strains), Klebsiella pneumoniae, and Moraxella catarrhalis. Addition anaerobic spectrum includes Bacteroides fragilis, B. distasonis, B. ovatus, B. thetaiotaomicron, B. uniformis, B. vulgatus, Clostridium clostridioforme, Eubacterium lentum, Peptostreptococcus, Porphyromonas asaccharolytica, and Prevotella bivia.

**Pharmacokinetics**

**Absorption:** 90% after IM administration; IV administration results in complete bioavailability.

**Distribution:** Enters breast milk.

**Metabolism and Excretion:** Mostly excreted by the kidneys. Half-life: 1.8 hr (renal impairment).

**TIME/ACTION PROFILE (blood levels)**

<table>
<thead>
<tr>
<th>BOCHE</th>
<th>ONSET</th>
<th>PEAK</th>
<th>DURATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>IM</td>
<td>rapid</td>
<td>2 hr</td>
<td>24 hr</td>
</tr>
<tr>
<td>IV</td>
<td>rapid</td>
<td>end of infusion</td>
<td>24 hr</td>
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</tbody>
</table>

**Contraindications/Precautions**

Contraindicated in: Hypersensitivity; Cross-sensitivity may occur with penicillins, cephalosporins, and other carbapenems; Hypersensitivity to lidocaine (may be used as a diluent for IM administration).

Use Cautionally in: History of multiple hypersensitivity reactions; Severe disorders; Renal impairment; OB: Use in pregnancy only if clearly needed; Lactation: Not expected to cause adverse effects in breast-fed infants (NIH); Pedi: Safety not established; Geri: Sensitivity due to age-related renal function.

**Adverse Reactions/Side Effects**

**CNS:**

Seizures, headache.

**GI:**

Pseudomembranous colitis, diarrhea, nausea, vomiting.

**GU:**

Vaginitis.

**Local:**

Phlebitis at IV site, pain at IM site.

**Misc:**

Hypersensitivity reaction including anaphylaxis.

**Interactions**

Drug-Drug: Probenecid (decreased excretion and blood levels).

**Route/Dosage**

**IV, IM (Adults and Children 13 yrs or older):**

1 g once daily for up to 14 days (IV) or 7 days (IM).

**IV, IM (Children 3 mo–12 yrs):**

15 mg/kg twice daily (not to exceed 1 g/day) for up to 14 days (IV) or 7 days (IM).

**Renal Impairment**

**IM, IV (Adults):**

CCr/H34930 mL/min/1.73m

- 30–50 mL/min/1.73m2:
  - 500 mg once daily.

**NURSING IMPLICATIONS**

**Assessment**

- Assess for infection (vital signs, appearance of wound, sputum, urine, and stool; WBC) at beginning of and during therapy.

**NURSING IMPLICATIONS**

Assessment

- Obtain a history before initiating therapy to determine previous use of and reactions to penicillins, cephalosporins, or carbapenems. Persons with a negative history of penicillin sensitivity may still have an allergic response.
● Obtain specimens for culture and sensitivity before initiating therapy. First dose may be given before receiving results.

● Observe patient for signs and symptoms of anaphylaxis (rash, pruritus, laryngeal edema, wheezing). Discontinue the drug and notify the physician immediately if these occur. Race epinephrine, an antihistamine, and resuscitative equipment close by in the event of an anaphylactic reaction.

● Monitor bowel function. Diarrhea, abdominal cramping, fever, and bloody stools should be reported to health care professional promptly as a sign of pseudomembranous colitis. May begin up to several weeks following cessation of therapy.

● Lab Test Considerations: May cause q AST, ALT, serum alkaline phosphatase levels.

● May cause q platelet and eosinophil counts.

Potential Nursing Diagnoses

● Risk for infection (Indications) (Side Effects)

Implementation

● Do not confuse Invanz with Avinza.

● IM: Reconstitute 1-g vial with 3.2 mL of 1% lidocaine without epinephrine. Shake well to form solution. Immediately withdraw contents and inject deep into large muscle mass. Use reconstituted solution within 1 hr.

IV Administration

● pH: 7.5.

● Y-Site Compatibility: acyclovir, alfentanil, amifostine, amikacin, amoxicillin, amphotericin B colloidal, anidulafungin, caspofungin, dantrolene, daunorubicin hydrochloride, diazepam, dobutamine, doxorubicin hydrochloride, droperidol, epirubicin, hydralazine, hydroxyzine, idarubicin, midazolam, mitoxantrone, nicardipine, ondansetron, pentamidine, phenytoin, prochlorperazine, promethazine, quinupristin/dalfopristin, thiopental, topotecan, verapamil.

● Y-Site Incompatibility: alemtuzumab, allopurinol, amiodarone, amphotericin B colloidal, amikacin, amphotericin B colloidal, anidulafungin, caspofungin, dantrolene, daunorubicin hydrochloride, diazepam, dobutamine, doxorubicin hydrochloride, droperidol, epirubicin, hydralazine, hydroxyzine, idarubicin, midazolam, mitoxantrone, nicardipine, ondansetron, pentamidine, phenytoin, prochlorperazine, promethazine, quinupristin/dalfopristin, thiopental, topotecan, verapamil.

Patient/Family Teaching

● Advise patient to report the signs of superinfection (black, furry overgrowth on the tongue; vaginal itching or discharge; loose or foul-smelling stools) and allergy.

● Caution patient to notify health care professional if fever and diarrhea occur, especially if stool contains blood, pus, or mucus. Advise patient not to treat diarrhea without consulting health care professional. May occur up to several weeks after discontinuation of medication. Consult health care professional before treating with antidiarrheals.

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CONTINUED
Evaluation/Desired Outcomes

- Resolution of the signs and symptoms of infection. Length of time for complete resolution depends on the organism and site of infection.

Why was this drug prescribed for your patient?