**ampicillin**
(am-pi-sill'in)

**Classifications:**
ANTIBIOTIC; AMINOPENICILLIN
**Therapeutic:**
ANTIBIOTIC

**Pregnancy Category:** B

**AVAILABILITY** 250 mg, 500 mg capsules, 125 mg/5 mL, 250 mg/5 mL oral suspension, 125 mg, 250 mg, 500 mg, 1 gm, 2 gm vials

**ACTION & *THERAPEUTIC EFFECT*** A broad-spectrum, semisynthetic aminopenicillin that is bactericidal but is inactivated by penicillinase (beta-lactamase). Like other penicillins, ampicillin inhibits the final stage of bacterial cell wall synthesis by binding to specific penicillin-binding proteins (PBPs) located inside the bacterial cell wall resulting in lysis and death of bacteria.

*Effective against gram-positive bacteria as well as some gram negative.*

**USES**

Infections of GU, respiratory, and GI tracts and skin and soft tissues; also gonococcal infections, bacterial meningitis, otitis media, sinusitis, and septicemia and for prophylaxis of bacterial endocarditis. Used parenterally only for moderately severe to severe infections.

**CONTRAINDICATIONS** Hypersensitivity to penicillin derivatives; infectious mononucleosis.

**CAUTIOUS USE** History of hypersensitivity to cephalosporins; GI disorders; renal disease or impairment; pregnancy ( category B), lactation.

**ROUTE AND DOSAGE**

**Systemic Infections**
*Adult:* **PO/IV/IM** 250–500 mg q6h
*Child (under 40 kg):* **PO/IV** 25–50 mg/kg/day divided q6–8h
*Neonate:* **IV/IM** *Up to 7 days, weight up to 2000 g,* 50 mg/kg/day divided q12h; *up to* *7 days, weight greater than 2000 g*, 75 mg/kg/day divided q8h; *older than 7 days, weight less than 1200 g*, 50 mg/kg/day divided q12h; *older than 7 days, weight 1200–2000 g*, 75 mg/kg/day divided q8h; *older than 7 days, weight greater than 2000 g,* 100 mg/kg/day divided q6h

**Meningitis**
*Adult/Child:* **IV** 150–200 mg/kg/day divided q3–4h
*Neonate:* **IV/IM** *Up to 7 days, weight up to 2000 g,* 100 mg/kg/day divided q12h; *up to* *7 days, weight greater than 2000 g*, 150 mg/kg/day divided q8h; *older than 7 days, weight less than 1200 g*, 100 mg/kg/day divided 2h; *older than 7 days, weight 1200–2000 g*, 150 mg/kg/day divided q8h; *older than 7 days, weight greater than 2000 g,* 200 mg/kg/day divided q6h

**Gonorrhea**
*Adult:* **PO** 3.5 g with 1 g probenecid × 1 **IV/IM** 500 mg q8–12h

**Bacterial Endocarditis Prophylaxis**
*Adult:* **IV** 2 g 30 min before procedure
*Child:* **IV** 50 mg/kg 30 min before procedure (max: 2 g)

**Group B Strep Prophylaxis**
*Adult:* **IV** 2 g, then 1 g q4h until delivery

***Renal Impairment Dosage Adjustment*** CrCl 10–30 mL/min: Give q6–12h; less than 10 mL/min: Give q12h
*Dialysis Dosage Adjustment:* Dose should be given after dialysis

**ADMINISTRATION**

**Oral**

* Give with a full glass of water on an empty stomach (at least 1 h before or 2 h after meals) for maximum absorption. Food hampers rate and extent of oral absorption.

**Intramuscular**

* Reconstitute each vial by adding the indicated amount of sterile water for injection or bacteriostatic water for injection (1.2 mL to 125 mg; 1 mL to 250 mg; 1.8 mL to 500 mg; 3.5 mL to 1 g; 6.8 mL to 2 g). All reconstituted vials yield 250 mg/mL except the 125 mg vial which yields 125 mg/mL. Administer within 1 h of preparation.
* Withdraw the ordered dose and inject deep IM into a large muscle.

**Intravenous**

* Verify correct IV concentration and rate of infusion with physician for administration to neonates, infants, and children.

***Prepare:***

**Direct Intermittent:**

* Reconstitute as follows with sterile water for injection: Add 5 mL to 500 mg or fraction thereof; add 7.4 mL to 1 g; add 14.8 mL to 2 g. Final concentration **must be** 30 mg/mL or less; may be given direct IV as prepared or further diluted in 50 mL or more of NS, D5W, D5/NS, D5W/0.45NaCl, or LR.
* Stability of solution varies with diluent and concentration of solution. Solutions in NS are stable for up to 8 h at room temperature; other solutions should be infused within 2–4 h of preparation. Give direct IV within 1 h of preparation.
* Wear disposable gloves when handling drug repeatedly; contact dermatitis occurs frequently in sensitized individuals.

***Administer:***

**Direct Intermittent:**

* Infuse 500 mg or less slowly over 3–5 min. Give 1–2 g over at least 15 min.
* With solutions of 100 mL or more, set rate according to amount of solution, but no faster than direct IV rate.
* Convulsions may be induced by too rapid administration.

***Incompatibilities:***

**Solution/additive:**

* Do not add to a **dextrose-**containing solution unless entire dose is given within 1 h of preparation. **Aztreonam****,** **cefepime****,** **hydrocortisone****,** **prochlorperazine****.**

**Y-site:**

* **Amphotericin B****,** **epinephrine****,** **fenoldopam****,** **fluconazole****,** **hydralazine****,** **lansoprazole****,** **midazolam****,** **nicardipine****,** **ondansetron****,** **sargramostim****,** **TPN,** **verapamil****,** **vinorelbine****.**
* Store capsules and unopened vials at 15°–30° C (59°–86° F) unless otherwise directed. Keep oral preparations tightly covered.

**ADVERSE EFFECTS**

Similar to those for penicillin G. Hypersensitivity (pruritus, urticaria, eosinophilia, hemolytic anemia, interstitial nephritis, anaphylactoid reaction); superinfections. Convulsive seizures with high doses. *Diarrhea,* nausea, vomiting, pseudomembranous colitis. Severe pain (following IM); phlebitis (following IV). *Rash.*

**DIAGNOSTIC TEST INTERFERENCES**

Elevated ***CPK*** levels may result from local skeletal muscle injury following IM injection. ***Urine glucose:*** High urine drug concentrations can result in false-positive test results with ***Clinitest*** or ***Benedict's*** [enzymatic ***glucose oxidase methods*** (e.g., ***Clinistix, Diastix, TesTape***) are not affected]. ***AST*** may be elevated (significance not known).

**INTERACTIONS**

**Drug:** **Allopurinol** increases incidence of rash. Effectiveness of the AMINOGLYCOSIDES may be impaired in patients with severe end-stage renal disease. **Chloramphenicol****,** **erythromycin****,** and **tetracycline** may reduce bactericidal effects of ampicillin; this interaction is primarily significant when low doses of ampicillin are used. Ampicillin may interfere with the contraceptive action of oral contraceptives ( **estrogens**). Female patients should be advised to consider nonhormonal contraception while on antibiotics.

**Food:** Food may decrease absorption of ampicillin, so it should be taken 1 h before or 2 h after meals.

NURSING IMPLICATIONS

**Assessment & Drug Effects**

* Determine previous hypersensitivity reactions to penicillins, cephalosporins, and other allergens prior to therapy. Monitor closely for signs of hypersensitivity during first 30 min after administration.
* Lab tests: Baseline C&S tests prior to initiation of therapy; start drug pending results. Baseline and periodic assessments of renal, hepatic, and hematologic functions, particularly during prolonged or high-dose therapy.
* Sodium content of IV drug should be considered in patients on sodium restriction.
* Inspect skin daily and instruct patient to do the same. The appearance of a rash should be carefully evaluated to differentiate a nonallergenic ampicillin rash from a hypersensitivity reaction. Report rash promptly to physician.
* Monitor for and report diarrhea which may indicate pseudomembranous colitis.

**Patient & Family Education**

* Report diarrhea to physician; do not self-medicate. Give a detailed report to the physician regarding onset, duration, character of stools, associated symptoms, temperature and weight loss to help rule out the possibility of drug-induced, potentially fatal pseudomembranous colitis ( [see Appendix F](http://reader.pdaverticals.com/catalog/pearson/book/read/vRWi2011?customer=pearson1)").
* Report S&S of superinfection (onset of black, hairy tongue; oral lesions or soreness; rectal or vaginal itching; vaginal discharge; loose, foul-smelling stools; or unusual odor to urine).
* Notify physician if no improvement is noted within a few days after therapy is started.
* Take medication around the clock; continue taking medication until it is all gone (usually 10 days) unless otherwise directed by physician or pharmacist.

**ceftriaxone sodium**
(sef-try-ax'one)
**Rocephin**

**Classifications:**
ANTIBIOTIC; THIRD-GENERATION CEPHALOSPORIN
**Therapeutic:**
ANTIBIOTIC

**Pregnancy Category:** B

**AVAILABILITY**

250 mg, 500 mg, 1 g, 2 g injection

**ACTION & *THERAPEUTIC EFFECT*** Semisynthetic third-generation cephalosporin antibiotic. Preferentially binds to one or more of the penicillin-binding proteins (PBP) located on cell walls of susceptible organisms. This inhibits third and final stage of bacterial cell wall synthesis, thus killing the bacterium.

*Similar to other third-generation cephalosporins, ceftriaxone is effective against serious gram-negative organisms and also penetrates the CSF in concentrations useful in treatment of meningitis.*

**USES** Infections caused by susceptible organisms in lower respiratory tract, skin and skin structures, urinary tract, bones and joints; also intra-abdominal infections, pelvic inflammatory disease, uncomplicated gonorrhea, meningitis, and surgical prophylaxis.

**CONTRAINDICATIONS** Hypersensitivity to cephalosporins; viral infections; neonates with hyperbilirubinemia, especially premature neonates; neonates with calcium-containing infusions such as parenteral nutrition; signs and symptoms of gallbladder disease.

**CAUTIOUS USE** Coagulopathy, hypersensitivity to penicillin or other drugs; impaired vitamin K synthesis; chronic hepatic disease; history of GI disease, colitis; renal disease, renal impairment; pregnancy ( category B).

**ROUTE AND DOSAGE**

**Moderate to Severe Infections**
*Adult:* **IV/IM** 1–2 g q12–24h × 4–14 days (max: 4 g/day)
*Child:* **IV/IM** 50–75 mg/kg/day in 2 divided doses × 4–14 days (max: 2 g/day)

**Bacterial Otitis Media**
*Child:* **IM** 50 mg/kg (max: 1 g)

**Meningitis**
*Adult:* **IV/IM** 2 g q12h
*Child:* **IV/IM** 100 mg/kg/day in 2 divided doses (max: 4 g/day)

**Surgical Prophylaxis**
*Adult:* **IV/IM** 1 g 30–120 min before surgery

**Uncomplicated Gonorrhea**
*Adult:* **IM** 250 mg as single dose
*Child:* **IM** 125 mg as single dose

**ADMINISTRATION**

**Intramuscular**

* Reconstitute the 1 g or 2 g vial by adding 2.1 mL or 4.2 mL, respectively, of sterile water for injection. Yields 350 mg/mL. See manufacturer's directions for other dilutions.
* Give deep IM into a large muscle.

**Intravenous**

* IV administration to infants and children: Verify correct IV concentration and rate of infusion with physician.

***Prepare:***

**Intermittent:**

* Reconstitute each 250 mg with 2.4 mL of sterile water, D5W, NS, or D5/NS to yield 100 mg/mL.
* Further dilute with 50–100 mL of the selected IV solution.

***Administer:***

**Intermittent:**

* Give over 30 min.

***Incompatibilities:***

**Solution/additive:**

* AMINOGLYCOSIDES, **aminophylline****,** **clindamycin****,** **lidocaine****,** **linezolid****,** **metronidazole****,** **theophylline****,** **calcium-**containing products such as parenteral nutrition.

**Y-site:**

* AMINOGLYCOSIDES, **amphotericin B** **cholesteryl complex,** **amsacrine,** **azithromycin****,** **calcium**-containing products, **filgrastim****,** **fluconazole****,** **labetalol****,** **pentamidine****,** **vancomycin****,** **vinorelbine****.**
* Protect sterile powder from light. Store at 15°–25° C (59°–77° F).
* Reconstituted solutions: Diluent, concentration of solutions are determinants of stability. See manufacturer's instructions for storage.

**ADVERSE EFFECTS**

Pruritus, fever, chills, pain, induration at IM injection site; phlebitis (IV site). *Diarrhea,* abdominal cramps, pseudomembranous colitis, biliary sludge. Genital pruritus; moniliasis.

**DIAGNOSTIC TEST INTERFERENCES**

Causes prolonged ***PT/INR*** during therapy.

**INTERACTIONS** **Drug:** **Probenecid** decreases renal elimination of ceftriaxone; **alcohol** produces disulfiram reaction; effect of **warfarin**may be increased.

NURSING IMPLICATIONS

**Assessment & Drug Effects**

* Determine history of hypersensitivity reactions to cephalosporins and penicillins and history of other allergies, particularly to drugs, before therapy is initiated.
* Lab tests: Perform culture and sensitivity tests before initiation of therapy. Dosage may be started pending test results. Periodic coagulation studies (PT and INR) should be done when on concurrent warfarin.
* Inspect injection sites for induration and inflammation. Rotate sites. Note IV injection sites for signs of phlebitis (redness, swelling, pain).
* Monitor for manifestations of hypersensitivity ( [see Appendix F](http://reader.pdaverticals.com/catalog/pearson/book/read/vRWi2011?customer=pearson1)"). Report promptly.
* Watch for and report: Petechiae, ecchymotic areas, epistaxis, or any unexplained bleeding. Ceftriaxone appears to alter vitamin K–producing gut bacteria; therefore, hypoprothrombinemic bleeding may occur.
* Report promptly development of diarrhea. The incidence of antibiotic-produced pseudomembranous colitis ( [see Appendix F](http://reader.pdaverticals.com/catalog/pearson/book/read/vRWi2011?customer=pearson1)") is higher than with most cephalosporins.

**Patient & Family Education**

* Report any signs of bleeding.
* Report loose stools or diarrhea promptly.

**clindamycin hydrochloride**
(klin-da-mye'sin)
**Classifications:**
LINCOSAMIDE ANTIBIOTIC
**Therapeutic:**
ANTIBIOTIC

**Pregnancy Category:** B

**AVAILABILITY**

75 mg, 150 mg, 300 mg capsules, 75 mg/5 mL oral suspension, 150 mg/mL injection, 2% vaginal cream, 100 mg suppositories, 10 mg gel, lotion; 1% foam

**ACTION & *THERAPEUTIC EFFECT***

Semisynthetic derivative of lincomycin that suppresses protein synthesis by binding to 50 S subunits of bacterial ribosomes, and, therefore, inhibits other antibiotics (e.g., erythromycin) that act at this site.

*Particularly effective against susceptible strains of anaerobic streptococci as well as aerobic gram-positive cocci.*

**USES** Serious infections when less toxic alternatives are inappropriate. Topical applications are used in treatment of acne vulgaris. Vaginal applications are used in treatment of bacterial vaginosis in nonpregnant women.

**UNLABELED USES** In combination with pyrimethamine for toxoplasmosis in patients with AIDS.

**CONTRAINDICATIONS** History of hypersensitivity to clindamycin or lincomycin; history of regional enteritis, ulcerative colitis, or antibiotic-associated colitis; viral infection.

**CAUTIOUS USE** History of GI disease, renal or hepatic disease; atopic individuals (history of eczema, asthma, hay fever); older patients over 60 y; pregnancy ( category B); lactation.

**ROUTE AND DOSAGE**

**Moderate to Severe Infections**
*Child:* **PO** 10–30 mg/kg/day q6–8h **IM/IV** 20–40 mg/kg/day in divided doses
*Neonate:* **IM/IV** *7 days or younger, weight 2000 g or less,* 10 mg/kg/day q12h; *7 days or younger, weight greater than 2000 g,* 15 mg/kg/day q8h; *older than 7 days, weight less than 1200 g,* 10 mg/kg/day q12h; *older than 7 days, weight 1200 g–2000 g,* 15 mg/kg/day q8h; *older than 7 days, weight greater than 2000 g,* 20 mg/kg/day q6–8h

**Acne Vulgaris**
*Adult:* **Topical** Apply to affected areas b.i.d.; 1% foam daily application

**Bacterial Vaginosis**
*Adult:* **Topical** Insert 1 suppository intravaginally at bedtime × 3 days, or insert 1 applicator full of cream intravaginally at bedtime × 7 days

**ADMINISTRATION**

**Oral**

* Administer clindamycin capsules with a full [240 mL (8 oz)] glass of water to prevent esophagitis.
* Note expiration date of oral solution; retains potency for 14 days at room temperature. Do not refrigerate, as chilling causes thickening and thus makes pouring it difficult.

**Intramuscular**

* Deep IM injection is recommended. Rotate injection sites and observe daily for evidence of inflammatory reaction. Single IM doses should not exceed 600 mg.

**Intravenous**

* IV administration to neonates, infants, and children: Verify correct IV concentration and rate of infusion with physician.

***Prepare:***

**Intermittent:**

* Each 18 mg **must be** diluted with at least 1 mL of D5W, NS, D5/.45% NaCl, or other compatible solution.
* Final concentration should never exceed 18 mg/mL.

***Administer:***

**Intermittent:**

* Never give a bolus dose.
* Do not give more than 1200 mg in a single 1-h infusion.
* Infusion rate should not exceed 30 mg/min.

***Incompatibilities:***

**Solution/additive:**

* **Aminophylline****,** BARBITUATES, **calcium** **gluconate,** **ceftriaxone****,** **ciprofloxacin****,** **gentamicin****,** **magnesium** **sulfate,** **ranitidine****.**

**Y-site:**

* **Allopurinol****,** **azithromycin****,** **doxapram****,** **filgrastim****,** **fluconazole****,** **idarubicin****,** **lansoprazole****.**
* Store in tight containers at 15°–30° C (59°–86° F) unless otherwise directed.

**ADVERSE EFFECTS**

Fever, serum sickness, sensitization, swelling of face (following topical use), generalized myalgia, superinfections, proctitis, vaginitis, pain, induration, sterile abscess (following IM injections); thrombophlebitis (IV infusion). Hypotension (following IM), cardiac arrest (rapid IV). *Diarrhea,* abdominal pain, flatulence, bloating, *nausea, vomiting,* pseudomembranous colitis; esophageal irritation, loss of taste, medicinal taste (high IV doses), jaundice, abnormal liver function tests. Leukopenia, eosinophilia, agranulocytosis, thrombocytopenia. *Skin rashes,* urticaria, pruritus, dryness, contact dermatitis, gram-negative folliculitis, irritation, oily skin.

**DIAGNOSTIC TEST INTERFERENCES**

Clindamycin may cause increases in ***serum alkaline phosphatase,*** ***bilirubin,*** ***creatine phosphokinase (CPK)*** from muscle irritation following IM injection; ***AST,*** ***ALT.***

**INTERACTIONS**

**Drug:** **Chloramphenicol****,** **erythromycin** possibly are mutually antagonistic to clindamycin; neuromuscular blocking action enhanced by NEUROMUSCULAR BLOCKING AGENTS **( atracurium,** **tubocurarine,** **pancuronium****).**

NURSING IMPLICATIONS

**Assessment & Drug Effects**

* Lab tests: Culture and susceptibility testing should be performed initially. Periodic CBC with differential, liver, and kidney function tests.
* Monitor BP and pulse in patients receiving drug parenterally. Hypotension has occurred following IM injection. Advise patient to remain recumbent following drug administration until BP has stabilized.
* Severe diarrhea and colitis, including pseudomembranous colitis, have been associated with oral (highest incidence), parenteral, and topical clindamycin. Report immediately the onset of watery diarrhea, with or without fever. Symptoms may appear within a few days to 2 wk after therapy is begun or up to several weeks following cessation of therapy.
* Be alert to signs of superinfection ( [see Appendix F](http://reader.pdaverticals.com/catalog/pearson/book/read/vRWi2011?customer=pearson1)").
* Be alert for signs of anaphylactoid reactions ( [see Appendix F](http://reader.pdaverticals.com/catalog/pearson/book/read/vRWi2011?customer=pearson1)"), that require immediate attention.

**Patient & Family Education**

* Report loose stools or diarrhea promptly.
* Stop drug therapy if significant diarrhea develops (more than 5 loose stools daily) and notify physician.
* Do not self-medicate with antidiarrheal preparations. Antiperistaltic agents may prolong and worsen diarrhea by delaying removal of toxins from colon.

**hydromorphone hydrochloride**
(hye-droe-mor'fone)
**Dilaudid**
**Dilaudid-HP**

**Classifications:**
NARCOTIC (OPIATE) AGONIST; ANALGESIC
**Therapeutic:**
NARCOTIC ANALGESIC; ANTITUSSIVE

**Prototype:**
Morphine 

**Pregnancy Category:** C; D in prolonged use or high doses at term

**Controlled Substance:**
Schedule II

**AVAILABILITY**

2 mg, 4 mg, 8 mg tablets, 5 mg/5 mL oral liquid, 1 mg/mL, 10 mg/mL injection

**ACTION & *THERAPEUTIC EFFECT***Has more rapid onset and shorter duration of action than morphine, and is reported to have less hypnotic effect.

*An effective narcotic analgesic that controls mild to moderate pain. Also has antitussive properties.*

**USES** Relief of moderate to severe pain and control of persistent nonproductive cough.

**CONTRAINDICATIONS** Intolerance to opiate agonists; opiate-naïve patients; acute bronchial asthma, COPD, upper airway obstruction, decreased respiratory reserve, severe respiratory depression; pregnancy ( category D if used for prolonged periods or in high does at term); lactation.

**CAUTIOUS USE** Abrupt discontinuation, alcoholism; angina; biliary tract disease; older adults; epidural administration; GI disease, GI obstruction; head trauma; heart failure; hepatic disease; hypotension, hypovolemia, oliguria, prostatic hypertrophy; pulmonary disease; renal disease, renal impairment; paralytic ileus; increased intracranial pressure; inflammatory bowel disease; labor; latex hypersensitivity; obstetric delivery; bladder obstruction; cardiac arrhythmias, cardiac disease; respiratory depression; seizure disorder, seizures; substance abuse; surgery; ulcerative colitis; urethral stricture, urinary retention; pregnancy ( category C).

**ROUTE AND DOSAGE**

**Moderate to Severe Pain**
*Child:* **PO** 0.03–0.08 mg/kg q4–6h (max: 5 mg/dose) **IV** 0.015 mg/kg q4–6h prn

**Antitussive**
*Child (6–12 y):* **PO** 0.5 mg q3–4h prn

**ADMINISTRATION**

**Oral**

* For chronic pain, around-the-clock dosing is recommended.

**Subcutaneous/Intramuscular**

* High-potency hydromorphone is highly concentrated, making delivery of exact small doses difficult. Use high-potency hydromorphone only if an accurate dose can be measured and delivered.
* Store at room 15°–30° C (59°–86° F) and protect from light.

**Intravenous**

* IV administration to children: Verify correct IV concentration and rate of infusion with physician.

***Prepare:***

**Direct:**

* May be given undiluted or diluted in 5 mL of sterile water or NS.

**IV Infusion:**

* Solution typically diluted to 1 mg/mL (specific concentration is ordered by physician) in D5W, NS, or other compatible solution.
* *For Dilaudid-HP:* Reconstitute 250 mg dry powder vial immediately prior to use with 25 mL sterile water for injection to yield 10 mg/mL.
* Final dilution of Dilaudid-HP 250 and HP 500 (supplied 500 mg/50 mL) **must be** ordered by physician.

***Administer:***

**Direct:**

* Give 2 mg or fraction thereof over 3–5 min.

**IV Infusion:**

* Both final volume and rate of infusion **must be** ordered by physician.

***Incompatibilities:***

**Solution/additive:**

* **Prochlorperazine****,** **sodium bicarbonate****,** **thiopental****.**

**Y-site:**

* **Amphotericin B** **cholesteryl,** **minocycline****,** **phenytoin****,** **sargramostim****,** **tetracycline****,** **thiopental****.**
* A slight discoloration in ampules or multidose vials causes no loss of potency.
* Store in tight, light-resistant containers at 15°–30° C (59°–86° F).

**ADVERSE EFFECTS**

Nausea, vomiting, constipation. Euphoria, dizziness, sedation, *drowsiness.* Hypotension, bradycardia or tachycardia. Respiratory depression. Blurred vision.

**INTERACTIONS**

**Drug: Alcohol** and other CNS DEPRESSANTS compound sedation and CNS depression.

**Herbal: St. John's wort, kava**may increase sedation.

NURSING IMPLICATIONS

**Assessment & Drug Effects**

* Note baseline respiratory rate, rhythm, and depth and size of pupils before administration. Respirations of 12/min or less and mitosis are signs of toxicity. Withhold drug and promptly notify physician.
* Monitor vital signs at regular intervals. Drug-induced respiratory depression may occur even with small doses and increases progressively with higher doses.
* Assess effectiveness of pain relief 30 min after medication administration.
* Monitor drug effects carefully in older adult or debilitated patients and those with impaired renal and hepatic function.
* Assess effectiveness of cough. Drug depresses cough and sigh reflexes and may induce atelectasis, especially in postoperative patients and those with pulmonary disease.
* Nausea and orthostatic hypotension most often occur in ambulatory patients or when a supine patient assumes the head-up position.
* Monitor I&O ratio and pattern. Assess lower abdomen for bladder distension. Report oliguria or urinary retention.
* Monitor bowel pattern; drug-induced constipation may require treatment.

**Patient & Family Education**

* Request medication at the onset of pain and do not wait until pain is severe.
* Use caution with activities requiring alertness; drug may cause drowsiness, dizziness, and blurred vision.
* Avoid alcohol and other CNS depressants while taking this drug.