Drug-herbs. *Cayenne:* increased risk of aminophylline toxicity
Drug-behaviors. *Smoking:* increased aminophylline elimination

Patient monitoring

Monitor aminophylline blood level. Adjust dosage if patient has signs or symptoms of toxicity (tachycardia, headache, anorexia, nausea, vomiting, diarrhea, restlessness, and irritability).
• Assess for arrhythmias, especially after giving loading dose.
• Check vital signs and fluid intake and output.
• Monitor patient's response to drug, and assess pulmonary function test results.

Patient teaching

• Advise patient to take oral doses at meals with 8 oz of water.
• Caution patient to avoid driving and other hazardous activities until he knows how drug affects concentration and alertness.
• Tell patient to minimize GI upset by eating small, frequent servings of food and drinking plenty of fluids.
• Advise patient to establish effective bedtime routine to minimize insomnia.
• Caution patient not to change aminophylline brands.
• If patient smokes, tell him to notify prescriber if he stops smoking; dosage may need to be adjusted.
• As appropriate, review all other significant and life-threatening adverse reactions and interactions, especially those related to the drugs, tests, herbs, and behaviors mentioned above.

amiodarone hydrochloride

Amyben[UK], Cordarone, Cordarone X[UK], Pacerone

Pharmacologic class: Benzofuran derivative

Therapeutic class: Antiarrhythmic (class III)

Pregnancy risk category D

FDA BOXED WARNING

• Because of substantial toxicity, drug is indicated only in patients with life-threatening arrhythmias.
• Drug may cause potentially fatal pulmonary toxicities, including hypersensitivity pneumonitis and interstitial/alveolar pneumonitis. Pulmonary toxicity is fatal about 10% of time.
• Hepatic injury is common but usually mild, manifesting only as abnormal liver enzyme levels. However, overt hepatic disease can occur and, in rare cases, is fatal.
• Drug may exacerbate arrhythmias by reducing tolerance for them or making them harder to reverse. Arrhythmias and significant heart block or sinus bradycardia occur in 2% to 5% of patients.
• Even in patients at high risk for arrhythmic death in whom toxicity is an acceptable risk, drug poses major management problems. Therefore, other agents should be tried first whenever possible.
• Difficulty of using drug effectively and safely poses significant risk. Patients with indicated arrhythmias must be hospitalized to receive loading dose; response generally takes at least 1 week, but usually 2 or more.

Action

Prolongs duration and refractory period of action potential. Slows electrical conduction, electrical impulse generation from sinoatrial node, and conduction through accessory pathways. Also dilates blood vessels.

Availability

Injection: 50 mg/ml in 3-ml ampules
Tablets: 100 mg, 200 mg, 400 mg

Indications and dosages

➢ Life-threatening ventricular arrhythmias

Adults: 150 mg in 100 ml of dextrose 5% in water (D_5W) by rapid I.V. infusion over 10 minutes; then dilute 900 mg in 500 ml of D_5W and administer 360 mg by slow I.V. infusion over next 6 hours; then 540-mg I.V. maintenance infusion over next 18 hours. Or 800 to 1,600 mg P.O. daily in one to two doses for 1 to 3 weeks; then 600 to 800 mg P.O. daily in one to two doses for 1 month; then 400-mg P.O. daily as maintenance dosage. All dosages are titrated to individual patient's clinical needs.

Off-label uses

- Atrioventricular (AV) nodal reentry tachycardia (with parenteral use)
- Conversion of atrial fibrillation to normal sinus rhythm

Contraindications

- Hypersensitivity to drug or its components, including iodine
- Cardiogenic shock
- Second- or third-degree AV block
- Marked sinus bradycardia
- Breastfeeding
- Neonates

Precautions

Use cautiously in:

- electrolyte imbalances, severe pulmonary or hepatic disease, thyroid disorders
- history of heart failure
- elderly patients
- pregnant patients
- children.

Administration

Know that I.V. amiodarone is a high-alert drug.

Give loading dose only in hospital setting with continuous ECG monitoring.

- Administer oral loading dose in two equal doses with meals. Give maintenance dose daily or in two divided doses to minimize GI upset.
- Don't give I.V. unless patient is on continuous ECG monitoring.
- Dilute I.V. drug with dextrose 5% in water and use in-line filter. Drug isn't compatible with normal saline solution.
- Use central venous catheter when giving repeated doses. If possible, use dedicated catheter for drug.

Route	Onset	Peak	Duration
P.O.	Variable	3-7 hr	Wks-mos
I.V.	Hrs	Unknown	Variable

Adverse reactions

CNS: dizziness, fatigue, headache, insomnia, paresthesia, peripheral neuropathy, poor coordination, involuntary movements, tremor, sleep disturbances

CV: hypotension, **heart failure, worsening arrhythmia, AV block, sinoatrial node dysfunction, bradycardia, asystole, cardiac arrest, cardiogenic shock, electromechanical dissociation, ventricular tachycardia**

EENT: corneal microdeposits, corneal or macular degeneration, visual disturbances, dry eyes, eye discomfort, optic neuritis or neuropathy, scotoma, lens opacities, photophobia, visual halos, **papilledema**

GI: nausea, vomiting, constipation, abdominal pain, abnormal salivation, anorexia

GU: decreased libido

Hematologic: coagulation abnormalities, thrombocytopenia
Hepatic: nonspecific hepatic disorders, **hepatic dysfunction**
Metabolic: hypothyroidism, hyperthyroidism
Respiratory: cough, **adult respiratory distress syndrome, pulmonary inflammation or fibrosis, pulmonary edema**
Skin: flushing, photosensitivity, toxic epidermal necrolysis
Other: abnormal taste and smell, edema, fever, **Stevens-Johnson syndrome**

Interactions

Drug-drug. *Anticoagulants:* increased prothrombin time (PT)
Azole antifungals, fluoroquinolones, loratadine, macrolide antibiotics, trazodone: increased risk of life-threatening arrhythmias
Beta-adrenergic blockers: increased risk of bradycardia and hypotension
Calcium channel blockers: increased risk of AV block (with verapamil, diltiazem) or hypotension (with any calcium channel blocker)
Cholestyramine: decreased amiodarone blood level
Cimetidine, ritonavir: increased amiodarone blood level
Class I antiarrhythmics (disopyramide, flecainide, lidocaine, mexiletine, procainamide, quinidine): increased blood levels of these drugs, leading to toxicity
Cyclosporine: elevated cyclosporine and creatinine blood levels
Dextromethorphan: impaired dextromethorphan metabolism (with amiodarone therapy of 2 weeks or longer)
Digoxin: increased digoxin blood level, leading to toxicity
Fentanyl: increased bradycardia, hypotension
Methotrexate: impaired methotrexate metabolism, possibly causing toxicity (with amiodarone use longer than 2 weeks)
Phenytoin: decreased amiodarone blood level or increased phenytoin blood level (with amiodarone use longer than 2 weeks)
Protease inhibitors (atazanavir, indinavir, nelfinavir): possible increased amiodarone concentration
Rifampin: decreased amiodarone concentration
Theophylline: increased theophylline blood level (with amiodarone use longer than 1 week)
Drug-diagnostic tests. *Kidney function tests:* abnormal results
Drug-food. *Grapefruit juice:* increased drug concentration
Drug-herb. *St. John's wort:* decreased drug blood level

Patient monitoring

Monitor patient closely. Drug may cause serious or life-threatening adverse reactions.
Watch for slow onset of life-threatening arrhythmias, especially after giving loading dose.
Monitor ECG continuously during loading dose and when dosage is changed.
• Check patient's blood pressure, pulse, and heart rhythm regularly.
• Assess for signs and symptoms of lung inflammation.
• Monitor baseline and subsequent chest X-rays, as well as pulmonary, liver, and thyroid function test results.
• Closely monitor patient who's receiving other drugs concurrently because amiodarone can interact with many drugs. Check digoxin blood level if patient is receiving digoxin; monitor PT or International Normalized Ratio if patient is receiving anticoagulants.

Patient teaching

Inform patient that drug may cause serious adverse reactions. Instruct him to report these immediately.
• Tell patient to take oral doses with meals. Advise him to divide daily dose into two doses if drug causes GI upset.

- Tell patient that adverse reactions are most common with high doses and may become more frequent after 6 months of therapy.
- Inform patient that he'll undergo regular blood testing, eye examinations, chest X-rays, and pulmonary function tests during therapy.
- As appropriate, review all other significant and life-threatening adverse reactions and interactions, especially those related to the drugs and tests mentioned above.

amitriptyline hydrochloride

Apo-Amitriptyline, Levate*, Novotriptyn*

Pharmacologic class: Tricyclic compound

Therapeutic class: Antidepressant

Pregnancy risk category D

FDA BOXED WARNING

- Drug may increase risk of suicidal thinking and behavior in children and adolescents with major depressive disorder and other psychiatric disorders. Risk is greater during first few months of treatment, and must be balanced with clinical need, as depression itself increases suicide risk. With patient of any age, observe closely for clinical worsening, suicidality, and unusual behavior changes when therapy begins. Advise family to observe patient closely and communicate with prescriber as needed.
- Drug isn't approved for use in pediatric patients.

Action

Unclear. Inhibits norepinephrine and serotonin reuptake at presynaptic neuron, increasing levels of these neurotransmitters in brain. Also has sedative, anticholinergic, and mild peripheral vasodilating effects.

Availability

Injection: 10 mg/ml
Syrup: 10 mg/5 ml
Tablets: 10 mg, 25 mg, 50 mg, 75 mg, 100 mg, 150 mg

Indications and dosages

➢ Depression

Adults: 75 mg P.O. daily in divided doses; may increase gradually to 150 mg/day. Or start with 50 to 100 mg P.O. at bedtime and increase by 25 to 50 mg as needed, to a total dosage of 150 mg. Hospitalized patients initially may receive 100 mg P.O. daily, with gradual increases as needed to a total dosage of 300 mg P.O. With I.M. use, give 20 to 30 mg q.i.d.

Dosage adjustment

- Elderly patients
- Adolescents
- Outpatients

Off-label uses

- Analgesic adjunct for phantom limb pain or chronic pain

Contraindications

- Hypersensitivity to drug or other tricyclic antidepressants (TCAs)
- Acute recovery phase after myocardial infarction
- MAO inhibitor use within past 14 days
- Children younger than age 12

Precautions

Use cautiously in:

- seizures, cardiovascular disease, renal or hepatic impairment, urinary retention, hyperthyroidism, increased intraocular pressure, closed-angle glaucoma, prostatic hypertrophy, bipolar disorder, schizophrenia, paranoia
- elderly patients
- pregnant or breastfeeding patients.

Administration

- Administer full dose at bedtime to minimize orthostatic hypotension.
- Give injectable form by I.M. route only.
- Don't withdraw drug suddenly. Instead, taper dosage gradually.
- If patient is scheduled for surgery, discuss dosage tapering with prescriber.
- Be aware that drug is often used in conjunction with psychotherapy.

Route	Onset	Peak	Duration
P.O.	2-4 wk	2-6 wk	Unknown
I.M.	2-3 wk	2-6 wk	Unknown

Adverse reactions

CNS: headache, fatigue, agitation, numbness, paresthesia, peripheral neuropathy, weakness, restlessness, panic, anxiety, dizziness, drowsiness, difficulty speaking, excitement, hypomania, psychosis exacerbation, extrapyramidal effects, poor coordination, hallucinations, insomnia, nightmares, **seizures, coma, suicidal behavior or ideation (especially in children and adolescents)**

CV: ECG changes, tachycardia, hypertension, orthostatic hypotension, **arrhythmias, heart block, myocardial infarction**

EENT: blurred vision, dry eyes, mydriasis, abnormal visual accommodation, increased intraocular pressure, tinnitus

GI: nausea, vomiting, constipation, dry mouth, epigastric pain, anorexia, **paralytic ileus**

GU: urinary retention, delayed voiding, urinary tract dilation, gynecomastia

Hematologic: agranulocytosis, thrombocytopenia, thrombocytopenic purpura, leukopenia

Metabolic: changes in blood glucose level

Skin: photosensitivity rash, urticaria, flushing, diaphoresis

Other: increased appetite, weight gain, high fever, edema, hypersensitivity reaction

Interactions

Drug-drug. *Activated charcoal:* decreased amitriptyline absorption

Adrenergics, anticholinergics, anticholinergic-like drugs: increased anticholinergic effects

Amiodarone, cimetidine, quinidine, ritonavir: increased amitriptyline effects

Barbiturates: decreased amitriptyline blood level, increased CNS and respiratory effects

Clonidine: hypertensive crisis

CNS depressants (including antihistamines, opioids, sedative-hypnotics): increased CNS depression

Drugs metabolized by CYP-4502D6 (such as other antidepressants, phenothiazines, carbamazepine, class 1C antiarrhythmics): decreased amitriptyline clearance, possibly causing toxicity

Guanethidine: antagonism of antihypertensive action

Levodopa: delayed or decreased levodopa absorption, hypertension

MAO inhibitors: hypotension, tachycardia, potentially fatal reactions

Rifabutin, rifampin, rifapentine: decreased amitriptyline blood level and effects

Selective serotonin reuptake inhibitors: increased risk of toxicity

Sympathomimetics: increased pressor effect of direct-acting sympathomimetics (epinephrine, norepinephrine), possibly causing arrhythmias; decreased pressor effect of indirect-acting sympathomimetics (ephedrine, metaraminol)

Drug-diagnostic tests. *Eosinophils, liver function tests:* increased values

Glucose, granulocytes, platelets, white blood cells: increased or decreased levels

Drug-herbs. *Angel's trumpet, jimsonweed, scopolia:* increased anticholinergic effects

Chamomile, hops, kava, skullcap, valerian: increased CNS depression
St. John's wort: decreased drug blood level and reduced efficacy
Drug-behaviors. *Alcohol use:* increased CNS sedation
Smoking: increased drug metabolism and altered effects
Sun exposure: increased risk of photosensitivity reaction

Patient monitoring

- Evaluate for signs and symptoms of psychosis. If present, discuss possible dosage change with prescriber.
- Assess for changes in patient's mood or mental status.

Monitor for signs and symptoms of depression and assess for suicidal ideation (especially in child or adolescent).

- Check blood pressure for orthostatic hypertension.
- Monitor CBC with white cell differential, glucose levels, and liver function test results.

Patient teaching

Instruct patient, parent, or caregiver to contact prescriber if severe mood changes or suicidal thoughts occur (especially if patient is child or adolescent).

- Tell patient that drug may cause temporary blood pressure decrease if he stands up suddenly. Advise him to rise slowly and carefully.
- Caution patient to avoid driving and other hazardous activities until he knows how drug affects concentration and alertness.
- Advise patient to minimize GI upset by eating small, frequent servings of food and drinking plenty of fluids.
- Inform patient that he'll undergo frequent blood testing during therapy.
- As appropriate, review all other significant and life-threatening adverse reactions and interactions, especially those related to the drugs, tests, herbs, and behaviors mentioned above.

amlodipine besylate

Norvasc

Pharmacologic class: Calcium channel blocker

Therapeutic class: Antihypertensive

Pregnancy risk category C

Action

Inhibits influx of extracellular calcium ions, thereby decreasing myocardial contractility, relaxing coronary and vascular muscles, and decreasing peripheral resistance

Availability

Tablets: 2.5 mg, 5 mg, 10 mg

Indications and dosages

Essential hypertension, chronic stable angina pectoris, and vasospastic angina (Prinzmetal's angina)
Adults: 5 to 10 mg P.O. once daily

Dosage adjustment

- Hepatic impairment
- Elderly patients

Off-label uses

- Pulmonary hypertension
- Raynaud's disease

Contraindications

- Hypersensitivity to drug

Precautions

Use cautiously in:

- aortic stenosis, severe hepatic impairment, heart failure
- elderly patients
- pregnant or breastfeeding patients.
- children.

Administration

• Be aware that this drug may be given alone or with other drugs to relieve hypertension or angina.

Route	Onset	Peak	Duration
P.O.	Unknown	6-9 hr	24 hr

Adverse reactions

CNS: headache, dizziness, drowsiness, light-headedness, fatigue, weakness, lethargy
CV: peripheral edema, angina, bradycardia, hypotension, palpitations
GI: nausea, abdominal discomfort
Musculoskeletal: muscle cramps, muscle pain or inflammation
Respiratory: shortness of breath, dyspnea, wheezing
Skin: rash, pruritus, urticaria, flushing

Interactions

Drug-drug. *Beta-adrenergic blockers:* increased risk of adverse effects
Fentanyl, nitrates, other antihypertensives, quinidine: additive hypotension
Drug-behaviors. *Acute alcohol ingestion:* additive hypotension

Patient monitoring

Monitor patient for worsening angina.
• Monitor heart rate and rhythm and blood pressure, especially at start of therapy.
Assess for heart failure; report signs and symptoms (peripheral edema, dyspnea) to prescriber promptly.
Give sublingual nitroglycerin, as prescribed, if patient has signs or symptoms of acute myocardial infarction (especially when dosage is increased).

Patient teaching

• If patient also uses sublingual nitroglycerin, tell him he can take nitroglycerin as needed for acute angina.
• Caution patient to avoid driving and other hazardous activities until he knows how drug affects concentration and alertness.
• As appropriate, review all other significant adverse reactions, especially those related to the drugs and behaviors mentioned above.

amlodipine besylate and atorvastatin calcium

Caduet

Pharmacologic class: Calcium channel blocker, HMG-CoA reductase inhibitor

Therapeutic class: Antihypertensive, antianginal, lipid-lowering agent

Pregnancy risk category X

Action

Amlodipine inhibits influx of extracellular calcium ions, thereby decreasing myocardial contractility, relaxing coronary and vascular muscles, and reducing peripheral resistance. Atorvastatin inhibits HMG-CoA reductase, which catalyzes first step in cholesterol synthesis; this action reduces serum cholesterol and low-density lipoprotein (LDL) levels; atorvastatin also moderately increases concentration of high-density lipoproteins (HDLs).

Availability

Tablets: (amlodipine besylate/atorvastatin calcium) 2.5/10 mg, 2.5/20 mg, 2.5/40 mg, 5/10 mg, 5/20 mg, 5/40 mg, 5/80 mg, 10/10 mg, 10/20 mg, 10/40 mg, 10/80 mg

Indications and dosages

➢ Patients for whom treatment with both amlodipine and atorvastatin is appropriate, such as those with hypertension (used alone or combined with other antihypertensives), coronary artery disease, cardiovascular disease

prevention, heterozygous familial or nonfamilial hypercholesterolemia, homozygous familial hypercholesterolemia, elevated serum triglycerides, or dysbetalipoproteinemia

Adults: Dosage individualized based on efficacy of and tolerance for each component. Maximum amlodipine dosage: 10 mg P.O. daily; maximum atorvastatin dosage: 80 mg P.O. daily.

Dosage adjustment

- Alanine aminotransferase (ALT) or aspartate aminotransferase (AST) more than three times upper limit of normal
- Small, frail, or elderly patients

Contraindications

- Hypersensitivity to drug or its components
- Active hepatic disease or unexplained persistent serum transaminase elevations
- Pregnant or breastfeeding patients

Precautions

Use cautiously in:

- hepatic or renal impairment; aortic stenosis; heart failure; hypotension; uncontrolled seizures; myopathy; severe metabolic, endocrine, or electrolyte disorders
- alcohol abuse
- concurrent use of fibric acid derivatives (such as gemfibrozil) or drugs that may decrease endogenous steroids (such as cimetidine, ketoconazole, spironolactone)
- elderly patients
- females of childbearing potential
- children (safety and efficacy not established).

Administration

- Before starting therapy, patient should attempt to control hypercholesterolemia with appropriate diet, exercise, and weight reduction (if obese) and should receive treatment for other underlying medical problems.
- Administer with or without food.
- Don't give with grapefruit juice or antacids.
- Titrate dosage over 7 to 14 days. (Titration may be more rapid if warranted and if patient is assessed frequently.)
- Dosage of amlodipine, atorvastatin, or both may be increased, if appropriate, for additional antianginal, hypotensive, or lipid-lowering effect.

Route	Onset	Peak	Duration
P.O.	Unknown	Unknown	Unknown

Adverse reactions

Amlodipine component

CNS: dizziness, headache, fatigue, somnolence

CV: palpitations, chest pain, **arrhythmias**

EENT: abnormal vision, conjunctivitis, diplopia, eye pain, tinnitus

GI: nausea, abdominal pain, dry mouth

GU: frequent urination, urination disorder, nocturia

Hematologic: purpura, leukopenia, thrombocytopenia

Metabolic: hyperglycemia

Skin: flushing, **erythema multiforme**

Other: edema, increased sweating, thirst

Atorvastatin component

CNS: headache, migraine, asthenia, insomnia, dizziness, malaise, depression, peripheral neuropathy, somnolence, amnesia, abnormal dreams, emotional lability, facial paralysis, incoordination, hyperkinesia, paresthesia, hypoesthesia, hypertonia

CV: chest pain, palpitations, vasodilation, syncope, hypertension, orthostatic hypotension, phlebitis, angina pectoris, **arrhythmias**

EENT: amblyopia, refraction disorder, eye hemorrhage, glaucoma, dry eyes,

hearing loss, tinnitus, parosmia, epistaxis, rhinitis, sinusitis, pharyngitis
GI: nausea, vomiting, diarrhea, constipation, abdominal pain, dyspepsia, flatulence, enteritis, gastroenteritis, colitis, gastritis, esophagitis, eructation, biliary pain, duodenal ulcer, gastric ulcer, pancreatitis, cholestatic jaundice, tenesmus, melena, dysphagia, cheilitis, glossitis, stomatitis, dry mouth, ulcerative stomatitis, **rectal and gum hemorrhage**
GU: decreased libido, sexual dysfunction, fibrocystic breasts, breast enlargement, metrorrhagia, epididymitis, abnormal ejaculation, urinary tract infection, hematuria, albuminuria, urinary frequency, urinary incontinence, urinary retention, urinary urgency, nocturia, cystitis, dysuria, renal calculus, nephritis, **vaginal and uterine hemorrhage**
Hematologic: anemia, thrombocytopenia
Hepatic: abnormal liver function tests, **hepatitis**
Metabolic: gout
Musculoskeletal: back pain, arthralgia, myalgia, myositis, myasthenia, arthritis, neck rigidity, leg cramps, bursitis, tenosynovitis, tendon contracture
Respiratory: bronchitis, pneumonia, dyspnea, asthma
Skin: rash, pruritus, contact dermatitis, alopecia, dry skin, acne, urticaria, eczema, seborrhea, skin ulcer, ecchymosis, petechiae, photosensitivity
Other: taste loss or alteration; appetite changes; weight gain; infection; lymphadenopathy; accidental injury; flu-like syndrome; peripheral, facial, or generalized edema; allergic reaction

Interactions

Drug-drug. *Antacids, colestipol:* decreased atorvastatin level
Azole antifungals, cyclosporine, erythromycin, fibric acid derivatives, niacin, other HMG-CoA inhibitors: increased myopathy risk
Beta-adrenergic blockers: increased risk of adverse effects (amlodipine component)
Cimetidine, ketoconazole, spironolactone: decreased levels or activity of endogenous steroids (atorvastatin component)
Digoxin: increased digoxin level, increased risk of digoxin toxicity
Fentanyl, nitrates, other antihypertensives, quinidine: additive hypotension (amlodipine component)
Hormonal contraceptives: increased estrogen level
Drug-diagnostic tests. *ALT, AST, creatinine kinase:* increased (atorvastatin component)
Blood glucose: increased or decreased
CBCs, platelets: decreased
Drug-food. *Grapefruit juice:* increased drug level, greater risk of adverse effects
Drug-herb. *Red yeast rice:* increased risk of adverse herbal effects
Drug-behaviors. *Acute alcohol ingestion:* additive hypotension (amlodipine component)

Patient monitoring

- Monitor heart rate and rhythm and blood pressure, especially at start of therapy.
- Monitor liver function tests before therapy starts, at 12 weeks, and after dosage increase; thereafter, monitor periodically.
- Watch for signs and symptoms of allergic response.
- Monitor patient for worsening angina.
- Assess for heart failure; promptly report signs and symptoms (peripheral edema, dyspnea).
- Monitor patients who develop transaminase elevations until these resolve.
- Evaluate for muscle weakness (a symptom of myositis and possibly rhabdomyolysis).
- Measure blood glucose level regularly.

Patient teaching

- Tell patient drug may be taken with or without food.
- Advise patient to minimize GI upset by eating small, frequent servings of food and drinking plenty of fluids.
- Instruct patient to avoid grapefruit juice during therapy.

Urge patient to immediately report unexplained muscle pain, tenderness, or weakness—especially if accompanied by malaise or fever.

Instruct patient to immediately report signs and symptoms of liver damage, such as nausea, fatigue, anorexia, jaundice, dark urine, light-colored stools, intense itching, or tender abdomen.

Tell patient to promptly report chest pain, swelling, or difficulty breathing.

- Caution patient to avoid driving and other hazardous activities until drug effects are known.
- Instruct patient to avoid alcohol use during therapy.
- Advise female with childbearing potential to avoid pregnancy and breast-feeding during therapy.
- As appropriate, review all other significant and life-threatening adverse reactions and interactions, especially those related to the drugs, tests, foods, herbs, and behaviors mentioned above.

amoxapine

Pharmacologic class: Tricyclic compound

Therapeutic class: Antidepressant

Pregnancy risk category C

FDA BOXED WARNING

- Drug may increase risk of suicidal thinking and behavior in children and adolescents with major depressive disorder and other psychiatric disorders. Risk must be balanced with clinical need, as depression itself increases suicide risk. With patient of any age, observe closely for clinical worsening, suicidality, and unusual behavior changes when therapy begins. Advise family to observe patient closely and communicate with prescriber as needed.
- Drug isn't approved for use in pediatric patients.

Action

Unclear. Inhibits reuptake of norepinephrine or serotonin at presynaptic neuron, thereby increasing levels of these neurotransmitters in brain. Also has sedative, anticholinergic, and mild peripheral vasodilatory properties.

Availability

Tablets: 25 mg, 50 mg, 100 mg, 150 mg

Indications and dosages

Depression accompanied by anxiety or agitation, depression in patients with neurotic or reactive depressive disorders, endogenous and psychotic depression

Adults: Initially, 50 mg P.O. two or three times daily, increased to 100 mg two or three times daily by end of first week. If starting dosage (up to 300 mg/day) is tolerated but ineffective for at least 2 weeks, dosage may be increased. For outpatients, maximum suggested dosage is 400 mg/day; for hospitalized patients, 600 mg/day.

Dosage adjustment

- Elderly patients

Off-label uses

- Analgesic adjunct for phantom limb pain or chronic pain

Contraindications

- Hypersensitivity to drug or other tricyclic antidepressants (TCAs)
- Acute recovery phase after myocardial infarction
- MAO inhibitor use within past 14 days

Precautions

Use cautiously in:

- renal or hepatic impairment, prostatic hypertrophy, hyperthyroidism, angle-closure glaucoma, bipolar disorder, schizophrenia
- elderly patients
- pregnant or breastfeeding patients
- children younger than age 16 (safety and efficacy not established).

Administration

Don't give drug if patient has taken MAO inhibitors within past 14 days.

- If desired, give daily dose up to 300 mg at bedtime.
- If patient is scheduled for surgery, discuss need for dosage tapering with prescriber.

Route	Onset	Peak	Duration
P.O.	Unknown	2-4 hr	2-4 wk

Adverse reactions

CNS: agitation, restlessness, fatigue, panic, anxiety, dizziness, drowsiness, difficulty articulating words, excitement, hypomania, psychosis exacerbation, extrapyramidal effects, tardive dyskinesia, poor coordination, hallucinations, headache, insomnia, nightmares, numbness, paresthesia, peripheral neuropathy, weakness, **neuroleptic malignant syndrome, seizures, coma, suicidal behavior or ideation (especially in children and adolescents)**
CV: ECG changes, hypertension, orthostatic hypotension, **arrhythmias, heart block, myocardial infarction, tachycardia**
EENT: blurred vision, dry eyes, mydriasis, abnormal visual accommodation, increased intraocular pressure, tinnitus
GI: nausea, vomiting, constipation, anorexia, epigastric pain, dry mouth, **paralytic ileus**
GU: urine retention, delayed voiding, urinary tract dilation, gynecomastia
Hematologic: agranulocytosis, thrombocytopenia, thrombocytopenic purpura, leukopenia
Metabolic: changes in blood glucose level
Skin: photosensitivity rash, urticaria, flushing, diaphoresis
Other: increased appetite, weight gain, high fever, edema, hypersensitivity reactions

Interactions

Drug-drug. *Adrenergics, anticholinergics, anticholinergic-like drugs:* increased anticholinergic effects
Amiodarone, cimetidine, quinidine, ritonavir: increased amoxapine effects
Barbiturates: reduced amoxapine blood level, increased CNS and respiratory effects
Clonidine: hypertensive crisis
CNS depressants (including antihistamines, opioids, sedative-hypnotics): increased CNS depression
Drugs metabolized by CYP450 2D6 (such as other antidepressants, carbamazepine, class IC antiarrhythmics, phenothiazines): decreased amoxapine clearance, possible toxicity
Guanethidine: antagonism of antihypertensive action
Levodopa: delayed or decreased levodopa absorption, hypertension
MAO inhibitors: hypotension, tachycardia, extreme excitation, fever, hyperpyrexia, seizures
Rifabutin, rifampin, rifapentine: decreased amoxapine blood level and effects
Selective serotonin reuptake inhibitors: increased toxicity
Sympathomimetics: increased pressor effects of direct-acting sympathomimetics (epinephrine, norepinephrine), possibly causing arrhythmias;

decreased pressor effects of indirect-acting sympathomimetics (ephedrine, metaraminol)
Valproic acid: increased valproic acid blood level, greater risk of adverse reactions
Drug-diagnostic tests. *Eosinophils, liver function tests:* increased values
Glucose, granulocytes, platelets, white blood cells: increased or decreased values
Drug-herbs. *Evening primrose:* lower seizure threshold, increased risk of seizures
Drug-behaviors. *Alcohol use:* increased CNS sedation
Smoking: increased metabolism and altered drug effects
Sun exposure: increased risk of photosensitivity reactions

Patient monitoring

Watch for signs and symptoms of neuroleptic malignant syndrome (high fever, rapid pulse and breathing, profuse sweating).
• Monitor patient for signs and symptoms of psychosis. If these occur, consult prescriber.
• Evaluate patient for development of tardive dyskinesia (involuntary movements of face, arms, legs, and trunk).
• Assess for changes in mood and mental status.
• Check blood pressure for orthostatic hypertension.
Watch for signs and symptoms of depression, and assess for suicidal ideation.
• Monitor CBC with white cell differential, glucose level, and kidney and liver function test results.

Patient teaching

Tell patient to contact prescriber immediately if he develops high fever, rapid pulse and breathing, profuse sweating, changes in mental status, or involuntary movements.
Instruct patient to promptly report severe mood changes or suicidal thoughts.
• Caution patient to avoid driving and other hazardous activities until he knows how drug affects concentration and alertness.
• Tell patient that stopping drug suddenly can cause withdrawal symptoms.
• Advise patient to rise slowly and carefully to avoid dizziness.
• Caution patient that drug may cause serious interactions with many common drugs. Instruct him to tell all prescribers that he's taking this drug.
• Advise patient to minimize GI upset by eating small, frequent servings of food and drinking plenty of fluids.
• Tell patient he'll undergo frequent blood testing during therapy.
• As appropriate, review all other significant and life-threatening adverse reactions and interactions, especially those related to the drugs, tests, herbs, and behaviors mentioned above.

amoxicillin

amoxicillin trihydrate

Amix, Amox, Amoxident, Amoxil, Apo-Amoxil, Moxatag, Novamoxin, Nu-Amoxil, Trimox

Pharmacologic class: Aminopenicillin
Therapeutic class: Anti-infective
Pregnancy risk category B

Action

Inhibits cell-wall synthesis during bacterial multiplication, leading to cell death. Shows enhanced activity toward gram-negative bacteria compared to natural and penicillinase-resistant penicillins.

Availability

Capsules: 250 mg, 500 mg
Powder for oral suspension: 50 mg/ml and 125 mg/5 ml (pediatric), 200 mg/5 ml, 250 mg/5 ml, 400 mg/5 ml
Tablets: 500 mg, 875 mg
Tablets for oral suspension: 200 mg, 400 mg
Tablets (chewable): 125 mg, 200 mg, 250 mg, 400 mg

Indications and dosages

➢ Uncomplicated gonorrhea
Adults and children weighing at least 40 kg (88 lb): 3 g P.O. as a single dose
Children ages 2 and older weighing less than 40 kg (88 lb): 50 mg/kg P.O. given with probenecid 25 mg/kg P.O. as a single dose

➢ Bacterial endocarditis prophylaxis for dental, GI, and GU procedures
Adults: 2 g P.O. 1 hour before procedure
Children: 50 mg/kg P.O. 1 hour before procedure

➢ Lower respiratory tract infections caused by streptococci, pneumococci, non-penicillinase-producing staphylococci, and *Haemophilus influenzae*
Adults and children weighing more than 20 kg (44 lb): 875 mg P.O. q 12 hours or 500 mg P.O. q 8 hours
Children weighing less than 20 kg (44 lb): 45 mg/kg/day P.O. in divided doses q 12 hours or 40 mg/kg/day P.O. in divided doses q 8 hours

➢ Ear, nose, and throat infections caused by streptococci, pneumococci, non-penicillinase-producing staphylococci, and *H. influenzae;* GU infections caused by *Escherichia coli, Proteus mirabilis,* and *Streptococcus faecalis*
Adults and children weighing more than 20 kg (44 lb): 500 mg P.O. q 12 hours or 250 mg P.O. q 8 hours
Children weighing less than 20 kg (44 lb): 45 mg/kg/day P.O. in divided doses q 12 hours or 20 to 40 mg/kg P.O. in divided doses q 8 hours

➢ Eradication of *Helicobacter pylori* to reduce risk of duodenal ulcer recurrence
Adults: 1 g P.O. q 12 hours for 14 days in combination with clarithromycin and lansoprazole, or in combination with lansoprazole alone as 1 g t.i.d. for 14 days

➢ Postexposure anthrax prophylaxis
Adults: 500 mg P.O. t.i.d. for 60 days
Children: 80 mg/kg/day P.O. t.i.d. for 60 days

➢ Skin and skin-structure infections caused by streptococci (alpha- and beta-hemolytic strains), staphylococci, and *E. coli*
Adults: 500 mg P.O. q 12 hours to 250 mg P.O. q 8 hours. For severe infections, 875 mg P.O. q 12 hours or 500 mg P.O. q 8 hours.
Children older than age 3 months: 25 mg/kg/day P.O. in divided doses q 12 hours or 20 mg/kg/day P.O. in divided doses every 8 hours. For severe infections, 45 mg/kg/day P.O. in divided doses q 12 hours or 40 mg/kg/day P.O. in divided doses every 8 hours.

Dosage adjustment

- Renal impairment
- Hemodialysis
- Infants ages 3 months and younger

Off-label uses

- *Chlamydia trachomatis* infection in pregnant patients

Contraindications

- Hypersensitivity to drug or any penicillin

Precautions

Use cautiously in:
- severe renal insufficiency, infectious mononucleosis, hepatic dysfunction
- pregnant patients.

Administration

Ask about history of penicillin allergy before giving.

- Give with or without food.
- Store liquid form in refrigerator when possible.
- Know that maximum dosage for infants ages 3 months and younger is 30 mg/kg/day divided q 12 hours.

Route	Onset	Peak	Duration
P.O.	30 min	1-2 hr	8-12 hr

Adverse reactions

CNS: lethargy, hallucinations, anxiety, confusion, agitation, depression, dizziness, fatigue, hyperactivity, insomnia, behavioral changes, **seizures** (with high doses)
GI: nausea, vomiting, diarrhea, bloody diarrhea, abdominal pain, gastritis, stomatitis, glossitis, black "hairy" tongue, furry tongue, enterocolitis, **pseudomembranous colitis**
GU: vaginitis, nephropathy, **interstitial nephritis**
Hematologic: eosinophilia, anemia, **thrombocytopenia, thrombocytopenic purpura, leukopenia, hemolytic anemia, agranulocytosis, bone marrow depression**
Hepatic: cholestatic jaundice, hepatic cholestasis, **cholestatic hepatitis, nonspecific hepatitis**
Respiratory: wheezing
Skin: rash
Other: superinfections (oral and rectal candidiasis), fever, **anaphylaxis**

Interactions

Drug-drug. *Allopurinol:* increased risk of rash
Chloramphenicol, macrolides, sulfonamides, tetracycline: decreased amoxicillin efficacy
Hormonal contraceptives: decreased contraceptive efficacy
Probenecid: decreased renal excretion
Drug-diagnostic tests. *Alanine aminotransferase, alkaline phosphatase, eosinophils, lactate dehydrogenase:* increased levels
Granulocytes, hemoglobin, platelets, white blood cells: decreased values
Direct Coombs' test, urine glucose, urine protein: false-positive results
Drug-food. *Any food:* delayed or reduced drug absorption
Drug-herbs. *Khat:* decreased antimicrobial efficacy

Patient monitoring

- Monitor for signs and symptoms of hypersensitivity reaction.
- Evaluate for seizures when giving high doses.
- Monitor patient's temperature and watch for other signs and symptoms of superinfection (especially oral or rectal candidiasis).

Patient teaching

- Instruct patient to immediately report signs and symptoms of hypersensitivity reactions, such as rash, fever, or chills.
- Tell patient he may take drug with or without food.
- Tell patient not to chew or swallow tablets for suspension, because they're not meant to be dissolved in mouth.
- Advise patient to minimize GI upset by eating small, frequent servings of food and drinking plenty of fluids.
- Tell patient taking hormonal contraceptives that drug may reduce contraceptive efficacy. Suggest she use alternative birth control method.
- Inform patient that drug lowers resistance to other types of infections. Instruct him to report new signs and symptoms of infection, especially in mouth or rectum.
- Tell parents they may give liquid form of drug directly to child or may mix it with foods or beverages.
- As appropriate, review all other significant and life-threatening adverse reactions and interactions, especially those related to the drugs, tests, foods, and herbs mentioned above.