amiodarone (am-ee-da-rone)  CORDARONE, NEXTERONE, PACERONE  Classification  Therapeutic: antiarrhythmics (class III)  Pregnancy Category D

Indications  Life-threatening ventricular arrhythmias unresponsive to less toxic agents. Indicated most frequent. Strikethrough  High Alert

Action  Blocks action potential and refractory period. Slows the sinus rate, increases PR and QT intervals, and decreases peripheral vascular resistance (vasodilation).

Pharmacokinetics

Absorption  Slowly and variably absorbed from the GI tract (35–65%). IV administration results in complete bioavailability.

Distribution  Distributed to and accumulates slowly in body tissues. Reaches high levels in fat, muscle, liver, lungs, and spleen. Crosses the placenta and enters breast milk.

Metabolism and Excretion  Metabolized by the liver, excreted into bile. Minimum renal excretion. One metabolite has antiarrhythmic activity.

Protein Binding  95%

Half-life  13–107 days.

TIME/ACTION PROFILE (suppression of ventricular arrhythmias)

<table>
<thead>
<tr>
<th>Route</th>
<th>ONSET</th>
<th>PEAK</th>
<th>DURATION</th>
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<tbody>
<tr>
<td>PO</td>
<td>2–3 hr</td>
<td>1–7 d</td>
<td>unknown</td>
</tr>
<tr>
<td>IV</td>
<td>3 hr</td>
<td>1–7 d</td>
<td>unknown</td>
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Adverse Reactions/Side Effects


Contraindications/Precautions

Contraindicated in: Patients with cardiogenic shock; severe sinus node dysfunction; 2nd- and 3rd-degree A-V block; Brugada syndrome; severe hypothyroidism; pseudocholecystokininase deficiency; any patient in whom the use of a less toxic agent would be indicated. Use cautiously in: History of HF; Thyroid disorders; Corneal refractive laser surgery; Severe pulmonary or liver disease; Geri: Initiate therapy at the low end of the dosing range due to age-related changes in renal, cardiac, and hepatic function; comorbid disease; or other disease states which may alter dose requirements; OB: use an alternative to breast milk; Lactation: may enter breast milk; Pedi: safety not established; products containing benzyl alcohol should be used in neonates.

Interactions

Drug-Drug: ↑ risk of QT prolongation with other class III antiarrhythmics, macrolides, and azole antifungals. (Undertake concurrent use with caution).  ↑ S levels of digoxin (↓ dose of digoxin by 50%).  ↑ levels of class Ia antiarrhythmics (quinidine, procainamide).  ↓ levels of warfarin by 33–50%.  ↑ levels of cyclosporine, dextromethorphan, methotrimeprazine, phenytoin, carvedilol, and diltiazem.  ↓ levels of warfarin by 35–50%.  ↑ risk of bradycardias, sinus arrest, or 3rd heart block with beta blockers or calcium channel blockers.  ↓ cholesterol levels with β blockers.  ↓ amiodarone levels with ergot derivatives.  ↑ levels of sympathomimetic amines. Risk of myocardial depression in ↑ by volatile anesthetics.  ↑ risk of myopathy with levothyroid hormone and simvastatin.  ↓ total cholesterol and triglycerides.  ↓ levels of digoxin, β blockers, carvedilol, and amiodarone.  ↓ levels of warfarin. Risk of myopathy with calcium channel blockers.  ↑ levels of other drugs by 30–50%.

Drug-Natural Products: St. John’s wort may induce enzymes that metabolize amiodarone; may ↑ levels of warfarin and effectiveness. Avoid concurrent use.

Genetic Implications: CAPI TALS indicate life-threatening, underlines genetic implication.  CAPI TALS indicate most frequent. Strikethrough

Depends on

- Genetic Implication
- CAPI TALS
Drug-Food: Grapefruit juice inhibits enzymes in the GI tract that metabolize amiodarone resulting in decreased levels and risk of toxicity; avoid concurrent use.

Route/Dosage

**Ventricular Arrhythmias**

**PO (Adults):** 800–1600 mg/day in 1–2 doses for 1–3 wk, then 600–800 mg/day in 1–2 doses for 1 mo, then 400 mg/day maintenance dose.

**PO (Children):** 10 mg/kg/day (800 mg/1.72 m²/day) for 10 days or until response or adverse reaction occurs, then 5 mg/kg/day (400 mg/1.72 m²/day) for several weeks, then 2.5 mg/kg/day (200 mg/1.72 m²/day) or lowest effective maintenance dose.

**IV (Adults):** 150 mg over 10 min, followed by 360 mg over the next 6 hr and then 540 mg over the next 18 hr. Continue infusion at 0.5 mg/min until oral therapy is initiated. If arrhythmia recurs, a small loading infusion of 150 mg over 10 min should be given; in addition, the rate of the maintenance infusion may be decreased. In addition, the rate of the maintenance infusion may be 50 mg/hr. If the patient is receiving the maintenance infusion, the maximum cumulative dose should be 2.2 g/24 hr. If the patient is receiving the maintenance infusion, the maximum cumulative dose should be 2.2 g/24 hr.

**Conversion to initial oral therapy—** If duration of IV infusion was < 1 wk, oral dose should be 800–1600 mg/day; if IV infusion was 1–3 wk, oral dose should be 600–800 mg/day; if IV infusion was > 3 wk, oral dose should be 400 mg/day.

**ACLS guidelines for pulseless VF/VT—** 300 mg IV push, may repeat once after 3–5 min with 150 mg IV push (maximum cumulative dose 2.2 g/24 hr; unlabeled).

**IV Intraosseous (Children and infants):** PALS guidelines for pulseless VF/VT—5 mg/kg as a bolus; Perfusion tachycardia—5 mg/kg loading dose over 20–60 min (maximum of 15 mg/kg/day; unlabeled).

**Supraventricular Tachycardia**

**PO (Adults):** 600–800 mg/day for 1 wk or until desired response occurs or side effects develop, then 400–600 mg/day for 3 wk, then maintenance dose of 200–600 mg/day.

**PO (Children):** 80 mg/kg/day (600 mg/1.72 m²/day) for 10 days or until response or side effects occur, then 5 mg/kg/day (400 mg/1.72 m²/day) for several weeks, then 2.5 mg/kg/day (200 mg/1.72 m²/day) or lowest effective maintenance dose.

**NURSING IMPLICATIONS**

**Assessment**

- **Monitor ECG continuously during IV therapy or initiation of oral therapy.** Monitor heart rate and rhythm throughout therapy; PR prolongation, slight QRS widening, T-wave amplitude reduction with T-wave widening and bifurcation, and U waves may occur. QT prolongation may be associated with worsening of arrhythmias and should be monitored closely during IV therapy. Report bradycardia or increase in arrhythmia promptly; patients receiving IV therapy may require slowing rate, discontinuing infusion, or inserting a temporary pacemaker.

- Assess pacing and defibrillation thresholds in patients with pacemakers and implanted defibrillators at beginning and periodically during therapy.

- Assess for signs of pulmonary toxicity (rales, crackles, decreased breath sounds, pleural friction rub, fatigue, dyspnea, cough, wheezing, pleural pain, fever, hemoptysis). Chest x-ray and pulmonary function tests are recommended before therapy. Monitor chest x-ray every 3–6 mo during therapy to detect diffuse interstitial changes or obvious infiltrates. Bronchoscopy or gallium radionuclide scan may also be used for diagnosis. Usually reversible after withdrawal, but fatalities have occurred.

- **IV:** Assess for signs and symptoms of ARDS throughout therapy. Report dyspnea, tachypnea, or rales/crackles promptly. Bilateral, diffuse pulmonary infiltrates are common clinical signs.

- **Monitor BP frequently.** Hypotension usually occurs during first several hours of therapy and is related to rate of infusion. Hypotension occurs, slow rate.

- **PO:** Assess for neurotoxicity (ataxia, proximal muscle weakness, myopathy, or weakness in fingers or toes, uncontrolled movements, tremor), common during initial therapy, occurring within 1 wk to several mo of initiation of therapy and may persist for more than 1 yr after withdrawal. Dose reduction is recommended. Assist patient during ambulation to prevent falls.

- **Ophthalmic exams should be performed before and regularly during therapy and whenever visual changes (photophobia, halos around lights, decreased acuity) occur.** May cause permanent loss of vision.

- **Assess for signs of thyroid dysfunction, especially during initial therapy.** Tachycardia; weight loss; nervousness; sensitivity to heat; insomnia; and warm, flushed, moist skin suggest hyperthyroidism and may require discontinuation of therapy and treatment with antithyroid agents.

- **Lab Test Considerations:** Monitor liver and thyroid functions before and every 6 mo during therapy. Drug effects persist long after discontinuation.
amiodarone

Thyroid function abnormalities are common, but clinical thyroid dysfunction is uncommon.

- Monitor T3, T4, and alkaline phosphatase at regular intervals during therapy, especially in patients receiving high maintenance dose. Decreased T3 levels are not uncommonly seen with discontinuation. 
- May cause asymptomatic increases in ANA titer concentrations.

Potential Nursing Diagnoses

- Decreased cardiac output (indications)
- Impaired gas exchange (side effects)

Implementation

- IV: Administer via volumetric pump; drop size may be reduced, causing altered dosing with drop counter infusion sets.
- Administer through an in-line filter.

- Direct IV: Administer undiluted. May also be administered in 20–30 mL of DSW or 0.9% NaCl. Concentration: 50 mg/mL. Rate: Administer IV push.
- Continuous Infusion: Diluent: Dilute 900 mg of amiodarone in 500 mL of DSW. Infusion stable for 2 hr in PVC bag, or use pre-filled bags. Concentration: 1.8 mg/mL. Rate: Infuse at a rate of 1 mg/min for the first 6 hr, then decrease infusion rate to 0.5 mg/min and continue until oral therapy initiated.

Y-Site Incompatibility: aminocaproic acid, aminophylline, ampicillin/sulbactam, bivalirudin, ceftazidime, cytarabine, digoxin, doxorubicin hydrochloride, erapenem, fludarabine, fluorouracil, heparin, imipenem-cilastatin, levofloxacin, mechlorethamine, methotrexate, micafungin, paclitaxel, piperacillin/tazobactam, potassium acetate, potassium phosphates, sodium acetate, sodium bicarbonate, sodium bicarbonate, sodium phosphates, yohimbine, thiotepa, tigecycline.
Patient/Family Teaching

- Instruct patient to take amiodarone as directed. Advise patient to read the Medication Guide prior to first dose and with each Rx refill. If a dose is missed, do not take extra. Consult health care professional if more than two doses are missed.

- Advise patient to avoid drinking alcohol or propafenone during therapy.

- Teach patient that side effects may not appear until several days, weeks, or yr after initiation of therapy and may persist for several mo after withdrawal.

- Teach patient to monitor pulse daily and report abnormalities.

- Advise patient that photosensitivity reactions may occur through window glass, thin clothing, and sunscreens. Protective clothing and sunblock are recommended during and for 4 mo after therapy. If photosensitivity occurs, dosage reduction may be useful.

- Teach patient that bluish discoloration of the face, neck, and arms is a possible side effect of this drug after prolonged use. This is usually reversible and will fade over several mo. Notify health care professional if discoloration occurs.

- Instruct patient to notify health care professional if sign of pulmonary edema (shortness of breath) occur. May require reduction in dose.

- Advise patient to notify health care professional of all Rx or OTC medications, vitamins, or herbal products being taken and to consult with health care professional before taking other medications, especially St. John’s wort.

- Instruct patient to notify health care professional of medication regimen before treatment or surgery.

- Advise patient to notify health care professional if signs and symptoms of thyroid dysfunction occur.

- Caution female patients to avoid breast feeding during therapy.

- Emphasize the importance of follow-up exams, including chest X rays and pulmonary function tests every 3–6 mo and ophthalmic exams after 6 mo of therapy, and then annually.

Evaluation/Desired Outcomes

- Cessation of life-threatening ventricular arrhythmias. Adverse effects may take up to 4 mo to resolve.

Why was this drug prescribed for your patient?