# Amiodarone

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| **Brand names** | Cordarone IV, Nexterone, generic |
| **Medication error potential** | ISMP high-alert medication that has an increased risk of causing significant patient harm if it is used in error.[1]<br>Look-alike, sound-alike drug names. Amiodarone may be confused with inamrinone, amantadine and AMILoride.[2,5] Corarone may be confused with Cardura or Cordran. |
| **Contraindications and warnings** | Hypersensitivity to amiodarone, iodine, or any component of the formulation (i.e., corn or corn products).[3] Should not be used in those with severe sinus-node dysfunction causing marked sinus bradycardia; second- and third-degree heart block (except in patients with a functioning artificial pacemaker); bradycardia causing syncope (except in patients with a functioning artificial pacemaker) and/or cardiogenic shock.[3] |
| **Infusion-related cautions** | Because dosing units can be variable (mcg/kg/min and mg/kg/day), caution should be used to validate dose and dosing. May cause hypotension and bradycardia that is associated with the rate of infusion; hence, the dose rate should be slowed if these develop.[3] The likelihood of phlebitis increases with peripheral infusion of concentrations >3 mg/mL in D5W.[3] Concentrations ≤2.5 mg/mL may be less irritating. Use of an inline filter during continuous infusions may reduce the incidence of phlebitis.[3] |
| **Dosage** | *Dosing units for regimens can vary (mcg/kg/min and mg/kg/day); therefore, use caution to ensure appropriate dose is given. Taper infusion as soon as clinically possible, and if necessary switch to oral therapy. (See the Comments section.)*<br>**Perfusing tachycardias:** Give an IV loading dose of 5 mg/kg (maximum: 300 mg/dose) over 20–60 minutes. Dose may be repeated twice up to a maximum total dose of 15 mg/kg during acute treatment.[4,5]<br>**Shock refractory ventricular fibrillation (VF) or pulseless ventricular tachycardia (VT):** Amiodarone is recommended for cardiac arrest with pulseless VT or VF that is unresponsive to defibrillation, CPR, and vasopressor administration and control of hemodynamically stable monomorphic VT or wide-complex tachycardia of uncertain origin.[5,7] May be given IO if an IV cannot be established.[6] Give 5 mg/kg (maximum: 300 mg/dose) by rapid bolus.[4,5,16] This may be repeat twice up to a maximum total dose of 15 mg/kg during acute treatment.[4,5,16] In the event of breakthrough episodes give 5 mg/kg (150 mg) over 10 minutes.<br>**Tachyarrhythmia, including junctional ectopic tachycardia, paroxysmal supraventricular tachycardia:** Although limited information is available, amiodarone is recommended for supraventricular tachycardia that is unresponsive to vagal maneuvers and adenosine.[4]<br>Loading dose of 5 mg/kg (maximum: 300 mg) given over 20–60 minutes (not to exceed 0.25 mg/kg/min unless clinically indicated).[4,5,8-10,12,16] Initial dose may be repeated up to a maximum of 15[4,16]–20 mg/kg.[11-13] Some have suggested dividing the loading dose of 5 mg/kg into 1-mg/kg aliquots that are each given over 5–10 minutes.[13,14] If after 30 minutes additional therapy is needed, give a dose of 1–5 mg/kg in the same manner.[13,14] Continuous IV infusion has also been used. The initial dose of 5 mcg/kg/min is followed by incremental increases as clinically needed. The usual required dose is 10 mcg/kg/min (range: 5–15 mcg/kg/min).[5,9,12,15,16] |
| **Dosage adjustment in organ dysfunction** | No adjustment necessary in renal or hepatic dysfunction.[3] Although no specific recommendations are available, dosage adjustment may be necessary in those with significant hepatic impairment. |
| **Maximum dosage** | 300 mg/dose. Although doses of 20 mg/kg/day have been used,[11-13] current guidelines suggest 15 mg/kg/day as a maximum dose.[4] Up to a maximum total 24-hour dose of 15 mg/kg/day, 20 mg/kg/day[4,5] or 20 mg/kg[11-13] during acute treatment or[13] 10[5]–15 mcg/kg/min.[5,12] |
| **Additives** | Each milliliter contains 100 mg of polysorbate 80 and benzyl alcohol 20.2 mg in water for injection. Commercially prepared, premixed solutions do *not* contain benzyl alcohol. Nexterone does not contain polysorbate 80 or benzyl alcohol.[3] (See Appendix C for specific information about benzyl alcohol potential for toxicity.) |

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| **Suitable diluents** | D5W |
| **Maximum concentration** | Concentrations >2 mg/mL are associated with increased phlebitis are generally discouraged unless given via a central venous catheter.[3,5] Commercially premixed solutions are available (1.5 and 1.8 mg/mL). |
| **Preparation and delivery** | *Parenteral products should be visually inspected for particulate matter and discoloration before use. Refer to appropriate references for more information on compatibility with other drugs and solutions; compatibility following Y-site delivery, and suggested storage and extended stability.*[17]<br><br>**Stability:** Store undiluted vials and premixed solutions (Nexterone) at 20°C to 25°C.[17] Excursions are permitted between 15°C and 30°C.[3,17] Protect from freezing.[3]<br><br>Solutions containing <0.6 mg/mL in D5% are unstable.[17]<br><br>**Compatibility:** Should only be added to D5.[17] Amiodarone may precipitate immediately or on standing when diluted. At concentrations between 0.0025 mg/L and 45 mg/mL in phosphate buffer (pH 7.4), the drug concentration may exceed the solubility of amiodarone hydrochloride in the mixture. Precipitation may occur when the drug enters the bloodstream, contributing to the phlebitis associated with peripheral infusion of amiodarone.<br><br>**Delivery system issues:** Solutions that will infuse for >2 hours must be prepared in a non-polyvinyl chloride (PVC) container (e.g., glass or polyolefin).[17] An inline filter has been recommended during administration for continuous infusions to reduce the incidence of phlebitis. PVC tubing is recommended for administration regardless of infusion duration. Amiodarone leaches diethylhexyl phthalate (DEHP) plasticizer from PVC tubing.[17] The degree of plasticizer leaching depends on the concentration and rate of administration with higher concentrations and slower administration rates leach more plasticizer.<br><br>**Photosensitivity:** Protect from light during storage. There is no need to protect solutions from light during administration.[17] |
| **IV push** | Pulseless VT or VF via rapid IV bolus. Adjust rate to urgency of the situation.[4,5] |
| **Intermittent infusion** | Administer loading dose over 20–60 minutes. Must be infused via volumetric infusion device. |
| **Continuous infusion** | Reported dosing units for regimens may vary (mcg/kg/min and mg/kg/day); hence, ensure appropriate dose and dosing units are used. |
| **Other routes of administration** | Intraosseous infusion[6] |
| **Comments** | **Conversion to oral therapy:** Although conversion to oral therapy has not been formally evaluated, some experts recommend a 1–2 day overlap when converting from IV to oral therapy, especially when treating ventricular arrhythmias.[3]<br><br>**Overdose:** Intoxication with amiodarone necessitates ECG monitoring. Because bradycardia may be resistant to atropine, IV isoproterenol or cardiac pacemaker may be required. Amiodarone is not dialiazable. Hypotension, cardiogenic shock, heart block, QT prolongation and hepatotoxicity may occur. The patients should be monitored for several days following overdose due to long half-life IV product is used for acute treatment.[3]<br><br>**Monitoring:** Heart rate and rhythm, blood pressure, and ECG. Amiodarone can be proarrhythmic and may worsen or precipitate new arrhythmias (e.g., torsades de pointes).[3] If QRS widens more than 50% of baseline, discontinue amiodarone.[4] If hepatic enzymes exceed 3 times normal or double in a patient with an elevated baseline, consider decreasing the dose or discontinuing amiodarone.<br><br>**Drug interactions:** Consult appropriate resources before combining any drug with amiodarone. Amiodarone inhibits CYP1A2, CYP2A6, CYP2C9, CYP2D6, CYP3A4 and P-glycoprotein.[3] Should be used cautiously in patients receiving other agents known to prolong the QT interval or depress the sinus or AV node.[3] |