

## ACLS Pharmacology Summary Table

Drug	Indications	Precautions/ Contraindications	Adult Dosage
<b>Adenosine</b>	<ul style="list-style-type: none"> <li>• First drug for most forms of stable narrow-complex SVT. Effective in terminating those due to reentry involving AV node or sinus node</li> <li>• May consider for unstable narrow-complex reentry tachycardia while preparations are made for cardioversion</li> <li>• Regular and monomorphic wide-complex tachycardia, thought to be or previously defined to be reentry SVT</li> <li>• Does <i>not</i> convert atrial fibrillation, atrial flutter, or VT</li> <li>• Diagnostic maneuver: stable narrow-complex SVT</li> </ul>	<ul style="list-style-type: none"> <li>• Contraindicated in poison/drug-induced tachycardia or second- or third-degree heart block</li> <li>• Transient side effects include flushing, chest pain or tightness, brief periods of asystole or bradycardia, ventricular ectopy</li> <li>• Less effective (larger doses may be required) in patients taking theophylline or caffeine</li> <li>• Reduce initial dose to 3 mg in patients receiving dipyridamole or carbamazepine, in heart transplant patients, or if given by central venous access</li> <li>• If administered for irregular, polymorphic wide-complex tachycardia/VT, may cause deterioration (including hypotension)</li> <li>• Transient periods of sinus bradycardia and ventricular ectopy are common after termination of SVT</li> <li>• Safe and effective in pregnancy</li> </ul>	<p><b>IV Rapid Push</b></p> <ul style="list-style-type: none"> <li>• Place patient in mild reverse Trendelenburg position before administration of drug</li> <li>• Initial bolus of 6 mg given rapidly over 1 to 3 seconds followed by NS bolus of 20 mL; then elevate the extremity</li> <li>• A second dose (12 mg) can be given in 1 to 2 minutes if needed</li> </ul> <p><b>Injection Technique</b></p> <ul style="list-style-type: none"> <li>• Record rhythm strip during administration</li> <li>• Draw up adenosine dose and flush in 2 separate syringes</li> <li>• Attach both syringes to the IV injection port closest to patient</li> <li>• Clamp IV tubing above injection port</li> <li>• Push IV adenosine as quickly as possible (1 to 3 seconds)</li> <li>• While maintaining pressure on adenosine plunger, push NS flush as rapidly as possible after adenosine</li> <li>• Unclamp IV tubing</li> </ul>
<b>Amiodarone</b>	<p>Because its use is associated with toxicity, amiodarone is indicated for use in patients with life-threatening arrhythmias when administered with appropriate monitoring:</p> <ul style="list-style-type: none"> <li>• VF/pulseless VT unresponsive to shock delivery, CPR, and a vasopressor</li> <li>• Recurrent, hemodynamically unstable VT</li> </ul> <p><i>With expert consultation</i>, amiodarone may be used for treatment of some atrial and ventricular arrhythmias</p>	<p><b>Caution: Multiple complex drug interactions</b></p> <ul style="list-style-type: none"> <li>• Rapid infusion may lead to hypotension</li> <li>• With multiple dosing, cumulative doses &gt;2.2 g over 24 hours are associated with significant hypotension in clinical trials</li> <li>• Do not administer with other drugs that prolong QT interval (eg, procainamide)</li> <li>• Terminal elimination is extremely long (half-life lasts up to 40 days)</li> </ul>	<p><b>VF/pVT Cardiac Arrest Unresponsive to CPR, Shock, and Vasopressor</b></p> <ul style="list-style-type: none"> <li>• <b>First dose:</b> 300 mg IV/IO push</li> <li>• <b>Second dose (if needed):</b> 150 mg IV/IO push</li> </ul> <p><b>Life-Threatening Arrhythmias</b></p> <p><b>Maximum cumulative dose:</b> 2.2 g IV over 24 hours. May be administered as follows:</p> <ul style="list-style-type: none"> <li>• <b>Rapid infusion:</b> 150 mg IV over first 10 minutes (15 mg per minute). May repeat rapid infusion (150 mg IV) every 10 minutes as needed</li> <li>• <b>Slow infusion:</b> 360 mg IV over 6 hours (1 mg per minute)</li> <li>• <b>Maintenance infusion:</b> 540 mg IV over 18 hours (0.5 mg per minute)</li> </ul>

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<p><b>Atropine Sulfate</b> <i>Can be given via endotracheal tube</i></p>	<ul style="list-style-type: none"><li>• First drug for symptomatic sinus bradycardia</li><li>• May be beneficial in presence of AV nodal block. <b>Not likely to be effective for type II second-degree or third-degree AV block or a block in nonnodal tissue</b></li><li>• Routine use during PEA or asystole is unlikely to have a therapeutic benefit</li><li>• Organophosphate (eg, nerve agent) poisoning: extremely large doses may be needed</li></ul>	<ul style="list-style-type: none"><li>• Use with caution in presence of myocardial ischemia and hypoxia. Increases myocardial oxygen demand</li><li>• Avoid in hypothermic bradycardia</li><li>• May not be effective for infranodal (type II) AV block and new third-degree block with wide QRS complexes. (In these patients, may cause paradoxical slowing. Be prepared to pace or give catecholamines)</li><li>• Doses of atropine &lt;0.5 mg may result in paradoxical slowing of heart rate</li></ul>	<p><b>Bradycardia (With or Without ACS)</b></p> <ul style="list-style-type: none"><li>• 0.5 mg IV every 3 to 5 minutes as needed, not to exceed total dose of 0.04 mg/kg (total 3 mg)</li><li>• Use shorter dosing interval (3 minutes) and higher doses in severe clinical conditions</li></ul> <p><b>Organophosphate Poisoning</b> Extremely large doses (2 to 4 mg or higher) may be needed</p>
<p><b>Dopamine IV infusion</b></p>	<ul style="list-style-type: none"><li>• Second-line drug for symptomatic bradycardia (after atropine)</li><li>• Use for hypotension (SBP <math>\leq</math> 70 to 100 mm Hg) with signs and symptoms of shock</li></ul>	<ul style="list-style-type: none"><li>• Correct hypovolemia with volume replacement before initiating dopamine</li><li>• Use with caution in cardiogenic shock with accompanying CHF</li><li>• May cause tachyarrhythmias, excessive vasoconstriction</li><li>• Do not mix with sodium bicarbonate</li></ul>	<p><b>IV Administration</b></p> <ul style="list-style-type: none"><li>• Usual infusion rate is 2 to 20 mcg/kg per minute</li><li>• Titrate to patient response; taper slowly</li></ul>
<p><b>Epinephrine</b> <i>Can be given via endotracheal tube</i> <i>Available in 1:10 000 and 1:1000 concentrations</i></p>	<ul style="list-style-type: none"><li>• <b>Cardiac arrest:</b> VF, pulseless VT, asystole, PEA</li><li>• <b>Symptomatic bradycardia:</b> Can be considered after atropine as an alternative infusion to dopamine</li><li>• <b>Severe hypotension:</b> Can be used when pacing and atropine fail, when hypotension accompanies bradycardia, or with phosphodiesterase enzyme inhibitor</li><li>• <b>Anaphylaxis, severe allergic reactions:</b> Combine with large fluid volume, corticosteroids, antihistamines</li></ul>	<ul style="list-style-type: none"><li>• Raising blood pressure and increasing heart rate may cause myocardial ischemia, angina, and increased myocardial oxygen demand</li><li>• High doses do not improve survival or neurologic outcome and may contribute to postresuscitation myocardial dysfunction</li><li>• Higher doses may be required to treat poison/drug-induced shock</li></ul>	<p><b>Cardiac Arrest</b></p> <ul style="list-style-type: none"><li>• <b>IV/IO dose:</b> 1 mg (10 mL of 1:10 000 solution) administered every 3 to 5 minutes during resuscitation. Follow each dose with 20 mL flush, elevate arm for 10 to 20 seconds after dose</li><li>• <b>Higher dose:</b> Higher doses (up to 0.2 mg/kg) may be used for specific indications (<math>\beta</math>-blocker or calcium channel blocker overdose)</li><li>• <b>Continuous infusion:</b> Initial rate: 0.1 to 0.5 mcg/kg per minute (for 70-kg patient: 7 to 35 mcg per minute); titrate to response</li><li>• <b>Endotracheal route:</b> 2 to 2.5 mg diluted in 10 mL NS</li></ul> <p><b>Profound Bradycardia or Hypotension</b> 2 to 10 mcg per minute infusion; titrate to patient response</p>

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<p><b>Lidocaine</b> <i>Can be given via endotracheal tube</i></p>	<ul style="list-style-type: none"><li>• Alternative to amiodarone in cardiac arrest from VF/pVT</li><li>• Stable monomorphic VT with preserved ventricular function</li><li>• Stable polymorphic VT with normal baseline QT interval and preserved LV function when ischemia is treated and electrolyte balance is corrected</li><li>• Can be used for stable polymorphic VT with baseline</li><li>• QT-interval prolongation if torsades suspected</li></ul>	<ul style="list-style-type: none"><li>• <b>Contraindication:</b> Prophylactic use in AMI is contraindicated</li><li>• Reduce maintenance dose (not loading dose) in presence of impaired liver function or LV dysfunction</li><li>• Discontinue infusion immediately if signs of toxicity develop</li></ul>	<p><b>Cardiac Arrest From VF/pVT</b></p> <ul style="list-style-type: none"><li>• Initial dose: 1 to 1.5 mg/kg IV/IO</li><li>• For refractory VF, may give additional 0.5 to 0.75 mg/kg IV push, repeat in 5 to 10 minutes; maximum 3 doses or total of 3 mg/kg</li></ul> <p><b>Perfusing Arrhythmia</b> For stable VT, wide-complex tachycardia of uncertain type, significant ectopy:</p> <ul style="list-style-type: none"><li>• Doses ranging from 0.5 to 0.75 mg/kg and up to 1 to 1.5 mg/kg may be used</li><li>• Repeat 0.5 to 0.75 mg/kg every 5 to 10 minutes; maximum total dose: 3 mg/kg</li></ul> <p><b>Maintenance Infusion</b> 1 to 4 mg per minute (30 to 50 mcg/kg per minute)</p>
<p><b>Magnesium Sulfate</b></p>	<ul style="list-style-type: none"><li>• Recommended for use in cardiac arrest only if torsades de pointes or suspected hypomagnesemia is present</li><li>• Life-threatening ventricular arrhythmias due to digitalis toxicity</li><li>• Routine administration in hospitalized patients with AMI is not recommended</li></ul>	<ul style="list-style-type: none"><li>• Occasional fall in blood pressure with rapid administration</li><li>• Use with caution if renal failure is present</li></ul>	<p><b>Cardiac Arrest (Due to Hypomagnesemia or Torsades de Pointes)</b> 1 to 2 g (2 to 4 mL of a 50% solution diluted in 10 mL [eg, D<sub>5</sub>W, normal saline] given IV/IO)</p> <p><b>Torsades de Pointes With a Pulse or AMI With Hypomagnesemia</b></p> <ul style="list-style-type: none"><li>• Loading dose of 1 to 2 g mixed in 50 to 100 mL of diluent (eg, D<sub>5</sub>W, normal saline) over 5 to 60 minutes IV</li><li>• Follow with 0.5 to 1 g per hour IV (titrate to control torsades)</li></ul>