

ACLS Emergency Cardiac Drug Therapy (bolded = changes based on 2005 AHA ACLS Guidelines) revised 01/18/07

Drug Name	Indications	Mechanism of Action	Precautions	Dose Note: Follow IV push meds with fluid bolus
Oxygen	<ul style="list-style-type: none"> ◆ Acute Chest Pain ◆ Suspected hypoxemia of any cause or c/o SOB ◆ Cardiopulmonary Arrest 	correct hypoxemia by O2 tension ↑ O2 content ↑ tissue oxygenation	<ul style="list-style-type: none"> ◆ O2 Toxicity with high FIO2s ◆ May cause ↑CO2 if a CO2 retainer 	2 –6 LPM by NC for CP/mild distress NRB Mask for mod. Distress/ CHF Bag/Mask Ventilation Bag/ETT Ventilation or other advanced airway
Epinephrine	IVPush for ANY CARDIAC ARREST: <ul style="list-style-type: none"> ◆ Shock refractory VF & Pulseless VT ◆ Asystole ◆ PEA IVDrip for Symp Brady	↑ SVR, BP, HR, Contractility of heart, automaticity ↑bloodflow to heart & brain ↑ AV conduction velocity		CARDIAC ARREST: 1 mg IV Push (10 ml of 1:10,000 solution) Repeat 1 mg q 3-5” Endotracheal dose = 2-2.5 times IV dose SYMPTOMATIC BRADY: 2 – 10 mcg/min (note: OSU’s Guardian pumps only do mcg/kg/min)
Vasopressin Pitressin®	Alternative Pressor to EPI for ANY CARDIAC ARREST: <ul style="list-style-type: none"> ◆ VF/Pulseless VT ◆ Asystole ◆ PEA ◆ Can replace 1st or 2nd dose of EPI Also used for hemodynamic support in Septic Shock	Non-adrenergic Peripheral Vasoconstrictor ↑bloodflow to heart & brain	<ul style="list-style-type: none"> ◆ Half life = 10 – 20” ◆ Not recommended in CAD 	Any pulseless patient: 40 U IVsingle dose--1 time only To replace 1st or and dose of EPI Can defibrillate every 2 minutes after administration of Vasopressin Endotracheal dose = 2-2.5 times IV dose

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Atropine	<ul style="list-style-type: none"> ◆ Symptomatic Bradycardia ◆ Ventricular Asystole (2nd line) ◆ PEA if rate is brady (2nd line) 	Parasympatholytic action: -accelerates rate of sinus node discharge -improves AV conduction	<ul style="list-style-type: none"> ◆ ↑ myocardial O₂ demand: worsening ischemia 	Asystole or PEA 1 mg IV every 3-5” Bradycardia 0.5 mg every 3-5” Repeat to total dose of 0.04 mg/kg Endotracheal dose = 2-2.5 times IV dose
Amiodarone Cordarone®	<ul style="list-style-type: none"> ◆ VF/Pulseless VT (2nd line) ◆ Vent. Arrhythmias –Sympt PVCs ◆ Preferred over Lido 	Anti arrhythmic Possesses α - and β -adrenergic blocking properties Prolongs action potential duration Prolongs refractory period ↓ AV node conduction ↓ sinus node function	<ul style="list-style-type: none"> ◆ Half life is long ◆ May prolongs QT Monitor BP, HR, QT interval Contraindicated in: Cardiogenic shock, Marked Sinus Brady, 2 nd or 3 rd block	300 mg IV Push in cardiac arrest (VF/VT) 150 mg IV Push for tachys with pulse (give over 10 minutes) Can repeat ONE 150 mg in 5 mins. Draw 2 glass ampules through a large gauge needle diluted in 20-30 mL of D₅W Maintenance infusion: 1 mg/min over 6 hrs. then 0.5 mg/min over 18 hrs. – max of 2.2 g over 24 hrs.

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Lidocaine	Alternative to Amiodarone in: <ul style="list-style-type: none"> ◆ Vtach (with pulse – stable) ◆ VF/Pulseless VT (2nd line) ◆ Symptomatic PVCs 	Suppresses vent ectopy ↑ VF threshold ↓ Vent. Irritability ↓ excitability helps prevent VTach	CNS Toxicity: muscle twitching, slurred speech, resp. arrest, altered consciousness, seizures Prophylactic use in MI no longer recommended.	For Vfib or Pulseless Vtach: 1 – 1.5 mg/kg repeat at 0.5 – 0.75 mg/kg in 3-5” for total dose of 3 mg/kg Vtach with pulse: 0.5 – 0.75 mg/kg repeat in 3-5” for total dose of 3 mg/kg Infusion: Infusion of 1-4 mg/min after termination of vent arrhythm.
Ibutilide Corvert®	<ul style="list-style-type: none"> ◆ Rapid conversion of atrial fib or flutter of recent onset (< 48 hrs). 	Prolongs action potential by delaying repolarization	Correct K & Mg before initiating Ibutilide	≥ 60 kg: 1 mg over 10 min < 60 kg: 0.01 mg/kg over 10 min Can repeat with a 2 nd dose
Procainamide	<ul style="list-style-type: none"> ◆ Stable monomorphic VTach with Normal QT and Normal LV function ◆ SVT uncontrolled by Adenosine & vagal if stable BP ◆ Atrial Fib with rapid rate in WPW ◆ Stable wide complex Tachy of unknown origin 	Suppresses vent ectopy	Monitor BP for Hypotension Monitor ECG for ↑ PR and QT Intervals, QRS widening, & heart block Use with caution with Amiodarone (prolongation QT)	20 mg/min IV infusion urgent situations up to 50 mg/min (max 17 mg/kg) stop if arrhythmia suppressed, ↓BP, or QRS duration ↑ by 50% Infusion: 1-4 mg/min

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Magnesium	<ul style="list-style-type: none"> ◆ Cardiac Arrest only if torsades is present or low Magnesium is suspected ◆ Life threatening vent arrhythmias due to dig tox. 	Antiarrhythmic Restores electrolyte balance	Prophylactic use in MI no longer recommended ↓ dose with impaired liver or LV dysfunction	For Cardiac Arrest due to low MG or Torsades: 1-2 g/10 ml D5W Over 1-2"
Adenosine	<ul style="list-style-type: none"> ◆ Stable SVT ◆ Undefined stable narrow complex tachycardia as a diagnostic maneuver Not effective in Afib, Aflutter, or VTach	Depresses SA & AV node activity Slows AV conduction Half-life = 5 seconds	<ul style="list-style-type: none"> ◆ Usually see brief of asystole after adm of drug ◆ Drug interactions with Theophylline, Dipyridamole, & Carbamazepine ◆ Pts. feel flushing, dyspnea, transient CP 	6 mg IV over 1 – 3 seconds followed by 20 cc saline flush then elevate arm (attach both syringes to same port) wait 1-2" repeat 12 mg IV rapid push wait 1-2" repeat 12 mg IV rapid push
Verapamil	<ul style="list-style-type: none"> ◆ Alternative Drug after Adenosine for SVT 	Systemic vasodilation Negative Inotropic effect Prolongs AV nodal conduction time Ca ⁺⁺ channel blocker	<ul style="list-style-type: none"> ◆ Expect ↓ BP – can counteract with IV Ca ◆ Do not use with wide complex 	2.5 – 5.0mg IV bolus over 2 minutes 2 nd dose: 5 – 10 mg in 15-30"
Digoxin	Slows ventricular response in <ul style="list-style-type: none"> ◆ Afib or Aflutter ◆ CHF 	Inotropic effect Slows AV conduction	<ul style="list-style-type: none"> ◆ Toxic effects can cause serious arrhythmias 	10 – 15 mcg/kg IV loading dose

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Cardizem (Diltiazem)	Controls vent rate in: ◆ Afib & Aflutter ◆ Refractory SVT (after Adenosine)	Ca ⁺⁺ channel blocker Prolongs effective refractory period	◆ BP may ↓ ◆ DO NOT use for wide QRS Tachy, WPW with Afib, sick sinus syndrome, or β blockers	15-20 mg (0.25 mg/kg) IV over 2" May repeat in 15" at 20-25 mg (0.35mg/kg) over 2" Infusion 5-15 mg/h titrate to HR.
Morphine Sulfate	◆ CP with ACS unresponsive to nitrates ◆ Cardiogenic Pul. Edema	↓ Preload ↓ Afterload	◆ Administer slowly and titrate to effect. ◆ Caution with RV infarction ◆ May cause ↓BP & Respiratory compromise – reverse with Narcan	2-4 mg IV (over 1-5 mins) every 5 to 30 minutes
Aspirin	◆ All ACS	Prevents platelet aggregation	◆ Contraindicated in acute ulcer disease, asthma, or ASA sensitivity.	160 mg to 325 mg tablet (chewing is preferable) – give immediately

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Nitroglycerin	<ul style="list-style-type: none"> ◆ Sublingual: Suspected ischemic pain ◆ IV Unstable Angina pectoris Acute MI CHF Hypertension 	<p>↓ pain in ischemic tissue ↑ venous dilation ↓ preload & O₂ consumption Dilates Coronary Arteries ↑ Collateral flow in MI</p>	<p>Contraindicated with Hypotension BP < 90 or severe brady < 50.</p> <ul style="list-style-type: none"> ◆ 	<p>Sublingual: 1 tablet (0.3-0.4 mg) – repeat Q5”</p> <p>Spray: oral mucosa 1 – 2 sprays – repeat Q5”</p> <p>Topical: 1-2” of 2% ointment</p>
Sodium Bicarb	<ul style="list-style-type: none"> ◆ Pre-existing hyperkalemia ◆ Drug Overdose ◆ Known ketoacidosis ◆ Prolonged cardiac arrest with adequate ventilation 		<ul style="list-style-type: none"> ◆ Adequate ventilation & CPR are best “buffer agents” 	<p>1 mEq/kg IV bolus</p>

Acute Coronary Syndromes:

ECG Findings	Diagnostic Class	Therapy
<ul style="list-style-type: none"> ◆ ST elevation or new or presumably new LBBB 	<ul style="list-style-type: none"> ◆ Acute MI ◆ ST-elevation MI (STEMI) 	<p>β Blockers Clopidogrel (Plavix) Heparin If onset ≤ 12 hours -- Reperfusion therapy</p> <ul style="list-style-type: none"> ◆ PCI or ◆ Fibrinolysis <ul style="list-style-type: none"> □ Recombinant Alteplase (Activase) □ Anistreplase (Eminase) □ Recombinant Reteplase (Retavase) □ Streptokinase (Streptase) □ Tenectaplaste (TNKase)
<ul style="list-style-type: none"> ◆ ST depression or T-wave inversion 	<ul style="list-style-type: none"> ◆ Acute MI ◆ HIGH-RISK unstable angina (UA) ◆ Non-ST-elevation AMI (NSTEMI) 	<p>Nitrates β Blockers Clopidogrel (Plavix) Heparin (antithrombin) Glycoprotein IIb-IIIa inhibitors (antiplatelet)</p> <ul style="list-style-type: none"> □ ReoPro □ Integrilin □ Aggrastat
<ul style="list-style-type: none"> ◆ Nonspecific ECG findings ◆ Absence of changes in ST segment or T waves 	<ul style="list-style-type: none"> ◆ Low- to intermediate- risk unstable angina 	<ul style="list-style-type: none"> ◆ Risk assessment ◆ Serial cardiac markers ◆ Serial ECGs/ST Segment monitoring ◆ Heparin ◆ Stress test

Fibrinolytic Therapy for Stroke:

<p>Inclusion Criteria:</p> <ul style="list-style-type: none">❑ Age \geq 18 years❑ Clinical diagnosis of <u>ischemic</u> stroke causing a measurable neurologic deficit❑ Onset < 3 hours	<p>Exclusion Criteria:</p> <ul style="list-style-type: none">❑ History/Evidence of intracranial hemorrhage on CT❑ Active internal bleeding or acute trauma❑ Uncontrolled HTN SBP > 185 or DBP > 110 at onset of therapy❑ Witnessed seizure at onset of symptoms
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