

Class	Mechanism	Drug Name	Dosage Form	Indications	Adult Dose	Compatibility	Elimination	Side Effects & Warnings
Ia	<p><u>Net effect:</u> Depress conduction &amp; prolong repolarization.  <u>MOA:</u> Moderately blocks fast Na<sup>+</sup> channels; ↓ membrane responsiveness by ↓ conduction velocity; ↑ APD; and ↓ gK<sup>+</sup> thereby ↑ refractory period.</p>	Disopyramide (Norpace; Norpace CR)	Caps: 100 mg, 150 mg	Approved: VT Non-Approved: AFib	150 mg q6h or 300 mg q12h (if using CR)	N/A	Renal: Dose adjust if CrCl < 40 ml/min	SE: Hypotension, HF, widened QRS, QT prolongation; 1 <sup>st</sup> degree HB (reduce dose), anticholinergic effects Warnings: 1 <sup>st</sup> /2 <sup>nd</sup> degree HB Pregnancy Risk: C
		Procainamide	Inj: 100 mg/ml; 500 mg/ml. Oral is discontinued	Approved: VT Non-Approved: AFib	20 to 50 mg/min IV up to maximum of 17 mg/kg; (Can be given IM) Maintenance: 1-6 mg/min	0.9% NS D5%W	Renal: Dose adjust if CrCl < 50 ml/min	SE: Hypotension, widened QRS, rash, agranulocytosis, drug induced lupus. Warnings: Complete heart block, SLE, Torsades de Pointes. Monitor N-acetylprocainamide (NAPA) levels. Pregnancy Risk: C
		Quinidine	Tab: 200 mg Tab XR: 300 mg & 324 mg Inj: 80 mg/ml	Approved: AFib, Aflutter, VT, malaria	PO: 300 mg q8-12h IV: 5-10 mg/kg given at 0.25 mg/kg/min	Diluted in 50 ml of D5W Note: binds to IV tubing (use short tubing)	Liver: (Sub): CYP3A4; OCTN1/2, Pgp; (Inhib): 2D6, OCT1, Pgp	SE: QT prolongation, paradoxical ↑ pulse in AFib/Aflutter, bradycardia in sick sinus syndrome, hypotension, diarrhea, vertigo, vision changes Warnings: heart block especially without pacemaker Pregnancy Risk: C
Ib	<p><u>Net effect:</u> Depress conduction with NO change in or shortened APD (repolarization)  <u>MOA:</u> Weakly blocks fast Na<sup>+</sup> channels; ↓ membrane responsiveness; may shorten APD &amp; end resting membrane potential (ERP) by ↑ K<sup>+</sup> conductance.</p>	Lidocaine (Xylocaine)	Inj: 0.5% (5mg/ml) 1% (10 mg/ml) 1.5% (15 mg/ml) 2% (20 mg/ml)	Approved: VF, VT	1-1.5 mg/kg IV/IO x 1; 0.5-0.75 mg/kg IV repeat in 3-5 min (max 3 mg/kg). Maintenance: 30-50 µg/kg/min	D5W D10W 0.9%NS	Liver: Half-life is less than 30 min	SE: Hypotension; neuro (↓ CNS, dizziness, drowsiness, and seizures at high levels). Warnings: Prophylactic use in AMI; (Warning: reduce maintenance dose if liver disease or left ventricular dysfunction); Adam-Stokes Syndrome. Pregnancy Risk: B
		Mexiletine (Mexitil)	Caps: 150 mg, 200 mg, 250 mg	VT	200 mg po q8h (max dose 1200 mg/day)	N/A	Liver: (Sub): 1A2, 2D6; No renal	SE: Acute liver injury, leukopenia, agranulocytosis, tremor, blurry vision, lethargy and nausea Warnings: sick sinus syndrome, heart block, hypotension, HF; Pregnancy Risk: C
		Tocainide (Tonocard)	Tabs: 400 mg, 600 mg	VT	400 mg po q8h up to max of 1800 mg/day	N/A	Renal: Lower doses if impaired renal function	SE: Agranulocytosis, bone marrow suppression, leukopenia, thrombocytopenia; pulmonary fibrosis; worsen HF. Warnings: sick sinus syndrome, heart block, hypotension, HF; Preg Risk: C
Ic	<p><u>Net effect:</u> Depress membrane responsiveness with less tendency to prolong repolarization.  <u>MOA:</u> Strongly blocks fast Na<sup>+</sup> channels; ↓ membrane responsiveness by ↓ conduction velocity; ↑ APD; but less ↓ gK<sup>+</sup> as compared to class Ia.</p>	Flecainide (Tambocor)	Tabs: 50 mg 100 mg 150 mg	Approved: PSVT & PAF without Structural Heart Disease, VT	50-100 mg q12h (max 400 mg/d)	N/A	Liver: (Sub): CYP2D6 Renal: Dose adjust if CrCl < 35 ml/min	SE: New or worsened arrhythmias, worsen HF (negative inotropic effects); dose-related ↑ in PR, QRS, & QT intervals, heart block. Warnings: Bradycardia, shock, prolonged QT interval, CAD; Pregnancy Risk: C
		Propafenone (Rythmol; Rythmoll SR)	(IR Tabs): 150 mg; 225 mg; 300 mg (SR Tabs): 225 mg; 325 mg; 425 mg	Approved: PSVT & PAF without Structural Heart Disease, VT	IR dosage formulation: 150 mg q8h with dose increased q3-4days up to max of 900 mg/d. SR formulation: 225 mg bid (up to 425 mg bid).	N/A	Liver: (Sub): CYP1A2, 2D6, 3A4; (inhib): Pgp; Dose adjust with severe liver disease Renal: Dose adjust for CrI	SE: New or worsened arrhythmias, worsen HF (negative inotropic effects); dose-related ↑ in PR, QRS intervals, heart block, neutropenia and/or agranulocytosis. Warnings: Bradycardia, shock, prolonged QT interval, CAD Pregnancy Risk: C
II	<p><u>Net effect:</u> ↓ chronotropy &amp; inotropy by inhibition of β<sub>1</sub>-receptors  <u>MOA:</u> ↓ gCa<sup>++</sup>, ↑ gK<sup>+</sup></p>	Esmolol (Brevibloc) & other β-blockers	Premixed bag: 2,500mg/250ml 2000mg/100ml Inj: 100mg/10ml 100mg/5ml	Approved: VT, AFib, Aflutter, ST, Intraoperative HTN	Doses vary based on indication. Please see prescribing recommendations.	0.9%NS D5W	RBC esterases: half-life is 9 min	SE: Bradycardia, hypotension, exacerbation of heart failure, bronchospasm Warning: Asthma (especially moderate to severe), decompensated HF Pregnancy Risk: C

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III	<u>Net effect:</u> Prolong repolarization (recovery) by ↑ effective refractory period and APD. <u>MOA:</u> Inhibition of K <sup>+</sup> conductance.	Amiodarone (Cordarone, Nexterone, Pacerone)	Inj: 50mg/ml PO: 100, 200, 300, 400 mg tabs	Approved: VT, VF Other Uses: AFib, Aflutter, PSVT	Inj: Pulseless VT/VF: 300 mg IV/IO push in 20 cc D5W; Other VT/VF: 150 mg IV x 10 min, then 360 mg IV x 6h, then 540 mg x 18h	D5W 0.9%NS Use non-PVC bag	Liver: (Sub): 2C8, 3A4, Pgp; and (Inhib): 1A2, 2C9, 2D6, 3A4; Pgp	Note: Can be used in patients with impaired left ventricular dysfunction and WPW. SE: Hypo & hyperthyroidism (inj & tab contain 37% iodine), pulmonary fibrosis, liver toxicity, blue discoloration of skin, optic neuropathy/neuritis, QT prolongation. Warning: heart block; Pregnancy Risk: D
		Bretylum	Inj: 50 mg/ml, 100mg/100ml, 200mg/100ml, 400mg/100ml	Approved: VT, VF	5-10 mg/kg IV over > 8 min followed by 1-2 mg/min infusion.	D5W 0.9%NS	Renal: Consider dose reductions with CKD	SE: Hypotension, transient ↑BP & PVCs due to release of NE, dizziness, hyperthermia Warnings: Aortic stenosis, pulmonary HTN, Digoxin toxicity. Pregnancy Risk: C
		Dofetilide (Tikosyn)	PO: 0.125 mg, 0.25 mg, 0.5 mg caps	Approved: Conversion of AFib, Aflutter	Dosing ranges: 0.125 – 0.5 mg bid based on CrCl and QTc.	N/A	Renal: Dose adjust if CrCl < 60ml/min Liver: (Sub) 3A4	Note: Prescriber/pharmacy must be registered to use SE: ↑QT interval, Torsade de pointes, Warnings: Bradycardia with pulse < 50 bpm; CrCl < 20 ml/min, QT interval >440 msec, CYP3A4 inhibitors; Pregnancy Risk: C
		Ibutilide (Corvert)	Inj: 0.1 mg/ml	Approved: Conversion of AFib, Aflutter	>60kg: 1 mg IV x 10 min; <60kg: 0.1mg/kg IV x 10 min; may repeat x 1 in 20 min	D5W 0.9%NS	Renal: No dosing reductions needed.	SE: ↑QT interval, Torsade de pointes, Warnings: Bradycardia with pulse < 50 bpm; CrCl < 20 ml/min, QT interval >440 msec Pregnancy Risk: C
		Sotalol (Betapace AF; Sorine)	PO: 80 mg, 120 mg, 160 mg, 240 mg tabs	Approved: VT, AFib, Aflutter	Initially: 80 mg bid, then up to 120-160 mg bid	N/A	Renal: Dose adjust if <60 ml/min	↑QT interval, Torsade de pointes, Warnings: Bradycardia, HF, hypokalemia Pregnancy Risk: B
IV	<u>Net effect:</u> ↓ chronotropy & inotropy; <u>MOA:</u> ↓ SA & AV nodal conduction of Ca <sup>+</sup> through a blockade of voltage gated Ca <sup>+</sup> channels.	Diltiazem (Cardizem, Cartia)	Inj: 5 mg/ml, 10 mg/ml	Approved: AFib, Aflutter with RVR	15-20 mg IV x 2 min; repeat in 15 min at 20-25 mg	D5W 0.9%NS	Liver: (Sub): 3A4, Pgp; (Inhib): 1A2, 3A4, Pgp	SE: Bradycardia, HB, worsening of HF, ↓BP Warnings: WPW, sick sinus syndrome, HB Pregnancy Risk: C
		Verapamil (Calan, Covera-HS, Isoptin, Verelan)	Inj: 2.5 mg/ml	Approved: Angina, AFib, Aflutter with RVR	2.5-5 mg IV over 2 min; then 5-10 mg (if needed) q15-30min (max dose 20mg).	Compatible in NS or D5W up to 0.16 mg/mL	Liver: (Sub): 2C8, 3A4, Pgp; (Inhib): 3A4, Pgp	SE: Bradycardia, HB, worsening of HF, ↓BP Warnings: WPW, sick sinus syndrome, HB, other AV nodal blockers Pregnancy Risk: C
Misc	<u>Net effect:</u> ↓ AV node conduction velocity, ↑ refractory period; <u>MOA:</u> ↑gK	Adenosine (Adenocard)	Inj: 3 mg/ml	Approved: PSVT	6 mg IV rapid bolus over 1-3 sec & a 20 ml bolus of NS; repeat with 12 mg in 1-2 min	0.9%NS	N/A; half-life < 10 secs	SE: AV Block, flushing, chest “burning” due to bronchospasm (respiratory alkalosis via stimulation of respirations), brief period of asystole on monitor. Warnings: HB, wide-complex VT Pregnancy Risk: C
		Digoxin (Lanoxin)	Inj: 0.1 mg/ml, 0.25 mg/ml	Approved: AFib, Aflutter with RVR; HF	0.4-0.6 mg IV over ≥ 5 min; may repeat 0.1-0.3 mg IV over ≥ 5min	4-fold volume of D5W or 0.9%NS to ↓precipitation	Renal: (Sub): OATP1B3, Pgp, MDR3	SE: Arrhythmias, N/V Warnings: Bradycardia, HB, renal failure, hypokalemia. Pregnancy Risk: C
		Dronedarone (Multaq)	PO: 400 mg tabs	Approved: AFib/Aflutter	400 mg bid with meals	N/A	Liver: (Sub): 3A4; (Inhib): 2D6, 3A4	Note: Stop class I or III agents first. SE: heart failure, heart block, bradycardia, QT prolongation. Warnings: Use with 3A4 inhibitors, Class IV heart failure, liver disease. Pregnancy Risk: X;

Note: Doses provided are general recommendations for acute care situations and should be verified for the indication being treated. Use of this chart does not replace clinical judgement. AFib = atrial fibrillation, Aflutter = atrial flutter, APD = action potential duration, Caps = capsule, CrCl = creatinine clearance, HB = heart block, HTN = hypertension, Inj = injection, IR = immediate release; IV = intravenous, NS = normal saline, Pgp = P-glycoprotein, MDR3 = multidrug resistant protein 3, PAF = paroxysmal atrial fibrillation, PNS = parasympathetic nervous system; PO = by mouth, SR = sustained release; Tabs = tablets, VT = ventricular tachycardia, VF = ventricular fibrillation, WPW = Wolf-Parkinson-White.

Version 3.2016. Created & Reviewed by: Anthony Busti, MD, PharmD, FNLA, FAHA; Krystal Haase, PharmD, BCPS, FCCP; Sarah Dehoney, PharmD, BCPS. Please go to [www.ebmconsult.com](http://www.ebmconsult.com) for current legends, updated versions & disclaimer. The user is responsible to verify the accuracy of the information as it relates to their practice.