Flecainide

Newborn Use Only

2017

Alert	Use in consultation with a Paediatric Cardiologist. Contraindicated in infants with reduced myocardial contractility. Use caution in patients with congenital heart disease—increased potential for proarrhythmic effects. Intravenous flecainide needs close cardiorespiratory monitoring due to the potential for an acute deterioration.
Indication	Treatment of paroxysmal supraventricular tachycardia, paroxysmal atrial fibrillation/flutter and life- threatening ventricular dysrhythmias as a second-line agent where tachycardia has been resistant to first-line agents.
Action	Flecainide causes a decrease in intracardiac conduction for all parts of the heart, with the greatest effect in the His-Purkinje system. It acts by blocking fast sodium channels. As a type IC agent, it slows cardiac conduction and decreases contractility.
Drug Type	Type Ic antiarrhythmic.
Trade Name	Flecainide Sandoz Tablets; Flecatab Tablets; Tambocor solution for injection, Tambocor Tablets
Presentation	Intravenous: 10 mg/mL (15 mL) injection. Oral: Flecainide 20 mg/mL suspension compounded by pharmacy. 50 mg, 100 mg tablets.
Dosage/Interval	Oral: Start at 1 mg/kg/dose 8 or 12 hourly. Increase by 1 mg/kg/dose as necessary to achieve maintenance of sinus rhythm up to maximum dose. Intravenous: 2 mg/kg over at least 10 minutes.
Route	Oral [preferred route] or intravenous.
Maximum Daily Dose	8 mg/kg/day.
Preparation/Dilution	Draw up 1mL (10mg of flecainide) and add 9mL of glucose 5% make up a final volume of 10 mL with a concentration of 1mg/mL. It can also be administered undiluted.
Administration	Oral: Administer between milk feeds. Do not administer with milk. Milk decreases absorption in infants. Intravenous: IV infusion over at least 10 minutes. IV flecainide needs to be monitored very closely with the potential for an acute deterioration.
Monitoring	Initiate treatment in hospital with ECG monitoring in consultation with paediatric cardiologist. When intravenous route used, continuous ECG monitoring is mandatory. Perform ECG when the dosage is increased – monitor QRS duration and dysrhythmia. Therapeutic trough concentrations are not routinely required (200–1000 microgram/L).
Contraindications	Cardiogenic shock. Hypersensitivity to flecainide. Significant renal impairment (creatinine clearance < 50 mL/min). Reduced left ventricular ejection fraction.
Precautions	Use with caution in patients with congenital heart disease or conduction system disease (right bundle branch block, with left hemiblock and without pacemaker; second- or third-degree atrioventricular block, without pacemaker; sick sinus

	syndrome [bradycardia-tachycardia syndrome]). Milk decreases oral flecainide absorption. Consider decreasing oral dose or dose monitoring if change of milk diet. Dosing adjustments are required in infants with renal impairment because 10% to 50% of a flecainide dose is excreted in the urine. Use with caution in significant hepatic impairment.
Drug Interactions	Drugs prolonging QT interval (cisapride, amiodarone, clarithromycin, chloral hydrate, ciprofloxacin, erythromycin, octreotide, sodium phosphate, vasopressin, ketoconazole, fluconazole, hydrochlorothiazide, azithromycin, propranolol, digoxin, verapamil).
Adverse Reactions	**Adults:** **Common** Cardiovascular: Palpitations (6.1%); Gastrointestinal: Nausea (up to 10%); Neurological: Dizziness (18.9% to 30%), Headache (4.5% to 9.6%); Ophthalmological: Blurred vision (10% to 38%), Photopsia (up to 30%); Respiratory: Dyspnoea (up to 10.3%); Other: Fatigue (7.7%). **Serious** Cardiac arrest, cardiac dysrhythmia, cardiogenic shock, disorder of pacing function, electrocardiogram abnormalities, heart block, heart failure (new onset or worsening [up to 25.7%]), prolonged QT interval, sinus node dysfunction (1% to less than 3%), syncope (1% to less than 3%), torsades de pointes, ventricular fibrillation, ventricular tachycardia. **Children:** Dizziness, blurred vision and headache have been reported in children.
Compatibility	5% glucose
Incompatibility	Incompatible with alkaline and chloride-containing solutions.
Stability	Diluted solution stable for 24 hours at 25°C. Oral suspension compounded by Pharmacy stable for up to 60 days.
Storage	Ampoules. Store below 30°C. Protect from light. Tablets. Store below 30°C. Compounded suspension: Store at room temperature.
Special Comments	
Evidence summary	**Efficacy and safety:** A review of published cases and subsequent reports found flecainide appeared to be safe (no deaths with usual oral dosing; < 1% incidence of serious proarrhythmia) and effective (73–100 % control, depending on mechanism) in children with supraventricular tachycardia. [1-4] (LOE IV GOR B) However, concerns regarding safety exist in patients with structural heart disease and cardiomyopathy. The Cardiac Arrhythmia and Suppression Trial (adults with AMI) demonstrated increased mortality in patients who received flecainide.[3-5] A report of young patients (4 days to 26 years) administered flecainide for treatment of SVT (n = 369) or VT (n = 103) found efficacy 71.4%, proarrhythmic response 7.4%, cardiac arrest 2.3% and died during treatment 2.1%. Cardiac arrest and deaths occurred predominantly among patients with underlying heart disease, particularly among patients receiving flecainide for supraventricular tachycardia (8.3%).[3] A report in children (n = 229) with congenital heart disease or cardiomyopathy, incidence of cardiac arrest in patients receiving flecainide was 3.0% with a mortality of 4.3%, with no difference in cardiac arrest or mortality rate when compared to patients who received other antiarrhythmics.[4] **Guidelines:** For SVT, flecainide is effective as a first-line agent in infants, but typically used as a second-line agent because of its arrhythmogenic potential. It has been used in infants with reentrant supraventricular tachycardia including Wolff-Parkinson-White syndrome, focal atrial tachycardia and permanent junctional

	reciprocating tachycardia (case reports). Has the potential for proarrhythmia in patients with congenital heart disease. Caution is advised when used in patients with congenital heart disease or conduction system disease. Milk feeds may decrease absorption. Concentration monitoring may assist in guiding therapy. Contraindicated if creatinine clearance <50 mL/min or reduced Left Ventricular Ejection Fraction.[6] (LOE IV GOR B) **Pharmacokinetics:** Flecainide is cleared via hepatic biotransformation and renal excretion. Infants < 1 year of age had a mean t½ of 11–12 hour; children aged 1 to 12 years had a t½ of 8 hours. Dosing schedules based on mg/m^2 correlated better with plasma flecainide concentrations than did dosing based on mg/kg.[8, 9] Oral bioavailability in adults reported to be 78–100%.
References	1. Perry JC, Garson A, Jr. Flecainide acetate for treatment of tachyarrhythmias in children: review of world literature on efficacy, safety, and dosing. Am Heart J. 1992;124:1614-21. 2. Ferlini M, Colli AM, Bonanomi C, Salvini L, Galli MA, Salice P, Ravaglia R, Centola M, Danzi GB. Flecainide as first-line treatment for supraventricular tachycardia in newborns. J Cardiovasc Med (Hagerstown). 2009;10:372-5. 3. Fish FA, Gillette PC, Benson DW, Jr. Proarrhythmia, cardiac arrest and death in young patients receiving encainide and flecainide. The Pediatric Electrophysiology Group. Journal of the American College of Cardiology. 1991;18:356-65. 4. Moffett BS, Valdes SO, Lupo PJ, delaUz C, Miyake C, Krenek M, Kim JJ. Flecainide use in children with cardiomyopathy or structural heart disease. Pediatr Cardiol. 2015;36:146-50. 5. Echt DS, Liebson PR, Mitchell LB, Peters RW, Obias-Manno D, Barker AH, Arensberg D, Baker A, Friedman L, Greene HL, et al. Mortality and morbidity in patients receiving encainide, flecainide, or placebo. The Cardiac Arrhythmia Suppression Trial. N Engl J Med. 1991;324:781-8. 6. Brugada J, Blom N, Sarquella-Brugada G, Blomstrom-Lundqvist C, Deanfield J, Janousek J, Abrams D, Bauersfeld U, Brugada R, Drago F, de Groot N, Happonen JM, Hebe J, Yen Ho S, Marijon E, Paul T, Pfammatter JP, Rosenthal E, European Heart Rhythm A, Association for European P, Congenital C. Pharmacological and non-pharmacological therapy for arrhythmias in the pediatric population: EHRA and AEPC-Arrhythmia Working Group joint consensus statement. Europace. 2013;15:1337-82. 7. Moffett BS, Salvin JW, Kim JJ. Pediatric Cardiac Intensive Care Society 2014 Consensus Statement: Pharmacotherapies in Cardiac Critical Care Antiarrhythmics. Pediatr Crit Care Med. 2016;17:S49-58. 8. Perry JC, McQuinn RL, Smith RT, Jr., Gothing C, Fredell P, Garson A, Jr. Flecainide acetate for resistant arrhythmias in the young: efficacy and pharmacokinetics. Journal of the American College of Cardiology. 1989;14:185-91; discussion 92-3. 9. Till JA, Shinebourne EA, Rowland E, Ward DE, Bhamra R, Haga P, Johnston A, Holt DW. Paediatric use of flecainide in supraventricular tachycardia: clinical efficacy and pharmacokinetics. Br Heart J. 1989;62:133-9. 10. Australian Medicines Handbook. Accessed online on 7 February 2017.

Original version Date: 02/03/2017	**Author: NMF Consensus Group**
Current Version number: 1.0	**Version Date:** 02/03/2017
Risk Rating: Medium	**Due for Review:** 02/03/2020
Approval by:	**Approval Date:**