

RX

Drug Name: Lidocaine Hydrochloride

Trade Name: Lidocaine, Xylocaine

Class:

- Antidysrhythmic (Class I-B)

Mechanism of Action:

- Decreases ventricular automaticity (*reduces the slope of phase 4 diastolic depolarization*)
- Decreases excitability, and raises fibrillation threshold
- Helps suppress ventricular ectopy after AMI (*reduces the slope of phase 0 of action potential*)
- Decreases conduction in ischemic cardiac tissue without adversely affecting normal conduction
- Does not affect contractility

Indications:

- ***The revised ACLS guidelines suggest IV amiodarone be considered prior to administration of lidocaine for ventricular fibrillation or pulseless ventricular tachycardia, based on greater supporting data for amiodarone***
- Pulseless Ventricular Tachycardia, Ventricular Fibrillation.
- Ventricular Tachycardia with a pulse
- Malignant PVCs
- Wide complex tachycardias of unknown origin
- Pre-Intubation in the setting of closed head injuries and strokes

Contraindications:

- Advanced AV block (2nd degree Type II (Mobitz II) and 3rd degree blocks) in the absence of a functioning pacemaker
- Torsades de Pointes (*if known torsades, magnesium is the agent of choice*)
- Adams-Stokes syndrome

Precautions:

- Hypotension

Dosage:

Adults:

- **Pulseless VT, VF:** 1.0 to 1.5 mg/kg IV bolus, can repeat in 3-5 minutes not to exceed 3 mg/kg.
- **Ventricular ectopy, and Wide complex tachycardia:**—1.0-1.5 mg/kg slow IV bolus followed by additional doses of 0.5-0.75 mg/kg every 5 minutes **not to exceed 3 mg/kg or 300 mg in 30 minutes (not including infusion)**. If ectopy resolves, can set up a continuous infusion. (Be sure to rebolus @ 0.5-0.75 mg/kg in 8-10 minutes to maintain therapeutic levels of lidocaine)
- Continuous infusion—1 g in 250 ml of NS yields 4 mg/ml ran at 2 to 4 mg/min (*Start @ 2 mg/min & add 1 mg/min for each additional 1 mg/kg IV bolus*)
 - 1 mg/kg bolus = 2 mg/min.*
 - 1.5-2 mg/kg total bolus = 3 mg/min.*
 - 2.5-3 mg/kg total bolus = 4 mg/min.*
- Pre-intubation in closed head injuries. CVA's. and cases of increased intracranial pressure—1mg/kg IV bolus

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- ET Administration—2-3 mg/kg (2 times the IV dose) every 3-5 minutes PRN

Pediatrics:

- All situations—1 mg/kg IV/IO bolus, not to exceed 3 mg/kg
- ET Administration--1 mg/kg diluted to with NS to a total of 3-5 cc
- Continuous Infusion—20-50 μ g/kg/min infusion. 120 mg in 100 ml NS yielding 1.2 mg/ml. *If a bolus dose of lidocaine has not been administered within the previous 15 minutes, administer a bolus of 1 mg/kg before initiation of the infusion*

Onset:

IV—30-90 sec

Duration:

IV—10-20 minutes for bolus

Side Effects:

CNS--drowsiness, dizziness, confusion, slurred speech, seizures, respiratory depression/arrest
CV--hypotension, dysrhythmias, bradycardia, cardiac arrest
Other--Nausea, vomiting

Interactions:

Additive cardiac depression and toxicity when used concomitantly with amiodarone, procainamide, phenytoin, quinidine, & beta-blockers

PEARLS:

- Always give full initial dose, but reduce all subsequent doses by $\frac{1}{2}$ for elderly (>70) or with impaired hepatic function
- Lidocaine has been shown to prolong apnea when used in conjunction with neuromuscular blocking agents. This usually occurs at higher doses than the dose used for pre-intubation, but be aware
- If you have a bradycardia with PVCs, always treat the bradycardia first (atropine, pacing, etc.), then treat the PVCs
- Lidocaine jelly works well as a topical anesthetic for intubation, use it to lubricate ET tubes, but not the stylette as the viscosity of lidocaine jelly may occlude your tube
- Also 2% lidocaine has been used effectively to reduce laryngospasm during intubation. **This use is not covered in local protocols.** While visualizing the spasming cords, spray 2% lidocaine directly on the cords (should take less than $\frac{1}{2}$ of the 100 mg preload)
- Lidocaine induced CNS toxicity usually presents with clinical signs of CNS stimulation followed by CNS depression. Cardiac toxicity follows CNS toxicity and usually requires very high doses
- Generally reperfusion arrhythmias following fibrinolytics are transient and do not require immediate treatment