

# LIDOCAINE HYDROCHLORIDE

SYNONYMS	Lignocaine hydrochloride
BRAND NAME	LIDOCAINE BAXTER, LIGNOCAINE PFIZER, XYLOCAINE, XYLOCARD, XYLOCAINE WITH ADRENALINE
DRUG CLASS	Local anaesthetic, antiarrhythmic
AVAILABILITY	<p><b>Plain lidocaine solutions:</b></p> <p>Lidocaine Baxter or Pfizer ampoules or vials contain lidocaine hydrochloride 1% (50 mg/5 mL or 200 mg/20 mL) or 2% (100 mg/5 mL or 400 mg/20 mL). Also contain sodium chloride and are isotonic.<sup>1</sup></p> <p>Xylocaine ampoules contain lidocaine hydrochloride 1% (20 mg/2 mL, 50 mg/5 mL or 200 mg/20 mL) or 2% (40 mg/2 mL, 100 mg/5 mL or 400 mg/20 mL). Also contain hydrochloric acid, sodium chloride and sodium hydroxide.<sup>1</sup></p> <p>Xylocard ampoule contains lidocaine hydrochloride 10% (500 mg/5 mL). Also contains sodium hydroxide.<sup>1</sup></p> <p>Xylocaine and Xylocard solutions are isotonic.<sup>1</sup></p> <p><b>Lidocaine with adrenaline solutions:</b></p> <p>Xylocaine with adrenaline ampoule or vial contains 0.5%, 1%, 2% of lidocaine hydrochloride with adrenaline (epinephrine) acid tartrate 1/80 000, 1/100 000 or 1/200 000 in 5 mL or 20 mL.<sup>1</sup></p> <p>Also contain hydrochloric acid, sodium chloride, sodium hydroxide and sodium metabisulfite.<sup>1</sup></p> <p>All solutions are clear and colourless.<sup>1</sup></p>
pH	Plain lidocaine solution: 5–7 <sup>1</sup> Lidocaine with adrenaline (epinephrine): 3–5.5 <sup>1</sup>
PREPARATION	Not required
STABILITY	Lidocaine-only solutions: store below 25 °C (Baxter store below 30 °C). <sup>1</sup> Xylocaine with adrenaline: store below 25 °C. Protect from light. <sup>1,2</sup> Lidocaine infusion solution: stable for 24 hours below 25 °C. <sup>2</sup>
ADMINISTRATION	
<b>IM injection</b>	Suitable <sup>2</sup> see SPECIAL NOTES
<b>SUBCUT injection</b>	Suitable. Local or regional techniques (e.g. infiltration, nerve block) are used. Inject slowly to avoid inadvertent intravascular injection. <sup>1</sup> May be given as a continuous subcutaneous infusion in palliative care patients. <sup>3</sup> Seek specialist advice.
<b>IV injection</b>	Suitable for Lidocaine Baxter and Lignocaine Pfizer. <sup>1</sup> Inject the dose over 1 to 2 minutes at a maximum rate of 25–50 mg/minute. Onset of effect is 2–4 minutes and maximum effect takes about 10 minutes. <sup>1</sup>

Check carefully that the correct product is selected. Solutions with adrenaline (epinephrine) are used for local anaesthesia and nerve block, and are contraindicated for IV regional anaesthesia.

Anaphylactic reactions have been reported.<sup>1</sup> Resuscitation facilities must be readily available.

**The administration and compatibility information in this monograph is for lidocaine-only solutions.**

Practice point: use the 2% solution and inject at a maximum rate of 1.25–2.5 mL/minute.<sup>1</sup>

**IV infusion** Suitable for Lidocaine Baxter, Lignocaine Pfizer and Xylocard.<sup>1</sup>  
Dilute in a compatible fluid to a usual concentration of 1–2 mg/mL.<sup>1</sup> Concentrations up to 8 mg/mL can be used in fluid restricted patients.<sup>2</sup>

Practice point: use the 10% solution (Xylocard) if possible e.g. dilute 500 mg (5 mL) in 500 mL to make a concentration of 1 mg/mL.

For cardiac arrhythmias infuse at a rate of 1–4 mg/minute.<sup>1</sup>

For refractory migraine infuse at a rate of 1–2 mg/minute.<sup>4</sup>

Seek specialist advice for use in neuropathic pain and severe acute pain.<sup>5</sup>

**IV use for infants and children** Suitable for Lidocaine Baxter and Lignocaine Pfizer. The 1% solution is preferred.<sup>1</sup>  
Dilute to 20 mg/mL or weaker and inject over 2 to 3 minutes. Do not exceed a rate of 0.7 mg/kg/minute or 50 mg/minute, whichever is slower. Faster rates may be used in cardiac emergency situations.<sup>6</sup> Dilute to 8 mg/mL for continuous infusion.<sup>6</sup>

#### COMPATIBILITY

**Fluids** Glucose 5%<sup>1</sup>, Hartmann's<sup>2</sup>, Plasma-Lyte 148 via Y-site<sup>7</sup>, Ringer's<sup>1</sup>, sodium chloride 0.45%<sup>2</sup>, sodium chloride 0.9%<sup>1</sup>

**Y-site** Alteplase<sup>2</sup>, amikacin<sup>8</sup>, amiodarone<sup>2</sup>, argatroban<sup>2</sup>, atracurium<sup>8</sup>, bivalirudin<sup>2</sup>, buprenorphine<sup>8</sup>, calcium chloride<sup>8</sup>, calcium gluconate<sup>8</sup>, cefalotin<sup>8</sup>, cefazolin<sup>8</sup>, cefotaxime<sup>8</sup>, cefoxitin<sup>8</sup>, ceftazidime<sup>8</sup>, ceftaroline fosamil<sup>2</sup>, ceftolozane-tazobactam<sup>2</sup>, ceftriaxone<sup>8</sup>, ciclosporin<sup>8</sup>, ciprofloxacin<sup>2</sup>, cisatracurium<sup>2</sup>, clindamycin<sup>8</sup>, dexmedetomidine<sup>2</sup>, dobutamine<sup>8</sup>, dopamine<sup>1</sup>, ephedrine sulfate<sup>8</sup>, eptifibatid<sup>1</sup>, fluconazole<sup>8</sup>, furosemide<sup>8</sup>, gentamicin<sup>8</sup>, glyceryl trinitrate<sup>2</sup>, haloperidol lactate (in glucose)<sup>2</sup>, heparin sodium<sup>2</sup>, hydrocortisone sodium succinate<sup>2</sup>, isavuconazole<sup>2</sup>, labetalol<sup>2</sup>, linezolid<sup>2</sup>, magnesium sulfate<sup>8</sup>, metoclopramide<sup>8</sup>, micafungin<sup>2</sup>, morphine sulfate<sup>2</sup>, nicardipine<sup>2</sup>, palonosetron<sup>2</sup>, paracetamol<sup>2</sup>, pethidine<sup>2</sup>, potassium chloride<sup>2</sup>, ranitidine<sup>8</sup>, remifentanyl<sup>2</sup>, sodium nitroprusside<sup>2</sup>, suxamethonium<sup>8</sup>, tigecycline<sup>2</sup>, tirofiban<sup>2</sup>, tobramycin<sup>8</sup>, vancomycin<sup>8</sup>, verapamil<sup>8</sup>

#### INCOMPATIBILITY

**Fluids** Some sodium bicarbonate solutions.<sup>2</sup> Consult the pharmacist, pharmacy department or medicines information service for more information.

**Drugs** Aciclovir<sup>9</sup>, azathioprine<sup>9</sup>, bupivacaine<sup>9</sup>, caspofungin<sup>9</sup>, ganciclovir<sup>9</sup>, metoprolol<sup>2</sup>, milrinone<sup>9</sup>, phenobarbital<sup>9</sup>, thiopental sodium<sup>9</sup>

#### SPECIAL NOTES

Continuous ECG monitoring is necessary during IV administration for cardiac arrhythmias.<sup>1</sup> Baseline and daily ECG monitoring is recommended when given by IV infusion for pain and migraine.<sup>1</sup>

Monitor for early symptoms of toxicity including numbness of the tongue, tingling sensation, tinnitus and sensitivity to sound.<sup>1</sup>

Adverse effects are generally dose related and include nervousness, dizziness, blurred vision, tremor, drowsiness, nausea and vomiting.<sup>1</sup>

Large or repeated doses of lidocaine for local anaesthesia may lead to plasma levels that are high enough to cause adverse effects associated with IV use.<sup>1</sup>

IM administration may increase creatine kinase for up to 48 hours, interfering with diagnosis of myocardial infarction.<sup>1</sup>

Avoid prolonged contact between lidocaine solution and metal surfaces e.g. cannulae and syringes with metal parts. Ions that are irritating to blood vessels may be released.<sup>1</sup>

Lidocaine with adrenaline injections contain sodium metabisulfite which may cause allergic reactions in susceptible people.

#### REFERENCES

1. Product information. Available from [www.tga.gov.au](http://www.tga.gov.au). Accessed 06/10/2022.
2. McEvoy GK editor. Handbook on injectable drugs. 20th ed. Bethesda, MD: American Society of Health-System Pharmacists; 2018.
3. Twycross R, Wilcock A, Howard P editors. Palliative care formulary. 6th ed. London: Pharmaceutical Press; 2017.
4. Marmura M, Rosen N, Muhammad A, Silberstein S. Intravenous lidocaine in the treatment of refractory headache: A retrospective case series. Headache 2009; 49: 286-291.
5. Kosharsky B, Almonte W, Shaprin N, Pappagalao M, Smith H. Intravenous infusions in chronic pain management [Comprehensive review]. Pain Physician 2013; 16: 231-249.
6. Phelps SJ, Hageman TM, Lee KR, Thompson AJ. Pediatric injectable drugs. 11th ed. Bethesda, MD: Am Soc Health-System Pharmacists; 2018.
7. OneCall Medical Information Service. Y-Site compatibility of intravenous drugs with Plasmalyte 148. Toongabbie, NSW: Baxter; 2015.
8. Trissel LA, Leissing NC. Trissel's Tables of physical compatibility. Lake Forest IL: Multimatix; 1996.
9. Lidocaine hydrochloride. In: IV index [internet]. Trissel's 2 clinical pharmaceuticals database (parenteral compatibility). Greenwood Village, CO: Truven Health Analytics. Accessed 29/05/2019.