

Anesthetics in Dermatology

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Table 1.

Anesthetics

Name	Trade Name (Manufacturer) ^a	Class	Duration (Without Epinephrine)	Maximum Dose ^b (Without Epinephrine)	Approximate Onset
Tetracaine	Pontocaine (Abbott Laboratories)	Ester	2–3 h	100 mg	7 min
Procaine	Novocaine (Hospira, Inc)	Ester	60–90 min	600 mg	5 min
Chloroprocaine	Nesacaine (AstraZeneca)	Ester	30–120 min	800 mg	6 min
Benzocaine (topical)	Hurricaine (Beutlich LP)	Ester	15–20 min	Two 0.5-s sprays	Seconds
Lidocaine	Xylocaine (AstraZeneca)	Amide	30–120 min	350 mg	Seconds
Bupivacaine	Marcaine (Carestream Health, Inc)	Amide	2–4 h	175 mg	4 min
Mepivacaine	Carbocaine (Hospira, Inc)	Amide	30–120 min	300 mg	Up to 20 min
Prilocaine	Citanest (Dentsply Pharmaceutical Inc)	Amide	30–120 min	400 mg	6 min
Etidocaine	Duranest (Ruai Pharmaceuticals Limited)	Amide	3–5 h	300 mg	5 min
Ropivacaine	Naropin (APP Pharmaceuticals, LLC)	Amide	2–6 h	200 mg	Up to 15 min
Levobupivacaine	Chirocaine (Ben Vue Laboratories, Inc)	Amide	2–4 h	150 mg	4 min
Conjunctival Preparations					
Proparacaine	Alcaine (Alcon Laboratories, Inc)	Ester	15–20 min	1 drop every 5 min, maximum 5 doses	5 min
Tetracaine	Pontocaine (Abbott Laboratories)	Ester	15–20 min	100 mg	7 min

^aOnly some brand names listed.

^bMaximum dose may vary slightly depending on the source. Dose given for 70-kg person.

Table 2.

Signs and Symptoms of Lidocaine Toxicity

Blood Level	Sign/Symptom
1–6 µg/mL	Perioral numbness, anxiety/restlessness, somnolence, dizziness, diplopia, metallic taste
6–9 µg/mL	Tinnitus, nausea/vomiting, confusion, nystagmus, slurred speech
9–12 µg/mL	Cardiopulmonary depression, seizure activity
>12 µg/mL	Cardiac arrest, coma

Table 3.

Facts

Mechanism: block Na⁺ influx by binding receptor at Na⁺ channel, preventing depolarization

Order of anesthesia: temperature, pain, touch, pressure, vibration/proprioception, motor function

Metabolism: esters, plasma pseudocholinesterases; amides, hepatic p450

PABA is produced as a result of ester and methylparaben metabolism; caution with use of esters or preservative containing anesthetic in those with PABA allergy

Benzocaine and prilocaine have been reported to cause methemoglobinemia

EMLA (Oak Pharmaceuticals, Inc) is a topically applied eutectic mixture of lidocaine and prilocaine

Lidocaine is pregnancy category B and drug of choice

Epinephrine is pregnancy category C; maximum vasoconstriction of epinephrine occurs at 10–15 min

Maximum dose of 1% lidocaine in adults is 5 mg/kg without epinephrine and 7 mg/kg with epinephrine

Parabens bind albumin; therefore, preservative-free anesthetics are recommended in newborns to minimize risk for worsening hyperbilirubinemia

All local anesthetics (except cocaine and possibly prilocaine) relax vascular smooth muscle and thus increase potential for hemorrhage; epinephrine counteracts this effect

Epinephrine allows for decreased volume of anesthesia, prolonged duration, and reduced intraoperative bleeding; contraindicated in patients with pheochromocytoma and hyperthyroidism

pH of lidocaine with epinephrine is approximately 5; with sodium bicarbonate, 7–8

Type I IgE is most probable allergic reaction associated with injection of esters; type IV reactions are possible, particularly in those patients with PABA contact allergy

pH buffering, verbal and mechanical distraction (pinching or vibrating), warming the anesthetic, and slow injection all reduce pain of injection

Cardiac toxicity of bupivacaine is greater than lidocaine, especially in pregnancy

Abbreviation: PABA, *p*-aminobenzoic acid.

Practice Questions

- 1. A 17-year-old adolescent girl presents to the emergency department with breathing trouble. She has no history of respiratory disease and no medical history of consequence. After leaving an uncomplicated laser hair removal appointment, she developed shortness of breath. On examination she is tachypneic and tachycardic with a pulse oximetry of 88% on 90% nonrebreather mask. What is the appropriate course of action?**
 - a. epinephrine and intravenous diphenhydramine
 - b. intravenous methylene blue (1 mg/kg)
 - c. intravenous methylprednisolone sodium succinate (Solu-Medrol, Pharmacia & Upjohn Co)
 - d. oxygen and nebulizer treatments
 - e. spiral chest computed tomography
- 2. Which is the most likely order of symptoms in a patient with increasing lidocaine toxicity?**
 - a. coma, anxiety, disorientation, focal seizures
 - b. nausea, bradypnea, metallic taste, dizziness
 - c. perioral numbness, diplopia, bradycardia, cardiac arrest
 - d. seizure, somnolence, vomiting, coma
 - e. slurred speech, dizziness, bradycardia, tinnitus, seizure
- 3. What is the maximum amount of 1% lidocaine (with epinephrine) that can be safely administered to a 50-kg healthy adult?**
 - a. 150 mg
 - b. 175 mg
 - c. 200 mg
 - d. 250 mg
 - e. 350 mg
- 4. Which of the following will *not* decrease pain from local administration of lidocaine for most patients?**
 - a. addition of sodium bicarbonate to the preparation
 - b. background music or conversation
 - c. quick administration
 - d. tapping the skin
 - e. warming the anesthetic
- 5. Which of the following can be safely used in a patient with a *p*-aminobenzoic acid allergy?**
 - a. chloroprocaine
 - b. lidocaine (preservative free)
 - c. procaine
 - d. proparacaine
 - e. tetracaine

Fact sheets and practice questions will be posted monthly. Answers are posted separately and require registration on www.cutis.com.