

Local Anaesthesia in Pediatric Dentistry: Foundational Articles and Consensus Recommendations, 2021

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IAPD Consensus Recommendations

Pain in conjunction with dental treatment in children and adolescents should be avoided or minimized. Local anaesthesia helps to prevent transmission of pain sensation during procedures which can serve to build trust and foster the relationship of the patient and dentist, alleviate fear and anxiety, and promote a positive dental attitude. Local anaesthetic agents available in dentistry include: articaine, bupivacaine, lidocaine, mepivacaine, and prilocaine.

1. Administration of local anaesthetics should be based on the weight/body mass index (BMI) of the patient, not to exceed the established maximum dosage; however, the lowest total dose to provide effective anesthesia should be used. Maximum dosage for mepivacaine is 6.6 mg/Kg; prilocaine, 8.0 mg/kg; lidocaine and articaine, 7.0 mg/Kg. The Manufacturer's Recommended Dose (MRD) maximum dose is for lidocaine is 7.0 mg/kg; however, a long-established dental maximum dose for lidocaine is 4.4 mg/kg.

2. A bisulfate preservative is used in local anaesthetics containing adrenaline. For patients having an allergy to bisulfates, use of a local anaesthetic without a vasoconstrictor is recommended. Local anaesthetics without vasoconstrictors should be used with caution due to rapid systemic absorption which may result in overdose.

3. Topical anaesthetic may be used on surface tissues prior to the injection of a local anesthetic to reduce discomfort associated with needle penetration. Benzocaine should not be used in patients with a history of methaemoglobinemia and should not be used in children younger than two years of age. Systemic absorption of topical anesthetics must be considered when calculating the total amount of anaesthetic administered.

4. Documentation of local anaesthetic must include the technique, the type and dosage of local anesthetic and dosage of vasoconstrictor (e.g., mandibular block, 27 gauge, 36 mg 2% lidocaine with 0.018 mg adrenaline, [or 36 mg 2% lidocaine with 1/100,000 adrenaline]). The efficacy in pain control should also be documented using a pain scale.

5. Needle gauges sizes 23-27 may be used for intraoral injections when aspiration is necessary. Short needles may be used for any injection in which the thickness of soft tissue is less than 20 mm. A long needle may be used for a deeper injection into soft tissue. To avoid needle breakage, needles should not be bent or buried into soft tissue up to the barrel, and 30-gauge needles should not be used for block anaesthesia. The rate of injection should be slow to avoid toxicity and pain.

6. Specific instructions should be given to children and guardians to avoid self injury of soft tissue, after the office visit.

7. Reviews comparing effectiveness of articaine vs. lidocaine have generally concluded that there is no difference in efficacy, except articaine may be superior to lidocaine for inferior alveolar nerve block in patients with irreversible pulpitis.

8. Local anaesthesia dose should be reduced when combined with sedative medications.

9. Several interventions to help children cope with delivery of local anaesthesia have been proposed, such as delivery of local anaesthesia with electronic devices, use of distraction techniques, hypnosis etc. However, no consensus has been reached on the best method to increase its acceptance.