Local Anaesthesia in Pediatric Dentistry: Foundational Articles and Recommendations

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Background

Pain in conjunction with dental treatment in children and adolescents should be avoided or minimized. Local anesthesia 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. 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.

IAPD Recommendations

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. The lowest total dose to provide effective anesthesia should be used.

Consensus-based statement › Global agreement 100%

2. A bisulphite preservative is used in local anaesthetics containing epinephrine. For patients having an allergy to bisulphite, use a local anesthetic without a vasoconstrictor.

Consensus-based statement › Global agreement 94%

3. Local anesthetics without vasoconstrictors should be used with caution due to rapid systemic absorption which may result in overdose.

Consensus-based statement › Global agreement 94%

4. Topical anaesthetics may be used on surface tissues prior to the injection of a local anesthetic to reduce discomfort associated with needle penetration.

Consensus-based statement › Global agreement 100%

a. Benzocaine should not be used in patients with a history of methemoglobinemia and should not be used in children younger than two years of age.

Consensus-based statement › Global agreement 94%

b. Systemic absorption of topical anesthetics should be considered when calculating the total amount of anaesthetic administered.

Consensus-based statement › Global agreement 88%

5. Documentation of local anaesthesia should 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 epinephrine, [or 36 mg 2% lidocaine with 1/100,000 epinephrine).

Consensus-based statement › Global agreement 100%

6. Needle gauges between 23-27 mm should be used for intraoral injections when aspiration is necessary.

Consensus-based statement › Global agreement 94%

7. Short needles should be used for infiltration. A long needle should be used for a deeper injection into soft tissue.

Consensus-based statement › Global agreement 88%

8. To minimize needle breakage, needles should not be bent, and 30-gauge needles should not be used for block anaesthesia.

Consensus-based statement › Global agreement 94%

9. The rate of injection should be slow to minimize pain and toxicity.

Consensus-based statement › Global agreement 100%

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

Consensus-based statement › Global agreement 100%

11. Reviews comparing the effectiveness of articaine vs. lidocaine have concluded that there is little difference in efficacy, except articaine may be superior to lidocaine for inferior alveolar nerve block in patient with irreversible pulpitis.

Consensus-based recommendation › Global agreement 82%

12. Local anaesthesia doses should be reduced when combined with sedative medications.

Consensus-based statement › Global agreement 88%

13. Interventions to help children cope with delivery of local anaesthesia include electronic delivery devices, use of distraction techniques, and hypnosis.

Consensus-based statement › Global agreement 88%

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