

## CE Course Handout

# Improving the Effectiveness of Your Local Anesthesia

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# Improving the Effectiveness of Your Local Anesthesia

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## Disclaimer

We do not endorse any one product and have no affiliation with any product mentioned in this presentation.

## Objectives

**At the end of this course, attendees/participants will be able to:**

1. Identify factors that influence the effectiveness of local anesthesia
2. Explain ways to reduce patient anxiety and pain
3. Describe how different anesthetic agents may provide a higher success rate
4. Choose appropriate techniques and anesthetics based on evidence

## Overview

45/50 states allow dental hygienists to administer local anesthesia (LA)

### I. Local Anesthetics Agents

- a. Lidocaine
- b. Mepivacaine
- c. Prilocaine
- d. Bupivacaine
- e. Articaine

### II. Factors that Influence LA Effectiveness

- a. Genetics
  - i. May play a role in anesthesia failure. Future studies may use genome testing to improve LA efficacy by selecting the most useful agent.
- b. Red hair phenotype and IAN blocks
  - i. Red-haired patients may be more difficult to anesthetize.
- c. Age
  - i. Studies show elderly patients tolerate pain better than younger patients and elderly patients had a shorter onset time of anesthesia.

- d. Patients with alcoholism
  - i. Patients with alcoholism who are not in recovery may be more difficult to anesthetize.

### **III. Allergies and LA**

- a. Stoppers
  - i. No documented cases of latex allergy from the latex stopper for dental local anesthesia.
  - ii. Stoppers are now made of latex free.
- b. Sulfites
  - i. If a patient has a severe allergy to sulfites, use an anesthetic solution without a vasoconstrictor.

### **IV. Anxiety**

- a. Anxious patients
  - i. Patients with anxiety may be harder to anesthetize
- b. Aromatherapy
  - i. Aromatherapy does not improve pain control
  - ii. Olfactory influences on mood and autonomic, endocrine and immune function.
- c. Needle Gauge
  - i. Needle gauge does not matter in perception of pain.
  - ii. Size doesn't matter: Needle gauge and injection pain associated with transmucosal anesthetic administration.
  - iii. Broken Needles
    - 1. Occurs most in IA with 30 gauge needle and in children who move suddenly
- d. Two stage injection
  - i. A two-stage injection may be helpful in reducing pain
  - ii. The effects of a 2-stage injection technique on inferior alveolar nerve block injection pain.

### **V. Alternate Modes of Reducing Pain**

- a. Warming the solution
  - i. Mixed studies. More research is needed.
- b. Cooling the injection site
  - i. Studies look promising but more studies are needed to confirm positive effects of cooling
  - ii.

### **VI. Local Anesthesia and the Pregnant Patient**

- a. Considerations for patients who are pregnant

**VII. Workplace controls**

- a. Consideration in workplace controls

**VIII. Alternative anesthesia techniques**

- a. Alternative techniques

**IX. Innovations in local anesthesia**

- a. Reversal agents
  - i. Phentolamine mesylate (OraVerse™) is a safe and effective product to help reverse soft tissue anesthesia. Reduces the median time to recovery of normal sensation by 55%-62%.
- b. Nasal spray
  - i. "Kovacaine mist"-designed to anesthetize the maxillary arch, not circulated in bloodstream therefore less harmful to kidneys, liver and lungs, wears off quicker. No needle=less stress and anxiety.
- c. Buffering solution
  - i. Buffering local anesthetics does not seem to reduce the pain of injections.

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