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## Abstract of the Scientific Literature

### Midazolam, Nitrous Oxide, Oxygen, and Sevofluorane Sedation: A Novel Approach?

Failure of dental treatment due to anxiety is a common problem in children. The aim of this study was to establish whether the use of a combination of intravenous midazolam with inhalation agents (nitrous oxide alone or in combination with sevoflurane) was any more likely to result in successful completion of treatment than midazolam alone. A further aim was to evaluate the clinical viability of these techniques as an alternative to general anesthesia. In total, 697 children—who were too anxious for management with relative analgesia and requiring invasive dental procedure for which a general anesthetic would usually be required—were recruited and randomly assigned to 1 of 3 groups given the following interventions: (1) group 1: a combination of inhaled medical air and titrated intravenous midazolam; (2) group 2: a combination of inhaled 40% nitrous oxide in oxygen and titrated intravenous midazolam; and (3) group 3: a combination of an inhaled mixture of sevoflurane 0.3% and nitrous oxide 40% in oxygen with titrated intravenous midazolam. The primary outcome measure was successful completion of the intended dental treatment with a co-operative child responsive to verbal commands. Fifty-four percent successfully completed treatment in group 1 (94/174 children), 80% in group 2 (204/256 children), and 93% in group 3 (249/267 children). This difference was significant at the 1% level. Intravenous midazolam, especially in combination with inhaled nitrous oxide or sevoflurane and nitrous oxide, are effective techniques—with the combination of midazolam and sevoflurane the one most likely to result in successful treatment.

**Comments:** This is an interesting study describing a sedation technique that is, unfortunately, unlikely to find its way into North American private pediatric dental practice. Because of the addition of a volatile inhaled anesthetic agent, this technique would likely be restricted to hospital clinics, although the authors specifically state that this is NOT necessary. One might rightly ask that, since an anesthesiologist would have to present to administer sevoflurane, why not just administer general anesthesia and secure the airway? It's a good question that, sadly, the authors do not address. **ARM**

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**Averley PA, Girdler NM, Bond S, Steen N, Steele J. A randomized, controlled trial of pediatric conscious sedation for dental treatment using intravenous midazolam combined with inhaled nitrous oxide or nitrous oxide/sevoflurane. Anaesthesia 2004;59:844-852.**

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