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Safety of high-concentration nitrous oxide by nasal mask for pediatric procedural sedation: experience with 7802 cases.

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Source

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Abstract

OBJECTIVES:

Nitrous oxide is an effective sedative/analgesic for mildly to moderately painful pediatric procedures. This study evaluated the safety of nitrous oxide administered at high concentration (up to 70%) for procedural sedation.

METHODS:

This prospective, observational study included all patients younger than 18 years who received nitrous oxide for diagnostic or therapeutic procedures at a metropolitan children's facility. Patients' age, highest concentration and total duration of nitrous oxide administration, and adverse events were recorded.

RESULTS:

Nitrous oxide was administered on 7802 occasions to 5779 patients ranging in age from 33 days to 18 years (median, 5.0 years) during the 5.5-year study period. No adverse events were recorded for 95.7% of cases. Minor adverse events included nausea (1.6%), vomiting (2.2%), and diaphoresis (0.4%). Nine patients had potentially serious events, all of which resolved without incident. There was no difference in adverse event rates between nitrous oxide less than or equal to 50% and greater than 50% ($P = 0.18$). Patients aged 1 to 4 years had the lowest adverse event rate ($P < 0.001$), with no difference between groups younger than 1 year, 5 to 10 years, and 11 to 18 years. Compared with patients with less than 15 minutes of nitrous oxide administration, patients with 15 to 30 minutes or more than 30 minutes of nitrous oxide administration were 4.2 (95% confidence interval, 3.2-5.4) or 4.9 (95% confidence interval, 2.6-9.3) times more likely to have adverse events.

CONCLUSIONS:

Nitrous oxide can be safely administered at up to 70% concentration by nasal mask for pediatric procedural sedation, particularly for short (<15 minutes) procedures. Nitrous oxide seems safe for children of all ages.