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| **Name:** |
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| 1B-1 |
| **Basic Science Question:** |
| How nitrous oxide works in dentistry? |
| **Report:** |
| Nitrous oxide, commonly known as laughing gas is a prominent component of dentistry. Patient anxiety always has been and always will be an issue within dentistry, but the use of nitrous oxide allows for minimal to moderate sedation. When used appropriately, it is a safe and effective way to relax patients who are experiencing pain or anxiety. The patient remains fully capable of responding to verbal commands, all vital signs should be stable, and once treatment is completed the patient is able to return to preprocedural mobility.  Administration of nitrous oxide via inhalation is generally through a simple face mask. To begin, the patient will slowly breathe 100% oxygen, generally 4-6 L/min for approximately 1-2 minutes. Introduction of 100% oxygen is followed by a slow addition of nitrous oxide. Begin with increasing the nitrous oxide to 1 L/min, then decrease the oxygen by 1 L/min. Continue this until the oxygen and nitrous oxide levels are equivalent, but do not exceed a 50% concentration of nitrous oxide. Throughout administration the patient should be questioned as to how they are feeling to make certain they are receiving a proper amount of nitrous oxide, especially since therapeutic levels will vary from patient to patient. It is important to remind the patient that they need to breathe through their nose for the nitrous oxide to be effective. Similar to administration, termination of sedation will end with the nitrous levels being lowered to zero and the patient slowly breathing 100% oxygen for 3-5 minutes.  Indications the proper amount of nitrous oxide is being delivered are lightheadedness, tingling arms and legs, feelings of warmth, floating, or heaviness, and altered perceptions of sound or dimmed vision. On the contrary, signs of nitrous oxide overdose can include mouth closure or mouth breathing, failure to respond to commands or loss of cooperation, incoherent speech, nausea, perspiration, shivering and laughing or crying.  Nitrous oxide sedation is indicated when the patient is fearful or anxious, for patients with special healthcare needs, or when a patient has a strong gag reflex that interferes with dental work. Contraindications for nitrous oxide use include critically ill patients, patients with severe cardiac disease, chronic obstructive pulmonary disease (COPD), upper respiratory infections, women in their first trimester of pregnancy, severely uncooperative patients, and those with personality disorders or drug-related dependencies.  The use of nitrous oxide is a safe and effective way to enhance the patient’s experience. The easy administration, management, and recovery rate allows it to be an effective tool all dental practices should use. |
| **References:** |
| Knuf K, Maani CV. Nitrous Oxide. [Updated 2020 Jul 26]. In: StatPearls [Internet]. Treasure  Island (FL): StatPearls Publishing; 2020 Jan-. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK532922/>  Mohan, R., Asir, V. D., Shanmugapriyan, Ebenezr, V., Dakir, A., Balakrishnan, & Jacob, J.  (2015). Nitrousoxide as a conscious sedative in minor oral surgical procedure. *Journal of pharmacy & bioallied sciences*, *7*(Suppl 1), S248–S250. <https://doi.org/10.4103/0975-7406.155939>  Picture: https://youngkidzdental.com/nitrous-laughing-gas/ |