

Applications of Inhalational Nitrous Oxide in Patients as an Alternative to Traditional Narcotics and Sedation Agents in the Emergency Department

Vanessa Pasadyn, BA^{1*}, Mohamad Moussa, MD², Sadik Khuder, PhD¹

¹Division of Internal Medicine, Department of Medicine, The University of Toledo, Toledo, OH 43614

²Department of Emergency Medicine, The University of Toledo, Toledo, OH 43614

*Corresponding author: vanessa.pasadyn@rockets.utoledo.edu

Published: 05 May 2023

This is the case of a 76-year-old woman who received nitrous oxide as analgesia for a shoulder reduction in the emergency department (ED). The goal of discussing this case is to emphasize the accessibility, efficacy, and safety of using nitrous oxide as a sedation agent in place of narcotics in the ED. From 4/11/22-6/15/22, nitrous oxide has been used as an analgesic at two of ProMedica Toledo's Hospital emergency departments 50 times for a variety of encounters ranging from laceration to open limb fracture repair. This effort is in support of the ProMedica Toledo's PAIN (Prescribing Alternatives Instead of Narcotics) program with an overarching goal to reduce opioid use in the ED. Nitrous oxide can be used for analgesia, pain management, and anxiolysis. It is a colorless, odorless gas that has rapid onset of 1-2 minutes and a short duration of 3-5 minutes. Nitrous has minimal effects on respiration and hemodynamics and has a minimal side effect profile compared to other sedatives. Nitrous is easy to administer, thus there are a wide variety of indications such as being used as an adjunct in fracture reduction, cardioversion, or foreign body removal. The opioid epidemic is an ever present and growing issue in the United States and any effort to curb narcotic use is imperative to prioritize. It is the responsibility of caregivers to learn and understand the indications and contraindications of the use of nitrous oxide as an analgesic. This is a meaningful step in working to curb the opioid epidemic and optimizing patient care in the acute setting.