



An Advisory Opinion adopted by the Alaska Board of Nursing (AKBON) is an interpretation of Alaska law. While an advisory opinion is not law, it is the AKBON's official opinion on whether certain nursing procedures, policies, and other practices comply with the standards of nursing practice in Alaska. Facility policies may restrict practice further in their setting and/or require additional expectations related to competency, validation, training and supervision to assure the safety of their patient population and/or decrease risk. National evidence based standard references are included. The Alaska Board of Nursing publishes Advisory Opinions regarding safe nursing practice, in accordance with AS 08.68.100(a)(9).

**OPINION:** Registered Nurse Role in Self-administered Nitrous Oxide Analgesia in the Intrapartum and Immediate Postpartum Period

**APPROVED DATE:** 11/2/2017

**REVIEWED DATE:** 8/9/2019

**REVISED DATE:** 8/15/2019

**Within the Scope of Practice/Role of**     APRN     RN     LPN     CNA

### **ADVISORY OPINION**

Alaska State Board of Nursing (AKBON) receives frequent questions regarding administration of Nitrous Oxide Analgesia. The purpose of this opinion is to provide guidance for Registered Nurses working in Intrapartum settings where self-administered nitrous Oxide (N<sub>2</sub>O) analgesia (in a mixed 50:50 O<sub>2</sub>/N<sub>2</sub>O concentration) is used by women in labor and in the immediate postpartum period.

### **Conclusion Statement**

Self-administered nitrous oxide analgesia may also be used for certain antepartum procedures such as external cephalic version when AKBON recommendations are met.

### **Background and Analysis**

Nitrous oxide is a gaseous mixture of 50% nitrous oxide and 50% oxygen. Nitrous oxide has been used for labor pain management since the 1930s, primarily outside the United States. Much of the literature on this topic is no longer new with nearly half of the studies in this review published prior to 1990 and one-quarter before 1980. Over the past decade, there has been growing interest in the use of nitrous oxide for laboring women in the United States.

Synthesis of efficacy and approval studies is challenging because of heterogeneous interventions, comparators, and outcome measures. Further randomized controlled trials should be adequately conducted and include pertinent clinical outcomes expressly for three primary outcomes: 1) sense of control in labor and 2) satisfaction with childbirth and 3) breastfeeding experience of women. Principally studies without the confounding factor of co-administration of other analgesia, would be very helpful. Additionally, there is a need for improving the quality and relevant, uniform reporting of future trials to make these trials valuable to include in a systematic review.

## Recommendations

*The Licensed Independent Practitioner managing the labor and delivery must be readily available and is responsible for:*

- Maternal-fetal assessment for suitability and absence of contraindications
- Patient and family education about the nature of "self-administration" including the safety feature that when a woman has physiologically reached her limit, she will no longer be able to hold the mask to her face, thus self-regulating her intake.

*The Registered Nurse is responsible for:*

- Reinforcing patient and family education about the nature of "self-administration"
- Setting up the 50:50 O<sub>2</sub>/N<sub>2</sub>O delivery system
- Monitoring the 50:50 O<sub>2</sub>/N<sub>2</sub>O delivery system for accuracy and safety

Ongoing patient assessment for response to and effectiveness of O<sub>2</sub>/N<sub>2</sub>O self-administered analgesia including continuous pulse oximetry

Discontinuing the 50:50 O<sub>2</sub>/N<sub>2</sub>O delivery system when

- o There is evidence of maternal or fetal compromise
- o The patient chooses to discontinue
- o The patient is non-compliant with self-administration instructions

In the event the patient is receiving inadequate analgesia with N<sub>2</sub>O alone, the Licensed Independent Practitioner managing the labor and delivery of the patient may order the addition of Intravenous opioid pain medications and/or regional anesthesia. When these modalities are used in conjunction with N<sub>2</sub>O, the following criteria must be met:

- o Licensed Independent Practitioner managing the labor and delivery of the patient must document physical assessment of the patient's neuro status to include being awake and alert with intact motor and sensory function
- o Continue continuous pulse oximetry monitoring
- o RN will monitor and document patient neurological status with a validated sedation scale such as the Pasero Opioid Scale with the addition of intravenous opioids (not necessary with regional anesthesia)

## REFERENCE:

- Agency for Healthcare Research and Quality (AHRQ) (2012). *Nitrous Oxide for the Management of Labor Pain*. No. 12-EHC071-EF
- Alaska Native Medical Center. (2015). *Self-Administration for Pain Management (Analgesia): Nitrous Oxide Use in the Intrapartum and Immediate Postpartum Period*. Anchorage, AK: ANMC.
- Collins, M. (2018, March). *Journal of Obstetric Gynecologic and Neonatal Nursing*, 47(2), 239-242. <http://dx.doi.org/doi.org/10.1016/j.jogn.2018.01.009>
- Collins, M. R., Starr, S. A., Bishop, J. T., & Baysinger, C. L. (2012). Nitrous Oxide for Labor Analgesia: Expanding Analgesic Options for Women in the United States. *Reviews in Obstetrics and Gynecology*, 5, e126-e131. Retrieved from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3594866/#>
- Pasero, C. (2009). Assessment of sedation during opioid administration for pain management. *Journal of Peri Anesthesia Nursing*, 24(3), 186-190. <http://dx.doi.org/https://doi.org/10.1016/j.jopan.2009.03.005>

