 Vanderbilt University Medical Center Policy Manual	Policy Number	AS xx-xx.xx
	Effective Date	Month/Year
Chapter: Add appropriate chapter name here	Supersedes	Month/Year
Nitrous Oxide Use in the Intrapartum/Immediate Post-Partum Period <i>Key Words: For search purposes, add appropriate key words nitrous, analgesia, intrapartum</i>		

Applicable to						
<input type="checkbox"/> VUH	<input type="checkbox"/> Children's	<input type="checkbox"/> VMG	<input type="checkbox"/> VMG Off-site locations	<input type="checkbox"/> VPH	<input type="checkbox"/> VUSN	<input type="checkbox"/> VUSM
Approved by						
<u>Suggest: Unit Manager</u>			Date	<u>Suggest PCC Administrator</u>		Date
<u>Suggest Medical Director as needed</u>			Date	<u>C. Wright Pinson, MBA MD</u>		Date


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I. Purpose:

To provide nitrous oxide by inhalation as an analgesia alternative for women in labor, as well as for therapeutic use in the immediate post-partum period. It is a primary aim of Vanderbilt's obstetric and anesthesia departments to allow patients free choice and autonomy in selecting the best form of labor pain management for their particular situation. In the interest of allowing patients this process of choice, Vanderbilt offers nitrous oxide analgesia which has been, and is currently used extensively world-wide as a primary form of analgesia for labor and birth.

II. Policy:

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To provide analgesia via a self-administered inhaled nitrous oxide delivery system for women in the intrapartum/immediate post-partum period. Use of nitrous oxide as an analgesic for this purpose shall be standardized according to current practices and guidelines to provide safe, consistent administration for women who desire this modality for their labor, and are appropriate candidates. Also to provide guidance for the therapeutic use of nitrous oxide analgesia for procedures that may occur in the intrapartum/ immediate post-partum period (such as manual removal of placenta, extensive perineal repairs, bedside dilation & curettage).

III. Definitions:

Nitrous oxide inhalation is one form of labor analgesia that provides a reasonable alternative to an epidural

IV. Additional Competencies Required:

A. Initial Competence:

1. Nursing staff and obstetric providers will attend a nitrous oxide training session provided by an obstetrical anesthesiologist and will demonstrate: understanding of equipment
2. Ability to set up equipment properly
3. Comprehension of indications and contraindications
4. Knowledge of potential side effects
5. Anesthesia provider to provide informed consent and instruction to patients requesting this method of analgesia

B. Continued Proficiency: Nursing staff and obstetric providers will receive updates on the use of nitrous oxide from the obstetrical anesthesia team as they become available.

C. Reevaluation of competency on an annual basis will be required to insure continued competence.

D. Training and assessment of anesthesia providers shall be done under the direction of the division of OB anesthesia.


V. Specific Information:

A. Background Information

1. Setting

Vanderbilt University Medical Center Labor and Delivery Unit


2. Supervision

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- a. administration of nitrous oxide shall be done under the direction of the division of obstetric anesthesia. Patients expressing a desire for nitrous oxide shall be evaluated by the anesthesia team and consented for this as well as other appropriate modes of anesthesia.
 - b. set up of the equipment and initial patient education will be performed by the anesthesia team. Ongoing assessment of the patient shall be performed by nursing staff as well as the obstetrical provider in consultation with the anesthesia team. The anesthesia team shall be immediately available to assess the patient for the duration of administration.
3. Indications:
- a. women in labor
 - b. women undergoing perineal repair where local anesthesia may not meet all analgesic needs; women requiring immediate post- partum procedures requiring analgesic such as manual removal of placenta, dilation and curettage of uterine cavity, extensive perineal repair, etc.
4. Contraindications include patients who:
- a. cannot hold their own facemask
 - b. have impairment of consciousness, or are intoxicated with either drugs or alcohol
 - c. are receiving specific vitamin B12 supplementation for documented B12 deficiency
 - d. have impaired oxygenation, defined as oxygen saturation consistently less than 95% on room air
 - e. do not have a category I, or category II fetal heart tracing that has been deemed by the obstetrical provider as safe to proceed
5. Precautions include patients who:
- a. have received intravenous opioids within the last ~~2 years~~ hours
 - b. have hemodynamic instability defined as a systolic blood pressure consistently less than 100

B. Materials

- 1. Nitrous-oxygen delivery system

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- a. administration of nitrous oxide for labor analgesia requires attaching the apparatus/equipment to tank nitrous oxide and tank or wall O2 supply utilizing a blender specifically designed for obstetric use to deliver up to a 50/50 delivery ratio and instructing women how to use the device for self-administration of inhalational analgesia.
- b. Nitrous administration equipment and tank will be stored in locked room/cabinet when not in use. Key to cabinet shall be accessed by OB anesthesia attending and L&D charge nurse.

2. Nitrous oxide

C. Set-up and Administration of Nitrous Oxide

1. Pre-treatment evaluation: Assessment of patient suitability (mother and fetus) and absence of contraindications. Vital signs including blood pressure, heart rate, oxygen saturation, and fetal heart rate evaluation.
2. Set-up: Insure equipment is properly connected and operating.
3. Patient Preparation
 - a. Informed consent of patient to include possible side effects: nausea, vomiting, dizziness, fatigue. Patient advised not to move about without assistance once nitrous use has been initiated.
 - b. Patient consent form signed and in chart.
 - c. Instruct patient on self-administration: Placement of mask to create seal; timing of breathing for maximum analgesic effect; only patient allowed to hold mask.
- 4 Procedure: Patient holds mask over nose and mouth creating a sufficient

seal to activate a second-stage regulator to open flow of nitrous oxide up to 50% in nitrous concentration and at least 50% oxygen. Labor nurse is instructed and orders entered that no additional opioid administration is allowed without direct anesthesiologist supervision while patient continues use of nitrous oxide. Patient is instructed that to obtain the greatest benefit, she should place the mask to her face and inhale deeply approximately 30 secs prior to the start of the contraction as it takes approximately 30 to 60 seconds for the nitrous to become most effective.

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5. Termination of Treatment: Use of nitrous oxide is discontinued when patient desires or when need for analgesia is no longer present.

D. Documentation: An anesthetic record shall be opened by the anesthesia team at the time of initial administration of nitrous oxide and maintained for the duration of delivery of the nitrous oxide. Nurses and obstetric providers will document in the patient's chart as part of the peripartum progress notes that nitrous oxide was administered, its efficacy, and any side effects or complications.

VI. References:

Bishop, Judith. Administration of Nitrous Oxide in Labor: Expanding the Options. *Journal of Midwifery and Women's Health* 52(3) May/June 2007 pp 308-309.

Rosen, Mark. Nitrous Oxide for relief of labor pain: A systematic review. *American Journal of Obstetrics and Gynecology* 186(5) 110-127.

American College of Nurse-Midwives Position Statement. Nitrous Oxide for Labor Analgesia December 2009.

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VIII: Endorsements:

OB-PCC Committee

Month Year