



POSITION STATEMENT

Nitrous Oxide for Labor Analgesia

Nitrous oxide (often called 'laughing gas'), in a 50/50 mixture with oxygen, has been in use for almost two centuries as a simple analgesic agentⁱ, and in obstetric care since the 1930s. Nitrous oxide works by increasing the release of endogenous opioid polypeptide compounds (endorphins), corticotropins, and dopamine that are produced in the mother's brain.

Though nitrous has been used in USA dental offices for years, the delivery system is very different. The laboring mother is in full control of the administration of nitrous as labor analgesia; the gas mixture for labor only flows to the laboring mother when she holds the mask to her face and inhales. Self-administration allows the mother to determine when and how much N₂O she uses. Conversely in dentistry the 80 nitrous /20 oxygen gas delivery system is a continuous flow system designed as an anesthetic agent.

Once the mother removes the mask from her face, she stops breathing nitrous and it quickly metabolizes out of her system (within 3-5 minutes). It is eliminated through the lungs rather than the liver, and thus does not accumulate in the mother's or baby's body. Unlike opioids, it does not depress respiration in the newborn.

Research shows that the use of nitrous for analgesia in labor does not increase the need for neonatal resuscitation and that newborn alertness and responsiveness during the important early period of maternal-infant bonding and early effective breastfeeding are unaffected.ⁱⁱ

Research also shows that nitrous oxide analgesia has no adverse effects on the progress of labor; the spontaneous vaginal birth rate is unaffected. Administration of N₂O is not associated with increased risk of maternal or fetal complications and does not require more intensive or invasive monitoringⁱⁱⁱ.

With this research foundation, the American Association of Birth Centers (AABC) holds that:

- Mothers should be offered a choice of pain relief options that are effective, evidence-based, and safe for birth center use.

- Licensed or accredited birth centers should be able to offer nitrous oxide (N₂O) to their clients to promote comfort and reduce pain throughout labor.
- Heightened surveillance with either a pulse oximeter or continuous electronic fetal monitor is not indicated or necessary.
- All licensed healthcare providers in licensed or accredited birth centers, including but not limited to ALL licensed midwives, physicians, and nurses, should be able to implement and oversee the use of nitrous oxide analgesia by mothers laboring in those birth centers.
- Birth centers implementing the use of nitrous oxide analgesia should have policies and procedures based on current guidelines that address all of the following: client education and informed consent, staff training including occupational exposure, equipment storage, maintenance and cleaning, and collection of outcome data.
- States regulating N₂O analgesia should include birth centers and their licensed care providers in their regulations.
- The licensed health care provider overseeing the use of N₂O analgesia should be familiar with the risks and contraindications of its use.
- Women choosing a birth center that offers N₂O should be provided with written information about its risks and benefits as an option for pain relief in labor so that she may make an informed decision.

AABC recognizes that research supports the use of nitrous for analgesia in labor. It is used in all birth settings in many countries with high standards for safe and effective health care, including Australia, Canada, Finland, Sweden, and the United Kingdom where it is a widely used analgesia for labor and birth. It is also increasingly being implemented in hospital maternity units and birth centers in the United States. The use of nitrous for analgesia in labor is a widely accepted component of quality maternity health care and AABC supports its use in birth centers in the United States.

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ⁱ Goerig, M. Schulte am Esch J. History of nitrous oxide – with special reference to its early use in Germany. *Best Practice & Research Clinical Anaesthesiology*. 2001; 15(3):313-338, ISSN 1521-6896, <https://doi.org/10.1053/bean.2001.0165>

ⁱⁱ Likis, FE, et al. Nitrous oxide for the management of labor pain: A systematic review. *Anesthesia & Analgesia*. 2014 Jan; 118(1):153-167. doi: 10.1213/ANE.0b013e3182a7f73c

ⁱⁱⁱ Rooks, JP. Safety and risks of nitrous oxide labor analgesia: A review. *J Midwifery Womens Health*. 2011 Nov-Dec; 56(6):557–565. doi: 10.1111/j.1542-2011.2011.00122.x