Nitrous Oxide (N2O) for the Management of Labor

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BACKGROUND
- N2O for labor analgesia was first introduced in England in 1934 and since is estimated that up to 75% of parturient’s in Europe, Canada, and Australia use N2O during labor.
- In recent years, N2O has been gaining popularity in the US and is now offered in over 500 hospitals and birth care centers across the US.
- At high concentrations (65-70%) N2O works as a weak anesthetic and produces loss of consciousness.
- At subanesthetic concentrations (<50%) N2O works as an analgesic and anxiolytic.
- Labor Experience is influenced by pain, anxiety, and autonomy.
- Labor epidurals, while considered the gold standard for the treatment of labor pain, may be contraindicated in some parturients (or refused).
- N2O can be used as an alternative intervention to alleviate anxiety, decrease pain perception, and improve satisfaction for laboring women.

PURPOSE
To create reference material on N2O for labor management to facilitate the implementation of this intervention at Kaiser Permanente of Southern California (KP SCAL).

AIMS:
- To develop a Southern California Permanente Medical Group (SCPMG) Regionally Approved Clinical Reference on N2O.
- To gain approval to publish this clinical reference on KP SCAL Clinical Library website.

LITERATURE REVIEW

N2O demonstrated more effective in parturients desiring:
- Natural birthing experience
- Avoidance of invasive methods
- Maintenance degree of mobility and autonomy

Therefore N2O can be recognized as:
- Substitute to utilizing narcotics
- Adjunct to nonpharmacologic methods of labor pain management
- Assistant with transition to neuraxial anesthesia

THEORETICAL FRAMEWORK
The Iowa Model Revised: Evidence-Based Practice to Promote Excellence in Health Care

LIMITATIONS
Obstetrical Anesthesia Changes During COVID-19
- Current literature does not recommend the utilization of N2O administration in the setting of COVID-19.
- Resources and financial dollars diverted towards management of Covid-19 pandemic.
- More concrete evidence needed regarding:
  - Safe administration practices
  - Proper device cleaning and filtering
  - Potential for aerosolization associated with N2O utilization.

FACILITATORS
- Team Lead: Jen Thompson
- Clinical site: Kaiser Permanente Fontana Medical Center
- SCPMG Physician Sponsor: Dr. Yen

OUTCOME
- Clinical Reference guideline for the use of N2O for the management of labor.
- Approved and evaluated by Dr. Yen, a board certified KP Anesthesiologist who specializes in obstetrical anesthesia.
- To be submitted for publication in the future following subsiding of the COVID-19 pandemic.

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