

# Nurse-administered nitrous minimal sedation policy (example)

## Policy:

Nitrous oxide sedation is expected to produce minimal sedation; therefore, current hospital policy regarding patients receiving minimal sedation (Sedation During Diagnostic and Therapeutic Procedures) will apply. As with all sedation agents, the possibility of reaching a deeper level of sedation than expected does exist.

## Procedure:

### Indications:

Consider nitrous oxide sedation alone (with topical and/or injected local anesthetic) for procedures which would likely cause mild-moderate pain and/or produce anxiety and distress, including but not limited to:

- Urologic imaging (voiding cystourethrogram, radionuclide cystogram)
- IV insertion/ port-a-cath access
- Lumbar puncture
- Laceration suturing
- Joint injection
- Abscess incision and drainage
- Nasogastric tube insertion
- Burn dressings
- Intramuscular injection (e.g., botulinum toxin, PEG-aspareginase)
- Fracture reduction

## Special Considerations

### Administration of nitrous oxide with other potentially sedating medications:

For more painful procedures, nitrous oxide may be administered with other potentially sedation medications in 2 separate scenarios:

1. Goal of minimal sedation still anticipated for procedure (e.g. use with additional anxiolytic)
  - Because our current equipment allows titration of nitrous oxide to target level of sedation, if goal remains minimal sedation, aforementioned policies/procedures for minimal sedation still apply.
  - Titrate nitrous oxide to maintain appropriate level of alertness (i.e., respond normally to verbal commands)

## 2. Goal of moderate sedation (e.g., use with narcotic for more painful procedure)

- Moderate sedation policy, including frequent vital sign monitoring and appropriate NPO requirement, would apply (sed policy 351.00)
- Written informed consent required

### Contraindications to nitrous oxide administration:

#### 1. Gas in trapped space.

- Examples include:
- Pneumothorax
- Bowel obstruction,
- Craniotomy in past 3 weeks unless imaging shows no free air
- Intraocular surgery with retained gas (past 10 weeks)
- Penetrating injury to the globe of the eye
- Pulmonary bullae or severe bullous emphysema
- Air embolism
- Decompression sickness (consider exclusion if diving within the previous 24 hours)
- Maxillofacial injuries
- Recent myringoplasty

#### 2. Increased intracranial pressure or impaired level of consciousness

#### 3. Pregnancy\*

#### 4. Treatment with bleomycin sulfate

#### 5. Vitamin B12 deficiency

\*Siblings and/or caregivers who are or may be pregnant will also be asked to remain distant from the patient's breathing space

### Nursing Personnel / Training:

Registered nurses may administer nitrous oxide after completion of nitrous oxide training course:

- Didactic component – pharmacology, toxicity, and environmental safety of nitrous oxide as well as the equipment used for its delivery
- Mentored hands-on training - supervised clinical experience using fail-safe equipment is required. Successful completion of at least 3 nitrous oxide sedation administrations with an experienced mentor is required to establish competency.

## Equipment:

In addition to equipment required per minimal sedation policy:

- Nitrous oxide delivery device capable of delivering no less than 30% oxygen with failsafe system
- Scavenging system must be operational

## Nitrous Oxide Sedation Process:

Assess suitability for nitrous oxide sedation and evaluate patient for presence of contraindications\* to use of nitrous oxide prior to nitrous oxide/oxygen sedation administration+

- Responsibility of nitrous-trained RN or MD
- Obtain order for nitrous oxide sedation
- Notify supervising practitioner if different from ordering practitioner (see below)
- Assemble nitrous oxide delivery device
- Check equipment failsafe prior to patient administration.
- Administer nitrous oxide to a maximum of 70% with oxygen as remaining gas
- Scavenging equipment must be operative during nitrous oxide administration.
- Administer 100% oxygen for 2-5 minutes following discontinuation of nitrous oxide to minimize risk of diffusion hypoxia.

\*Listed above

+Nurses may choose not to administer nitrous oxide/oxygen sedation to any patient based on their pre-sedation assessment and may solicit additional physician input at any time.

## Ordering Practitioner:

An order for nitrous oxide sedation must be obtained prior to nitrous oxide administration.

- Any physician, dentist or advanced practice nurse (APRN) with prescribing privileges may order medication for minimal sedation, including nitrous oxide. This includes residents and fellows

## Supervising Practitioner:

A sedation qualified physician, dentist or advanced practice nurse (APRN) will be in house during nitrous oxide/oxygen administration.

Supervision of trained personnel in the administration of nitrous oxide sedation to patients requires special privileges.

### Pre-assessment:

Current hospital policy regarding pre-assessment of patients receiving minimal sedation (Sedation During Diagnostic and Therapeutic Procedures) will apply. NPO guidelines are at the discretion of the sedation practitioner. It may be prudent to instruct families to restrict their child's oral intake to at most a light meal prior to a scheduled procedure with nitrous oxide sedation. Patients who are not fasting may still receive nitrous oxide at the discretion of the practitioner ordering sedation. Minimal sedation is covered in general hospital consent for treatment and no additional written informed consent for nitrous oxide minimal sedation is required.

- RN will educate patient and family about the expected sedative effects and potential side effects of nitrous oxide sedation including risks, benefits, and alternatives

### Patient Monitoring:

Current hospital policy regarding monitoring of patients receiving minimal sedation (Sedation During Diagnostic and Therapeutic Procedures) will apply.

As with all sedation agents, the possibility of reaching a deeper level of sedation than expected does exist. If patients reach a level of moderate sedation, policy regarding patients receiving moderate sedation would apply:

- Heart rate, respiratory rate, and blood pressure will be documented every 5 minutes in addition to pulse oximetry values, level of sedation, and nitrous oxide concentration until the patient returns to a less than moderately sedated state.
- When the physical stimulus of blood pressure cuff inflation is likely to interfere with sedation level and compromise the procedure or test being performed, capillary refill, heart rate, and pulse oximetry waveform can temporarily serve as a surrogate for recorded blood pressure.

### Documentation:

- Documentation of sedation administration and the procedure itself will be performed on the patient record.
- Continuous pulse oximetry and direct visual observation by a qualified RN are mandatory throughout nitrous oxide administration.
- Pulse oximetry values will be recorded throughout the sedation and recovery period.
- Nitrous oxide concentration, pulse oximetry value, and level of sedation will be recorded at the onset of administration, with any changes in administered nitrous oxide concentration, and every 5 minutes thereafter.
- Adverse events such as emesis, vasovagal reaction, seizure, anaphylaxis, or anaphylactoid reaction, or cardiopulmonary impairment during the sedation period as well as interventions required, and disclosure performed to the patient and/or guardian(s) will be documented.

### Transfer / Discharge:

Current hospital policy regarding transfer/discharge of patients receiving minimal sedation (Sedation During Diagnostic and Therapeutic Procedures) will apply.

### Performance Improvement:

Outcomes of patients undergoing nitrous oxide sedation are collected and analyzed in the aggregate in order to identify opportunities to improve care.

### Accountability / Responsibility:

The medical director of nitrous oxide sedation is responsible for the quality monitoring of the nitrous oxide sedation program. He/she is responsible to report to the medical director of sedation.

### Quality:

The medical director of nitrous oxide sedation will work in conjunction with the professional staff, performance improvement (Center for Care Innovation and Research), nursing leadership, and administrative leadership to define and implement performance improvement activities in the area of nitrous oxide sedation.

