

Drug Chart for Procedural Sedation

All sedation agents require to be documented on the Record of Sedation for Procedures (MR56S)

Nitrous oxide(N₂O)

- Gas when inhaled produces an analgesic, anxiolysis, amnesia, and anaesthetic effect by mechanisms which are not completely understood.
- **Nitrous oxide may only be administered by accredited staff member.**

Onset : 20 seconds

Peak: 3 -5 minutes

- Low blood solubility thus rapid clearance with exhalation.
- Rapid fall in arterial concentration once inhalation stopped.
- Low fat solubility
- Complete recovery in approximately 5 minutes when 100 % oxygen given
- Psychomotor recovery in 20 minutes, monitor for dizziness/ fall prevention.

Dose:

Dose should be prescribed on the drug chart as 10% to 70% nitrous oxide, and should be titrated to the level of sedation required,.

Note: if opioid or oral sedation agents are administered as part of the procedure, then nitrous oxide should be titrated slowly, starting with a minimal dose of 10% to a maximum of 50% nitrous oxide.

Side effects: Dizziness or lightheadedness, headache, mild nausea, vomiting and failure to sedate.

Exclusion criteria: risk of expansion of trapped gas e.g. lung cyst, bowel obstruction, middle ear disease, pneumothorax.

Adverse effects:

- Expansion of closed gas in filled space causing pneumothorax etc
- Respiratory depression, apnoea
- Pulmonary aspiration of gastric contents if protective airway reflexes are impaired.
- Folate metabolism and vitamin B12 suppression

Reversal Agent: Give 100% oxygen via face mask post procedure or if adverse event occurs, nurse in the "recovery position," and initiate MET. Normal recovery occurs within 5 minutes with 100 % oxygen.

Midazolam

- Anxiolytic and sedative. Central nervous system depressant. **No analgesic properties.**

Oral: Absorption is rapid but erratic.
Max effect: 15-20 minutes
Duration: up to 2 hours

Dose:
0.5 mg/kg per dose to maximum of 15 mg.
Give 15-30 minutes prior to procedure.

Nasal: **Not preferred route due to local nasal irritation If ingested orally from nasal route, an unknown amount of drug is absorbed.**

Dose:
0.2 to 0.4 mg/kg per dose to maximum of 10 mg.
Use 5mg/ml midazolam for injection.

Absorption is rapid
Max effect: 10 minutes
Duration: up to 2 hours

Midazolam

- Anxiolytic and sedative. Central nervous system depressant. **No analgesic properties.**

Intravenous Midazolam intravenous should be titrated until the desired level of sedation is achieved.
Administration should not exceed the total maximum dose (age/weight)
| **Should only administered by accredited staff.**

Onset: 1-5 minutes

Child > 6 months and < 12 months of age

- 0.1 mg/kg of midazolam diluted to 10 mls of 0.9% sodium chloride.
- Bolus: give 1 ml and repeat bolus at intervals of **no less than 5 minutes** to achieve or maintain anxiolysis.
- **Do not exceed a total dose of 0.15mg/kg or 15 mls of the diluted solution.**

Child >12 months of age and less 50kg

- 0.1 mg/kg midazolam diluted to 10 mls of 0.9% sodium chloride.
- Bolus: give 1-2 mls and repeat bolus at intervals of **no less than 3 minutes** to achieve or maintain anxiolysis.
- **Do not exceed a total dose of 0.15mg/kg or 15mls of the diluted solution.**

Child weight > 50 kg

- 5 mg of midazolam diluted to 10 mls of 0.9% sodium chloride.
- Bolus: give 1-2 mls and repeat bolus at intervals of **no less than 3 minutes** to achieve or maintain anxiolysis.
- **Do not exceed total dose of 7.5 mg or 15mls of the diluted solution.**

Side effects: cardiac depression, apnoea and respiratory depression.

Rapid administration of IV midazolam increases the risk of cardio respiratory depression.

- Excessive sedation UMSS score >2
- Airway obstruction
- Hypotension- especially in patients with impaired cardiovascular stability.
- Delirium, paradoxical agitation
- Hiccups and impaired balance and coordination- patients at risk for falls.

| **Reversal agent: Flumazenil which is available on PICU Resuscitation Trolley.**

Chloral Hydrate:

- Sedative and hypnotic, unpredictable onset and duration.

Oral/Rectal

Dose:

50 mg/kg to a maximum dose of 2 grams as single dose.
Full dose may be given or give an initial dose of 30mg/kg then an additional (20mg/kg) in twenty minutes if level of sedation is not achieved. Do not exceed maximum dose.

Side effects:

- Hyperactivity occurs in 1-2 % of patients. Abort procedure and call in charge anesthetist.
- Liver failure (rare).
- Impaired liver function; chloral hydrate should not be used.
- Respiratory depressant activity is less common than with other sedatives.

