

Drugs used at SWMC in Procedural Sedation

Narcotic Analgesics:

Block transmission and perception of pain and produce generalized CNS depression.

Morphine Sulfate

- Adult Dosage: 2 -4 mg IV every 5-10 minutes. Initial dose dependent on patient's condition.
- Onset: 1 - 3 minutes; peak 10 – 20 minutes.
- Duration: 1-2 (or longer) hours, metabolized in the liver, excreted in urine and bile.
- Contraindications: Known hypersensitivity; Paralytic ileus.
- Precautions: Administer with caution to patients with respiratory depression; head injury; increase ICP, in pregnancy; renal or hepatic dysfunction; pulmonary disease; convulsive disorders.
- Reversal Agent: Naloxone
- Adverse Reactions:
 - CNS: ♦ Sedation ♦ Dizziness ♦ Delirium/Hallucinations (auditory and visual)
♦ Euphoria ♦ Increased ICP
 - GI: ♦ Nausea ♦ Vomiting ♦ Constipation
 - EENT: ♦ Blurred Vision ♦ Miosis
 - CV: ♦ Bradycardia ♦ Palpitations ♦ Hypotension
 - Resp: ♦ Respiratory Depression ♦ Apnea
 - Other: ♦ Rash ♦ Urticaria ♦ Flushing ♦ Diaphoresis ♦ Histamine release at injection site

Note: Suggested doses are adult doses and must be adjusted based on patient assessment, condition and age. Slow titration to effect is much safer than a large bolus.

Meperidine (Demerol):

- Adult Dosage: 25 – 100 mg (in divided doses) IV prior to procedure. Titrate based on effect. Administer slowly over 30 seconds or longer into an infusing IV line.
- Onset: 1 – 5 minutes. IV peak 5 – 7 minutes.
- Duration: 2 – 3 hours. Elimination half-life is 2 – 6 hours, metabolized in the liver, excreted in urine.
- Contraindications: Respiratory depression. Known hypersensitivity. May interact with MAO inhibitors if receiving MAOI or with past 14 days, and result in hypertension, excitation, tachycardia, seizure and hypoxia.
- Precautions: Administer with caution on patients with supraventricular dysrhythmias, head injury, renal or hepatic dysfunction, pulmonary disease, convulsive disorder or glaucoma and to older or debilitated patients.
- Reversal Agent: Naloxone.
- Adverse Reactions:
 - CNS: ♦ Dizziness ♦ Confusion ♦ Headaches ♦ Sedation
♦ Euphoria ♦ Increased ICP ♦ Convulsions at high doses >1000 mg (due to active metabolite)
 - CV: ♦ Tachycardia ♦ Bradycardia ♦ Palpitations ♦ Hypotension
 - EENT: ♦ Blurred Vision ♦ Miosis ♦ Tinnitus ♦ Diplopia
 - GI: ♦ Nausea ♦ Vomiting ♦ Constipation
 - Resp: ♦ Respiratory Depression ♦ Apnea
 - Skin: ♦ Rash ♦ Urticaria ♦ Flushing ♦ Diaphoresis ♦ Histamine release at injection site

Note: Suggested doses are adult doses and must be adjusted based on patient assessment, condition and age. Slow titration to effect is much safer than a large bolus.

Opioid

Fentanyl Citrate

Sublimaze

- Adult Dosage: 25 – 50 mcg followed by repeat in 3 minutes to effect.
- Onset: 1 – 3 minutes; peak 5 – 10 minutes.
- Duration: 30 – 60 minutes. Metabolized in the liver. Excreted in urine. Rapidly dissolved in highly perfused tissue and stored in muscle tissue. When Fentanyl is released from fat and tissue back into circulation, delayed onset respiratory depression may result with high doses >10 ml.
- Contraindications: Known hypersensitivity; Not recommended for patients taking MAO inhibitors 14 days before administration; increases intracranial pressure; severe respiratory depression; severe liver insufficiency.
- Precautions: Administer with caution to any patient with supraventricular dysrhythmia or bradycardia, head injury, renal or hepatic dysfunction, pulmonary disease, and convulsive disorders. Use with other CNS depressants should reduce dose of Fentanyl by ¼ to ⅓.
- Reversal Agent: Naloxone
- Adverse Reactions:
 - CNS: ♦ Sedation ♦ Dizziness ♦ Delirium ♦ Seizures ♦ Tremors ♦ Euphoria
 - GI: ♦ Nausea ♦ Vomiting ♦ Constipation
 - EENT: ♦ Blurred vision ♦ Miosis
 - CV: ♦ Bradycardia ♦ Palpitations ♦ Arrest ♦ Hypotension
 - Resp: ♦ Respiratory depression ♦ Apnea
 - Other: ♦ Skeletal muscle rigidity ♦ Pruritus ♦ Erythema

Note: Suggested doses are adult doses and must be adjusted based on patient assessment, condition and age. Slow titration to effect is much safer than a large bolus.

Benzodiazepine

Lorazepam (Ativan)

- Onset: 1 – 2 min IV (15 – 30 minutes IV)
- Adult Dosage: 0.044 mg/kg or up to 2 mg 15 – 20 minutes prior to procedure. Administer IV. Do not exceed 2mg/min into running IV.
- Pharmacokinetics: Metabolism occurs in the liver and is excreted in the urine. 16 hours duration 8 – 12 hours.
- Contraindications: Known hypersensitivity; Benzodiazepines or acute narrow angle glaucoma; pregnancy.
- Precautions: Patients over 50 years may experience more profound and prolonged effects. Administer with caution to older adults, very ill patients or patients with limited pulmonary reserve.
- Reversal Agent: Flumazenil
- Adverse Reactions:
 - CNS: ♦ Excessive sleepiness and drowsiness ♦ Hallucinations ♦ Dizziness ♦ Confusion
♦ Hangover effect ♦ Ataxia ♦ Transitory hallucinations
 - CV: ♦ Hyper or Hypotension ♦ Bradycardia ♦ Circulatory collapse
 - EENT: ♦ Depressed hearing ♦ Diplopia ♦ Blurred vision
 - GI: ♦ Nausea ♦ Vomiting ♦ Constipation
 - Respiratory: ♦ Respiratory depression ♦ Apnea
 - Skin: ♦ Rash

Note: Suggested doses are adult doses and must be adjusted based on patient assessment, condition and age. Slow titration to effect is much safer than a large bolus.

Diazepam

Valium

- Adult Dosage: 2 – 10 mg IV slowly.
- Onset: 1 – 5 minutes IV. Peak is 1 – 2 hours and duration 2 – 6 hours. Metabolism occurs in the liver and is eliminated in urine.
- Contraindications: Known hypersensitivity; narrow angle glaucoma; pregnancy.
- Reversal Agent: Flumazenil
- Adverse Reactions:
 - CV: ♦ Hypotension ♦ Bradycardia ♦ CV collapse
 - CNS: ♦ Drowsiness ♦ Confusion ♦ Fatigue ♦ Amnesia
 - Respiratory: ♦ Apnea ♦ Respiratory depression
 - Ocular: ♦ Blurred vision ♦ Diplopia
 - Other: ♦ Painful at injection site when given IV.

Note: Suggested doses are adult doses and must be adjusted based on patient assessment, condition and age. Slow titration to effect is much safer than a large bolus.

Midazolam Hydrochloride

Versed

- Onset: 1 – 5 min. Duration 20 – 30 minutes. Excreted in the urine and feces.
- Adult Dosage: Titrate 1 – 2.5 mg until the initiation of slurred speech. Initial titration should not exceed 2.5 mg. Administer over a 2-minute period. Never administer by rapid or single bolus. Can repeat every 2 – 3 minutes as needed to total dose of 5 mg.
- Contraindications: Patients with known hypersensitivity and acute narrow-angle glaucoma. Not recommended during pregnancy or in obstetrics.
- Precautions: Same as contraindications.
- Reversal Agent: Flumazenil
- Adverse Reactions:
 - CNS: ♦ Retrograde amnesia ♦ Euphoria ♦ Confusion ♦ Restlessness
♦ Grogginess/Sedation ♦ Headache ♦ Emergence delirium ♦ Insomnia
 - CV: ♦ Ventricular ectopy ♦ Vasovagal response ♦ Bradycardia ♦ Nodal rhythm
♦ Hypotension
 - Skin: ♦ Rash
 - Respiratory: ♦ Hypoventilation ♦ Respiratory depression ♦ Oxygen desaturation ♦ Cough
♦ Loss of airway reflexes

Note: Suggested doses are adult doses and must be adjusted based on patient assessment, condition and age. Slow titration to effect is much safer than a large bolus.

N.B. Respiratory depressant effect is synergistic when mixed with narcotics.

N.B. Mixing narcotic and benzodiazepine will increase likelihood of respiratory depression.

