

## Procedural Sedation Shownotes

Although procedural sedation is a bread and butter component of emergency medicine, it is an area where we can introduce significant harm to our patients. Preparation and being facile with all components of the process is key to doing this safely and efficiently.

### **Level of Sedation**

**Minimal Sedation** is characterized by anxiolysis but with normal, although sometimes slowed, response to verbal stimuli. The person will be awake but relaxed. Good for procedures that require patient cooperation and those in which pain is controlled by local or regional anesthesia. (Lac Repair, Abscess I+D)

**Moderate Sedation** is characterized by a depressed level of consciousness and a slower but purposeful motor response to simple verbal or tactile stimuli. Patients at this level generally have their eyes closed and respond slowly to verbal commands. Dissociative Sedation is one type. Moderate sedation can be used for procedures in which detailed patient cooperation is not necessary, and muscular relaxation with diminished pain reaction is desired. (dislocation reductions, chest tube insertions and cardioversions)

**Deep Sedation** is characterized by a profoundly depressed level of consciousness, with a purposeful motor response elicited only after repeated or painful stimuli, so we might use it for procedures that are painful and require muscular relaxation with minimal patient reaction like burn wound care or open fracture reductions.

### **Prepare for Complications**

- Hypotension and apnea are not uncommon when using the sedative agents discussed below
- Be prepared to emergently manage an airway or resuscitate a patient with fluids/pressors if needed
- Consider having airway cart, BVM, end tidal CO<sub>2</sub>, defibrillator and any other equipment you would need to take care of a crashing patient

### **Know Your Patient**

- Detailed History: Experience with anesthesia, NPO time, current meds and allergies can help you choose right agent
- Focused Exam: ASA classification can help predict complications (Class III-V have much higher complication rate), Mallampati score can help you prepare for emergent intubation.

### **Choose Your Agent**

- There are many agents to choose from, each with advantages and disadvantages
- Try to master as many as you can and become facile with all of your options

	Dose	Onset / Duration	Advantages	Complications
Nitrous Oxide	50:50:: NO:O2 Ratio (Up to 70:30)	1-2min / 3-5 min	Fast on, fast off Anxiolysis, Analgesia, Amnesia	Contraindicated in pregnancy, SBO, pneumothorax
Midazolam	0.1mg/kg IV 0.2-0.3 mg/kg IN	2-3min / 30 min	Fast on, fast off	No analgesia Hypotension, Apnea
Fentanyl	1-3 mcg/kg	1-5min / 30 min	Fast on, fast off Analgesia and Sedation	Hypotension, Apnea
Midazolam + Fentanyl	0.1mg/kg Midaz + 3 mcg/kg Fent	3 min / 60 min	Moderate sedation and Analgesia	Increased risk of hypotension and Apnea
Ketamine	1 mg/kg	1-3 min / 30 min	Anxiolysis, Analgesia, Amnesia and Moderate Sedation No hypotension, minimal apnea risk	Tachycardia, HTN, Laryngospasm, Vomiting, Emergence Reaction
Etomidate	0.15mg/kg load 0.1mg/kg aliquats PRN	15-30s / 3-8 min	Extremely fast on, fast off Minimal CV risk	No analgesia Myoclonic Jerking Respiratory depression
Methohexital	1 mg/kg	1 min / 3-5 min	Extremely fast on, fast off	Higher rate of apnea, hypotension No analgesia
Propofol	0.5-1 mg/kg load 0.5mg/kg aliquats PRN	30-60s / 5-6 min	Easy to titrate	Apnea, hypotension (especially if volume depleted)
Ketofol	0.5 mg/kg Ketamine + 0.5 mg/kg Propofol	15-30s / 15-30 min	Less hypotension and more analgesia than Propofol alone	No increased risk compared to ketamine alone or propofol alone

**During and Post Procedure**

- Need two qualified professionals; one to administer drugs and/or do procedure, and another to watch vital signs for signs of complications
- Watch until patient can ambulate, urinate, eat and have mentally returned to baseline