

## Procedural Sedation Medication Guideline for Adults and Pediatrics

For complete details regarding the Moderate Sedation Policy at University Hospital, please reference the policy titled: Moderate Sedation/Analgesia. The following is intended to provide drug dosing and drug selection pearls about medications approved for use to achieve moderate sedation at University Hospital.

### Choose an Agent Based on Desired Level of Sedation

#### Minimal PSA

- Definition: Normal response to verbal stimulus with airway, ventilation, and cardiac function unaffected
- Consent: not required
- Agents:
  - Benzodiazepines only
  - Opioid only

#### Moderate or Deep PSA:

- Moderate PSA definition: Respond purposefully to voice/touch, no airway intervention required, ventilation adequate, and cardiovascular function usually maintained
- Deep PSA definition: Responds purposefully to repeat stimulation/pain, airway intervention may be required, ventilation may be adequate, and cardiovascular function usually maintained
- Consent: Required
- Agents:
  - Benzodiazepine PLUS opioid within 30 minutes of either drug
  - Ketamine
  - Propofol
  - “Ketofol”

### Specific Agent and Dosing

Fentanyl	
<i>IV Dosing</i>	<i>PK/PD</i>
0.5 – 1 mcg/kg IV once <b>THEN</b> 0.5 mcg/kg IV q5 minutes PRN x 1	Onset: 60 seconds Duration: 30 minutes
<i>Intranasal Dosing – Pediatric patients (&lt; 45 kg) without IV access</i>	
1.5 mcg/kg (max 100 mcg) IN once <b>THEN</b> 0.5 mcg/kg IN q10 minutes PRN x 1	Onset: 5 – 15 minutes Duration: 30 – 60 minutes
<b>Administration Pearls</b>	
<ul style="list-style-type: none"> <li>- If sedation not adequate after 2 doses of IN fentanyl, consider alternative route of administration</li> <li>- Consider midazolam prior to sedation since fentanyl is devoid of sedation properties</li> <li>- When used as the sole agent, can be considered minimal sedation as long as patient meets above definition</li> </ul>	

Ketamine	
<i>IV Dosing</i>	<i>PK/PD</i>
1 mg/kg (max 100 mg) IV once, slowly over 1 minute <b>THEN</b> 0.5 mg/kg (max 50 mg) IV q10 minutes PRN, slowly over 1 minute x 2	Onset: 1 minute Duration: 10 minutes
<i>Intramuscular Dosing – Pediatric patients (&lt; 45 kg) without IV access</i>	
3 – 4 mg/kg IM once	Onset: 5 – 10 minutes Duration: 30 minutes
<b>Administration Pearls</b>	
<ul style="list-style-type: none"> <li>- Avoid in patients with history of psychosis or those apprehensive about procedure to be conducted</li> <li>- Avoid in patients with severe hypertension</li> <li>- The following have been shown to reduce emergence phenomenon:               <ul style="list-style-type: none"> <li>o Assure patients that medication is safe and will allow them to feel no pain during the procedure</li> <li>o Tell patients that medication will allow them to dream about any topic they choose and to think pleasant/happy thoughts while medication being given</li> <li>o Minimize disturbing stimuli when possible (e.g. lighting, noise, interruptions)</li> </ul> </li> <li>- Excess salivation possible – have suction ready at bedside</li> <li>- Ideal in patients requiring longer duration of sedation – procedures expected to last ≥ 10 minutes</li> </ul>	

Guidelines are intended to be flexible. They serve as reference points or recommendations, not rigid criteria. Guidelines should be followed in most cases, but there is an understanding that, depending on the patient, setting, circumstances or factors, guidelines can and should be tailored to fit individual needs.

Updated July 2019

<b>Ketamine + Propofol ("Ketofol")</b>	
Dosing	PK/PD
Ketamine 0.5 mg/kg (max 50 mg) IV q10 minutes PRN, slowly over 1 minute x 3 <b>AND</b> Propofol 0.5 mg/kg (max 50 mg) IV q3 minutes PRN, slowly over 1 minute x 3	Onset: 1 minute Duration: 5 – 10 minutes
Administration Pearls	
<ul style="list-style-type: none"> <li>- Avoid in patients with history of psychosis or those apprehensive about procedure to be conducted</li> <li>- <b>NEVER</b> combine medications in same syringe – use two separate syringes each time</li> <li>- The following have been shown to reduce emergence phenomenon:               <ul style="list-style-type: none"> <li>o Assure patients that medication is safe and will allow them to feel no pain during the procedure</li> <li>o Tell patients that medication will allow them to dream about any topic they choose and to think pleasant/happy thoughts while medication being given</li> <li>o Minimize disturbing stimuli when possible (e.g. lighting, noise, interruptions)</li> </ul> </li> <li>- Excess salivation possible – have suction ready at bedside</li> </ul>	

<b>Midazolam</b>	
IV Dosing	PK/PD
0.05 mg/kg IV once <b>THEN</b> 0.05 mg/kg in 5 minutes PRN x1 ONLY if max of 10 mg not reached	Onset: 3 minutes Duration: 90 minutes
Intranasal Dosing – Pediatric patients (< 45 kg) without IV access	
0.2 mg/kg IN (up to 10 mg) once <b>THEN</b> 0.2 mg/kg IN in 10 minutes PRN ONLY if max of 10 mg not reached	Onset: 5 – 15 minutes Duration: 20 – 40 minutes
Administration Pearls	
<ul style="list-style-type: none"> <li>- Maximum total cumulative dose = 10 mg for IV and IN routes</li> <li>- If sedation not adequate after 2 doses or 10 mg of IN midazolam, consider alternative route of administration</li> <li>- Consider fentanyl prior to sedation since midazolam is devoid of analgesic properties</li> <li>- When used as the sole agent, can be considered minimal sedation as long as patient meets above definition</li> </ul>	

<b>Propofol</b>	
Dosing	PK/PD
1 mg/kg (max 100 mg) IV once, slowly over 1 minute <b>THEN</b> 0.5 mg/kg (max 50 mg) IV q3 minutes PRN, slowly over 1 minute x 2	Onset: 30 seconds Duration: 5 minutes
Administration Pearls	
<ul style="list-style-type: none"> <li>- Avoid in hemodynamically unstable patients</li> <li>- Contraindicated in patients with soy allergy</li> <li>- Consider fentanyl prior to sedation since propofol is devoid of analgesic properties</li> <li>- Consider lowering dose to 50% in elderly patients</li> <li>- Ideal in patients requiring short duration of sedation - procedures expected to last &lt; 10 minutes</li> <li>- Some pain associated with injection – push slowly</li> </ul>	