

## Sedation Levels and Modalities

Achieving optimal sedation requires various modalities, considering factors like procedure type, patient age, and medical history. Common sedation types include oral, inhaled, intranasal, and intravenous, each using specific medications.

### **Sedation Levels**

- Minimal Sedation: Patients respond to verbal commands, with minimal impact on cognition and coordination. Ventilatory and cardiovascular functions remain unaffected.
- Moderate Sedation: Patients respond purposefully to verbal or tactile stimulation. Airway and ventilation are generally stable.
- Deep Sedation: Patients are less easily aroused and may need airway support. Cardiovascular function is typically maintained.
- General Anesthesia: Characterized by the absence of awareness and pain perception. Airway and ventilation assistance is required, with potential cardiovascular challenges.

*Note:* Achieving a different sedation level than intended can occur. Healthcare providers should be qualified to manage patients at any sedation level reached, whether intentional or unintentional.

## Advantages and Disadvantages of Sedation Agents

<b>Medication</b>	<b>Advantages</b>	<b>Disadvantages</b>
Chloral hydrate #	Oral	Narrow therapeutic index No analgesic effect
Midazolam #	Oral, intranasal, buccal, IM or IV Amnestic and anxiolytic effect Quick onset Short acting	Can produce paradoxical effect after discharge Agent failure No analgesic effect
Intranasal fentanyl	Synergistic with nitrous oxide Reduces need for IV access	No sedative effect
Nitrous oxide	Quick onset and offset Anxiolysis and amnesia	Vomiting is common Limited analgesic effect
Ketamine*	Airway reflexes maintained Cardiovascular stability IM or IV Provides excellent analgesia and sedation and thus can be used as a sole procedural agent	Side effects include agitation and emesis during recovery Rarely can cause laryngospasm
Propofol **	Ultrashort acting sedative anesthetic agent Effective for muscle relaxation (eg reduction of ankle dislocation)	Narrow therapeutic window Respiratory and cardiovascular depression Lack of analgesic property
Dexmedetomidine	Sedative without respiratory depression	Hypotension, bradycardia with fast infusion or high dose
Etomidate	Rapid onset and offset, deep sedation, amnesia	Adrenal suppression in septic shock, myoclonus, vomiting during recovery

# Extra analgesia eg fentanyl may be required for painful procedures when using these drugs

\* Ketamine and propofol should only be used by clinicians who are trained and approved in their use and who have experience in pediatric resuscitation, advanced airway management and monitoring

## Sedation Choice by Procedure Type

Procedure type	Example	Goals	Agent of Choice	Alternatives
Diagnostic imaging	<ul style="list-style-type: none"> <li>- CT</li> <li>- US</li> <li>- MRI</li> </ul>	<ul style="list-style-type: none"> <li>- Reduce movement</li> <li>- Anxiolysis</li> </ul>	Chloral hydrate Midazolam Dexmedetomidine Ketamine*	General anesthetic
Diagnostic (painful)	<ul style="list-style-type: none"> <li>- IV insertion</li> <li>- LP</li> <li>- Port access</li> <li>- Joint aspirations</li> <li>- Urinary catheter insertion</li> </ul>	<ul style="list-style-type: none"> <li>- Reduce movement</li> <li>- Sedation</li> <li>- Anxiolysis</li> <li>- Analgesia</li> </ul>	Topical local anesthetic Nitrous oxide Midazolam Ketamine* Etomidate Extra analgesia eg fentanyl may be required	
Therapeutic	<ul style="list-style-type: none"> <li>- Laceration repair</li> <li>- Fracture reduction</li> <li>- Dislocation reduction</li> <li>- Larger burns dressings</li> <li>- Foreign body removal</li> <li>- Dressing changes</li> <li>- Simple burns dressings</li> <li>- Foreign body removal</li> <li>- Abscess incision and drainage</li> </ul>	<ul style="list-style-type: none"> <li>- Reduce movement</li> <li>- Sedation</li> <li>- Anxiolysis</li> <li>- Analgesia</li> </ul>	Nitrous Midazolam Ketamine* Propofol Etomidate Extra analgesia eg fentanyl may be required	Regional anesthesia

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