

PEDIATRIC SEDATION POCKET CARD FOR PROVIDERS

Provider should be skilled in recognition and management of airway and hemodynamic compromise

- Ensure pre-screening of patient for procedural sedation
- Ensure availability of appropriate procedural sedation team resources
- Collaboration with anesthesiologist is suggested for patients with high risk conditions

Potentially High Risk Factors:

- | | |
|----------------------------------|----------------------------------|
| Age <3 months | Obesity/snoring/OSA |
| Prematurity | Mallampati Class IV |
| Craniofacial deformity | Acute respiratory illness |
| Complex congenital heart disease | Chronic lung disease |
| Hypotonia/neuromuscular weakness | End-stage renal or liver disease |

Obtain SAMPLE history prior to procedural sedation

S: Signs and symptoms; **A:** Allergies; **M:** Medications **P:** Past medical history; **L:** Last meal; **E:** Events/diagnosis

ASA-PS Classification

- Class I:** A normal healthy patient
 - Class II:** Mild systemic disease (e.g. controlled asthma)
 - Class III:** Patient with severe systemic disease (e.g. actively wheezing child, oncology patients, cystic fibrosis)
 - Class IV:** Patient with severe systemic disease that is constant threat to life (e.g. status asthmaticus)
 - Class V:** Moribund patient who is not expected to survive without the operation (e.g. a patient with severe cardiomyopathy requiring heart transplantation)
- E:** Procedure done on emergent basis

Pre-procedure Fasting* per ASA guidelines

- Clear liquids: 2 hours
- Breast milk: 4 hours
- Infant formula / Cow's milk/light meal: 6 hours
- Heavy solid food: 8 hours

* Patients w/ risk factors should be strict NPO for 8 hours

Procedural Sedation Adverse Events

- Apnea/Hypoventilaion
- Hypoxemia & desaturations
- Airway obstruction
- Laryngospasm
- Hypotension
- Anaphylaxis

Airway/Breathing Interventions*

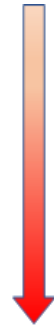
Airway obstruction/Apnea/Hypoventilation*

- Early detection (use ETCO2)
- Reposition patient/airway
- Jaw thrust
- Oxygen/Suction
- Positive Airway Pressure
- Oral/nasal airway
- Titrate/stop drugs

Reversal agents
LMA
Intubate

Management of Laryngospasm*

- Positive Pressure ventilation
- Deepen sedation (propofol)
- Succinylcholine/Atropine**
- Intubate**



***Use PALS guidelines and call for help early**

Discharge Guidelines: 1. Tolerate PO/Ambulate, 2. Modified Aldrete Score >8, 3. Parent teaching, 4. F/u phone call in 24 hours.

References:

1. Cote CJ, Wilson S. Guidelines for Monitoring and Management of Pediatric Patients Before, During and After Sedation for Diagnostic and Therapeutic Procedures: Pediatrics 2019
2. American Society of Anesthesiologist Committee. Practice Guidelines for preoperative fasting and the use of pharmacologic agents to reduce the risk of pulmonary aspiration: application to healthy patients undergoing elective procedures: an updated report by the American Society of Anesthesiologists Committee on Standards and Practice Parameters. Anesthesiology. 2017; 126 (3): 376-93.
3. ASA House of Delegates. ASA physical status classification system. 2014. <https://www.asahq.org/resources/clinical-information/asa-physical-status-classification-system>.
4. www.intranasal.net

Notes:

SPS acknowledges a significant contribution by Drs Deshpande and Fitch from Children's Hospital of Illinois, Peoria, IL, and SPS leadership of Drs Pradip Kamat, Amber Rogers, and Jaimee Holbrook into making of this card.
Note: Information on this card should not replace clinical judgment or institution-specific guidelines.

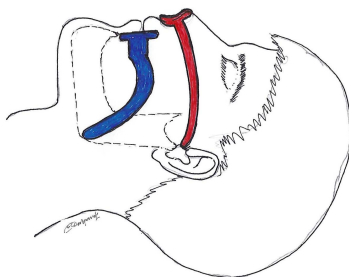
Mallampati Classification



Procedural Sedation Checklist

- Medication Selection
 - Select appropriate sedative/analgesic for procedure
 - Confirm patient weight, drug doses
 - Reversal agents, emergency medication doses affirmed (keep code sheet ready)
 - Consider adjuvants (lidocaine, glycopyrrolate)
- Discuss plan with the procedural team
- Confirm informed consent(s)
- Monitoring Equipments: ECG, Pulse Ox, BP, ETCO2
- O2 delivery devices & Suction
- Resuscitation equipment available nearby
- Bag/Mask, airway adjuncts (see below)

Airway Adjuncts



Nasopharyngeal Airway: measure from the tip of the nose to tragus of the ear

Oral Airway: measure from angle of mouth to angle of the mandible/jaw

Medication	Route/Concentration	Onset	Duration	Dose	Side Effects/Comments
Dexmedetomidine	Nasal* (100 mcg/ml)	15-30 min	60-90 min	2-4 mcg/kg	<ul style="list-style-type: none"> • Hypotension, bradycardia • Minimal effects on respiration • Monitor for hypertension and bradycardia during bolus • Do not use vagolytic (atropine/glycopyrrolate) for bradycardia
	IV Bolus	3-5 min	30-45 min	1-3 mcg/kg over 10 minutes	
	IV Infusion			0.5-2 mcg/kg/hour	
Fentanyl	IV	< 1min	30-60 min	0.5-2 mcg/kg	<ul style="list-style-type: none"> • Respiratory depression • Chest wall rigidity with rapid IV push (including saline flush used after pushing medication)
	Nasal	15-20 min	60-120 min	1-2 mcg/kg	
Ketamine	IV (10 mg/ml)	1-2min	10-15min	1-2 mg/kg	<ul style="list-style-type: none"> • Increased HR, BP • Bronchodilation • Increased IOP, ICP • Nystagmus • Laryngospasm (succinylcholine can be used to treat it) • Increased secretions • ↓ CO w/ catecholamine depletion, hypotension • Emergence reaction
	IM, Nasal* (100 mg/ml)	5-15 min (IM) 5-10 min (Nasal)	15-30 min (IM) 30-60 min (Nasal)	2-4 mg/kg	
Midazolam	IV (1 mg/ml)	1-2min	45-60min	0.05- 0.15 mg/kg (max. 2 mg)	<ul style="list-style-type: none"> • Hypotension • Paradoxical reaction/agitation
	PO	15-30min	60-90min	0.5 -0.75 mg/kg (max. 20 mg)	
	Nasal*(5 mg/ml)	<5min	30-60min	0.2-0.5 mg/kg (max. 10 mg)	
Nitrous Oxide	Inhaled	2-5min	Recovery within 3-5 min washout with 100% O ₂	<50% NO ₂ = minimal sedation 50-70% NO ₂ = moderate sedation	<ul style="list-style-type: none"> • Nausea/vomiting • Avoid in eye/brain surgery and bowel obstruction (air-filled spaces) • Avoid with air leak syndromes (pneumomediastinum, pneumothorax, pneumoperitoneum)
Propofol	IV Bolus	30-45 sec	4-8min	1-2 mg/kg	<ul style="list-style-type: none"> • Hypotension, bradycardia • Pain on Injection • Respiratory depression • Avoid w/ egg, soy anaphylaxis
	IV infusion			1-6 mg/kg/hour (50-120 mcg/kg/min)	
Reversal Agents/Adjuncts					
Naloxone (Fentanyl reversal)	IV/Nasal (2 mg/2ml)	1-2min	20-40min	0.1 mg/kg/dose for < 20 kg 2 mg for equal or more than 20 kg	<ul style="list-style-type: none"> • Catecholamine release, HTN • Use frequent dosing until effect reversed
Flumazenil (Midazolam reversal)	IV	1-2min	30-60min	0.01 mg/kg (max. 0.2 mg)	<ul style="list-style-type: none"> • Avoid in patients with seizure disorder
Glycopyrrolate	IV	<1 min	~ 7 hours	4 mcg/kg	<ul style="list-style-type: none"> • Thickened secretions
Succinylcholine	IV	0.5-1 min	3-10 min	1 mg/kg	<ul style="list-style-type: none"> • Used for treatment of laryngospasm (short acting agent)
*Use atomizer & appropriate concentration for nasal meds and divide dose in 50% per nostril					