

***When Emla Isn't Enough:
Pharmacological and
Non-Pharmacological
Strategies for Alleviating
Procedural pain and
Distress in Satellite
patients***

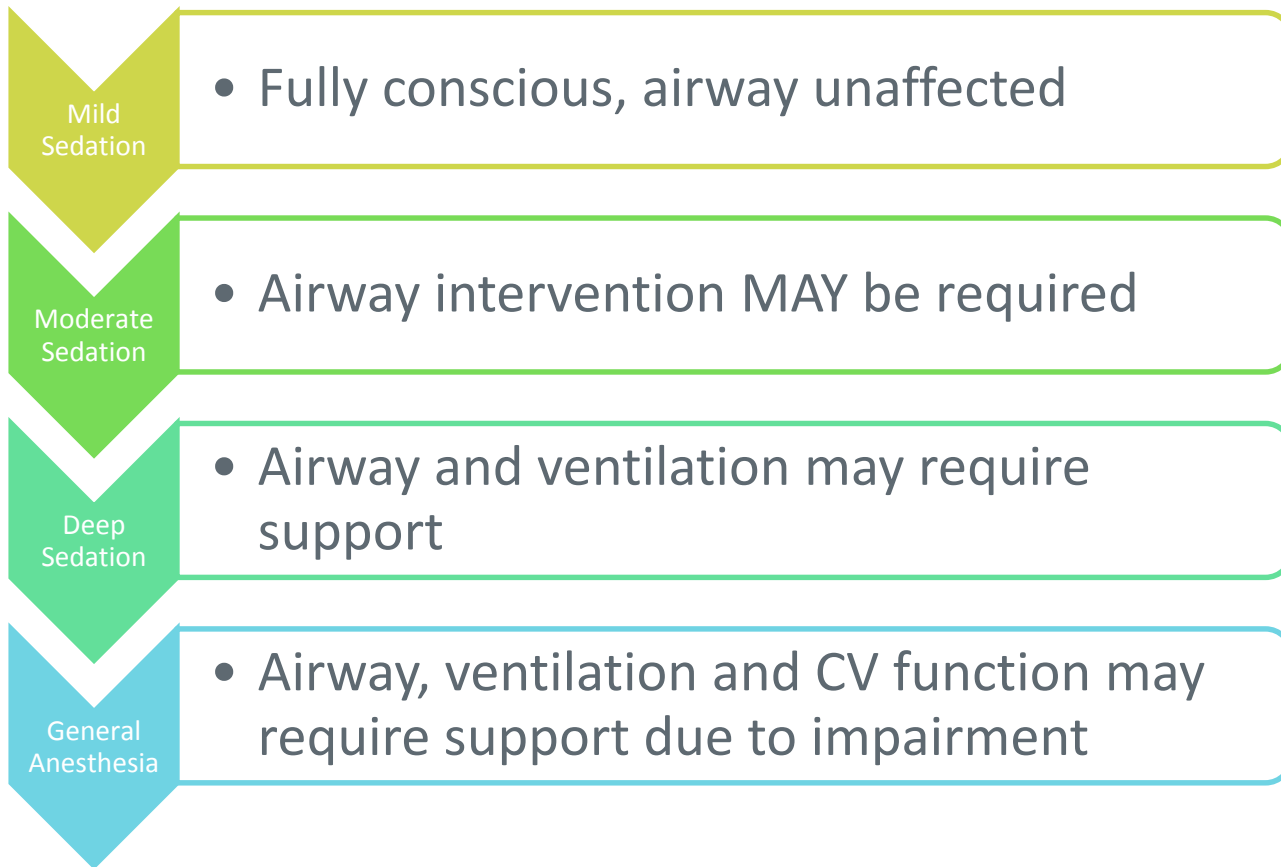


Pediatric
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EDUCATION
DAY

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Deepa Kattail, MD MHS FAAP
Assistant Professor, Department of Anesthesia
McMaster University, Faculty of Health Sciences

Sedation in Children....a spectrum



Procedural Sedation

Pharmacological Management

Benzodiazepines

- Diazepam (valium)
- Midazolam (versed)

Opioids

- Fentanyl
- Morphine

Alpha-2 agonists

- dexmedetomidine
- clonidine

NMDA Antagonists

- ketamine

Benzodiazepines

Midazolam

- A short acting, water soluble benzodiazepine; no analgesic properties
- Short duration with predictable onset
- Provides amnesia and anxiolysis

Dosing:

- oral: 0.5-0.75 mg/kg, max 20 mg
- Intranasal: 0.2 to 0.3 mg/kg, max 10 mg

Benzodiazepines

Diazepam

- Long acting "classic" benzodiazepine
- Slower onset of action than midazolam

Dosing:

- Oral: 0.2 to 0.4 mg/kg, 45 to 60 minutes before the procedure. Maximum dose is 20 mg PO

Opioids

Fentanyl

- potent synthetic opioid (100 x Morphine)
- peak effect = 5 min and lasts for 30 - 60 min.
- respiratory depressant effect is much longer (4 hrs) than analgesic effect

Dosing:

- Intranasal Dose: 1-2 mcg/kg up to 5 mcg/kg

Alpha-2 agonists

Dexmedetomidine

- selective alpha-2 adrenergic receptor agonist that offers potent sedative effects along with some analgesia
- Unlike most sedatives, it causes minimal respiratory depression

Side Effects:

- bradycardia (avoid in children taking cardiac medications)

Dosing:

- Intranasal Dose: 1.5 to 2 mcg/kg

Ketamine?



- Developed in the 1960s, it has become well established for many uses including analgesic, anesthetic, sedative and bronchodilator
- Provides sedation AND analgesia for moderately to severely painful procedures
- Metabolized by the liver
- Elimination $\frac{1}{2}$ life is 2-3 hours

Ketamine

Common adverse events:

Vomiting, emergence reaction

Absolute contraindications:

Age younger than 3 months or patients with known or suspected psychosis.

Side Effects:

- bradycardia (avoid in children taking cardiac medications)

Dosing:

- 3-6 mg/kg PO (usually mixed with 0.5 mg /kg of midazolam)

Case #1: “Jayden”

9 year old girl with Down Syndrome and ALL. Is happy in clinic, but the moment she is here port is to be accessed, she becomes very agitated, kicking and biting. It takes more than 3 staff and her parents to hold her still for port access.

Topical anesthetics (e.g. EMLA, ametop)

- Apply 30-45 minutes prior to access

Midazolam-oral

- 0.5 mg/kg 20-30 min prior to accessing

Ketamine- oral

- 3 mg/kg 20-30 min prior to accessing

Distraction techniques: games, Ipad, blowing bubbles

Case #2: “Alex”

11 year old with Osteosarcoma of the left femur. Following resection at the tertiary centre, he has large wound that requires dressing changes every 48 hours. Finds them VERY uncomfortable, cries and screams.

Morphine

- Oral dose 0.3 mg/kg

Diazepam

- Oral dose 1-2 mg

Case #2: “Javed”

5 year old with ALL. Port access goes fine, but puts up fight with attempts to DE-access (wont’ let anyone touch dressing, says he hates the ‘taste’ of line flush.

Midazolam

- Oral dose 0.5 mg/kg, 20-30 min prior to de-accessing OR

Fentanyl

- 1-1.5 mcg/kg intranasal

Distraction techniques



Deepa Kattail, MD

@DeepaKattail