HMC EM EVIDENCE-BASED CLINICAL ALGORITHM:
KETAMINE PROCEDURAL SEDATION & ANALGESIA

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Evidence basis:
- Bisanzo M *et al*. Nurse-administered ketamine sedation in an ED in rural Uganda. *Ann Emerg Med* 2012; 59: 268.
- Green S. Clinical practice guideline for ED ketamine dissociative sedation in children. *Ann Emerg Med* 2004; 44: 461.
- Auerbach P. Pain management and procedural sedation in children. *Tintinalli's Emergency Medicine*, 7th edition (www.accessem.com)
- Godwin S. ACEP Clinical Policy: Procedural sedation and analgesia in the ED. *Ann Emerg Med* 2005; 45: 177.
- Sener S. Ketamine with and without midazolam for ED sedation in adults: A randomized controlled trial. *Ann Emerg Med* 2011; 57: 109.

This EBCA:
- has been endorsed by HMC EM and other consultants for education and assistance with clinical practice in HMC's EDs.
- is intended to complement any related multispecialty Clinical Practice Guideline prepared as per HMC policy.
- is not presented as the binding "standard of care" but is rather a reference tool to inform clinical judgment.

Algorithm aim & applicability:
This algorithm applies to adult and pediatric ED patients in whom ketamine procedural sedation and analgesia (PSA) is being considered. The aim is not to dictate all aspects of ketamine PSA but rather to guide use of ketamine where appropriate. This EBCA is intended to complement – *and in any disagreement, yield to* – applicable HMC Policy (*e.g.*, *Moderate Sedation & Analgesia by Non-Anesthesiologists*).

***Ketamine contraindications (*Note*: Evidence for both strong and relative contraindications is non-definitive):**

Strong: Age < 3 months or active psychosis

Relative:
- Age 3 to 12 months or over 40 years
- Hx of airway instability or tracheal surgery/stenosis
- Procedures involving posterior pharyngeal stimulation
- Active pulmonary or upper airway infection or disease
- Ischemic cardiac disease or CHF
- ICP issues: Head injury, CNS mass, hydrocephalus
- Glaucoma or acute globe injury
- PMH: seizures, psychosis, porphyria, thyroid disease

****Adjuncts (may be added to ketamine syringe)**
- **Atropine** 0.01 mg/kg IV or IM (max 0.3 mg) *OR* **Glycopyrrolate** 5 mcg/kg IV or IM (max 250 mcg); (either is acceptable as antisialogogue)
- **Midazolam** 0.05 mg/kg IV or IM (2 mg max) reduces emergence reaction in adults; may also reduce post-PSA vomiting