

44. Procedural Sedation and Analgesia (PSA)

SEE THE EMERGENCY DEPARTMENT PROCEDURAL SEDATION AND ANALGESIA PHYSICIAN CHECKLIST

Procedural sedation is the technique of administering **sedatives or dissociative agents with or without analgesics** to induce a state that allows the patient to tolerate unpleasant procedures while maintaining cardiorespiratory function.

Potential indications for procedural in the ED: fracture reduction, joint reduction, incision and drainage, chest tube placement, electro cardioversion, upper endoscopy (with a gastroenterologist), foreign body removal, burn or wound debridement

Patient selection: A pre-procedural history and physical exam, as documented in the ED record, should reflect a focused evaluation of the airway, cardiovascular status, pulmonary status, allergies, and history of prior adverse reactions to sedatives or anaesthetics. PSA may not be ideal for patients with significant chronic morbidities e.g. sleep apnoea, COPD, low baseline oxygen saturations or blood pressure, or anatomic features that would make bag valve mask (BVM) ventilation or maintaining an airway difficult.

Preparation: Monitoring equipment (continuous telemetry, pulse oximetry, BP; consider continuous end tidal CO₂ monitoring), peripheral IV, Ringer's Lactate/Hartmann's Solution, medications for PSA, naloxone (if opiates are given), equipment for procedure (e.g. scalpel), team (minimum one practitioner for sedation, one for procedure – **ONE OF THEM MUST BE PROFICIENT IN AIRWAY MANAGEMENT**), airway equipment (oxygen source, nasal cannula/face mask, BVM, suction), rescue airway equipment (endotracheal tube, laryngoscope, LMA, nasal trumpet)

OBTAIN CONSENT for **ALL** PSA Procedures

Medication for PSA - give both an Analgesic AND a Sedative unless using Ketamine which is both

Drug	Dosage	Analgesic/ Sedative	Onset/Peak Effect	Duration of Action	Adverse Effects	Comments/Caveats
Ketamine	1 mg/kg IV over 30-60 seconds	Analgesic and Sedative	Onset 1min; Peak effect 1 min	5 - 10mins	Laryngospasm (0.3%), hyper salivation, vomiting, emergence reaction	Ketamine is preferred for patients with hemodynamic instability or renal insufficiency .
Fentanyl	0.5 – 3 µg/kg IV over 3-5mins	Analgesic	Immediate onset, Peak effect 2-3mins	30 - 45mins	Chest wall rigidity and respiratory depression may occur with rapid IV administration	Fentanyl is preferred for a rapid onset of analgesia in acutely distressed patients.
Midazolam	0.05 – 0.15mg/kg IV	Sedative	Onset 3-5 mins; Peak effect 15-30 mins	20 - 60mins	Respiratory depression, hypotension	Midazolam has a rapid onset and short duration and is classed as an ultra-short acting benzodiazepine and is 2 to 3 times more potent than diazepam , so can produce significant respiratory depression. Blood pressure decreases, and heart rate increases as compensation for a decreased SVR, although CO remains unchanged.

