IV ANTIEPILEPTICS – CONTINUOUS INFUSION (cIV)/ ANESTHETIC AGENTS (ADULTS)

NEUROCRITICAL CARE SOCIETY

	DOSING GUIDELINES	TITRATION (BREAKTHROUGH SEIZURES)	ADVERSE EFFECTS	METABOLISM	MAJOR DRUG INTERACTIONS	COMMENTS
MIDAZOLAM (MDZ)						
Mechanism: $GABA_A$ agonist **Rx Class:** Benzodiazepine	• Bolus: 0.2 mg/kg (max 10mg) » Admin rate: 2 mg/min • Continuous infusion: 0.05 –2 mg/kg/hr	• Bolus: 0.1-0.2 mg/kg • Titrate infusion: ↑by 0.05-0.1 mg/kg/hr q3-4h	• Hypotension • Resp. depression • Tachyphylaxis (with prolonged use)	• Metabolism: Hepatic CYP 3A4 substrate • Elimination: Renal (as active metabolite) • Half-life: 2-6 hours	• Strong 3A4 inducers: phenytoin, phenobarb » ↓serum MDZ levels	• Active metabolite (renal elimin) – both renal & hepatic impairment prolong clearance of MDZ • Very lipophilic – long half-life with prolonged use/high doses
PROPOFOL (PRO)						
Mechanism: $GABA_A$ agonist **Rx Class:** Gen. Anesthetic	• Bolus: 1-2 mg/kg • Continuous infusion: 20 – 250 mcg/kg/min	• Bolus: 1 mg/kg • Titrate infusion: ↑by 5-10 mcg/kg/min q5 min	• Hypotension • Bradycardia • Resp. depression • ↑Triglycerides • Propofol-related infusion syndrome (PRIS)	• Metabolism: Hepatic • Half-life: (Bi-phasic) • Initial half-live: ~10-30 mins • Terminal half-life: 4-7 hours	• No major drug interactions	• Formulated as lipid emulsion – 1.1 kcal/mL • Significant↑in half-life with prolonged infusion • Monitoring for PRIS: EKG, lactate, arterial blood gas (metabolic acidosis), creatinine kinase, triglycerides, LFTs, SCr, K+
PENTOBARBITAL (PTB)						
Mechanism: $GABA_A$ agonist **Rx Class:** Barbiturate	• Bolus: 5-15 mg/kg » Admin rate: ≤ 50 mg/min • Continuous infusion: 0.5 – 5 mg/kg/hr	• Bolus: 5 mg/kg • Titrate infusion: ↑by 0.5-1 mg/kg/hr q12h	• Hypotension • Resp. depression • Paralytic ileus • Infections • Metabolic acidosis • Hypothermia	• Metabolism: Hepatic • Half-life: 15-50 hours	• Strong CYP inducer – many potential interactions » ↓serum lamotrigine levels (2A6 substrate)	• Greatest cardiac depressant of cIV agents (may require vasopressor use) • Contains propylene glycol – may accumulate with prolonged use
KETAMINE (KET)						
Mechanism: NMDA antagonist **Rx Class:** Gen. Anesthetic	• Bolus: 0.5-4.5 mg/kg • Continuous infusion: 0.5 – 5 mg/kg/hr	• Bolus: 0.5 mg/kg • Titrate infusion: ↑by 1 mg/kg/hr q4h	• Hypertension • Tachycardia/arrhythmias • Hypersalivation • Emergence reaction	• Metabolism: Hepatic CYP 3A4, C29 substrate • Active metabolite: Norketamine • Half-life: 2-3 hours	• Strong 2C9 inducers: phenytoin, phenobarb » ↓serum KET levels	• May decrease need for vasopressor support • Does not depress respiratory drive

For reference information, see www.neurocriticalcare.org


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