

ICU AED's

Acute seizure management: Bolus Medications

Medication	Dose	Rate	Goal & Therapeutic Monitoring	Side Effects
LORazepam (Ativan)	0.1 mg/kg (max 4 mg/dose), may repeat second dose in 3-5min ORDER 2nd agent (fosphenytoin or PHENobarbital) if second benzodiazepine dose given independent of seizure cessation	IV Push IM	Seizure cessation	Respiratory depression, hypotension, sedation
Midazolam (Versed)	0.2 mg/kg (max 10 mg/dose)	IV Push IM	Seizure cessation	Respiratory depression, hypotension, sedation
Diazepam (Valium) <i>Second-line Agent</i>	0.2 mg/kg IV (max 10 mg/dose) 0.5 mg/kg PR (max 20mg/dose)	IV Push PR	Seizure cessation	Respiratory depression, hypotension, sedation

Acute seizure management (Status Epilepticus)

Medication	Dose	Rate	Goal & Therapeutic Monitoring	Side Effects
Fosphenytoin (Cerebyx)	20 mgPE/kg (max 1500 mg/dose) IV/IM load Consider starting maintenance dose of 5 mgPE/kg/day div BID (max 300 mgPE/day)	Administer at 1-3 mgPE/kg/min up to a maximum of 150 mg PE/minute	Level 2 hours after load Goal Phenytoin Trough: Total: 15-20— preferred Correct for low albumin Free: 1.5-2	Hypotension, arrhythmia, ataxia, nystagmus
PHENobarbital	20 mg/kg IV load (max 1000 mg/dose), may repeat 10 mg/kg/dose as needed Consider starting maintenance dose of 5 mg/kg/day divided BID	1 mg/kg/min (max 2 mg/kg/min) 30mg/min for infants & children 60mg/min for adults >60kg	Level 2 hrs after load Goal Trough: 20-40	Respiratory depression, hypotension, sedation, rash
Topiramate (Topamax)	10 mg/kg/day div BID PO x 2 days then decrease to 7 mg/kg/day div BID	Enteral only	Seizure cessation (best for infants and/or NAT) Obtain levels for infants, patient on phenobarbital and compound	Sedation, metabolic acidosis, kidney stone
Depakote (Depacon)	20 mg/kg IV load, may repeat 10 mg/kg x 1 (max 1g/day) Consider starting maintenance dose of 20 mg/kg/d divided BID	6 mg/kg/min	Level 2 hrs after load Goal Trough: 60-100	•Hypotension, hepatotoxicity, bleeding dysfunction, thrombocytopenia •Avoid in children < 2 years and with metabolic disorders (especially mitochondrial disorders) •No carbapenems (meropenem, ertapenem, imipenem) –lowers levels
Pyridoxine	100mg IV x 1 Maintenance dose: 50 - 100 mg/day	Oral preferred	Seizure cessation	Apnea, sedation, hypotonia
Lacosamide (Vimpat)	2 mg/kg/day divided BID, increase by 2 mg/kg/day Q week (max 8 mg/kg/day)	IV or Enteral	Seizure cessation	GI sx, ataxia, HA, arrhythmias, hypersensitivity syndrome, avoid in neonates
Felbamate	15mg/kg/day div TID, increase Q 3-7 days to 45 mg/kg/day (max 100 mg/kg/day)	Enteral Only	Seizure cessation, used in supra refractory status epilepticus (not first-line) Goal Level: 40-100	Aplastic anemia, hepatic failure, anorexia, insomnia, rash

Methylprednisolone	30 mg/kg/day (max 1 g/day) given IV daily x 3 days, then 1 mg/kg IV daily for 4 days (continue if + response)	IV	Seizure cessation	Hyperglycemia, hypertension, insomnia, delirium, immune suppression, GI bleeding
CBD Oil	5 mg/kg/day divided BID <i>To be obtained from parents. Attending physician must order as home supplement and okay to be given by RN per pharmacy recs.</i>	Enteral Only	Seizure cessation	Sedation

Seizure Prophylaxis

Medication	Loading Dose	Maintenance Dose
Leviteracetam (Keppra)	40 mg/kg IV load (max: 1000 – 3000 mg/dose)	30 mg/kg/day divided BID <i>Change patient to oral product (1:1) as soon as patient tolerates</i>

Infusions for Refractory Seizures

Medication	Bolus Dose	Maintenance Infusion Dose	Goal	Side Effects
Midazolam	<i>Initial bolus:</i> 0.1 mg/kg <i>Proceeding boluses:</i> match infusion rate to a max of 0.5 mg/kg	Start infusion at 0.1 mg/kg/hr • Increase infusion by 0.2 mg/kg/hr Q 15 minutes (max 2mg/kg/hour) Adult dosing: 0.05 mg/kg/hr – 0.6 mg/kg/hr	Seizure cessation	Respiratory depression, hypotension, sedation
PENTobarbital	Order 10 mg/kg, give 5 mg/kg over 15 min. If EEG not burst suppressed, give remaining 5 mg/kg	Start infusion at 1 mg/kg/hr • May increase infusion by 0.5 mg/kg/hr (max 5mg/kg/hr)	Burst suppression with IBI of 5-7 seconds	Respiratory depression, hypotension, sedation, immunosuppression, ileus
Propofol	3-5 mg/kg, repeat as needed	75-150 mcg/kg/min	Titrate to seizure cessation or burst suppression if seizures refractory	Hypotension, propofol infusion syndrome-limit duration as much as possible. Contraindicated in patients on ketogenic diet, if concern for metabolic disorder or egg allergy.
Valproic Acid	20 mg/kg IV load, may repeat 10 mg/kg x 1 (max 1g/day)	1 mg/kg/hr increase to max of 4 mg/kg/hr	Seizure cessation Level: 100-125	Pancreatitis, hepatotoxicity, thrombocytopenia
Ketamine	1-3 mg/kg slow IV push	2-5 mg/kg/hr (max 10mg/kg/hr)	Seizure cessation or burst suppression if seizures refractory	

AED PO to IV Conversions

Medication	PO to IV Conversion
Keppra	1:1
Vimpat	1:1
Phenytoin	1:1 Phenytoin 1 mg = fosphenytoin 1 mgPE
PHENobarbital	1:1
Valproic Acid	Give total daily dose divided q 6hrs
Benzodiazepines	1 mg of lorazepam = 0.25mg of clonazepam = 5 mg of diazepam