

Emergency Seizure Protocol

1. Stop the Seizure

- A. Up to 3 **diazepam boluses (1-2cc per 20 lbs each)**
 - 1) This will last up to 30 minutes
 - 2) IV or per rectum
 - 3) Place IV catheter now
- B. If no effect, **phenobarbital IV bolus (1-3 mg/lb)**
 - 1) May take up to 15-20 minutes to reach full effect
 - 2) Can give deep IM
- C. If no effect, **propofol low dose IV bolus (1-2 cc per 20 lbs IV)**
- D. If no effect, induce anesthesia
 - 1) Isoflurane
 - 2) **Propofol induction bolus (up to 3cc per 10 pounds IV to effect) and/or CRI**
 - 3) **Pentobarbital bolus (up to 3.3cc per 10 pounds IV to effect) or CRI**
 - give bolus over several minutes, very slowly

2. Provide Supportive Care

- A. Oxygen
 - 1) By face mask if conscious
 - 2) By tube if intubated
- B. IV fluids – place catheter
 - 1) 1 ml/lb per hour for maintenance
 - 2) Less if CHF
 - 3) More if dehydrated or shocky
- C. Monitor temperature
 - 1) Cool if needed
 - 2) Warm with time (anticonvulsant therapy can drop temp)

3. Initiate Diagnostics

- A. Draw blood
 - 1) PCV/total solids
 - 2) Check for lipemia – TG/chol
 - 3) Glucose, calcium
 - 4) If already taking bromide or phenobarbital, drug levels
 - prior to emergency phenobarbital administration if possible
- B. Get pre-fluid therapy urinalysis

4. Prevent further seizures

- A. Start **PO phenobarbital 1-3 mg/lb**
 - 1) if not already given as a bolus
 - 2) If conscious enough to swallow
 - 3) Can give IM if can't swallow
- B. If on anticonvulsants, consider starting new drug
 - 1) Bromide can be given rectally if can't swallow

2) May cause transient diarrhea

5. Treat further seizures

- A. More boluses if sufficient time has passed
- B. Anticonvulsant CRI if recent boluses ineffective
 - 1) Diazepam CRI first
 - 2) Then add phenobarbital or low-dose propofol CRI
- C. If still ineffective, consider anesthetic induction
 - 1) Propofol bolus induction
 - i. Maintain on isoflurane or propofol CRI
 - 2) Or pentobarbital bolus induction
 - i. Maintain on series of pentobarbital boluses or CRI

6. Monitor and recover

- A. temperature
- B. Pulse oximetry
- C. Respiratory and heart rate
- D. Turn every 4 hours if laterally recumbent
- E. Express bladder as needed or catheterize with closed collection system
- F. If seizures recur on recovery, repeat the process
- G. Some patients need to be sedated for 24-48 hours
- H. Tremors on recovery from propofol anesthesia can be confused with seizures

Continuous Rate Infusion (CRI) Recipes				
Drug	Drug Concentration	Fluid Volume (D5W or PSS)	cc Drug Added	Fluid Rate
Diazepam (0.5-2 mg/kg/hr)	5 mg/ml	50 ml	4.5-18cc	0.5 ml/lb/hr
			2.2-9cc	1 ml/lb/hr
			1.1-4.5cc	2 ml/lb/hr
		100 ml	9-36cc	0.5 ml/lb/hr
			4.5-18cc	1 ml/lb/hr
			2.2-9cc	2 ml/lb/hr
		150 ml	13.5-54cc	0.5 ml/lb/hr
			6.8-27cc	1 ml/lb/hr
			3.4-13.5cc	2 ml/lb/hr
		250 ml	22.5-90cc	0.5 ml/lb/hr
			11.2-45cc	1 ml/lb/hr
			5.6-22.5cc	2 ml/lb/hr
Phenobarbital (2-4 mg/kg/hr)	30 mg/ml	50 ml	3-6cc	0.5 ml/lb/hr
			1.5-3cc	1 ml/lb/hr
			0.8-1.5cc	2 ml/lb/hr
		100 ml	6-12cc	0.5 ml/lb/hr
			3-6cc	1 ml/lb/hr
			1.5-3cc	2 ml/lb/hr
		150 ml	9-18cc	0.5 ml/lb/hr
			4.5-9cc	1 ml/lb/hr
			2.2-4.5cc	2 ml/lb/hr
		250 ml	15-30cc	0.5 ml/lb/hr
			7.5-15cc	1 ml/lb/hr
			3.8-7.5cc	2 ml/lb/hr
	60 mg/ml	50 ml	1.5-3cc	0.5 ml/lb/hr
			0.8-1.5cc	1 ml/lb/hr
			0.4-0.8cc	2 ml/lb/hr
		100 ml	3-6cc	0.5 ml/lb/hr
			1.5-3cc	1 ml/lb/hr
			0.8-1.5cc	2 ml/lb/hr
		150 ml	4.5-9cc	0.5 ml/lb/hr
			2.2-4.5cc	1 ml/lb/hr
			1.2-2.2cc	2 ml/lb/hr
		250 ml	7.5-15cc	0.5 ml/lb/hr
			3.8-7.5cc	1 ml/lb/hr
			1.9-3.8cc	2 ml/lb/hr
65 mg/ml	50 ml	1.4-2.8cc	0.5 ml/lb/hr	
		0.7-1.4cc	1 ml/lb/hr	
		0.3-0.7cc	2 ml/lb/hr	
	100 ml	2.8-5.5cc	0.5 ml/lb/hr	
		1.4-2.8cc	1 ml/lb/hr	
		0.7-1.4cc	2 ml/lb/hr	

Continuous Rate Infusion (CRI) Recipes				
Drug	Drug Concentration	Fluid Volume (D5W or PSS)	cc Drug Added	Fluid Rate
Phenobarbital (2-4 mg/kg/hr)	65 mg/ml	150 ml	4.2-8.3cc	0.5 ml/lb/hr
			2.1-4.2cc	1 ml/lb/hr
			1-2.1cc	2 ml/lb/hr
		250 ml	6.9-13.8cc	0.5 ml/lb/hr
			3.5-6.9cc	1 ml/lb/hr
			1.7-3.5cc	2 ml/lb/hr
	130 mg/ml	50 ml	0.7-1.4cc	0.5 ml/lb/hr
			0.3-0.7cc	1 ml/lb/hr
			0.2-0.3cc	2 ml/lb/hr
		100 ml	1.4-2.8cc	0.5 ml/lb/hr
			0.7-1.4cc	1 ml/lb/hr
			0.3-0.7cc	2 ml/lb/hr
		150 ml	2.1-4.2cc	0.5 ml/lb/hr
			1-2.1cc	1 ml/lb/hr
			0.5-1cc	2 ml/lb/hr
		250 ml	3.5-6.9cc	0.5 ml/lb/hr
			1.7-3.5cc	1 ml/lb/hr
			0.9-1.7cc	2 ml/lb/hr
		500 ml	6.9-13.8cc	0.5 ml/lb/hr
			3.5-6.9cc	1 ml/lb/hr
			1.7-3.5cc	2 ml/lb/hr
Propofol Anticonvulsant (0.1-0.6 mg/kg/hr)	10 mg/ml	50 ml	0.4-2.7cc	0.5 ml/lb/hr
			0.2-1.4cc	1 ml/lb/hr
			0.1-0.7cc	2 ml/lb/hr
		100 ml	0.9-5.4cc	0.5 ml/lb/hr
			0.4-2.7cc	1 ml/lb/hr
			0.2-1.4cc	2 ml/lb/hr
		150 ml	1.4-8.1cc	0.5 ml/lb/hr
			0.7-4cc	1 ml/lb/hr
			0.3-2cc	2 ml/lb/hr
		250 ml	2.2-13.5cc	0.5 ml/lb/hr
			1.1-6.8cc	1 ml/lb/hr
			0.6-3.4cc	2 ml/lb/hr
		500 ml	4.5-27cc	0.5 ml/lb/hr
			2.2-13.5cc	1 ml/lb/hr
			1.1-6.8cc	2 ml/lb/hr
		1000 ml	9-54cc	0.5 ml/lb/hr
			4.5-27cc	1 ml/lb/hr
			2.2-13.5cc	2 ml/lb/hr

Continuous Rate Infusion (CRI) Recipes				
Drug	Drug Concentration	Fluid Volume (D5W or PSS)	cc Drug Added	Fluid Rate
Pentobarbital (0.5-4 mg/kg/hr)	50 mg/ml	50 ml	0.4-3.6cc	0.5 ml/lb/hr
			0.2-1.8cc	1 ml/lb/hr
			0.1-0.9cc	2 ml/lb/hr
		100 ml	0.9-7.2cc	0.5 ml/lb/hr
			0.4-3.6cc	1 ml/lb/hr
			0.2-1.8cc	2 ml/lb/hr
	150 ml	1.4-10.8cc	0.5 ml/lb/hr	
		0.7-5.4cc	1 ml/lb/hr	
		0.3-1.4cc	2 ml/lb/hr	
	250 ml	2.2-18cc	0.5 ml/lb/hr	
		1.1-9cc	1 ml/lb/hr	
		0.6-4.5cc	2 ml/lb/hr	

Continuous Rate Infusion (CRI) Infusion Rates									
Drug	Drug conc.	Body wt.	Max ml per hour	Maximum Drops/minute		Minimum Seconds/drop			
				15 drops/ml	60 drops/ml	15 drops/ml	60 drops/ml		
Propofol Anesthesia (6 mg/kg/hr)	10 mg/ml	0-1 lbs	0-0.27						
		1-2 lbs	0.27-0.54						
		2-3 lbs	0.54-0.82						
		3-4 lbs	0.82-1.1						
		4-5 lbs	1.1-1.4						
		5-6 lbs	1.4-1.6						
		6-7 lbs	1.6-1.9						
		7-8 lbs	1.9-2.2						
		8-9 lbs	2.2-2.4						
		9-10 lbs	2.4-2.7						
		10-12 lb	2.7-3.3			3		18-22	
		12-14 lb	3.3-3.8			3-4		16-18	
		14-16 lb	3.8-4.4			4		14-16	
		16-18 lb	4.4-4.9			4-5		12-14	
		18-20 lb	4.9-5.5			5		11-12	
		20-23 lb	5.5-6.3			5-6		9-11	
		23-26 lb	6.3-7.1			6-7		8-9	
		26-29 lb	7.1-7.9			7-8		7-8	
		29-32 lb	7.9-8.7			8-9		7	
		32-36 lb	8.7-9.8			9-10		6-7	
		36-40 lb	9.8-10.9			10-11		5-6	
		40-45 lb	10.9-12.3			11-12		5	
		45-50 lb	12.3-13.6			3	12-14	18-19	4-5
		50-55 lbs	13.6-15			3	13-15	16-18	4
		55-60 lbs	15-16.4			3-4	15-16	14-16	3-4
		60-65 lbs	16.4-17.7			4	16-18	13-14	3
		65-70 lbs	17.7-19.1			4-5	18-19	12-13	3
70-80 lbs	19.1-21.8			5	19-22	11-12	3		
80-90 lbs	21.8-24.5			5-6	22-24	10-11	2-3		
90-100 lbs	24.5-27.3			6	24-27	9-10	2		
100-110 lbs	27.3-30			6-7	27-30	8-9	2		
110-120 lbs	30-32.7			7-8	30-33	7-8	2		