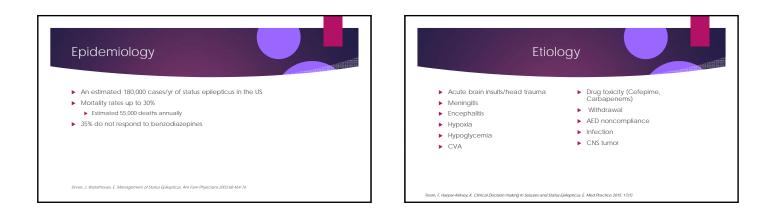
An Evidence-Based Framework for the Treatment of Status Epilepticus

NEUROCRITICAL CARE PHARMACY SPECIALIST

Disclosures

- I do not have (nor does any immediate family member have) a vested interest in or affiliation with any corporate organization offering financial support or grant monies for this continuing education activity, or any affiliation with an organization whose philosophy could potentially bias my presentation.
- There was no Financial Support obtained for this CPE Activity





Classification of Status Epilepticus (SE)

Teran, F, Harper-Kirksey, K. Clinical Decision making In Selzures and Status Epilepticus. E. Med Practice 2015; 17(1)

- Generalized convulsive status epilepticus (GCSE)
- Generalized non-convulsive status epilepticus
- Simple partial status epilepticus
- Complex partial status epilepticus

 Characterization Convulsive Status Epilepticus (GCSE)

 Phase 1

 Phase 2

 Photic clonic Christing

 Phase 2

 Photic clonic Christing

 Phase 1

 Phase 2

 Photic clonic Christing

 Phase 3

 Photic clonic Christing

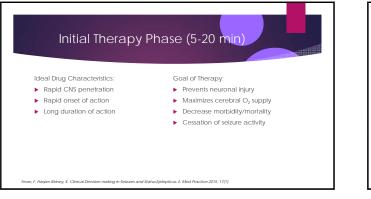
 Phase 1

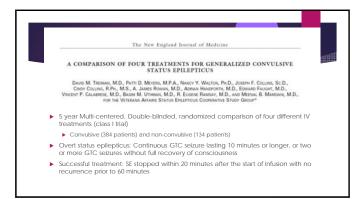
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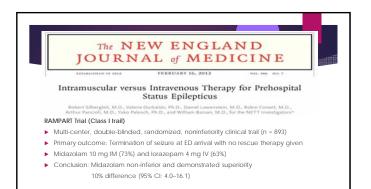


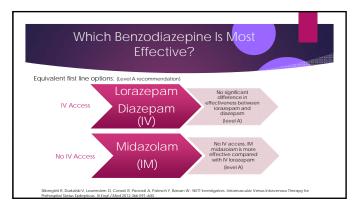






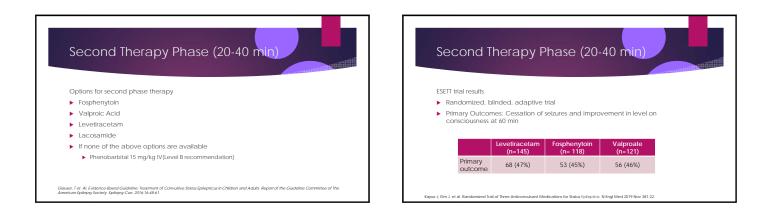




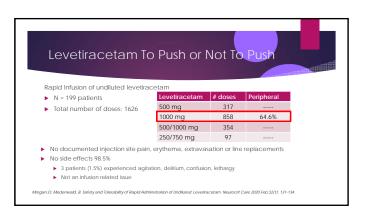


Initia	al Therapy Phase	e (5-20 min)
Drug	Loading Dose (LD)	Notes
Lorazepam	IV: 0.1 mg/kg (max 4 mg/dose) May repeat once in 5-10 min	Longer anticonvulsant duration Direct glucuronidation Preferred IV agent Respiratory depression Hypotension
Diazepam	IV: 0.15-0.2 mg/kg (max 10 mg/dose) May repeat once in 5-10 min	 Sedation (active metabolites) Rectal formulation available Respiratory depression Hypotension
Midazolam	IM: 5-10 mg IM Single dose	 DOC for IM administration Intranasal/buccal formulations Respiratory depression Less hypotension

Т	ime Dependent Treatment Strategy
•	Stabilize Phase (0-5 min)
۲	Initial Therapy Phase (5-20 min)
►	Second Therapy Phase (20-40 min)
•	Third Therapy Phase (40+ min of seizure activity)
	Glauser, Tet, Al Evidence-Based Guideline: Treatment of Convulsive Status Episeblicus in Children and Adults. Report of the
	Glauser, T.et. Al. Evidence-Based Guideline: Treatment of Convulsive Status Epilepticus in Children and Adults. Report of the Guideline Committee of The American Epilepsy Society. Epilepsy Curr. 2016;16:48-61

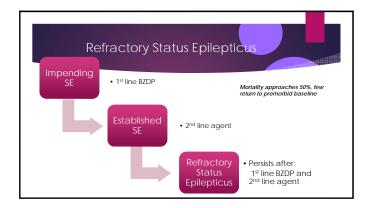


Second Phase (40+ min)				
Drug	Loading Dose	Time to Peak	ADE / Notes	
Fosphenytoin	20 mg PE/kg IV	30-60 min	Max infusion rate 150 mg PE/min Hypotension Cardiac arrhythmias Many drug interactions	
Lacosamide	400 mg IV	End of infusion	Cardiac arrhythmiasRequires renal dose adjustment	
Levetiracetam*	60 mg/kg IV Max dose: 4500 mg	5-30 min	Minimal drug interactionRequires renal dose adjustment	
Valproic Acid	40 mg/kg IV Max dose: 6000 mg	End of infusion (60 min)	Hepatotoxic Pancreatitis Teratogenic Monitor BP	



Laco	osamide	e to Push	or Not t	to Pust	
IV Push Lacos	amide Safety o	utcomes			
▶ N = 166					
 Single cen 	iter retrospectiv	e cohort study			
No infusion	n site reactions i	reported			
		IV Push (n = 78)	IVPB (n= 88)	P value	
	Hypotension	8 (10.3%)	7	0.61	
	Bradycardia	2 (2.6%)	2	>0.99	
	Lowest SBP	115 (21)	116 (24)	0.71	
	Lowest HR	74 (16)	78 (18)	0.14	
Davidson KE, Neural	Latal Safabi and Effica	cy of Intravenous Push Laco	samida Administration 1	Neurocrit Care, 2016	Par

	proving Time to Administration
Lac	cosamide
	 All doses of lacosamide are <u>undiluted</u> via IV push
	 Vials available in automated dispensing cabinet
Lev	retiracetam
	All doses of levetiracetam < 1000 mg are given <u>undiluted</u> via IV push
	 Levetiracetam doses > 1000 mg
	Consecutive IV push doses of 1000 mg are given to equate total loading dose
	 Vials available in automated dispensing cabinet







Third Phase (40+ min) continued				
Drug	Loading Dose	Continuous Infusion rate	Notes	
Propofol	1-2 mg/kg IV (up to 5 mg/kg)	20 mcg/kg/min Titrate 5-10 mcg q5min Range: 30-200 mcg/kg/min	 Hypotension w/ LD Requires mech ven PRIS: >80 mcg/kg/minute for >48 hr 	
Midazolam	0.2 mg/kg IV (max 10 mg)	0.05-2 mg/kg/hr Titrate 0.051mg q3-4 hrs	TachyphylaxisNO propylene glyco	
Pentobarbital	5-15 mg/kg IV (max rate 50 mg/min)	0.5–10 mg/kg/hr Titrate 0.5-1 mg q12h	 Elimination half life 15-60 hrs Hypotension Myocardial depression 	

Molecular Changes in Prolonged SE

Number and activity of GABA receptors gradually decrease
 BZDP

- Upregulation of p-glycoprotein molecular transporters at the level of the BBB occurs
 Phenytoin, phenobarbital
- Numbers and activities of glutamatergic NMDA receptors increase

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▶ Ketamine

Examine Core Refractory Steps
Loading dose: 3 mg/kg IV (may repeat 1.5 mg/kg)
Continuous infusion: 0.5-2 mg/kg/hr titrate (range 1-10 mg/kg/hr)
Continuous infusion: 0.5-2 mg/kg/hr titrate (range 1-10 mg/kg/hr)<



