 <p style="text-align: center;">C R E D I T • V A L L E Y THE CREDIT VALLEY HOSPITAL</p>	CLINICAL PRACTICE GUIDELINE	PROFESSIONAL PRACTICE
TITLE: Status Epilepticus and Refractory Status Epilepticus, Management of Adult and Paediatric Patients		
DATE OF ISSUE: 2005 10	PAGE 1 OF 6	NUMBER: CPG 5-4
SUPERCEDES: 2005 06	ISSUED BY: _____ TITLE: Chief of Medical Staff	
	ISSUED BY: _____ TITLE: President	

Purpose:

To provide a guideline to assist physicians in the emergency management of patients with acute status epilepticus and refractory status epilepticus, both adults and paediatrics.

Definition of Status Epilepticus (SE):

Adults

Continuous seizures lasting at least 5 minutes or two or more discrete seizures between which there is incomplete recovery of consciousness. Serial seizures are two or more seizures occurring over a relatively brief period (i.e., minutes to many hours), but with the patient regaining consciousness between the seizures. (1)

Paediatrics

Single generalized (tonic-clonic, myoclonic, tonic, or absence) or focal (clonic or jacksonian) seizure lasting 30 min or longer; includes any series of seizures without intervening return of consciousness with duration of greater than 30 min.(2)

Generalized convulsive status includes tonic-clonic, tonic, clonic, or myoclonic SE, although the majority of cases consist of recurrent tonic-clonic seizures.

Nonconvulsive SE includes absence and complex partial SE, both of which are characterized by clouding of consciousness with or without minor motor manifestations. With nonconvulsive SE the patient may appear confused, dazed or unable to speak. The patient may seem to comprehend but is unable to respond appropriately. The patient may appear to be comatose with or without subtle convulsive movements such as rhythmic muscle twitches or tonic eye deviation (also called Subclinical Status). The EEG shows continuous ictal discharges. An EEG is usually required to distinguish between the two. Any type of simple partial seizure, including seizures with sensory, motor, language, autonomic, or psychic manifestations, can evolve into SE. (3)

Definition of Refractory Status Epilepticus (RSE):

Adults

SE that does not respond to a benzodiazepine and phenytoin. (1)

Paediatrics

Persisting seizures. (2)

Etiology of Status Epilepticus in Urban Hospital Practice (4)

Etiology	Percent of cases
Antiepileptic medication non-compliance	26
Alcohol related	24
Drug toxicity*	10
CNS infection**	8
Cerebral tumour	6
Trauma	5
Refractory epilepsy	5
Stroke (infarct or hemorrhagic)	4
Metabolic abnormalities***	4
Cardiac arrest	4
Idiopathic	5

*may include tricyclic antidepressants, cocaine, opiates, ethylene glycol, methanol, phenothiazines, salicylates, carbon monoxide

**such as bacterial meningitis, viral encephalitis including West Nile

***such as hyponatremia, hypercalcemia, hypocalcemia, hypoglycemia, organ dysfunction such as hepatic, renal, hypercarbic respiratory failure

Management

Adults

Emergency Management of Acute Status Epilepticus – Adults – see Appendix A

Refractory Status Epilepticus – ICU Management – Adults – see Appendix B

Paediatrics

Emergency Management of Acute Status Epilepticus – Paediatrics – see Appendix C

Evaluation:

Following implementation, a staff survey will be conducted to determine if staff are aware of the guideline.

Approval:

General Medicine Steering Committee – May 19, 2005
ER Steering Committee – June 21, 2005
Paediatrics Steering Committee -
CQCC – June 15, 2005 (FYI)
PPAC – June 27, 2005 (FYI)
MAC – Dec 5, 2005 (FYI)

Developed by:

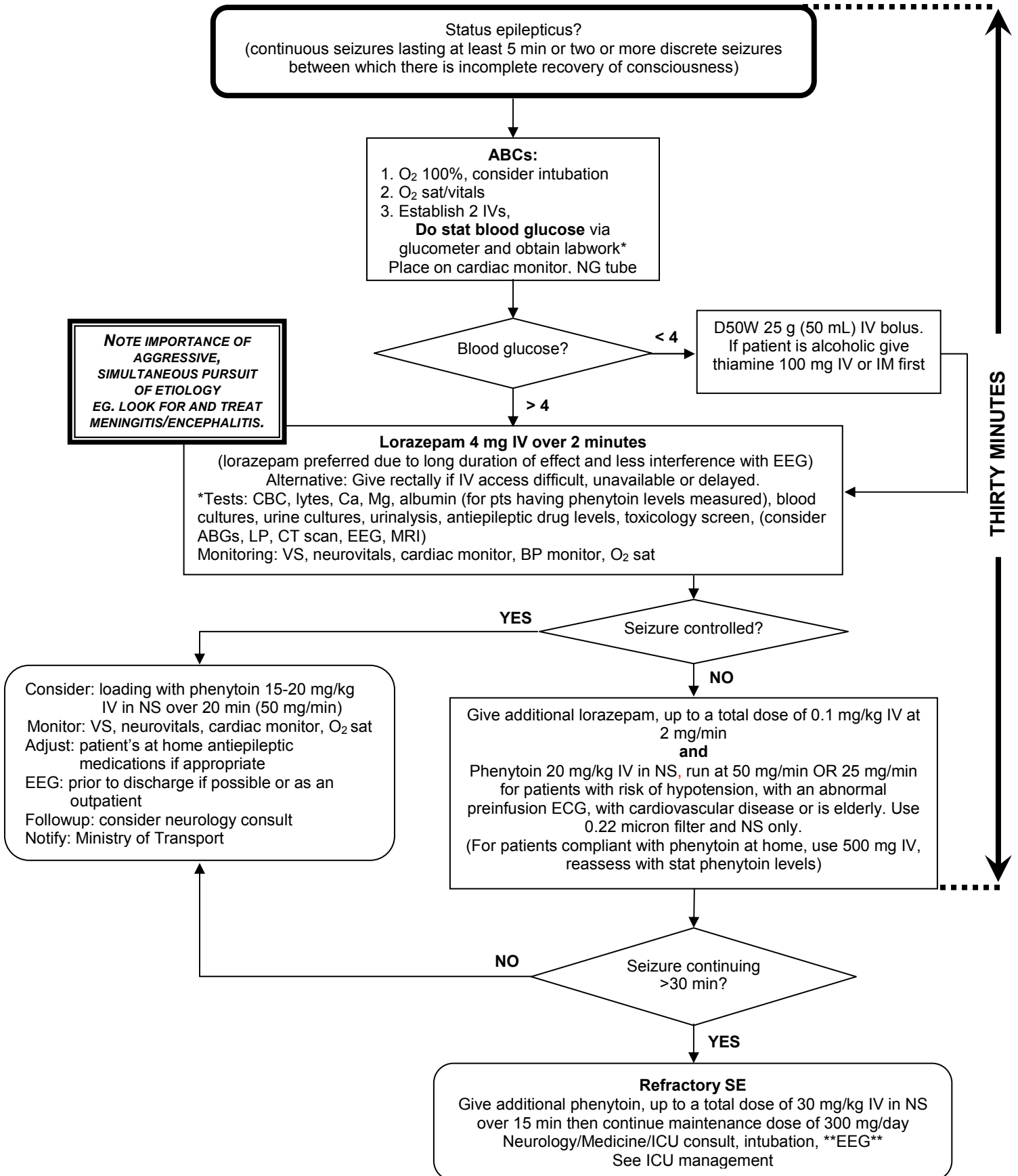
ER Steering and General Medicine Subcommittee
Leaders – ER physician, Intensivist, Neurologist
Team Members – Neurology Nurse Specialist, General Medicine Quality Facilitator, ICU Pharmacist, EEG technologist, Psychologist, Paediatrics Nurse Educator, Chief of Paediatrics, Paediatric Pharmacist, ER Nurse Educator, ER Pharmacist, ICU Nurse Educator

References:

1. Lowenstein DH, Alldredge BK. Status Epilepticus. N Engl J Med 1998; 338: 970-976.
2. Cheng A, Williams BA, Sivarajan BV (editors), The Hospital for Sick Children's Handbook of Paediatrics, 10th edition (2003), The Hospital for Sick Children, Toronto, Canada, Elsevier Canada.
3. Goetz, Textbook of Clinical Neurology, 2nd edition, 2003 Elsevier, Chapter Epilepsies and Epileptic Syndromes.
4. Bassin S, Smith TL, Bleck TP. Clinical review: status epilepticus. Critical Care 2002; 6: 137-142.
5. Vasile B, Rasulo F, Candiani A, Latronico N. The pathophysiology of propofol infusion syndrome: a simple name for a complex syndrome. Intensive Care Med; 29: 1417-1425.
6. Giroud M, Gras D, Escousse A et al. Use of injectable valproic acid in status epilepticus: a pilot study. Drug Invest 1993; 5:154-159.
7. Wheless JW, Vazquez BR, Kanner AM et al. Rapid infusion with valproate sodium is well tolerated in patients with epilepsy. Neurology 2004; 63 (8): 1-5.

Appendix A

Emergency Management of Acute Status Epilepticus ADULTS



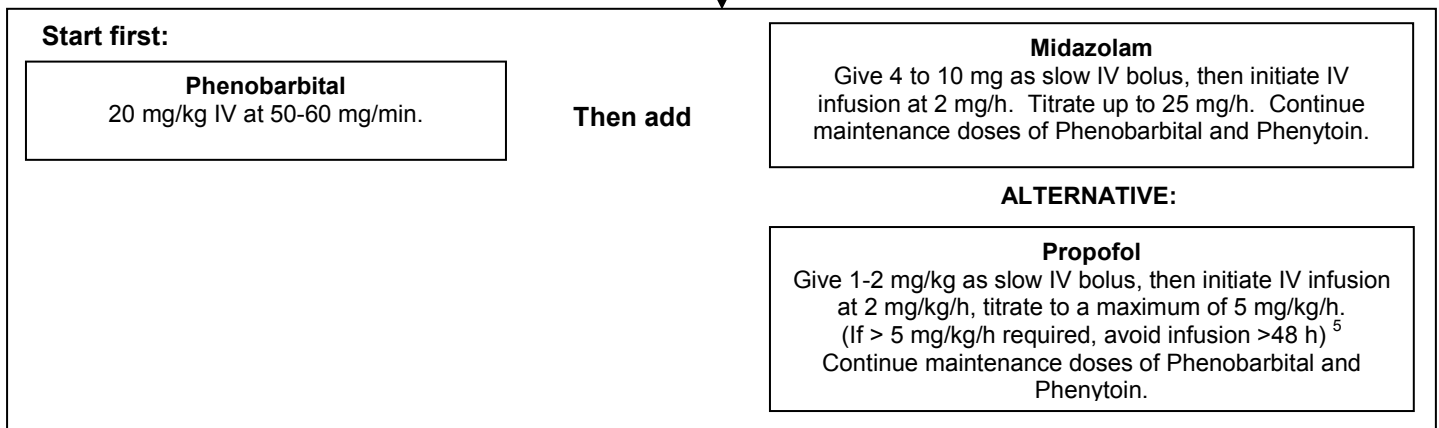
Appendix B

Refractory Status Epilepticus – ICU Management

ADULTS

Refractory SE?
(Status epilepticus that does not respond to a benzodiazepine and phenytoin)

1. Intubate and ventilate patient, admit to ICU
2. Place EEG monitor (consider continuous)
3. Note importance of aggressive, simultaneous pursuit of etiology eg. look for and treat meningitis/encephalitis.
4. Monitor appropriate drug levels.
5. Use IV fluids and low-dose dopamine to treat hypotension. If necessary, add low-dose dobutamine. Decrease dosage of midazolam or propofol if there are any signs of cardiovascular compromise.
6. Consult Neurology



Titrate to cessation of seizures clinically and electrographically.

Seizures continuing?

NO

Following control of seizures and prior to discharge:
- consult neuropsychology
- notify Ministry of Transport

YES

Consider addition of Pentobarbital (Nembutal)*
10-15 mg/kg IV over 1 h then 0.5-1 mg/kg/h

Valproic acid* may be considered. Give 15 mg/kg IV bolus (in 25 mL NS over 5 min) then 30 min following bolus, start 1 mg/kg/h IV infusion (6,7)

Consider surgical options, contact Toronto Western Hospital or Sunnybrook

*subject to availability

1. Lowenstein DH, Alldredge BK. Status Epilepticus. N Engl J Med 1998; 338: 970-976.
5. Vasile B, Rasulo F, Candiani A, Latronico N. The pathophysiology of propofol infusion syndrome: a simple name for a complex syndrome. Intensive Care Med; 29: 1417-1425.
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Appendix C

Emergency Management of Acute Status Epilepticus PAEDIATRICS

