

Status Epilepticus Care Guideline

Inclusion Criteria: Children \geq 1 month of age who have been seizing for $>$ 5 minutes. (Status epilepticus is defined as a seizure that lasts for $>$ 30 minutes or recurrent seizures without full recovery between seizures for $>$ 30 minutes)

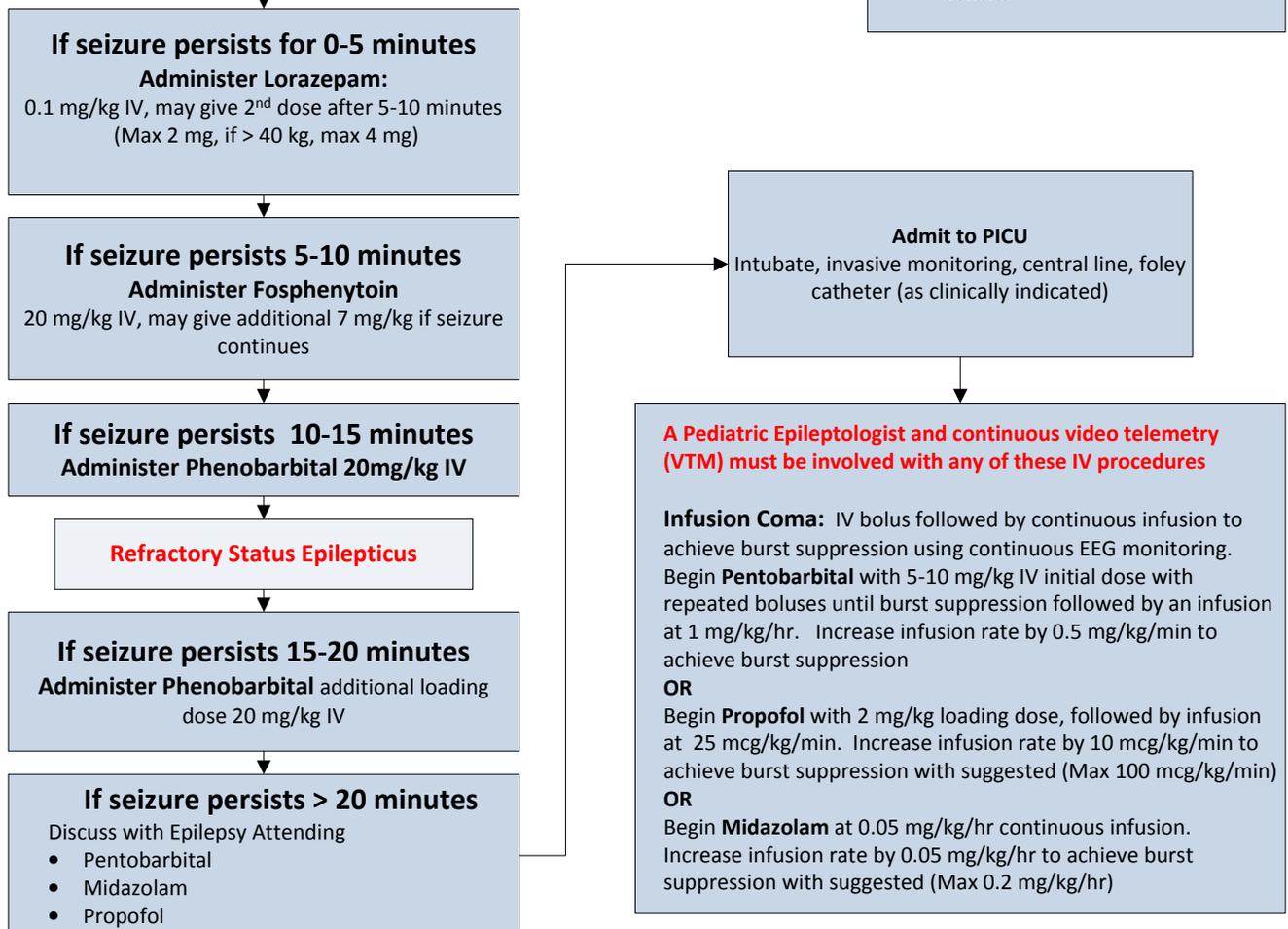
Exclusion Criteria: Children $<$ 1 month of age

Immediate Assessment/Intervention

- Initiate airway support (insert nasal airway or intubate if necessary), begin nasal oxygen
- Vital signs, temperature, continuous cardio-respiratory monitor
- Obtain history, perform neuro exam
- Establish IV line, begin isotonic saline infusion at a low rate
- Consider 50% glucose IV and Thiamine IV or IM in an older child
- Lab (prior to any antiepileptic drug, if possible): electrolytes, CMP, magnesium, toxicology screen, ABG, blood glucose (do not delay antiepileptic drug administration)
- If patient is already on antiepileptic drug obtain STAT level of the drug then load with IV form (if IV form is available)
- Remain NPO and initiate seizure precautions
- If new onset, consider basic metabolic work up: urine organic acids qualitative, serum acetoacetate, lactic acid, pyruvate level, carnitine free and total, acylcarnitine profile
- Notify Neurology as soon as possible, general neurology team will notify Epilepsy attending to start VTM if indicated
- Arrange for PICU admission

Recommendations/Considerations

- Most seizures in children $>$ 5 minutes will last for at least 30 minutes; therefore it is recommended that seizures lasting $>$ 5 minutes be treated as status epilepticus
- The underlying cause of status epilepticus is considered to be the most important determinant of outcome; the morbidity may be less in those with febrile and unprovoked status epilepticus
- Children treated more aggressively and those with shorter episodes of status epilepticus are less likely to develop subsequent neurological deficits



References

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- Agarwal P, et al. Randomized Study of Intravenous Valproate and Phenytoin in Status Epilepticus. *Seizure*, 2007; 16: 527-532. <http://www.ncbi.nlm.nih.gov/pubmed/17616473>
- Boggs JG. Mortality Associated with Status Epilepticus. *Epilepsy Currents*, 2004; 4(1):25-27. <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC324580/>
- Chapman MG, et al. Status Epilepticus. *Anaesthesia* 2001; 56: 648-659. <http://onlinelibrary.wiley.com/doi/10.1046/j.1365-2044.2001.02115.x/abstract>
- Chauré-Raspall M, et al. The Epidemiology of Convulsive Status Epilepticus in Children: a Critical Review. *Epilepsia*, 2007; 48(9): 1652-1663. <http://onlinelibrary.wiley.com/doi/10.1111/j.1528-1167.2007.01175.x/abstract>
- Chin RFM, et al. A Systematic Review of the Epidemiology of Status Epilepticus. *European Journal of Neurology*, 2004; 11: 801-810. <http://onlinelibrary.wiley.com/doi/10.1111/j.1468-1331.2004.00943.x/abstract>
- Garzon E, et al. A Reexamination of PLEDS in the Setting of Status Epilepticus. *Neurology* 2001; 57: 1175-1183. <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC321033/>
- Kahriman M, et al. Efficacy of Topiramate in Children with Refractory Status Epilepticus. *Epilepsia*, 2003; 44(10); 1353-1356. <http://onlinelibrary.wiley.com/doi/10.1046/j.1528-1157.2003.11803.x/abstract>
- Karasalihoglu S, et al. Risk Factors of Status Epilepticus in Children. *Pediatrics International*, 2003; 45: 429-434. <http://onlinelibrary.wiley.com/doi/10.1046/j.1442-200X.2003.01758.x/abstract>
- Lambrechtsen F, et al. Aborted and Refractory Status Epilepticus in Children: a Comparative Analysis. *Epilepsia*, 2008; 49(4): 615-625. <http://onlinelibrary.wiley.com/doi/10.1111/j.1528-1167.2007.01465.x/abstract>
- Lee J, Huh L, et al. Guideline for the Management of Convulsive Status Epilepticus in Infants and Children. *BC Medical Journal*, July/August, 2011, 53(6): 279-285. <http://www.bcmj.org/articles/guideline-management-convulsive-status-epilepticus-infants-and-children>
- Logroscino G, et al. Time Trends in Incidence, Mortality, and Case-fatality After First Episode of Status Epilepticus. *Epilepsia* 2001; 42: 1031-1035. <http://onlinelibrary.wiley.com/doi/10.1046/j.1528-1157.2001.0420081031.x/abstract>
- Lowenstein DH. Aborted and Refractory Status Epilepticus: an Update. *Epilepsia*, 2006; 47s1: 35-40. <http://onlinelibrary.wiley.com/doi/10.1111/epi.2006.47.issue-s1/issuetoc>
- Lowenstein DH, Alldredge BK. Status Epilepticus. *New England Journal of Medicine*, 1998; 338 (14): 970-976. <http://www.nejm.org/doi/full/10.1056/NEJM199804023381407>
- Mazarati AM, et al. Time-dependent Decrease in the Effectiveness of Antiepileptic Drugs During the Course of Self-sustaining Status Epilepticus. *Brain Research* 1998; 814:179-185. <http://www.sciencedirect.com/science/article/pii/S0006899398010804>
- Miller LJ, et al. Propofol for the Long-term sedation of a critically ill patient. *American Journal of Critical Care* 1998; 7 (1): 73-76. <http://ajcc.aacnjournals.org/content/7/1/73.abstract>

- Morrison G, et al. High-Dose Midazolam Therapy for Refractory Status Epilepticus in Children. *Intensive Care Medicine*, 2006; 32:2070-2076. http://icmjournal.esicm.org/journals/abstract.html?v=32&j=134&i=12&a=362_10.1007_s00134-006-0362-8&doi=
- Ozdemir D, et al. Efficacy of Continuous Midazolam Infusion and Mortality in Childhood Refractory Generalized Convulsive Status Epilepticus. *Seizure*, 2005; 14: 129-132. <http://www.sciencedirect.com/science/article/pii/S1059131104002274>
- Parviainen I, et al. Propofol in the Treatment of Refractory Status Epilepticus. *Intensive Care Medicine*, 2006; 32: 1075-1079. http://icmjournal.esicm.org/journals/abstract.html?v=32&j=134&i=7&a=154_10.1007_s00134-006-0154-1&doi=
- Perry MS, et al. Topiramate Loading for Refractory Status Epilepticus in Children. *Epilepsia*, 2006 47(6): 1070-1071. <http://onlinelibrary.wiley.com/doi/10.1111/j.1528-1167.2006.00564.x/abstract>
- Ramsay PE. Treatment of Status Epilepticus. *Epilepsia* 1993; 34 (Suppl. 1): S71-81. <http://onlinelibrary.wiley.com/doi/10.1111/j.1528-1157.1993.tb05908.x/abstract>
- Riviello JJ, Hirtz AD, et al. Practice Parameter: Diagnostic Assessment of the Child with Status Epilepticus, an Evidence-Based Review: Report of the Quality Standards Subcommittee of the American Academy of Neurology and the Practice Committee of the Child Neurology Society. *Neurology*, 2006; 67: 1542-1550. <http://www.neurology.org/cgi/content/full/67/9/1542>
- Rossetti AO, et al. Propofol Treatment of Refractory Status Epilepticus: a Study of 31 Episodes. *Epilepsia*, 2004; 45(7): 757-763. <http://onlinelibrary.wiley.com/doi/10.1111/j.0013-9580.2004.01904.x/abstract>
- Sahin M, et al. Outcome of Severe Refractory Status Epilepticus in Children. *Epilepsia* 2001; 42 (11): 1461-67. <http://onlinelibrary.wiley.com/doi/10.1046/j.1528-1157.2001.21301.x/abstract>
- Sankar R. Neonatal Seizures: After All These Years We Still Love What Doesn't Work. *Neurology*, 2005; 64: 776-777. <http://www.mdconsult.com/das/article/body/325810906-2/jorg=journal&source=&sp=15360162&sid=0/N/461012/1.html?issn=0028-3878>
- Seigler RS, et al. A Comparison of Propofol and Ketamine/Midazolam for Intravenous Sedation of Children. *Pediatric Critical Care Medicine* 2001; 2 (1): 20-23. http://journals.lww.com/pccmjournal/Fulltext/2001/01000/A_comparison_of_propofol_and_ketamine_midazolam.5.aspx
- Shinnar S, et al. Short-term Outcomes of Children with Febrile Status Epilepticus. *Epilepsia*, 2001; 42 (1): 47-53. <http://onlinelibrary.wiley.com/doi/10.1046/j.1528-1157.2001.10000.x/abstract>
- Toweill DL, et al. Linear and Nonlinear Analysis of Heart Rate Variability During Propofol Anesthesia for Short-duration Procedures in Children. *Pediatric Critical Care Medicine*, 2003; 4 (3): 308-314. http://journals.lww.com/pccmjournal/Abstract/2003/07000/Linear_and_nonlinear_analysis_of_heart_rate.6.aspx
- Trabacca A, et al. Levetiracetam in Nonconvulsive Status Epilepticus in Childhood: a Case Report. *Journal of Child Neurology*, 2007; 29:559-564. <http://jcn.sagepub.com/content/22/5/639.abstract>
- Yamamoto H, et al. Treatments with Midazolam and Lidocaine for Status Epilepticus in Neonates. *Brain and Development*, 2007; 29:559-564. <http://www.sciencedirect.com/science/article/pii/S0387760407000721>
- Zuppa AF, et al. Propofol Pharmacokinetics. *Pediatric Critical Care Medicine*, 2003; 4(1): 124-125. http://ovidsp.tx.ovid.com/sp-3.5.1a/ovidweb.cgi?&S=EABPFPAEPADDPILONCALIGFBMOICAA00&Link+Set=S.sh.15.16.20.24%7c30%7csl_10