

# Guideline



## CCHMC Trauma Service Guidelines

Title: Seizure Prophylaxis

Effective Date: 06/2018

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### 1.0 SCOPE

- 1.1. Care of the Trauma Services Patient at CCHMC.

### 2.0 DEFINITIONS

- 2.1. **Post-Contact Seizure:** Seizure that occurs less than one (1) hour post-injury
- 2.2. **Early Seizure:** Seizure that occurs between one (1) hour to less than seven (7) days post-injury
- 2.3. **Late Seizure:** Seizure that occurs more than one (1) week post-injury

### 3.0 GUIDELINE

- 3.1. Expert consensus recommends Levetiracetam (Keppra) for seizure prophylaxis when indicated due to:
  - 3.1.1. Predictable pharmacokinetics - Levetiracetam maintenance dose for seizure prophylaxis is 20 mg/kg IV/PO q12hrs (40 mg/kg/day). Max dosing 1000 mg q12hrs.
  - 3.1.2. Does not require serum drug monitoring to ensure that therapeutic levels are achieved
  - 3.1.3. Lack of sedating effects
  - 3.1.4. The low propensity for drug interactions.
- 3.2. Anti-epileptic drugs should be administered when indicated for a 7 day course post-injury to decrease risk of post-traumatic seizure.
- 3.3. Neurology consult is indicated for any patient who exhibits an early or late seizure
- 3.4. Indications for seizure prophylaxis:
  - 3.3.1 Early seizure activity
  - 3.3.2 Late seizure activity
  - 3.3.3 Severe traumatic brain injury (GCS  $\leq$  8)
  - 3.3.4 Moderate trauma brain injury (GCS 9 – 12) with associated head CT findings as listed
  - 3.3.5 Head CT findings:
    - 3.3.5.1 Frontal lobe contusion
    - 3.3.5.2 Temporal lobe contusion
    - 3.3.5.3 Subdural hemorrhage
- 3.5. Contraindications to administration of Levetiracetam (Keppra) include a previous medical history of aggression or behavioral problems due to tendency to exacerbate agitation.
  - 3.5.1. Neurology consult for seizure prophylaxis recommendations if Levetiracetam (Keppra) is contraindicated.

### 4.0 REFERENCES

- 4.1. Bansal S, Blalock D, Kebede T, Dean NP, & Carpenter JL. (2014). Levetiracetam versus (fos)phenytoin for seizure prophylaxis in pediatric patients with intracranial hemorrhage. *J Neurosurg Pediatric*, 13(2), 209-215.
- 4.2. Chung MG, O'Brien NF. (2016). Prevalence of early posttraumatic seizures in children with moderate to severe traumatic brain injury despite levetiracetam prophylaxis. *Pediatr Crit Care Med*. 17(2):150-6.
- 4.3. Inaba K, Menaker J, Branco BC, et al. (2013). A prospective multicenter comparison of levetiracetam versus phenytoin for early posttraumatic seizure prophylaxis. *Trauma Acute Care Surg*, 74(3), 766-771.
- 4.4. Kochanek, PM, Carney, N, Adelson, PD, Ashwal, S, et al. (2012). Guidelines for the acute medical management of severe traumatic brain injury in infants, children, and adolescents, 2<sup>nd</sup> edition. *Pediatric Critical Care Medicine*, 13(1), supplement, s1-s82.
- 4.5. Kruer RM, Harris LH, Goodwin H, Kornbluth J, Thomas KP, Slater LA, & Haut ER. (2013). Changing trends in the use of seizure prophylaxis after traumatic brain injury: A shift from phenytoin to levetiracetam. *Journal of Critical Care*, 28(5), 883.e9-13.
- 4.6. Torbic, H, Forni AA, Anger KE, Degrado JR, Greenwood BC. (2013) Use of antiepileptics for seizure prophylaxis after traumatic brain injury. *American Journal of Health System Pharm*, 70(9), 759-766.

**5.0 APPROVALS**

All revisions of this guideline are approved by the Trauma Service Department. This guideline is reviewed every three years or sooner if deemed necessary. Policy authority for this document resides with the Trauma Service Department. This guideline is approved by the Trauma Service Manager and the Director of Trauma Services.

HISTORY	
<b>Original Date</b>	
02/06	
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05/15, 06/18	
<b>Review Date</b>	