Rationale
Anticonvulsants are recommended by the Brain Trauma Foundation for the prevention of early post-traumatic seizures (PTS) within 7 days of injury. A randomized, placebo-controlled trial conducted in 1990 demonstrated a significant reduction in early post-traumatic seizures with phenytoin. Smaller randomized studies, as well as retrospective and prospective observational studies have indicated that levetiracetam offers similar efficacy to phenytoin in the reduction of PTS. Recently, the effect of phenytoin on cognitive recovery following brain injury has been questioned. Levetiracetam does not appear to interfere with cognitive recovery, requires no therapeutic monitoring, has a favorable side effect profile, and provides a cost advantage over phenytoin.

Practice Management Guideline
Indications
Patients with structural intracranial injury on CT/MR imaging should receive levetiracetam for early PTS prophylaxis.

• Therapy should not continue beyond 7 days unless documented seizure activity or continuing home medications for a known seizure disorder.

Exception
If seizure prophylaxis is omitted based on this Exception, please document on the inpatient problem list and/or daily progress notes.

Seizure prophylaxis may be omitted in patients who meet ALL of the following criteria:

• ≥ 65 Years of age
• GCS ≥ 13 with minor structural injury*
• Without initial need for Q1hr neuro checks

*Clarified on a case-by-base basis by input from neurosurgery and/or trauma

Prophylaxis dosing

• Levetiracetam 1000mg IV/PO load → 500mg IV/PO BID x 7 days
• Patients < 50kg – omit the 1000mg loading dose
• Renal adjustment - 250mg BID in hemodialysis only (continue usual dose for CRRT)
• Levetiracetam can be converted to the oral route at the same dose as the IV route.

<table>
<thead>
<tr>
<th>Levetiracetam IV 1000mg</th>
<th>$5.80</th>
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<tbody>
<tr>
<td>Levetiracetam IV 500mg</td>
<td>$2.90</td>
</tr>
<tr>
<td>Levetiracetam 500mg oral solution</td>
<td>$4.29</td>
</tr>
<tr>
<td>Levetiracetam 500mg tablet</td>
<td>$0.16</td>
</tr>
</tbody>
</table>

Follow-up

• If seizure activity is documented at any point in the continuum of care, a Neurology consult should be placed to ensure long-term management.
References


Oversight:
Multidisciplinary Trauma Conference (5/25/2016)
Dept. of Surgery, Division of Trauma, Trauma Program Operational Process Performance (5/25/2016)
Dept. of Neurosurgery (6/7/2016)

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