Management of Convulsive/Generalised Tonic Clonic Status Epilepticus in Hospital Clinical Guideline

V2.0

June 2020
# Summary - Convulsive/ Generalised Tonic Clonic Status Epilepticus in Adults

<table>
<thead>
<tr>
<th>TIMELINE</th>
<th>INVESTIGATION AND TREATMENT</th>
<th>OTHER ACTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 to 5 minutes</td>
<td>ABCDE, 100% oxygen, Check BMs, ECG Bloods: Anticonvulsant Drug levels, FBC, glucose, U&amp;E's, Ca, Mg, LFTs, Toxicology, ABG/VBG</td>
<td>Fast bleep medical on-call Correct hypoglycaemia If suspicion of alcohol abuse or poor nutritional status, administer 1 pair Pabrinex IV.</td>
</tr>
<tr>
<td>5 to 15 minutes</td>
<td>Seizure persists &gt; 5 mins or recurrent with no recovery</td>
<td>Alert Critical care outreach Prepare 2nd line therapy if repeat dose lorazepam required</td>
</tr>
<tr>
<td>15 to 30 minutes</td>
<td>Seizure persists or recurrent with no recovery 15 minutes after seizure onset</td>
<td>Critical care in attendance Prepare for possible transfer to Critical Care</td>
</tr>
<tr>
<td>&gt;30 minutes</td>
<td>Transfer to Critical Care if seizures persist or patient fails to regain consciousness If seizures managed by second line therapy go to post status management</td>
<td></td>
</tr>
</tbody>
</table>

Initial therapy:
- IV lorazepam 4mg (2mg if <40kg)
- If no IV access IM lorazepam 4mg or PR Diazemuls 10mg
- REPEAT if no response with 5 to 10 minutes

Second Line therapy:
- IV Levetiracetam 30mg/kg over 15 minutes (max. 4500mg)
- OR
- IV Sodium valproate 30mg/kg over 15 minutes (max. 3000mg)
- OR
- IV phenytoin (see loading dose worksheet)

NB: See below for further dilution instructions & decision guidance
1. **Aim/Purpose of this Guideline**

1.1. This guideline is intended for all medical staff who will be managing patients with convulsive/generalized tonic clonic status epilepticus. These patients may be seen in ED/ MAU or in the hospital wards.

1.2. This version supersedes any previous versions of this document.

1.3. **Data Protection Act 2018 (General Data Protection Regulation – GDPR) Legislation**

The Trust has a duty under the DPA18 to ensure that there is a valid legal basis to process personal and sensitive data. The legal basis for processing must be identified and documented before the processing begins. In many cases we may need consent; this must be explicit, informed and documented. We can’t rely on Opt out, it must be Opt in.

DPA18 is applicable to all staff; this includes those working as contractors and providers of services.

For more information about your obligations under the DPA18 please see the ‘information use framework policy’, or contact the Information Governance Team rch-tr.infogov@nhs.net

2. **The Guidance**

Status epilepticus is a life threatening neurological condition defined as 5 or more minutes of continuous seizure activity, or repetitive seizures without regaining consciousness

2.1. **Common Causes**

- In an individual with epilepsy, poor compliance with antiepileptic drug regime
- Alcohol
- Illicit drug use:
  - Cocaine
  - Amphetamine
- CNS pathology including:
  - Infection
  - Trauma
  - Tumour
  - Stroke
- Metabolic disturbance
- NB Not all seizures are epileptic; non epileptic or “pseudoseizures” may also be prolonged or recurrent

2.2. **Management**

See flow chart

2.3. **Investigation**

See flow chart for acute investigation
2.3.1. CNS imaging
   - Consider CT brain in first instance
   - MRI brain in selected cases

2.3.2. EEG
   - Request EEG in all new onset cases
   - Consider EEG if doubts regarding diagnosis or to confirm that seizures have been abolished

2.3.3. CSF examination
   - If suspected CNS infection
   - Neurology referral via MAXIMs

2.4. Second Line Therapy Guidance

With the exception of contra-indications there is no preferential status given to any of the second line treatments stated within this guidance.

2.4.1. Intravenous loading levetiracetam

   No contra-indications except for previous allergic reaction.

2.4.2. Dilute the required dose in 100mls of 0.9%w/v sodium chloride or 5%w/v glucose.

2.4.3. Administer required dose over 15 minutes

2.4.4. Loading dose levetiracetam can be administered to a patient already prescribed the drug, with problems being unlikely.

2.4.5. Adverse effects that may be experienced include aggression/irritability, somnolence and headache.

2.4.6. If the combination of a patient’s regular dosing and loading dose will exceed 100mg/kg in a 24 hour period then contact during the day shift either the on-call neurology consultant or your ward pharmacist for advice regarding potential monitoring. Out of hours please contact the on-call pharmacist.

2.5. Intravenous loading dose sodium valproate

2.5.1 This medication is contra-indicated in:
   - Women of child bearing potential, unless the conditions of the Pregnancy Prevention Programme are fulfilled
   - Severe liver failure
   - Mitochondrial disorder
2.5.2 Dilute the required dose in 50mls 0.9%w/v sodium chloride

2.5.3 Administer required dose over 10 minutes

2.6. Intravenous loading dose phenytoin with ECG monitoring

2.6.1. See loading dose worksheet at: http://doclibrary-rcht-intranet.cornwall.nhs.uk/DocumentsLibrary/RoyalCornwallHospitalsTrust/Clinical/Pharmacy/ClinicalGuidelineForTheUseOfPhenytoinInEpilepsy.pdf

2.6.2. This guideline will advise on the loading dose of phenytoin to administer in those patients who are phenytoin naïve and those already on phenytoin.

2.6.3. Maximum infusion rate should not exceed 50mg/minute.

2.7. Intravenous Phenobarbital (For potential use in Critical Care only when used for status epilepticus)

- Single dose of 10mg/kg
- Maximum infusion rate of 100mg/minute
- Dilution of injection is required with 0.9%w/v sodium chloride or 5% glucose (see Medusa via hospital intranet)

2.8. Post Status Management

2.8.1. Complete investigations for cause

2.8.2. Ensure that individuals with prior epilepsy diagnosis continue with their usual antiepileptic drug regime

2.9. Maintenance Dosing for Levetiracetam

2.9.1. Maintenance dosing is started 4 to 8 hours after receiving the loading dose of levetiracetam.

2.9.2. Oral, NG and IV maintenance dose following loading dose is 1000mg BD; switch IV maintenance dose to an enteral dose as soon as practicable.

2.9.3. In renal impairment dose reductions may be required:
- For eGFR 50mls-80mls/min – give 1000mg BD
- For eGFR 30mls-50mls/min – give 750mg BD
- For eGFR <30mls/min – give 500mg BD
- For dialysis patients – give 500mg OD
2.10. Maintenance Dosing for Sodium Valproate

2.10.1. Maintenance dosing is started 4 to 8 hours after receiving the loading dose of sodium valproate.

2.10.2. Oral, NG and IV maintenance dose following loading dose is 1000mg BD switch IV maintenance dose to an enteral dose as soon as practicable.

2.10.3. For patients already on lamotrigine, dose reduction will be required when starting regular sodium valproate. On reducing lamotrigine dosing please seek advice from neurology and/or pharmacy.

2.10.4. This medication is contra-indicated in:

- Women of child bearing potential, unless the conditions of the Pregnancy Prevention Programme are fulfilled (https://www.gov.uk/guidance/valproate-use-by-women-and-girls)
- Severe liver failure
- Mitochondrial disorder

2.11. Maintenance Dosing for Phenytoin

See clinical guideline in document library Clinical Guideline for the Use of Phenytoin in Epilepsy

3. Monitoring compliance and effectiveness

<table>
<thead>
<tr>
<th>Element to be monitored</th>
<th>Compliance with recognition of the definitions, recommended drug policy, escalation procedures, and investigations required, with morbidity and mortality outcomes.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lead</td>
<td>Neurology Department</td>
</tr>
<tr>
<td>Tool</td>
<td>Review of case notes, using the guidelines as the audit standard on a Word or Excel template specific to the topic.</td>
</tr>
<tr>
<td>Frequency</td>
<td>One year after implementation to complete first audit. Thereafter frequency will depend on our compliance.</td>
</tr>
<tr>
<td>Reporting arrangements</td>
<td>Report will be initially discussed in the Neurology audit and Governance meeting, then presented to the medical Division, and to the ED and MAU departments. The Divisional Audit and Governance groups will receive a report. Adherence to the guidelines will be examined and deviations explored, with recommendations to rectify made. The Neurology Department Governance and Audit leads will be responsible for this.</td>
</tr>
</tbody>
</table>

Acting on recommendations and Lead(s) The Neurology Department Governance and Audit leads will be responsible for this. The report will be disseminated and an expectation to implement any recommendations of change immediately.

Change in practice and The recommended actions will be cascaded to the junior staff involved in the clinical management of these patients, at
4. Equality and Diversity

4.1. This document complies with the Royal Cornwall Hospitals NHS Trust service Equality and Diversity statement which can be found in the 'Equality, Inclusion & Human Rights Policy' or the Equality and Diversity website.

4.2. **Equality Impact Assessment**

The Initial Equality Impact Assessment Screening Form is at Appendix 2.
## Appendix 1. Governance Information

<table>
<thead>
<tr>
<th>Document Title</th>
<th>Management of Convulsive Status Epilepticus in Hospital Clinical Guideline V2.0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date Issued/Approved:</td>
<td>1&lt;sup&gt;st&lt;/sup&gt; June 2020</td>
</tr>
<tr>
<td>Date Valid From:</td>
<td>June 2020</td>
</tr>
<tr>
<td>Date Valid To:</td>
<td>June 2023</td>
</tr>
<tr>
<td>Directorate / Department responsible (author/owner):</td>
<td>Dr Jonathan Stewart, Consultant Neurologist</td>
</tr>
<tr>
<td>Contact details:</td>
<td>01872 253195</td>
</tr>
<tr>
<td>Brief summary of contents</td>
<td>This guidance is for the emergency management of Convulsive Status Epilepticus within the RCHT Hospitals Group</td>
</tr>
<tr>
<td>Suggested Keywords:</td>
<td>Epilepsy, Status, Status Epilepticus, Convulsions, Seizures</td>
</tr>
<tr>
<td>Target Audience</td>
<td>RCHT</td>
</tr>
<tr>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Executive Director responsible for Policy:</td>
<td>Medical Director</td>
</tr>
<tr>
<td>Date revised:</td>
<td>27&lt;sup&gt;th&lt;/sup&gt; February 2020</td>
</tr>
<tr>
<td>This document replaces (exact title of previous version):</td>
<td>Clinical Guideline For The Management Of Convulsive Status Epilepticus in Hospital V1.0</td>
</tr>
<tr>
<td>Approval route (names of committees)/consultation:</td>
<td>Medication Practice Committee Neurology Governance Meeting</td>
</tr>
<tr>
<td>Care Group General Manager confirming approval processes</td>
<td>Sharon Matson</td>
</tr>
<tr>
<td>Name and Post Title of additional signatories</td>
<td>Not Required</td>
</tr>
<tr>
<td>Name and Signature of Care Group/Directorate Governance Lead confirming approval by specialty and care group management meetings</td>
<td>{Original Copy Signed}</td>
</tr>
<tr>
<td>Name: Becky Osborne</td>
<td></td>
</tr>
<tr>
<td>Signature of Executive Director giving approval</td>
<td>{Original Copy Signed}</td>
</tr>
<tr>
<td>Publication Location (refer to Policy on Policies – Approvals and Ratification):</td>
<td>Internet &amp; Intranet</td>
</tr>
</tbody>
</table>
Training Need Identified?

Junior Doctors receive annual training update as part of the Emergency Neurological Conditions Teaching

Version Control Table

<table>
<thead>
<tr>
<th>Date</th>
<th>Version No</th>
<th>Summary of Changes</th>
<th>Changes Made by (Name and Job Title)</th>
</tr>
</thead>
<tbody>
<tr>
<td>23.12.2014</td>
<td>V1.0</td>
<td>Initial version</td>
<td>Dr Brendan Mclean Neurology Consultant</td>
</tr>
<tr>
<td>27.02.2020</td>
<td>V2.0</td>
<td>Full Update to flowchart and all of section 2 together with being transposed to latest Trust template.</td>
<td>Dr Jonathan Stewart, Consultant Neurologist</td>
</tr>
</tbody>
</table>

All or part of this document can be released under the Freedom of Information Act 2000

This document is to be retained for 10 years from the date of expiry.
This document is only valid on the day of printing

Controlled Document

This document has been created following the Royal Cornwall Hospitals NHS Trust Policy for the Development and Management of Knowledge, Procedural and Web Documents (The Policy on Policies). It should not be altered in any way without the express permission of the author or their Line Manager.
Appendix 2. Initial Equality Impact Assessment Form

<table>
<thead>
<tr>
<th>Name of the strategy / policy / proposal / service function to be assessed</th>
<th>Management of Convulsive Status Epilepticus in Hospital Clinical Guideline V2.0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Directorate and service area:</td>
<td>New or existing document:</td>
</tr>
<tr>
<td>Specialist Medicine, Neurology</td>
<td>Existing</td>
</tr>
<tr>
<td>Name of individual completing assessment:</td>
<td>Telephone:</td>
</tr>
<tr>
<td>Jonathan Stewart, Consultant Neurologist</td>
<td>01872 253195</td>
</tr>
</tbody>
</table>

1. Policy Aim*

Who is the strategy / policy / proposal / service function aimed at?

The policy is aimed at Medical staff who may be asked to attend a patient in Status Epilepticus.

2. Policy Objectives*

The policy provides the guidelines for medical interventions and supportive care, as well as necessary emergency investigations required for patients.

3. Policy – intended Outcomes*

To standardise care, ensure early and timely interventions, guide escalation of care, and reduce morbidity and mortality from the condition.

4. *How will you measure the outcome?

Audit of patients experiencing this complication.

5. Who is intended to benefit from the policy?

Patients who present with status epilepticus

6a Who did you consult with

<table>
<thead>
<tr>
<th>Workforce</th>
<th>Patients</th>
<th>Local groups</th>
<th>External organisations</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Please record specific names of groups

The guidelines have been discussed with the Junior medical staff, Consultant Neurologists, Pharmacy and ICU. Medication Practice Committee Neurology Governance Meeting

What was the outcome of the consultation?

Agreed

7. The Impact

Please complete the following table. If you are unsure/don’t know if there is a negative impact you need to repeat the consultation step.

<table>
<thead>
<tr>
<th>Equality Strands:</th>
<th>Yes</th>
<th>No</th>
<th>Unsure</th>
<th>Rationale for Assessment / Existing Evidence</th>
</tr>
</thead>
</table>

| Age               | ✓   |    |        |                                             |
Sex (male, female, trans-gender / gender reassignment)  ✔  

Race / Ethnic communities /groups  ✔  

Disability - Learning disability, physical impairment, sensory impairment, mental health conditions and some long term health conditions.  ✔  

Religion / other beliefs  ✔  

Marriage and Civil partnership  ✔  

Pregnancy and maternity  ✔  

Sexual Orientation, Bisexual, Gay, heterosexual, Lesbian  ✔  

You will need to continue to a full Equality Impact Assessment if the following have been highlighted:
- You have ticked “Yes” in any column above and
- No consultation or evidence of there being consultation - this excludes any policies which have been identified as not requiring consultation. or
- Major this relates to service redesign or development

8. Please indicate if a full equality analysis is recommended.  Yes  No  ✔

9. If you are not recommending a Full Impact assessment please explain why.

Not indicated

Date of completion and submission  27th February 2020

Members approving screening assessment

Policy Review Group (PRG)  APPROVED

This EIA will not be uploaded to the Trust website without the approval of the Policy Review Group.

A summary of the results will be published on the Trust’s web site.