### Strategic Clinical Networks

**Improving Management of Seizure**

| Paper prepared by | Claire Braid  
| Northern England Strategic Clinical Networks  
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| Consultant Neurologist / Neurological Conditions Network Clinical Lead |
| Purpose | This paper provides information on current work within the Northern SCN area for patients with seizure. It is intended to be read alongside the national seizure paper. |

### Version Control:

<table>
<thead>
<tr>
<th>Version</th>
<th>Purpose / Change</th>
<th>Author</th>
<th>Date</th>
</tr>
</thead>
</table>
| V0.2 | Draft | Claire Braid  
Paul Goldsmith | 7 Oct 14 |
| V0.3 | Insert Cumbria Guidelines | Claire Braid | 17 Feb 15 |
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Introduction and background

In April 2013, twelve Strategic Clinical Networks (SCNs) were introduced to the new NHS structures for England. Working within the Mental Health, Dementia and Neurological Conditions Network, each area has been tasked with improving services for people with neurological conditions. During the first year of operation, there has been time invested in reviewing evidence and speaking to local stakeholders about areas of health and social care which warrant large scale change. Seizure was identified as an area that places significant demand on acute neurology services and there is scope to improve the management of this condition.

In April 2014, it was agreed that management of seizure would form one of the national priorities for the Neurological Conditions Strategic Clinical Networks. A national working group was subsequently set up to identify any existing pathways, share good practice and develop a common integrated care pathway for local adaptation and use. A national document was produced (1), with comprehensive information on the rationale, background and evidence base to this project and a compendium of known pathways, protocol and guidance. This document is intended to be read in conjunction with the national paper.

Local Data – Highlights

The Strategic Clinical Network Business Support Team identified local data on seizure, in terms of epilepsy prevalence rates, prescribing, admission rates (primary and mentions), proportion of patients managed by a Consultant Neurologist emergency bed days, Choose and Book referrals for neurology, and diagnostics (Appendix 1).

Most CCGs in the Northern SCN area have epilepsy prevalence rates higher than the national average, with only two CCGs being in line with the national average (charts 3 and 4). In terms of prescribing, per capita spend is generally above the national average in a number of CCGs, although spend is significantly lower than the national average for Levetiracetam across the SCN area (charts 5-12).
For patients who are admitted with a primary diagnosis of epilepsy, there is variation around the national average, although this is not significant (chart 13). The proportion of these patients whose care was managed by a Consultant Neurologist varies across the SCN area, but generally numbers are low, ranging from 4% to 15% (chart 15). There is wide variation across the SCN area for bed days following emergency admission for epilepsy (chart 16). Rates per 100,000 population for emergency admissions with a primary diagnosis of epilepsy are generally high across the SCN area, although two CCG areas are significantly below the national average (chart 20).

The proportion of all neurology Choose and Book referrals attributed to epilepsy range from 4% to almost 9% across the CCG areas. This is compared to a national average of 5.7% (chart 22).

A number of hospitals also participated in the second National Audit of Seizure Management in Hospitals (NASH2). This provided site-specific audit information regarding how patients with seizures were managed in emergency departments. An overall report has been produced which details the outcome of the audit for all participating sites across the Northern SCN area (2). This is available on the Northern England SCN website.

**Known Local Guidelines / Protocol**

An exercise was carried out to understand what is currently in place across the Northern England SCN area, in terms of existing pathways, guidelines and protocol to support the management of seizure.

A number of emergency departments have locally developed seizure pathways in place (County Durham and Darlington NHS Foundation Trust, South Tyneside NHS Foundation Trust and North Tyneside General Hospital). Other departments use documents such as the Guideline for the Management of First Seizure in the Emergency Department, published by the College of Emergency Medicine (3).

The main issues identified across the Northern SCN area are:

- Lack of neurology specialty in district general hospitals
• Lack of capacity in neurology to meet NICE guidance target of people being seen by a specialist within 2 weeks of a first fit
• Limited communication between neurology to emergency departments on the quality of referrals
• Increased numbers of patients with alcohol-provoked seizures in emergency departments
• Lack of access to neurology notes in district general hospital emergency departments
• Inadequate community-based long term care
• Lack of access to EEG in district general hospitals, affecting ability to make an accurate diagnosis
• Lack of an agreed management protocol that spans primary and secondary care.
• Lack of support for patients with non-epileptic attack disorder (NEAD)

Nationally, the main areas identified for improvement are:

• Supporting rapid access to accurate diagnosis
• Decreasing avoidable admissions for people with established epilepsy
• Providing on-going support via annual reviews and information provision for people with a diagnosis of epilepsy
• Improving access to epilepsy specialist nurses
• Improving transition for young people into adult service.
• Links to improvement work for people with non-epileptic attack disorder.

Proposals for local implementation

A number of proposals have been developed to be considered by the Network stakeholder group. These include:

• Implementation of a standardised pathway across the SCN area to facilitate rapid access to accurate diagnosis, using learning from local and national good practice examples
• Education for rotating emergency department staff, linking with neurologists from local specialist centres
• Linking with another work stream incorporating non-epileptic attack disorder, aiming to provide education for staff on this condition

• Exploring the potential for the role of epilepsy specialist nurses in emergency departments

It is also proposed to link with a broader project led by the Maternity and Child Health SCN on transition.
References


Appendices

Appendix 1  Data
Appendix 2  County Durham and Darlington Seizure Guideline
Appendix 3  South Tyneside Seizure Guideline
Appendix 4  Northumbria Healthcare and Newcastle Hospital Seizure Management
Appendix 5  Cumbria Guidelines
Appendices

Appendix 1 – Data

Northern England Strategic Clinical Networks

Neurological Conditions Network
Neurology Baselines

Overview

Across England there were over 15 million hospital admission episodes in 2012/13, with just over 1 million in CCGs in the network area (no adjustment for Cumbria) across all specialties. This number equates to 7.3% of the national total which is slightly higher than the proportion of the national population in this area which is 6.1%.

Of those admission episodes, over 1.3m (8.2%) are attributed to Neurology (either primary diagnosis or mentions); across network CCGs Neurology episodes account for 8.5% of all admissions.

Generally admission rates (per 100,000 population) are higher in network CCGs than in England and this is mirrored for neurology admissions. See Chart 1 below

Chart 1

Nationally 35.2% of all admissions are emergencies; across network CCGs there is some variation with a range from 32.6% in South Tyneside to 39.7% in South Tees. For Neurology
patients 58.7% of admissions are emergencies nationally - generally rates for network CCGs are slightly below this, ranging from 52.8% in North Durham to 61.8% in Darlington.

Chart 2

**FAEs - % Emergency**

<table>
<thead>
<tr>
<th>Network CCG</th>
<th>FAEs - Neurology</th>
<th>FAEs - All Specialties</th>
<th>All - England</th>
<th>Neurology - England</th>
</tr>
</thead>
<tbody>
<tr>
<td>NHS DARLINGTON CCG</td>
<td>61.8%</td>
<td>55.6%</td>
<td>57.7%</td>
<td>52.9%</td>
</tr>
<tr>
<td>NHS DURHAM DALES, EASINGTON AND SEDGEFIELD CCG</td>
<td>55.6%</td>
<td>57.7%</td>
<td>52.9%</td>
<td>53.2%</td>
</tr>
<tr>
<td>NHS DURHAM NEWCASTLE AND NORTH AND EAST CCG</td>
<td>58.6%</td>
<td>54.4%</td>
<td>60.5%</td>
<td>55.8%</td>
</tr>
<tr>
<td>NHS DURHAM NORTH AND EAST CCG</td>
<td>55.8%</td>
<td>57.9%</td>
<td>55.0%</td>
<td>52.7%</td>
</tr>
<tr>
<td>NHS NEWCASTLE NORTH AND SOUTH CCG</td>
<td>58.6%</td>
<td>54.4%</td>
<td>60.5%</td>
<td>55.8%</td>
</tr>
<tr>
<td>NHS NORTHUMBERLAND CCG</td>
<td>55.8%</td>
<td>57.9%</td>
<td>55.0%</td>
<td>52.7%</td>
</tr>
<tr>
<td>NHS NORTH TYNE CCG</td>
<td>58.6%</td>
<td>54.4%</td>
<td>60.5%</td>
<td>55.8%</td>
</tr>
<tr>
<td>NHS NORTH TYNE AND WEAR RIVERS CCG</td>
<td>55.8%</td>
<td>57.9%</td>
<td>55.0%</td>
<td>52.7%</td>
</tr>
<tr>
<td>NHS NORTH WEST CCG</td>
<td>58.6%</td>
<td>54.4%</td>
<td>60.5%</td>
<td>55.8%</td>
</tr>
<tr>
<td>NHS NORTHWEST CUMBRIA CCG</td>
<td>58.6%</td>
<td>54.4%</td>
<td>60.5%</td>
<td>55.8%</td>
</tr>
<tr>
<td>NHS NORTHWEST NORTH WEST CCG</td>
<td>58.6%</td>
<td>54.4%</td>
<td>60.5%</td>
<td>55.8%</td>
</tr>
<tr>
<td>NHS NUNEATON AND SOUTH WARWICK CCG</td>
<td>58.6%</td>
<td>54.4%</td>
<td>60.5%</td>
<td>55.8%</td>
</tr>
<tr>
<td>NHS SOUTH HUMBER AND PITTSBURGH CCG</td>
<td>58.6%</td>
<td>54.4%</td>
<td>60.5%</td>
<td>55.8%</td>
</tr>
<tr>
<td>NHS SOUTH TYNE AND WEAR CCG</td>
<td>58.6%</td>
<td>54.4%</td>
<td>60.5%</td>
<td>55.8%</td>
</tr>
<tr>
<td>Total NECN</td>
<td>58.6%</td>
<td>54.4%</td>
<td>60.5%</td>
<td>55.8%</td>
</tr>
</tbody>
</table>

Epilepsy

**Prevalence**

Chart 3 – Number in Cohort

**NESCN - Number and %**

<table>
<thead>
<tr>
<th>Network CCG</th>
<th>Number in Cohort</th>
<th>% Prevalence</th>
<th>National Prevalence</th>
</tr>
</thead>
<tbody>
<tr>
<td>NHS Darlington CCG</td>
<td>1,669</td>
<td>37.6%</td>
<td>0.2%</td>
</tr>
<tr>
<td>NHS Newcastle CCG</td>
<td>3,669</td>
<td>83.2%</td>
<td>0.4%</td>
</tr>
<tr>
<td>NHS North Durham CCG</td>
<td>1,452</td>
<td>36.7%</td>
<td>0.2%</td>
</tr>
<tr>
<td>NHS North East CCG</td>
<td>2,240</td>
<td>52.9%</td>
<td>0.4%</td>
</tr>
<tr>
<td>NHS North East CCG</td>
<td>2,159</td>
<td>52.9%</td>
<td>0.4%</td>
</tr>
<tr>
<td>NHS North East CCG</td>
<td>1,492</td>
<td>37.5%</td>
<td>0.2%</td>
</tr>
<tr>
<td>NHS North East CCG</td>
<td>1,351</td>
<td>33.8%</td>
<td>0.2%</td>
</tr>
<tr>
<td>NHS North West CCG</td>
<td>1,492</td>
<td>37.5%</td>
<td>0.2%</td>
</tr>
<tr>
<td>NHS North West CCG</td>
<td>1,492</td>
<td>37.5%</td>
<td>0.2%</td>
</tr>
<tr>
<td>NHS South West CCG</td>
<td>1,492</td>
<td>37.5%</td>
<td>0.2%</td>
</tr>
<tr>
<td>NHS South West CCG</td>
<td>1,492</td>
<td>37.5%</td>
<td>0.2%</td>
</tr>
<tr>
<td>NHS South East CCG</td>
<td>1,492</td>
<td>37.5%</td>
<td>0.2%</td>
</tr>
<tr>
<td>NHS South East CCG</td>
<td>1,492</td>
<td>37.5%</td>
<td>0.2%</td>
</tr>
<tr>
<td>NHS South Central CCG</td>
<td>1,492</td>
<td>37.5%</td>
<td>0.2%</td>
</tr>
<tr>
<td>NHS South Central CCG</td>
<td>1,492</td>
<td>37.5%</td>
<td>0.2%</td>
</tr>
<tr>
<td>Total NECN</td>
<td>10,000</td>
<td>100%</td>
<td>1.2%</td>
</tr>
</tbody>
</table>
There are 24,888 patients with epilepsy on GP registers in network CCGs and this represents 0.9% of the CCG populations. Nationally just under 0.8% of the total registered populations are estimated to have epilepsy. For network CCGs most are above this with 0.9 - 1%. Only Hambleton and Newcastle North and East are in line with the national average and have the lowest % prevalence (0.8%) in the network. South Tees has the highest rate in the network and is ranked 3 across all CCGs nationally.

Prevalence rates (crude per 100,000) are generally significantly higher than the national average. The Chart below shows only HRW and NNE have rates which are not significantly different to the national average.

**Chart 4 - % Prevalence**

![Prevalence - Epilepsy by CCG](image)
Prescribing

Spend per 1,000 on individual drugs shows variation across network CCGs and this may reflect preferred drugs use. However, per capita spend is generally above the national average (often significantly so) for all listed drugs in a number of CCGs – so high spend on one product is not offset by low spend on another – although spend is significantly lower across the board for Lavetiracetam than the national average.

Chart 5 - Phenytoin Sodium

Chart 6 - Sodium Valporate
From the Neuro Compendium data for prescribing and daily dosages are generally higher than the national average – which will impact on spend – consideration should be given to whether increased levels are to be expected as a result of higher prevalence in the network area.
This chart shows the rate of admission per 100,000 (CCG population aged 18+) with a primary diagnosis of Epilepsy. While there is variation around the national average; wide confidence intervals mean that many differences are not significant.

The next chart shows the same for admissions with a mention of epilepsy in diagnostic codes – the admission may or may not be a result of the epilepsy. For this cohort, all CCGs have rates above the national average – however this could be a reflection of more efficient coding of admissions.

Chart 14 – Admitted - Mention
Chart 15 - Inpatient Management

This chart shows the % of admission episodes with a Primary Diagnosis of Epilepsy where the care was managed by a neurologist (spec 400). There is no national comparator; but levels are varied across the network – and all CCGs demonstrate very low numbers with a range from less than 4% to just over 15%. These cases have a primary diagnosis of epilepsy, so it would be reasonable to assume that admissions are related to the condition and therefore the question is whether care received is appropriate and effective for the patient.

Chart 16 - Emergency Bed Days

This chart shows rate per 100,000 for bed days following emergency admission for epilepsy. There is wide variation across the network with a range from 94 in HRW to almost 700 in Newcastle North.
and East. Rates for most CCGs are above the national average – a number significantly so; 3 CCGs have rates significantly below the national average.

**Chart 17 - Disease Management**

For most CCGs the proportion of patients on the QOF register who have been seizure free for 12 months is broadly in line with the national average – this measure has been dropped from QOF so data after this issue for 12/13 will not be available.

**Chart 18 - Admission Episodes – Primary**
Finished admission episodes with a primary diagnosis of epilepsy nationally account for just under 7% of neurology admissions; for CCGs in the network area epilepsy admissions rate from 4.4% in North Tyneside and North Durham to 8% in South Tees. Emergency Admissions with a primary diagnosis of Epilepsy nationally account for almost 13% of all neurological emergency admissions; across the network epilepsy accounts for between 7.4% in Hambleton, Richmondshire & Whitby and 16.9% in South Tyneside.

Chart 19 – Admission Episodes - Mentions

Nationally Epilepsy is mentioned in 15.4% of admission episodes; across the network values range from 14.6% in Northumberland to 24.3% in South Tees. Emergency neurological episodes with a mention of Epilepsy account for 16% of the total; again network CCG rates are generally broadly in line with this, ranging from 13.4% in HRW to 24% in South Tees.

Nationally there are more than 1.3m neurological admission episodes each year of which 60.2% are Emergencies.
Rates per 100,000 population for emergency admissions with a primary diagnosis of Epilepsy are generally high across network CCGS, though in some cases differences are not significant. HRW and North Durham are both significantly below the national average.

For admissions where epilepsy is mentioned rates are similarly above the national average, with the exception of the same 2 CCGs.
The above chart shows the proportion of Choose and Book Referrals attributed to Epilepsy out of all neurology choose and book referrals. CCG rates range from 4% to almost 9% compared to the national average of 5.7%.

Diagnostics

This chart shows numbers for diagnostic imaging tests for all neurological conditions and the number of those attributed to epilepsy. The % of epilepsy tests is also shown. Typically
between 10% and up to 20% of imaging is attributed to epilepsy. Data should be checked as that for the 2 Newcastle CCGs is much lower than for other CCGs – this may be a coding issue.

From the Diagnostic Imaging Dataset the next 2 charts show median waiting times for each test by CCG. There is some variation in the data – but this is worthy of further scrutiny as some of the numbers are very small and data completeness issues continue.

Chart 24 – Median Wait Times Diagnostics

Chart 25 – Median Wait Times
Appendix 2 – County Durham and Darlington Seizure Guideline

Guideline on the management of First Seizure in the Emergency Department

Introduction

Seizures are a common occurrence. Prospective, population based studies show up to a 2-4% lifetime risk of one seizure, and a 2% chance of epilepsy. People with epilepsy have a premature death that is 2-3 times higher than the general population.

Seizures are a frequent reason for attendance to the ED, accounting for around 1.2% of attendances. Around a quarter of these are due to first seizure.

Scope

This guideline is based on that developed by the College of Emergency Medicine. It is for adult patients (≥16yrs of age) presenting to the ED with a suspected first convulsive seizure (not including status epilepticus).

Is it a seizure or not?

If at all possible get as much details as you can from any witnesses (see appendix 1) and invite them to attend the neurology outpatient appointment if possible. Below is a basic guide to help differentiate seizures from syncope.

<table>
<thead>
<tr>
<th>Think about:</th>
<th>Seizure:</th>
<th>Syncope:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Context -</td>
<td>From sleep or awake?</td>
<td>Relevant triggers / precipitants?</td>
</tr>
<tr>
<td>Before -</td>
<td>Aura?</td>
<td>Lightheadedness / sweating Pallor Chest pain / palpitation</td>
</tr>
<tr>
<td>During -</td>
<td>Convulsion Head turning Automatism / posturing Tongue biting</td>
<td>Brief myoclonus</td>
</tr>
<tr>
<td>Afterwards -</td>
<td>Confusion</td>
<td>Rapid recovery and orientation</td>
</tr>
</tbody>
</table>

ED management

Baseline observations

Temperature, Pulse, Blood Pressure, Sats, GCS & pupils, EWS, BM

Investigations (Ix)

Bloods (FBC, U&Es, Glucose, Calcium, ethanol) ECG (to be faxed with the referral) Urine pregnancy test (if woman of child-bearing age)

Other Ix to consider

CXR, LP, toxicology
Neuroimaging
The following patients should be considered for immediate CT head:
- New focal neurological deficit or persistent altered mental state
- Fever
- Persistent headache
- Focal or partial onset before generalised
- History of acute head trauma
- Malignancy (CT with contrast)
- Immunocompromised, HIV infection (CT with contrast)
- Alcoholism
- Anticoagulation or bleeding diathesis

Requesting of Urgent out-patient MRI
Patients that present with a good history of first seizure (including an eye-witness account of tonic-clonic seizure activity with post-ictal phase) should have an Urgent out-patient MRI requested. This imaging will then be reviewed and actioned by the neurologist in out-patients. **The scan itself does not need to be performed prior to ED discharge.** MR brain imaging should only be requested for those patients in whom a first seizure is considered likely. The named consultant should be the ED consultant on-call at the time of the ED attendance.

Need for admission
Patients who have fully recovered, have no neurological deficit, and have normal initial investigations can be discharged from the ED.
Admission should be considered in all patients with:
- Alcoholism
- Poor social circumstances
- No responsible adult to stay with

Advice
Patients should be given verbal and written advice about driving and lifestyle changes prior to being discharged from the ED e.g. bathing/ swimming and working at heights/ with machinery
Advice given to patients should be documented in the medical notes.

Referral
Please ensure that a copy of the ED notes, ECG, witness statement (if possible) and the attached checklist filled out and all faxed to 64405 for the attention of Dr Williams/ Dorman (Consultant Neurologists) to the Central Appointments Bureau.
# First Fit referral checklist

## Suitability for protocol driven investigation (all Yes)

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>16 years old or over</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Suspected first seizure, convulsive</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not status epilepticus</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Seizure not related to head injury or ecclampsia</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## ED Management (all Yes)

<table>
<thead>
<tr>
<th>Perform and results in notes</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baseline observations</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FBC, U&amp;Es, serum ethanol, Calcium, Glucose</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ECG (copy to be faxed with referral)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Complete witness statement form- if possible (copy to be faxed with referral)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pregnancy test (if appropriate)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## Urgent out-patient MRI requested

(if high likelihood of convulsive tonic-clonic seizure with post-ictal phase confirmed by eye-witness)

Yes ☐ No ☐

## Advice given & documented in notes(all Yes)

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Written First Seizure card given</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Verbal explanation- swimming/ bathing and working at heights/ with machinery</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Driving advice (if appropriate)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Please ensure checklist faxed to Central Appointments Bureau on 64405 with a copy of the ED summary, ECG and witness statement (if available)
### DETAILS OF EVENT / SEIZURE FROM A WITNESS- PLEASE BRING THIS INFORMATION TO YOUR CLINIC APPOINTMENT

<table>
<thead>
<tr>
<th>Witness Name:</th>
<th>Your name:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. **What was the person doing just before the seizure event?**

2. **What alerted you to the seizure/ event?**

3. **What time of day did the seizure event happen?**

4. **Describe what you saw during the seizure / event**
   - **What parts of the body were affected?**
   - **Was one side affected more than the other?**
   - **Did the person go stiff?**
   - **What types of movements did the person make if any?** (eg twitching, jerking, thrashing) **Were there any facial movements?**
   - **Was the person unconscious or was there a change in awareness( could the person speak to you, did the speech make sense?**
   - **Were their eyes open or shut?**
   - **Did their colour change (eg flushed, clammy pale)?**
   - **Did their breathing change ? If so, in what way?**
   - **How long did the seizure last?**
   - **Did the person injure himself or herself?**

   **Anything else you noticed that you feel would be helpful to tell us (use the back of the sheet if necessary)**

   **How did the person behave after the seizure?**
   - **Were they sleepy, confused or alert?**
   
   **How long did the person take to recover?**
   - **Did they want to sleep afterwards?**
Management of First Seizure in the Emergency Department Protocol

Background

The National Institute for Health and Care Excellence (NICE) have produced guidance for the management of Epilepsy (CG137-Epilepsy 2012) which is a common long-term condition. Within this protocol there is guidance on the management of a first seizure. Furthermore, the National Confidential Enquiry into Patient Outcome and Death Audit -National Audit into Seizure management in Hospitals, 2011, (NASH) has identified areas for improvement nationally and locally.

This protocol has been developed to improve the management of first seizure presentations by risk stratification allowing identification of patients requiring in-patient management and those that can be managed in an ambulatory out-patient pathway in an efficient manner.
MANAGEMENT OF FIRST SEIZURE IN THE EMERGENCY DEPARTMENT

- FLOWCHART
- SUITABILITY FOR PROTOCOL BASED INVESTIGATIONS
- CRITERIA FOR NEUROIMAGING
- DISCHARGE RISK ASSESSMENT
- GUIDANCE NOTES
- PATHWAY CHECK LIST
- MRI CHECKLIST
- REFERRAL FOR ACUTE ACCESS CLINIC
Patient with suspected first seizure

- See Notes
- Check Suitability

Needs Emergency Department Neuroimaging
(Check imaging criteria)

Discharge Risk Assessment
(See Risk Assessment Criteria)

- High
- Moderate
- Low

- Admit

1. Laboratory Investigations & Bedside Tests
2. Choice of neuroimaging modality
3. Treatment
4. Discharge
5. Advice

- Discharge advice
- Driving advice
- Occupational and Hazardous activities advice
- Document all of above advice given in Patient Medical Notes
- MRI Checklist
- Fax copy of AAC referral form and MRI checklist to Dr Wahid’s Secretary on ext 2910
SUITABILITY FOR PROTOCOL BASED INVESTIGATION (ALL YES)

1. 

- 16 years old or over 
- Suspected first seizure 
- Not status epilepticus 
- Seizure not related to head injury or eclampsia 

Observations: TEMPERATURE, HEART RATE, RESPIRATORY RATE, OXYGEN SATURATIONS, BM

Laboratory: FBC, UREA ELECTROLYTE, COAGULATION, SERUM GLUCOSE, CALCIUM, MAGNESIUM, PHOSPHATE, LIVER FUNCTION TEST. ECG, PREGNANCY TEST, CXR,

Other investigations such as TOXICOLOGY AND ALCOHOL LEVELS if clinically indicated.

CRITERIA FOR NEUROIMAGING (ANY YES):

2. 

- New focal neurological deficit 
- Persistent altered mental status 
- Fever or persistent headache or vomiting 
- Focal or partial onset seizure 
- History of Cancer, HIV, Head Injury, Anticoagulation, Bleeding disorder, Alcoholism 
- Follow up cannot be ensured 
- Needs Lumbar Puncture

DISCHARGE RISK ASSESSMENT

3. 

<table>
<thead>
<tr>
<th></th>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Simple fit with full recovery</td>
<td>(HIGH)</td>
</tr>
<tr>
<td>2</td>
<td>No neurological deficit</td>
<td>(HIGH)</td>
</tr>
<tr>
<td>3</td>
<td>Normal initial investigations</td>
<td>(HIGH)</td>
</tr>
<tr>
<td>4</td>
<td>No history of/suspected alcoholism</td>
<td>(MOD)</td>
</tr>
<tr>
<td>5</td>
<td>No poor social circumstances</td>
<td>(MOD)</td>
</tr>
<tr>
<td>6</td>
<td>Responsible adult to look after</td>
<td>(MOD)</td>
</tr>
<tr>
<td>7</td>
<td>Likely to return</td>
<td>(MOD)</td>
</tr>
</tbody>
</table>

Risk
High if answer NO to Q 1, 2 or 3. 
Low if no high and no moderate 
All otherwise classed as moderate risk.
NOTES:

1. **Laboratory Investigations & Bedside Tests:**
   Laboratory investigations other than those outlined in protocol based investigations, should only be done if clinically indicated.

2. **Choice of neuroimaging modality:**
   MRI preferable to CT, if readily available within an acceptable time period, in a patient who has fully recovered. *(See page 8)*
   CT should be used if MRI is not readily available or in an individual who has not fully recovered.
   CT is the modality of choice if the patient is critically ill, requires monitoring or MRI is not available /contraindicated.

3. **Treatment:**
   Antiepileptic should not routinely be prescribed in the ED. If antiepileptic is to be prescribed, this should only be after consultation with an epilepsy specialist/ neurologist.

4. **Discharge:**
   Patients with a normal neurological examination and normal baseline investigations can be safely discharged from the ED with outpatient follow-up. Consider admitting those patients without a responsible adult to stay with, or patients who are unlikely to attend out-patient investigations and follow-up.

5. **Advice:**
   Give discharge advice including first aid, driving, occupation and hazardous activities; document advice in patient’s medical record.

6. **Follow-up:**
   Arrange follow-up in the next available slot in Acute Access Clinic.
   Arrange outpatient neuroimaging if not already scanned, or do the MRI head request or checklist.
Management of First Seizure in Emergency Department:

Check List:

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>COMPLETED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emergency Department notes</td>
<td></td>
</tr>
<tr>
<td>First seizure Pathway</td>
<td></td>
</tr>
<tr>
<td>MRI head request/checklist</td>
<td></td>
</tr>
<tr>
<td>DVLA instructions- see website</td>
<td></td>
</tr>
<tr>
<td>Occupational and Hazardous activities advice</td>
<td></td>
</tr>
<tr>
<td>Patient contact details</td>
<td></td>
</tr>
<tr>
<td>Responsible Adult to Stay</td>
<td></td>
</tr>
<tr>
<td>Fax Referral Form &amp; MRI checklist to Dr S. Wahid (Fax No 2910)</td>
<td></td>
</tr>
<tr>
<td>Place Emergency Department notes &amp; First Seizure Pathway in docket in the Ambulatory Care Unit (AMB Care)</td>
<td></td>
</tr>
</tbody>
</table>
**Neuroimaging**

Due to the strong magnetic field there are instances where MRI is contraindicated. See STFT intranet, Radiology Department page – MRI Request form and Safety Checklist.

<table>
<thead>
<tr>
<th>SOUTH TYNEIDE NHS FOUNDATION TRUST MRI Department CHECK LIST</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Due to the strong magnetic field there are instances where MRI is contraindicated. If the answer to any of the following safety questions is yes, please contact the MRI Department (ext. 3156) for advice. Failure to provide accurate information will be regarded as a potential clinical incident.</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Does the patient have or has ever had:</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Pacemaker?</td>
</tr>
<tr>
<td>Implanted defibrillator?</td>
</tr>
<tr>
<td>Retained pacing wire?</td>
</tr>
<tr>
<td>Metallic heart valve?</td>
</tr>
<tr>
<td>Brain surgery?</td>
</tr>
<tr>
<td>History of foreign body metal in eye?</td>
</tr>
<tr>
<td>Implanted electronic / magnetically / mechanically controlled devices?</td>
</tr>
<tr>
<td>Has the patient undergone surgery involving metal in the past 8 weeks?</td>
</tr>
<tr>
<td>History of stent insertion for an aortic aneurysm (thoracic / abdominal)?</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Is patient arriving by ambulance?</strong></th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th><strong>TABLE WEIGHT LIMIT 140kg/22stone</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>What is the patient’s weight?</td>
</tr>
<tr>
<td>Can patient attend at short notice?</td>
</tr>
<tr>
<td>Is patient barrier nursed?</td>
</tr>
<tr>
<td>Is pregnancy known or suspected?</td>
</tr>
<tr>
<td>Does patient have any known communication difficulties?</td>
</tr>
<tr>
<td>Is patient in renal failure?</td>
</tr>
<tr>
<td>Does patient have any allergies including latex?</td>
</tr>
</tbody>
</table>
REFERRAL TO (DR WAHID) ACUTE ACCESS CLINIC (AAC) FOR FIRST SEIZURE

<table>
<thead>
<tr>
<th>CRITERIA</th>
<th>YES (tick)</th>
<th>No (tick)</th>
</tr>
</thead>
<tbody>
<tr>
<td>16 years and older</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Suspected first seizure</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Status Epilepticus</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Seizure not related to head injury or eclampsia</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Simple fit with full recovery</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Neurological deficit</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Normal initial investigations</td>
<td></td>
<td></td>
</tr>
<tr>
<td>History of/suspected alcoholism</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poor social circumstances</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Responsible adult to look after for 24-hrs?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Likely to return?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Patient has been seen by or discussed with senior doctor (Middle Grade or Consultant)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

IF ANSWERS ARE ALL YES PATIENT IS SUITABLE FOR REVIEW IN AAC. UNDERTAKE THE FOLLOWING:

1. Sign this form
2. Complete MRI check list
3. FAX THIS REFERRAL FORM AND MRI CHECKLIST TO: Ext. 2910
4. Place the completed first seizure pathway, A&E Casualty Card and ECG in the docket found in the Ambulatory Care Unit reception area

Name and Grade of doctor completing form (print):

Date ___/ ___/ 20___
Seizure Management in the Emergency Department (Adult)

Document Type: Clinical Guideline
Clinical Lead: Phil Stamp
Author: Phil Stamp
Directorate: Emergency Care
Approved by Sub Committee/Group: ECSUB

Date Approved by Sub Committee/Group: TBC
Date Approved by Clinical Guidelines Group: 25/10/12
Date of Issue: 3rd December 2012
Review Date: December 2015
Version: 1

Relevant to: (Northumbria Healthcare Foundation Trust NHS Trust, primarily Emergency Care Staff but others may find this of use)

Important Notes: This Guideline is primarily aimed at Emergency Department Staff. It has been adapted from the “Newcastle, North Tyneside and Northumberland Guidelines for the diagnosis and Management of epilepsy in Primary and Secondary Care”

Criteria for Use: this guideline covers
1. Status Epilepticus
2. First Fit (including referral form and patient information)

Prescribers should review patients for any contra-indications before initiating drugs. The drugs are recommended assuming there are no contra-indications to treatment, and no contra-indications develop.

1. MANAGEMENT OF STATUS EPILEPTICUS

See Page 2 for detailed Anti-Epileptic drug (AED) therapy & Doses.

Generalised tonic clonic status epilepticus should be managed immediately;

- Secure airway.
- Give oxygen.
- Assess cardiac and respiratory function.
- Secure intravenous access in a large vein.
- Check BM at an early stage – if low give 10% Glucose iv 100 - 500ml according to response
- Check FBC, U&E, LFT, glucose, calcium, drug levels and consider urine for toxicology.
- Give two pairs of Pabrinex® ampoules (vials I & II) by IV infusion initially in A&E if any suggestion of alcohol dependency
- ECG when able

More detailed recommendations about baseline assessment and management are available in appendix C of the NICE guideline: www.nice.org.uk/nicemedia/pdf/CG020fullguideline_appendixC_corrected.pdf
Emergency Anti-epileptic Drug (AED) therapy for convulsive status epilepticus

<table>
<thead>
<tr>
<th>Premonitory stage</th>
<th>Diazepam 10–20 mg given rectally, repeated once 15 minutes later if status continues to threaten, or midazolam 10 mg given <strong>buccally</strong> If seizures continue, treat as below</th>
</tr>
</thead>
<tbody>
<tr>
<td>Early status</td>
<td>Usually a 4mg bolus, repeated once after 10-15 minutes. However, in low–weight patients consider smaller initial bolus. Diazepam may be used if rate not critical. Give usual AED medication if already on treatment For sustained control or if seizures continue, treat as below.</td>
</tr>
<tr>
<td>Established status</td>
<td><strong>Phenytoin</strong> infusion and/or Phenobarbitone bolus of 10-15 mg/kg at a rate of 100 mg/minute</td>
</tr>
</tbody>
</table>
| Refractory status*| General anaesthesia, with one of:  
- Propofol (1-2mg/kg bolus, then 2-10mg/kg/hour) titrated to effect.  
- Midazolam (0.1-0.2mg/kg bolus, then 0.05-0.5mg/kg/hour) titrated to effect.  
- Thiopentone (3-5mg/kg bolus, then 3-5mg/kg/hour) titrated to effect; after 2-3 days infusion rate needs reduction as fat stores are saturated.  
Anaesthetic continued for 12–24 hours after the last clinical or electrographic seizure, then dose tapered |

*In the above scheme, the refractory stage (general anaesthesia) is reached 60/90 minutes after the initial therapy.

**If status epilepticus remains refractory**: anaesthetics/critical care should be called, and propofol and thiopental used to control seizures. Critical life support is required.

**Transfer of intravenous agents to oral agents**

In patients with known epilepsy oral AEDs should continued throughout, via an NG tube if needed. If used, intravenous phenytoin should continue until the patient has been seizure free for 24 hours, then weaned down aiming to discontinue after 48 hours. In those without known epilepsy, intravenous phenytoin should be continued and further management discussed with a neurologist.

Phenytoin is not normally recommended as a long term AED.
In all cases the reason for status epilepticus should be investigated.

This may include poor concordance, infection, other drugs interacting with AEDs. Blood should be taken at baseline for assessment of drug levels to aid in the diagnosis of poor concordance.

Pseudo seizures presenting as possible status epilepticus

This can be difficult to diagnose. Patient safety is most important, but where this is a possible diagnosis, this should be discussed with a neurologist urgently. An EEG may be required to aid in diagnosis.

2. First Fit – See ‘Pathway for First Fits' (Appendix 1)

- A patient may only be discharged following a first fit, if they have fully recovered.

- **Diagnosis Clear:** refer directly to the first seizure clinic & copy of the referral should be sent to the GP. Results of any investigations (e.g., bloods) should be included with the referral, including a copy of the ECG. Transfer CT images (if done) to Newcastle Hospital PACS system.

- **Diagnosis less certain:** refer to the GP for review - referral can be made by the GP.

**ADVICE to patient/carer:**

All patients referred with a suspected seizure, and their carers as appropriate, should be provided with preliminary advice at the time of referral, including:

- To stop driving pending confirmation of the diagnosis
- First aid if a further seizure occurs
- Advice regarding work / leisure if dangerous
- Reasons for referral to hospital
- To take a witness of the seizure to the first hospital appointment

An information leaflet is included in this guideline *(Appendix 3)*

**Guidance relating to alcohol and first fit:**

See guidelines on Intranet *(hyperlink)*

If a First Seizure has occurred more than a month after acute withdrawal, referral would generally be made.

---

**Reference:** NICE and North of Tyne Guidance
Pathway for First Fits

**Was this a first seizure?**
- **No**: Consider causes of non-epileptic attacks eg. Arrhythmia, vaso-vagal etc.
- **Yes**: Manage ABC

**Manage ABC**
- **Yes**: **Has hypoglycaemia been excluded?**
  - **No**: Treat hypoglycaemia & address the underlying cause then reassess.
  - **Yes**: Does the patient require an urgent CT?

**Does the patient require an urgent CT?**
- **Indications for CT scan prior to disposal**
  - Persistent new focal neurological deficit
  - Persistent altered mental status
  - Fever or persistent headache
  - Recent head trauma
  - History of cancer or HIV infection
  - Patients with focal or partial onset seizure
  - Anticoagulation or bleeding diathesis
  - Past history of stroke / TIA
  - Patients whose FU cannot be ensured (DW senior)
- **Yes**: Emergency CT head
  - **Is it normal?**
    - **Yes**: Refer case to appropriate speciality
    - **No**: Refer for admission
- **No**: Are the ECG and blood results all normal? (U&Es, glucose & bone profile)
  - (Consider uraemia, hyponatraemia, hypoglycaemia, hypercalcaemia & prolonged QT)
  - Is the CXR normal? (all patients with signs or symptoms)
    - > 16 years of age
      - **Yes**: Consider discharge with appropriate advice and followup (see referral form)
      - **No**: Refer for admission
Referral form from A&E for adults with uncomplicated first generalised seizure (copy to GP)
(Advice on completion of form: see pathway for information regarding this form)

| Inclusion Criteria | Patients > 16 yrs  
| Clear history of first generalised epileptic seizure | Name  
| DOB | Address  

| Exclusion Criteria | Patients with non-epileptic attacks  
| Those with symptomatic seizures e.g. hypoglycaemia, acute trauma, eclampsia | Tel no  
| People more suited to elderly care review | Attach address label  

History: (continue onto second page if needed)

| Temp: |  
|  
| Pulse: |  
| BP: |  
| BM: |  

Investigations table (enter results or attach results sheet)

| ECG | (send photocopy with form)  
|  
| Urea | Alk Ph  
| Creat | ALT  
| Na | Bil  
| K | Alb  
| CO2 | Hb  
| Ca | MCV  
| GGT | WCC  
| Gluc | Plat  
| CXR |  
| CT |  

Indications for CT scan prior to disposition
- Persistent new focal neurological deficits
- Persistent altered mental status
- Fever or persistent headache
- Recent head trauma
- History of cancer or HIV infection
- Patients with focal onset seizure
- Anticoagulation or bleeding diathesis
- Past history of stroke /TIA
- Patients whose follow-up cannot be ensured (discuss with senior)

PLEASE ENSURE ALL FILMS ARE TRANSFERRED TO THE NEWCASTLE HOSPITALS SYSTEM

Discharge table – instructions in all sections must be fulfilled before referral is made

Patient has fully recovered with no persistent neurological symptoms or signs (incl. headache)
Normal observations and investigations (incl. temperature)
Consider social circumstances prior to discharge (will the patient be safe?)
Patient has been given departmental written advice sheet
- including driving and lifestyle changes
Patient suitable for First Seizure Clinic follow up
- copies of form and all notes forwarded FAO Neurology - First Seizure Clinic
- NB if you do not do this you may delay your patients follow up
- fax number 0191 2825027
Copy referral form to GP
Retain original form in A&E notes

Hospital/department referring patient…………………………………………………………………………………………..
Signature/Name (in capitals)…………………………………………………………………………………………………………
contact phone number of person faxing referral………………………………………………………………………………
Have you had a seizure?

First aid advice and Information

First Aid for Seizures

If you have had one seizure, you and your relatives may be worried about what to do if you have another. Take the time to read this leaflet and show it to your friends and relatives so they can help you if you do have another seizure.

If someone has a seizure don't panic.

During the Seizure

- If possible, move anything from around them that they may injure themselves on.
- If you can, note the time.
- Don't move the person unless they are in danger.
- Don't put anything in their mouth.
- Protect their head but don't restrict their movements.

After the Seizure

- Turn them on to their side (see diagram).
- If they seem to be having difficulty breathing, check there is nothing blocking their airway e.g. food, false teeth etc.
- Don't leave them until they are fully recovered.

Call an ambulance if;
- The seizure lasts more than 5 minutes.
- If the person has injured themselves.
- Or if the person has a series of seizures without regaining consciousness.
Seizures can be allowed to run their natural course following these guidelines. Recovery time varies from person to person. Some people need to rest for a few minutes; others may need to sleep for some time.

Remember

- If you have a driving licence you must inform the Driver Vehicle Licensing Authority (DVLA) and you must not drive until they say you can.
- Many people have only one seizure but it is wise to take some precautions for a while. Consider what the risks may be to you in any situation and minimise them as far as possible. For example: consider using a shower rather than a bath, avoid climbing ladders or scaffolding and if you go swimming, go with a friend and inform the attendants.
- You may be referred to a specialist for further tests. When you attend your appointment make sure you take someone with you who has seen your attack.

Further information

If you have any questions or require further information please contact:

**Epilepsy Society**

Tel: 01494 601 400  
Website: [http://www.epilepsysociety.org.uk](http://www.epilepsysociety.org.uk)

**Epilepsy Action**

Tel: 0808 800 5050  
Website: [http://www.epilepsy.org.uk](http://www.epilepsy.org.uk)

**Epilepsy Specialist: Nurse Penny Burt:**

Tel: 0191 282 3995 (Mon-Fri, 9am-5pm)

Every effort has been made to ensure that the information in this leaflet is correct. It is, however, only intended as a guide and each individual's care may be different.

Your doctor will advise you on your own personal treatment.

**Information produced by Epilepsy Specialist Nurse. July 2003**  
**Next review: April 2014**
Further information/contacts.................................................................

Clinical Lead Signature ......................Print Name...P Stamp........Date.....................

Authors Signature..............................Print Name...P Stamp........Date..................

Trust Approved Signature....................Print Name...P Stamp........Date..................

Add to Intranet –Emergency Care and Medicine
Referral form from A&E for adults with uncomplicated first generalised seizure (copy to GP) *(Advice on completion of form: see pathway for information regarding this form)*  
**Keywords - Epilepsy; First fit**  
For further information, see Seizure Management in Emergency Care (Adult) Guideline

<table>
<thead>
<tr>
<th>Inclusion Criteria</th>
<th>Name</th>
<th>DOB</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patients &gt; 16 yrs Clear history of first generalised epileptic seizure</td>
<td>Address</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Exclusion Criteria</th>
<th>Tel no</th>
<th>Attach address label</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patients with non-epileptic attacks</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Those with symptomatic seizures e.g. hypoglycaemia, acute trauma, eclampsia</td>
<td></td>
<td></td>
</tr>
<tr>
<td>People more suited to elderly care review</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**History:** (continue onto second page if needed)

**Temp:**

**Pulse:**

**BP:**

**BM:**

**Investigations table (enter results or attach results sheet)**

<table>
<thead>
<tr>
<th>ECG</th>
<th>(send photocopy with form)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urea</td>
<td>Alk Ph</td>
</tr>
<tr>
<td>Creat</td>
<td>ALT</td>
</tr>
<tr>
<td>Na</td>
<td>Bil</td>
</tr>
<tr>
<td>K</td>
<td>Alb</td>
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<td>CO2</td>
<td>Hb</td>
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<tr>
<td>Ca</td>
<td>MCV</td>
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<tr>
<td>GGT</td>
<td>WCC</td>
</tr>
<tr>
<td>Gluc</td>
<td>Plat</td>
</tr>
<tr>
<td>CXR</td>
<td></td>
</tr>
<tr>
<td>CT</td>
<td></td>
</tr>
</tbody>
</table>

**Indications for CT scan prior to disposition**

- Persistent new focal neurological deficits
- Persistent altered mental status
- Fever or persistent headache
- Recent head trauma
- History of cancer or HIV infection
- Patients with focal onset seizure
- Anticoagulation or bleeding diathesis
- Past history of stroke /TIA
- Patients whose follow-up cannot be ensured (discuss with senior)

**PLEASE ENSURE ALL FILMS ARE TRANSFERRED TO THE NEWCASTLE HOSPITALS SYSTEM**

**Discharge table – instructions in all sections must be fulfilled before referral is made**

Patient has fully recovered with no persistent neurological symptoms or signs (incl. headache)

Normal observations and investigations (incl. temperature)

Consider social circumstances prior to discharge (will the patient be safe?)

Patient has been given departmental written advice sheet

- including driving and lifestyle changes

Patient suitable for First Seizure Clinic follow up

- copies of form and all notes forwarded FAO Neurology - First Seizure Clinic

- NB if you do not do this you may delay your patients follow up

fax number **0191 282 4085**

Copy referral form to GP

Retain original form in A&E notes

Hospital/department referring patient

Signature/Name (in capitals)

Contact phone number of person faxing referral
Febrile seizures

Simple

Complex

Febrile Convulsions - Paediatrics

Document Type: Clinical Guideline
Clinical Lead: Dr Stephen Bruce
Author/s: Dr Anjali Chaudhari
Directorate: Child Health
Approved by Sub Committee/Group: Child Health Clinical Policy Group
Date Approved by Sub Committee/Group: TBC
Date Approved by Clinical Guidelines Group: 14/12/2011
Date of Issue: October 2011
Review Date: October 2014
Version: 1

Relevant to: (Northumbria Healthcare Foundation Trust NHS Trust; North Tyneside General Hospital etc)

Important Notes/Exclusions

Criteria for Use: For use in paediatric services

Febrile seizure is a benign seizure that occurs between the age of 6 months and 5 years, peak incidence at 18 months. It is usually associated with fever or rising temperature with no intracranial infection or defined cause for their seizure. It occurs in a neurodevelopmentally normal child, with no previous non-febrile fits. 1 3 4

Criteria for diagnosis: 1 3 4

<table>
<thead>
<tr>
<th>Simple febrile seizure – all of the following:</th>
<th>Complex febrile seizure - any of the following:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fit is generalised tonic-clonic</td>
<td>Any focal symptoms</td>
</tr>
<tr>
<td>Duration &lt; 15 minutes,</td>
<td>Duration &gt; 15 minutes</td>
</tr>
<tr>
<td>No more than one seizure in 24 hours</td>
<td>Recurrence within 24 hours</td>
</tr>
<tr>
<td>Followed by full recovery within 1 hour</td>
<td>Not followed by full consciousness within one hour</td>
</tr>
</tbody>
</table>

Investigations including lumbar puncture and neuro-imaging (CT brain if focal seizure) are often warranted for complex febrile seizures.

*Initial management:* see THE FITTING CHILD - Convulsions - Paediatrics
Evaluation of a child with a febrile seizure:

- Detailed history including family history of febrile seizure, and epilepsy.³

- Examine carefully for focus for the temperature, evidence of meningitis, underlying neurological deficit, asymmetry, and stigmata of neurocutaneous markers and measuring the head circumference.³

- Routine blood tests are not recommended unless where clinically indicated,³ and urine infection needs to be ruled out.

- In younger children signs of meningitis can be subtle. So consider a lumbar puncture in children less than 12 months unless a site of infection is clearly identified. The decision not to perform an LP should be made by a middle grade or more senior doctor

- A short period of close observation is reassuring.

Control fever:

- Paracetamol is the most useful drug.
- Ibuprofen is also useful (use with caution if clinically dehydrated). (Recent NICE guidelines for fever advice against use of paracetamol for just reduction of fever. Also, alternating paracetamol and Ibuprofen is not recommended by NICE)

- Remove most of clothing, but do not allow child to become cold peripherally

- Use fan to move air in room if necessary, but do not direct onto child

- Tepid sponging is of no value as it often causes cutaneous vasoconstriction

Admission:

Offer admission to all children with their first febrile convulsion.

Counsel parents:

- Increasingly, a genetic predisposition is recognised, with febrile seizures occurring in families but the exact mode of inheritance varies between families.

- The risk of another child having febrile seizure is one in five if one sibling is affected, and one in three if both parents and a previous child had febrile seizure.¹

- Other risk factors associated with an increased rate of febrile seizure recurrence include young age at onset (less than 12 months), history of simple or complex febrile seizures, and body temperature at onset of less than 40 °C.

- Age at onset seems the most constant predictive factor, with 50% of children aged less than 12 months, and 30% of children aged more than 12 months, presenting with a recurrent febrile seizure

- Simple febrile seizures may slightly increase the risk of developing epilepsy but have no adverse effects on behaviour, scholastic performance, or neurocognition.

- Prevent by controlling fever - as above

- Regular prophylactic anticonvulsants are not indicated for treatment of simple febrile seizure as there is no evidence to reduce the risk of epilepsy developing and considerable potential side effects exist.³⁴
Issue Advice/Information leaflet

REFERENCES


(2) Feverish illness in children. Assessment and initial management in children younger than five years. NICE clinical guidelines 47.


AUDITABLE OUTCOMES

Further information/contacts

Clinical Lead Signature ..........Print Name Dr Stephen Bruce ..........Date October 2011

Authors Signature..................Print Name Dr Anjali Chaudhari ..........Date October 2011

Trust Approved Signature............Print Name..............................Date................

Add to Intranet – Please Indicate appropriate Specialties: Paediatrics & Emergency Care
**Status Epilepticus in Adults**

- **Manage ABC**
  - High flow oxygen
  - IV access
  - Check glucose and treat

- If seizure persists after 10 minutes
  - Lorazepam 2-4mg IV over 2 minutes
  - If alcohol misuse suspected give Pabrinex
  - High Potency 1&2 (2 pairs)

- If seizure persists after 10 minutes
  - Lorazepam 2-4mg IV over 2 minutes

- If seizure persists after 10 minutes
  - Phenytoin 20mg/kg IVI at a rate not to exceed 50mg/min with BP/ECG monitoring

- If seizure persists after 20 minutes
  - General anaesthesia

**Notes:**
In refractory status epilepticus consider the diagnosis of pseudostatus and the use of other drugs (e.g., Phenobarbitone 10mg/kg)

**References:**
# Status Epilepticus in Adults

<table>
<thead>
<tr>
<th>Document Type: Clinical Guideline</th>
<th>Date ratified by Clinical Guidelines Group: 19/06/2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>Author/s &amp; Clinical Lead: James Hayton</td>
<td>Date of Issue: 23/07/2014</td>
</tr>
<tr>
<td>Approved by Business Unit/ Committee: Emergency Department</td>
<td>Review Date: May 2015</td>
</tr>
<tr>
<td>Date approved by Business Unit/Sub Committee: 22/04/2014</td>
<td>Version: 1.2</td>
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Relevant to: **North Cumbria University Hospitals NHS Trust**

Please complete additional information required for implementation and publication on the Intranet

<table>
<thead>
<tr>
<th>Changes made: None</th>
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<tr>
<td>Brief Description: To provide information and advice on management of adults patients (16 years and over) with generalized convulsive status epilepticus</td>
</tr>
<tr>
<td>Specialities: Emergency Care, General Medicine</td>
</tr>
<tr>
<td>Keywords: Status Epilepticus, Epilepsy, Convulsion, Seizures, GCSE</td>
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<tr>
<td>Further information / local contact(s): James Hayton, EM Consultant, WCH</td>
</tr>
<tr>
<td>Staff training: Incorporated in EM and general medicine training</td>
</tr>
<tr>
<td>Dissemination: Available on trust website</td>
</tr>
<tr>
<td>Auditable Outcomes: TBC</td>
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</tbody>
</table>
**Status Epilepticus - Paediatrics**

- Call for senior paediatric help at an early stage
- Follow each step until fits resolve, but do not treat post-ictal posturing as seizure
- Prepare next step in algorithm immediately after previous one administered
- Do not give more than 2 doses of benzodiazepine, including any pre-hospital doses

### Algorithm

1. **Airway**
   - High flow oxygen
   - Glucose measurement

2. Vascular access?
   - Yes
   - Lorazepam* 0.1 mg/kg IV/IO (max 4 mg) over 6 min (dilute 1:1 with sodium chloride 0.9%)
   - Midazolam buccal$ (see Table below for dose)
   - If seizure continuing **10 min** after start of step 1

3. **Pre-prepare phenytoin. Call for senior help**
   - Reconfirm it is an epileptic seizure
   - Phenytoin** 20 mg/kg IV/IO over 20 min with cardiac monitoring
   - If seizure continuing **10 min** after start of step 3

### Diazepam (IV)

<table>
<thead>
<tr>
<th>Diazezapam (IV)</th>
<th>Diazepam (rectal)</th>
<th>Midazolam (buccal)</th>
<th>Paraldehyde (rectal) volume of 50:50 diluted</th>
</tr>
</thead>
<tbody>
<tr>
<td>If lorazepam not available</td>
<td>Aged 1 month – 2 yr: 300-400μg/kg (max 10mg)</td>
<td>Aged 1 month – 2 yr: 5 mg</td>
<td>Aged &lt;6 months: 300 μg/kg (max 2.5 mg)</td>
</tr>
<tr>
<td>Aged &gt;12 yr: 10 mg</td>
<td>Aged 2–12 yr: 5–10 mg</td>
<td>Aged 6 months – 1 yr: 2.5 mg</td>
<td>1 month – 18 yr 0.8mL/kg</td>
</tr>
<tr>
<td>Aged &gt;12 yr: 10 mg</td>
<td>Aged 5–10 yr: 7.5 mg</td>
<td>Aged 1–5 yr: 5 mg</td>
<td></td>
</tr>
<tr>
<td>Aged &gt;10 yr: 10 mg</td>
<td></td>
<td></td>
<td>Age 5–18 yr: 5–10 mL</td>
</tr>
</tbody>
</table>

* If lorazepam not available give IV diazepam.
$ If buccal midazolam not available give rectal diazepam
# If vascular access and intraosseous still not obtained give paraldehyde PR: 0.8 mL/kg ready mixed solution or 0.4 mL/kg diluted with equal volume of olive oil
** If already taking phenytoin, give phenobarbital 20 mg/kg IV/IO over 20 min diluted 1:1 with water for injection (available from SCBU at WCH and CIC)
Status Epilepticus - Paediatrics

| Document Type: Clinical Guideline | Date ratified by Clinical Guidelines Group: 19/06/2014 |
| Clinical Lead: James Hayton | Date of Issue: 23/07/2014 |
| Author/s: North Staffordshire Guideline Group | Review Date: December 2014 |
| Approved by Business Unit/ Committee: Emergency Department | Version: 1.0 |
| Date approved by Business Unit/Sub Committee: 22/04/2014 | |

Relevant to: North Cumbria University Hospitals NHS Trust

Please complete additional information required for implementation and publication on the Intranet

Changes made: Note regarding emergency supply of phenobarbitone from SCBU at CIC/WCH.

Brief Description: To provide information and advice on management of paediatric patients (under 16 years old) with status epilepticus

Specialities: Emergency Care, Paediatrics

Keywords: Status Epilepticus, Epilepsy, Convulsion, Seizures

Further information / local contact(s): James Hayton, EM Consultant, WCH

Staff training: Incorporated in EM and Paediatric training

Dissemination: Available on trust website

Auditable Outcomes: Compliance with flowchart
Form NFS: For Patients Suitable for Neurology Out-Patient Referral Following Suspected First Seizure

Date of referral: ........................................... Patient details (label):
Referral from (Dept): ................................. Referral by (Dr): .................................
Signature:....................................................

**Action 1) HISTORY** – obtain a clear history of event plus symptoms just before and after from patient and if possible witness.

<table>
<thead>
<tr>
<th>Date of event:</th>
<th>Time of onset of event:</th>
<th>Duration of seizure-like activity:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>No  Yes If Yes Describe:</td>
</tr>
</tbody>
</table>

- Warning symptoms
- Focal beginning or aura
- Limbs jerking
- Limbs shaking
- Incontinence of urine
- Tongue biting
- Post-ictal state
- Repeated seizure in <1 day
- Alcohol 1-2 days prior
- Recreational drugs

**Action 2) GENERAL EXAMINATION**

<table>
<thead>
<tr>
<th>P</th>
<th>BP</th>
<th>BM</th>
<th>ECG findings</th>
</tr>
</thead>
</table>

**Action 3) – Advice Checklist:** (tick when done) □
- Give patient advice leaflet called "First Seizure" AND specifically advise them regarding:
- General safety measures while having bath, avoid working at height, with machinery, etc.
- DO NOT DRIVE until cause of episode is clear. Consultant neurologist will advise.
- Patient is recommended to inform DVLA that they are under medical investigation following a possible seizure

**Action 4) – Referral Checklist:** (tick when done) □
- Copy ECG
- Copy SEWS chart (both sides)
- Copy this form (completed both sides)
- File copies with ED notes
- Send all three documents, in sealed envelope or fax to:

**Neurology Department, Penrith Hospital, Cumbria Partnership NHS FT, fax: 01768245302**