



CG004.v Status Epilepticus (Adults)

1. Key Recommendations for operational use

1	Initial	<ul style="list-style-type: none">• High flow oxygen: titrate to S_pO_2 94-98%• Basic monitoring: S_pO_2, NIBP, ECG• Standard ABC management as required• Consider buccal or intranasal therapy• IV or IO access
2	Benzodiazepines	<ul style="list-style-type: none">• If seizure lasts >5 minutes, use any of:• Midazolam 10mg BUCCAL or INTRANASAL• Lorazepam 4mg IV• Diazepam 10mg IV or PR• Repeat after 10 minutes if no response
3	Glucose	<ul style="list-style-type: none">• Check BM• 250ml 10% IV glucose if BM <3 mmol/l
4	Thiamine	<ul style="list-style-type: none">• If suggestion of malnutrition or alcohol misuse:• 2 pairs of IV Pabrinex in 100ml saline over 30 mins
5	Anti-convulsant drugs	<ul style="list-style-type: none">• Within 30 minutes, if seizures continue, use either:<ul style="list-style-type: none">- Phenytoin 18 mg/kg at 50 mg/min- Valproate 20-30 mg/kg at 40 mg/min
6	General anaesthesia	<ul style="list-style-type: none">• If seizures continue, and within 60 minutes, induce anaesthesia• Midazolam, thiopentone or propofol are suitable induction agents• Propofol or midazolam are suitable maintenance infusions
7	Consider these	<ul style="list-style-type: none">• Chest X Ray - assess for signs of aspiration• Arterial blood gas• Check electrolytes for sodium and potassium• Neuroprotective physiological strategies• Measure temperature and actively treat pyrexia• CNS infection and antibiotic therapy• Requirement for CT brain as part of triage decision• Requirement for EEG as part of triage decision



CG004.v Status Epilepticus (Adults)

2. Document History			
Reference Number	CG004		
Version	1		
Writing group (Chair in bold)	Iain Cromarty	General Practitioner	RGPAS
	Paul Gowens	Consultant Paramedic	SAS
	Fiona MacGregor	Pharmacist	Scottish Adult Critical Care Pharmacists Network
	Richard Price	Intensivist	EMRS
	Jeff Proctor	Adv Retrieval Practitioner	EMRS
	Suzie Thomson	Neuroanaesthetist	EMRS
Associate Medical Director	Andrew Inglis		
Date issued	22nd January 2018	Format revisions: 23rd April 2019	
Date for review	January 2021		
Distribution	ScotSTAR	EMRS West	✓
		EMRS North	✓
		Paediatric	X
		Neonatal	X
	Referring centres via service websites		✓
	BASICS Scotland		✓
	Medic 1		X
	Tayside Trauma Team		X
	Rural GPs Association of Scotland		✓
	SAS Air Ambulance Division		for information





CG004.v Status Epilepticus (Adults)

3. Scope and purpose

- Overall objectives:

Status epilepticus carries considerable morbidity and mortality. The aim of this guideline is to summarise an incremental management plan to adult patients with seizures lasting >5 minutes that can be applied to a remote and rural healthcare setting, mindful of variable resources between these facilities.

- Statement of intent:

This guideline is not intended to be construed or to serve as a standard of care. Adherence to guideline recommendations will not ensure a successful outcome in every case, nor should they be construed as including all proper methods of care or excluding other acceptable methods of care aimed at the same results. The ultimate judgement must be made by the appropriate healthcare professional(s) responsible for clinical decisions regarding a particular clinical procedure or treatment plan.

- Feedback:

Comments on this guideline can be sent to: scotamb.CPG@nhs.net

- Equality Impact Assessment:

Applied to the ScotSTAR Clinical Standards group processes.

- Guideline process endorsed by the Scottish Trauma Network Prehospital, Transfer and Retrieval group.





CG004.v Status Epilepticus (Adults)

4. Explanatory Statements

4.1 Initial management	Authors' recommendation	Level [Reference]
<ul style="list-style-type: none">• <i>High flow oxygen: titrate to S_pO_2 94-98%</i>• <i>Basic monitoring: S_pO_2, NIBP, ECG</i>• <i>Standard ABC management as required</i>• <i>IV or IO access</i>	Strong	Guidelines [1,2]
4.2 Benzodiazepines	Authors' recommendation	Level [Reference]
<ul style="list-style-type: none">• <i>If seizure lasts >5 minutes, use any of:</i>• <i>Midazolam 10mg BUCCAL or INTRANASAL</i>• <i>Lorazepam 4mg IV</i>• <i>Diazepam 10mg IV</i>• <i>Repeat after 10 minutes if no response</i>	Strong	Guidelines [1,2]
4.3 Glucose	Authors' recommendation	Level [Reference]
<ul style="list-style-type: none">• <i>Check BM</i>• <i>250ml 10% IV glucose if BM <3 mmol/l</i>	Strong	Guidelines [1,2]
4.4 Thiamine	Authors' recommendation	Level [Reference]
<ul style="list-style-type: none">• <i>If suggestion of malnutrition or alcohol misuse:</i>• <i>2 pairs of IV Pabrinex in 100ml saline</i>	Strong	Guidelines [1,2]
4.5 Anticonvulsant drugs	Authors' recommendation	Level [Reference]
<ul style="list-style-type: none">• <i>Within 30 minutes, if seizures continue, use either:</i>• <i>Phenytoin 18 mg/kg at 50 mg/min</i>• <i>Valproate 20-30 mg/kg at 40 mg/min</i> <p>Phenytoin is likely to be most familiar; consider reducing the rate of infusion if hypotension or dysrhythmias are an issue. Valproate may cause CNS depression when given with benzodiazepines.</p>	Strong	Guidelines [1,2]
<p>Note that the current NICE guideline refers to pentobarbital; we do not consider that experience, familiarity and availability of this drug supports inclusion when applied to the remote / rural / transport environment.</p>	GPP	



CG004.v Status Epilepticus (Adults)

4.6 General anaesthesia	Authors' recommendation	Level [Reference]
<ul style="list-style-type: none"><i>If seizures continue and within 60 minutes, induce general anaesthesia</i><i>Midazolam, thiopentone or propofol are possible induction agents</i><i>Propofol and midazolam are suitable maintenance infusions</i>	Strong	Guidelines [1,2]

4.7 Think about	Authors' recommendation	Level [Reference]
<ul style="list-style-type: none">Chest X Ray - assess for signs of aspiration	Conditional	Guideline [1]
<ul style="list-style-type: none">Arterial blood gas for both gas exchange and appraisal of acidosis	Conditional	Guidelines [1,2]
<ul style="list-style-type: none">Check electrolytes for sodium and potassium Hyponatraemia can sometimes present with seizures. Do not attempt to rapidly correct it but normal saline maintenance should be started. Hyperkalaemia may result from rhabdomyolysis and should be treated conventionally	GPP	
<ul style="list-style-type: none">Neuroprotective physiological strategies Standard neuroprotective targets should be achieved, similar to the management of a head injured patient: normocarbida, MAP>70, 15° head up tilt, normoglycemia.	GPP	
<ul style="list-style-type: none">Measure temperature and actively treat pyrexia normothermia is a key neuroprotective target mechanism. Pyrexia may result from prolonged seizures or indicate infection or drug toxicities as an underlying cause.	GPP	
<ul style="list-style-type: none">CNS infection and antibiotic therapy Meningitis and encephalitis should be considered and considering the setting, have a low threshold for blood cultures and empirical antibiotics if there is any suggestion of CNS infection	GPP	
<ul style="list-style-type: none">Requirement for CT brain as part of triage decisions unless a clear non-structural cause is confidently identified, a CT brain is likely to form part of the early in-hospital management and should be factored into triage decisions	GPP	
<ul style="list-style-type: none">Requirement for EEG as part of triage decisions SIGN raise EEG emergency availability as a grade D recommendation. Although EEG availability is limited to major centres, this should be factored into triage decisions	Conditional	Guideline [1]



CG004.v Status Epilepticus (Adults)

5. References

1. Scottish Intercollegiate Guidelines Network (SIGN). Diagnosis and management of epilepsy in adults. Edinburgh: SIGN; 2015. (SIGN publication no. 143). [May 2015]. Available from URL: <http://www.sign.ac.uk>
2. NICE Clinical Guideline (CG137). Epilepsies: Diagnosis and Management Appendix F: Protocols for treating convulsive status epilepticus in adults and children (adults published in 2004 and children published in 2011) <https://www.nice.org.uk/guidance/cg137/chapter/appendix-f-protocols-for-treating-convulsive-status-epilepticus-in-adults-and-children-adults-published-in-2004-and-children-published-in-2011>