

Clinical Guideline

WATCH – MANAGEMENT OF CHILDREN IN STATUS EPILEPTICUS IN THE DISTRICT GENERAL HOSPITAL

SETTING	Wales and West Acute Transport for Children
FOR STAFF	WATCH Team, South West and Wales District General Hospital medical and nursing teams.
PATIENTS	Children with status epilepticus in a DGH requiring local extubation or a WATCH retrieval.

GUIDANCE

Commence treatment in all seizures >5 minutes duration as per the APLS algorithm. This guideline provides advice for the child requiring either a WATCH retrieval or a pathway to support local extubation. If ongoing seizures see **REFRACTORY STATUS EPILEPTICUS (RSE)**. A summary guideline can be found on page 2 and is available on the WATCH website (www.watch.nhs.uk).

RELATED DOCUMENTS	APLS (2016) Wilfong (2020) Management of Convulsive Status Epilepticus in Children
AUTHORISING BODY	WATCH governance group
SAFETY	Treatment for Refractory Status Epilepticus should be discussed with WATCH +/- a tertiary neurologist.
QUERIES	0300 0300 789

MANAGEMENT OF CHILDREN IN STATUS EPILEPTICUS IN THE DISTRICT GENERAL HOSPITAL

Prolonged seizure (>5mins) or recurrent seizures without return to baseline between seizures.

If ongoing seizures see REFRACTORY STATUS EPILEPTICUS (RSE) below

CAUSES	MANAGEMENT
<p>Most common: Febrile convulsion and known epilepsy Consider: meningitis, encephalitis, head injury, cerebral infarct or bleed, blocked VP shunt, space occupying lesion Hypoglycaemia, hyponatraemia, hypoxic ischaemic event, poisoning, inborn error of metabolism</p>	<p>Manage Airway, Breathing, Circulation (treat hypoxia, hypotension). Treat seizures as per APLS algorithm (NB max 2 doses benzodiazepine, including pre-hospital doses) or as per child's individual seizure management plan. Levetiracetam (Keppra) either instead of or in addition to phenytoin. 40mg/kg loading dose (maximum 2500mg). IV administration over 5 minutes into a large vein. Dilution to a maximum of 50mg/ml with 0.9% NaCl Find and treat underlying cause</p> <ul style="list-style-type: none"> - Consider antibiotics/acyclovir - Hypoglycaemia – 2ml/kg 10% glucose - Correct hyponatraemia – 5ml/kg 2.7% NaCl to achieve serum Na >125mmol/l - Antipyretics for fever
URGENT INVESTIGATIONS	
<p>Blood glucose and blood gas FBC, Urea and electrolytes, Calcium, Magnesium, CRP Consider ammonia Consider toxicology screen BP to exclude malignant hypertension Anti-Epileptic Drugs (AEDs) levels (if appropriate) Consider CT if focal seizure/neurology, trauma or suspected space occupying lesion, VP shunt blockage</p>	<p>May require intubation either for seizure management or following termination of seizure (for respiratory suppression or CT scan).</p>
POTENTIAL COMPLICATIONS	
<p>Hypoventilation / hypotension post benzodiazepines Difficulty recognising ongoing seizures Difficulty identifying cause Dravet Syndrome – phenytoin is contraindicated</p>	
CONSIDERATION FOR LOCAL EXTUBATION	REQUEST WATCH RETRIEVAL
<p>Extubate locally if: RESP: Saturations within expected range Oxygen <45% PIP <22 PEEP <8 Spontaneously breathing Normal blood gas CVS: Cardiovascular stability CNS: Seizures controlled Absence of focal neurology Airway reflexes present Normal posture Pupils equal and reactive Responding to voice or better</p> <p>NB: If conscious level is reduced due to repeated anticonvulsant doses hold sedation and reassess for extubation in 4-6 hours</p>	<p>If seizure terminated but not suitable for local extubation prepare for transfer while awaiting WATCh arrival: Insert Nasogastric tube (NGT) CXR for Endotracheal Tube (ETT) and NGT position Blood gas post intubation Suction as required Commence Intravenous (IV) sedation with Morphine and Midazolam according to WATCh drug sheet. Hourly neuro observations and pupil checks Restrict isotonic maintenance fluid to 80% (60% if evidence of raised ICP) Urinary catheter</p> <p>Neuroprotective measures if raised ICP on CT or clinical signs present: Glucose (aim 4-8mmol) 5ml/kg 2.7% NaCl to achieve a serum sodium >145 mmol/L Antipyretics / active cooling (aim for normothermia) Ceftriaxone +/- Acyclovir (if meningitis suspected) Nurse with head midline Ventilate to ETCO₂ 4-4.5kpa 30 degree head tilt</p>
REFRACTORY STATUS EPILEPTICUS (seizures continue following RSI)	
<p>Conference call with WATCh and neurologist Increase Midazolam by 60micrograms/kg/hr every 15 minutes until seizure terminates (max 300micrograms/kg/hr). If RSE continues on the maximum dose advised in the BNFC the midazolam can be increased by 100microgram/kg/hr every 15 minutes until the seizure terminates (max reported dose of 1.6mg/kg/hr), but MUST be in discussion with WATCh Consultant/Tertiary Neurologist</p>	
<ol style="list-style-type: none"> 1. APLS (6th Edition) 2016 2. Wilfong (2020) Management of Convulsive Status Epilepticus in Children 	

Paediatric Status epilepticus flow diagram

Treat and investigate as per APLS protocol & WATCH – Management of children in status epilepticus in the DGH

Respiratory inadequacy or airway compromise ongoing seizures, focal neurology, GCS<8/15 after termination of seizure / not returning to normal baseline

RAPID SEQUENCE INDUCTION

Intubated child

DISCUSS CHILD WITH WATCH

Concerns?

- Acute illness e.g. meningitis, pneumonia, aspiration
- Metabolic disorder, hypoglycaemia, poisoning
- Focal seizure/neurology, trauma or suspected space occupying lesion, VP shunt blockage
- Other reasons seizure unlikely to terminate

NO

YES

Hold sedation and assess for extubation

Failed criteria for extubation

IV sedation with Morphine & Midazolam according to WATCH drug sheet.
Avoid muscle relaxant prior to transfer to allow for neurological assessment

Clinical

- RS** Saturations within expected range
Oxygen <45%
PIP <22; PEEP <8
Spontaneously breathing
Normal blood gas
- CVS** Cardiovascular stability?
- CNS** Seizures controlled
Absence of focal neurology
Airway reflexes present
Normal posture
Pupils equal and reactive
Responding to voice or better
- SEPSIS** No signs of evolving LRTI (secretions, CXR, labs)

Await WATCH retrieval to PICU

Ongoing Management:

- Insert Nasogastric tube
CXR to confirm endotracheal tube & NGT position
Post intubation blood gas
Hourly neuro observations and pupil checks
Restrict isotonic maintenance fluid to 80% (60% if evidence of raised ICP)
Urinary catheter
- Neuroprotective measures if raised ICP on CT or clinical signs present:**
Glucose (aim 4-8mmol)
2.7% NaCl 5ml/kg to achieve a serum sodium >145 mmol/L
Antipyretics / active cooling (aim for normothermia)
Ceftriaxone +/- Acyclovir (if meningitis suspected)
Nurse with head midline; 30 degree head tilt
Ventilate to ETCO₂ 4-4.5kpa

'YES' TO ALL

'NO' TO ANY

Logistics & Resources

Appropriately skilled doctors & nurses available?
Suitable High Dependency area for on-going care?

YES

Extubate child

Agree appropriateness for local extubation, but maintain close contact with WATCH.
Consider light sedation with propofol infusion 1-4mg/kg/hr whilst optimising respiratory function.
Monitor closely in High Dependency setting for 12-24 hours post-extubation