GUIDELINE FOR THE MANAGEMENT OF THE UNCONSCIOUS CHILD

Reference: Unconscious Child

Version No: 1

Applicable to

Children presenting in an unrousable state to UHW / CHfW

Classification of document: Guideline

Area for Circulation: Children’s Hospital for Wales

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Group Consulted: Practitioners within the Children’s Hospital for Wales

Current literature

Ratified by: Child Health Guideline Meeting

May 2012

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<table>
<thead>
<tr>
<th>Version Number</th>
<th>Date of Review</th>
<th>Reviewer Name</th>
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<th>Approved By</th>
<th>Date Approved</th>
<th>New Review Date</th>
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<td>2014</td>
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Disclaimer

These have been ratified at the Child Health Guideline Meeting, however clinical guidelines are guidelines only.
The interpretation and application of clinical guidelines will remain the responsibility of the individual clinician.
If in doubt contact a senior colleague or expert.
Caution is advised when using guidelines after the review date.

Guideline for the management of the Unconscious Child
Management of the Unconscious Child

**Definition:** A state of unrousability.

- The changes in mental state which precede coma may be classified by the "Modified Glasgow Coma Scale For Infants And Young Children"
- In this scale, the total score = eye opening + motor response + verbal response. **The best response is scored.** The lowest score is 3, and the highest is 15 (the fully conscious child).
- Children in coma have GCS scores of 8 or less. In the context of head trauma, a GCS of 8 or less suggests severe cerebral injury, a GCS of 9 - 12 moderate cerebral injury, and a GCS of 13 – 15 minor cerebral injury.
- Limitations of the GCS include the fact that the verbal component is difficult to apply to young children and cannot be applied to the intubated patient. The score does not give any weight to focal deficits such as hemiparesis. The score was developed in adults, and does not have the same predictive value in childhood.

<table>
<thead>
<tr>
<th>Category</th>
<th>Score</th>
<th>Response &lt; 1 year</th>
<th>Response &gt; 1 year</th>
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</thead>
<tbody>
<tr>
<td><strong>Eye Opening</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td>Spontaneous</td>
<td>Spontaneous</td>
</tr>
<tr>
<td>3</td>
<td></td>
<td>To Shout</td>
<td>To speech</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>To pain</td>
<td>To pain</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td><strong>Best Motor</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td></td>
<td>Normal movement</td>
<td>Obeys commands</td>
</tr>
<tr>
<td>5</td>
<td></td>
<td>Localizes to pain</td>
<td>Localizes to pain</td>
</tr>
<tr>
<td>4</td>
<td></td>
<td>Flexion withdraw₁</td>
<td>Flexion withdraw₁</td>
</tr>
<tr>
<td>3</td>
<td></td>
<td>Abnormal flexion</td>
<td>Abnormal flexion</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>Extension</td>
<td>Extension</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td><strong>Best Verbal²</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>0-23 mths</td>
<td>Smiles/coos/cries appropriate</td>
<td>Orientated</td>
</tr>
<tr>
<td>4</td>
<td>2-5 yrs</td>
<td>Cries/screams consolable</td>
<td>Confused</td>
</tr>
<tr>
<td>3</td>
<td>&gt;5yrs</td>
<td>Irritable/inconsolable</td>
<td>Inappropriate words</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>Grunts/agitated</td>
<td>Cries/screams</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td>None</td>
<td>Grunts</td>
</tr>
</tbody>
</table>

*apply knuckles to sternum and observe arms  *arouse patient with painful stimulus if necessary

*Guideline for the management of the Unconscious Child*
## Aetiology – not exhaustive list

**Infectious Causes**
- Meningitis, encephalitis
- Toxic shock syndrome
- Subdural empyema, cerebral abscess

**Toxins**
- Drugs
- Carbon monoxide

**Neoplastic**
- Brain tumours

**Trauma**
- Head injury
- Haemorrhage: epidural, subdural

**Vascular**
- Arteriovenous malformation
- Aneurysm, venous thrombosis

**Metabolic**
- Hypoglycaemia
- DKA
- Electrolyte abnormalities
- Inborn errors of metabolism
- Hepatic encephalopathy
- Hormonal abnormalities: thyroid, adrenal, pituitary
- Uraemic encephalopathy

**Other**
- Hypothermia
- Hyperthermia
- Seizures and postictal state
- Hypertension
- Hydrocephalus
- Hypoxic-ischaemic
- Sepsis
- Intussusception
- Acute confusional migraine
- Psychiatric
Approach to the Unconscious Child

- **Obstructed** Paediatric Cardiac Arrest

**Airway**
- **At Risk** Discuss with senior/anaesthetic review
- **Patent** Observe, frequent reassessment
  - High flow oxygen till SpO₂ known

**C-Spine¹** Is there a history to exclude trauma - if not protect C-spine

- **Inadequate** Paediatric Cardiac Arrest, Support with BVM

**Breathing²**
- **Adequate** Observe; frequent reassessment (15 mins)

- Obtain IV/IO access and bloods³
- Is fluid bolus/boluses needed?

**Circulation**
- Monitoring
  - Arrhythmias?
  - Aim to maintain normal HR and normal BP

- GCS⁴ and Pupils

**Disability**
- Glucose - correct hypoglycaemia (Hypo screen)
- Drugs - history of any reversible ingestion
- Treat Seizures

**Exposure**
- Check temperature

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¹ Immobilise as appropriate- care with combative children as immobilisation may worsen neck injury
² Assess RR, Sats and obtain blood gas. Is ventilation adequate?
³ Bloods as indicated by history - see investigations/specific protocols
⁴ Not all cases of reduced GCS need intubating however if imminent improvement not suspected or unsure seek senior advice

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Resuscitation – ABC
And
Conscious Level scoring – AVPU/GCS

Known Cause

History and Examination

Unknown Cause

Appropriate Investigations and Treatment

Possible Significant Trauma?

NO

Primary Laboratory Survey
FBC, Coag, U&Es, Glc, LFTs
Blood cultures
Blood Gases
Ammonia
Urine (dip and toxicology)

Consider Broad Spectrum Antibiotics

Secondary Survey
Cranial CT
Lumbar Puncture
EEG

Possible Overdose
Blood ETOH
Paracetamol
Salicylate
Toxicology screen

Secondary Laboratory Survey

YES

Radiology
CXR
C spine
Lab. Survey
X match

Other appropriate investigations as per history
Points in History

- Time course – when symptoms started and their progression
- Past and recent medical history
- Possible ingestion or exposure to medication or toxins
- Possible recent trauma, illness or exposure to infection
- Family history (e.g. migraine or epilepsy)

Investigations

Consider the following, use clinical judgement, seek senior advice

- **Blood**
  - FBC, film and clotting
  - Glucose
  - U&Es, LFTs, lactate and Ammonia
- **Toxicology**
  - Urine
  - Specific drug blood levels
- **Acid-Base**
  - Blood gas
- **Imaging**
  - CT head
  - MRI
  - C spine
- **EEG**
  - Standard EEG
- **Microbiology**
  - blood cultures
  - LP

Specific Therapies

- **Meningitis/Encephalitis** See protocol
- **Toxins** Consult TOXBASE or regional poisons centre
- **Trauma** See protocol
- **Metabolic** Hypoglycaemia screen
  - DKA pathway
  - Endocrine/metabolic pathways/protocols
- **Other** See relevant protocols on intranet
- **Raised ICP** Maintain “normal” parameters*
  - Catheter
  - Nurse head up 30°
  - PICU involvement
  - (Consider Hypertonic Saline
  - OR Mannitol [www.cardiffpicu.com])

*normal temperature, normal blood glucose, normal oxygenation and normal carbon dioxide