**THE MANAGEMENT OF CHILDREN AND YOUNG PEOPLE WITH AN ACUTE DECREASE IN CONSCIOUS LEVEL**

Population: Children aged from 4 weeks up to 18 years who have a decreased conscious level*.

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**DIFFERENTIAL DIAGNOSIS**

### Hypertensive encephalopathy

**Investigation**
- Look for signs of raised ICP: papilloedema
- Urinalysis for blood/protein + U&Es

**PICU and NEPHROLOGY**
* Discuss when DeCon + hypertension (BP >150* for centile for age)

### Intracranial infection

**Differential**
- Bacterial meningitis
- Intracerebral abscess
- TB meningitis

**Investigation**
- LP including CSF pH, VC for any contraindications

**Treatment**
- **Bacterial:**
  - Refer to the NICE Bacterial meningitis and meningococcal septicaemia guideline for recognition and management of meningococcal septicaemia
  - **HSE:**
    - Duration decided by local GID/ID experts
  - **TB:**
    - At least 2 months

### Raised ICP

**Diagnosis**
- See ‘Signs of raised ICP’

**Treatment**
- Discuss acute management with local PICU
- FrONTAL-oculomotor
- **20° head lift**
- Avoid intubation (upper CVC)
- Hyperventilation
- Avoid use of intravenous lines
- Intubate and ventilate to a PaCO2 of 4.5-5.0 kPa BEFORE IMAGING

### Alcohol intoxication

**Investigation**
- Consider blood alcohol test when suspected as a cause of DeCon

**Treatment**
- ABCD/IVS
- Treat hypoglycaemia with IV glucose + maintenance Dex/Saline
- Avoid intubation (upper CVC)
- Hyperventilation
- Avoid use of intravenous lines
- Intubate and ventilate to a PaCO2 of 4.5-5.0 kPa BEFORE IMAGING

### Shock

**Diagnosis**
- Mottled, cool extensors or diminished peripheral pulses + systolic BP <60* for centile for age or urine output <1mL/kg/hr

**Differential**
- Sepsis, trauma, anaphylaxis, heart failure

**Treatment**
- ABCD/IVS
- Treat hypoglycaemia with IV glucose + maintenance Dex/Saline
- Avoid intubation (upper CVC)
- Hyperventilation
- Avoid use of intravenous lines
- Intubate and ventilate to a PaCO2 of 4.5-5.0 kPa BEFORE IMAGING

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**GLASGOW COMA SCALE (GCS)**

<table>
<thead>
<tr>
<th>Eye</th>
<th>Motricity</th>
<th>Voice</th>
</tr>
</thead>
<tbody>
<tr>
<td>Open</td>
<td>Glaty commands</td>
<td>Converses</td>
</tr>
<tr>
<td>To command</td>
<td>Localises pain</td>
<td>Confused</td>
</tr>
<tr>
<td>To pain</td>
<td>Focuss withdrawal</td>
<td>Stuporous</td>
</tr>
<tr>
<td>No response</td>
<td>Abnormal fixation</td>
<td>Uncommunicable</td>
</tr>
<tr>
<td>No response</td>
<td>Abnormal responses</td>
<td></td>
</tr>
</tbody>
</table>

**GCS MODIFICATIONS IN CHILDREN UNDER 5 YEARS**

<table>
<thead>
<tr>
<th>Motor</th>
<th>Voice</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal spontaneous movements</td>
<td>Alert, babbles, cries, confusion, irritability</td>
</tr>
<tr>
<td>Localises to suprapubic pain (SOP) or withdraws from touch</td>
<td>Less than usual activity, irritability</td>
</tr>
<tr>
<td>Withdraws from raised pad</td>
<td>Grows to pain</td>
</tr>
<tr>
<td>No response</td>
<td></td>
</tr>
</tbody>
</table>

**APAGU SCALE**

- 1 = Alert
- 2 = Responds to voice
- 3 = Responds to pain
- 4 = Unresponsive

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**Laboratory tests**

- Capillary blood glucose, Blood gas (arterial, capillary or venous) for pH, PCO2, BE, Lactic & Urine dipstick
- Hyperglycaemia
- Hypoglycaemia
- Long term use of salicylates

**Saved samples**

- 10mL of urine for later analysis including toxicology

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**Observation – normal ranges**

<table>
<thead>
<tr>
<th>Age</th>
<th>Respiratory Rate</th>
<th>Heart Rate</th>
<th>Systolic BP</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;1 year</td>
<td>35-45</td>
<td>90-160</td>
<td>70</td>
</tr>
<tr>
<td>1-5 years</td>
<td>20-30</td>
<td>80-160</td>
<td>80-100</td>
</tr>
<tr>
<td>5-12 years</td>
<td>20-25</td>
<td>80-100</td>
<td>90-110</td>
</tr>
<tr>
<td>&gt;12 years</td>
<td>adult</td>
<td>adult</td>
<td>100-120</td>
</tr>
</tbody>
</table>

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**Signs of raised ICP**

- Pupillary dilatation (unilateral or bilateral)
- Loss of spontaneous movements
- Abnormal breathing pattern
- Posturing

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**LP WARNING**

- There are signs of raised ICP (GCS <12) or GCS <8 after a secure lasting <10 minutes
- CT/MRI suggesting CSpH path
- Clinical evidence of circulatory shock/meningococcal disease

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*This does not include Children with a previously diagnosed condition which may decompensate causing a decreased conscious level (e.g. epilepsy, vertical-vertigo position, previously diagnosed metabolic condition, who present with a decreased conscious level). Children who have a previous diagnosis of recurrent Grade 3 neuro-axial headache with base scores 14 or less on the Glasgow Coma Scale or Modified Glasgow Coma Scale (e.g. children with epileptic encephalopathy, minimally responsive state following acquired brain injury).

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**Additional tests:**
- Toxicology
- Urine culture
- Blood culture
- Blood PCR (meningo coccal)
- Viral PCR
- Blood PCR
- EEG
- Electroencephalography
- Ocular ultrasound
- Ophthalmic examination
- Skull X-rays
- Brain CT/MRI
- Laboratory tests: Capillary blood glucose, Blood gas (arterial, capillary or venous) for pH, PCO2, BE, Lactic & Urine dipstick
- Hyperglycaemia
- Hypoglycaemia
- Long term use of salicylates
- *Based on consensus methodology or weaker evidence

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**Start observations**

- Record hourly: HR, RR, SPO2, BP, Temperature, physical state/appearance
- Continuous monitor: SaO2, ECG
- Consider differential diagnoses

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**Identify DeCon**

**1. Identify DeCon**
- GCS ≤ 14
- AVPU = P or U
- See ‘Neurological assessment’ box

**2. Perform DeCon specific ABCD**
- A. Intubate if GCS <9, AVPU = U or if there is suspected/proven raised intracranial pressure* See ‘Signs of raised ICP’ box
- B. 100% Oxygen if oxygen SaO2 <95%
- C. If circulation compromised give 10 mL/kg isotonic fluid bolus if DeCon associated with either signs of raised ICP or ketacido sis (as opposed to 20 mL/kg)
- D. Perform a capillary glucose test ≤15 minutes of presentation* If capillary glucose blood ≤3 mmol/L, give 2 mL/kg of 10% dextrose and consider a hypoglycaemia screen
- In a child with a clinical diagnosis of raised intracranial pressure, before imaging consider sedation, intubation and ventilation to maintain the PaCO2 between 4.5 and 5.0 kPa

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**Take core investigations**

- Capillary blood glucose, Blood gas (arterial, capillary or venous) for pH, PCO2, BE, Lactic & Urine dipstick
- Hyperglycaemia
- Hypoglycaemia
- Long term use of salicylates

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**Consider differential diagnoses**

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**Useful websites**

- http://www.survivingsepsis.org/Bundles/Pages/default.aspx
- Broad spectrum antibiotics
- Ventilation
- Hyperglycaemia
- Hypoglycaemia