PAEDIATRICS

THE UNCONSCIOUS CHILD

Conscious level ranges from full arousal to complete unresponsiveness. Coma, the most profound impairment of consciousness, is defined as a state of unrousable unresponsiveness. When communicating with other health professionals use the patient's GCS to describe conscious level; terms like coma, stupor and obtunded are less exact.

GCS measurement in children

The standard Glasgow coma scale can be used in children able to talk. In preverbal children a Paediatric Glasgow Coma Scale can be used:

Score	Motor	Voice
6	Normal spontaneous movement	-
5	Localises to pain or withdraws from touch	Alert, babbles, coos, words or sentences to usual ability
4	Withdraws from nailbed pain	Less than usual ability, irritable cry
3	Abnormal flexion	Cries to pain
2	Abnormal Extension	Moans to pain
1	No response	No response

Acute Management

ABCDE

Airway

Open airway with manoeuvres/adjuncts
Intubate if not protecting airway
Consider intubation if GCS <9

Breathing

Give oxygen if SpO2 <95%

Circulation

If circulatory compromise give 20ml/kg fluid bolus
In DKA or raised ICP give 10ml/kg instead

Disability

Perform BM – give 2ml/kg 10% dextrose if BM <3
Consider intubation to maintain PaCO2 4.5-5kPa if there is a clinical diagnosis of raised ICP

Investigations

Capillary blood glucose
Blood gas – usually capillary

FBC, U&E, LFT, CRP, blood culture

Urine dipstick and consider toxicology screen

Indications for CT

- Trauma
- Signs of raised intracranial pressure
- Focal neurological signs
- Unknown cause

Lumbar puncture

Usually done in children's hospital
Indicated if suspected intracranial infection
Contraindicated if:

- signs of raised ICP
- contraindication on CT

Differential Diagnosis

Altered consciousness in children is caused by the same pathology as adults, though certain causes are more common in each age group.

Metabolic/Systemic	Neurological/Structural
Hypoxia	Traumatic brain injury
Hypercapnia	Meningitis/encephalitis/malaria
Sepsis/shock	Epilepsy
Hypoglycaemia/DKA	Tumour with mass effect
Hypoglycaemia	Vascular events
Uraemia	
Hepatic failure	
Drugs/toxins/alcohol	

One UK study investigating the causes of atraumatic coma found that:

- Infection was the commonest cause, (Neisseria meningitidis in 47% of coma).
- Intoxication was the second most common, though this was largely in adolescents.

Some Specific Causes

Raised Intracranial Pressure

Bradycardia and hypertension
Papilloedema
Pupillary dilatation, inequality and loss of reaction to light (all late signs!)

20 degree head up tilt
Consider mannitol
Intubate and ventilate to $PaCO_2$ 4.5-5kPa
Discuss with PICU

Sepsis

Increased HR, RR, temp, WCC
Purpuric rash
Focal signs of infection

ABCDE as above
CXR, urine MC&S, consider LP
IV antibiotics within 1 hour

Intracranial Infection

Fever, photophobia, neck stiffness
Signs raised ICP
Unexplained fever and reduced consciousness

Treat co-existing shock if present
Cefotaxime (amox & gent if <6/52, dex if >3/12)
Aciclovir
LP – usually at children's hospital
CT – if focal neurology, reduced GCS, signs ICP

Cause Unclear

Thorough physical examination
CT head
Infection screen (LP at children's hospital)
Toxicology screen

In children's hospital:
Ammonia
EEG
Metabolic disease workup