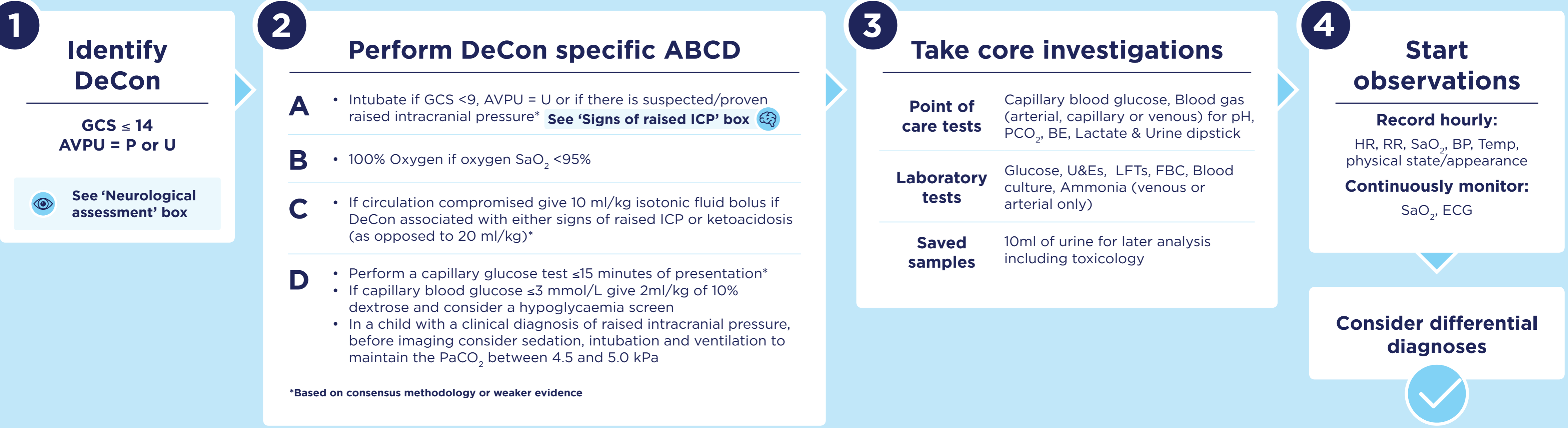


# THE MANAGEMENT OF CHILDREN AND YOUNG PEOPLE WITH AN ACUTE DECREASE IN CONSCIOUS LEVEL

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



## IDENTIFY DECON



## DIFFERENTIAL DIAGNOSIS

### Hypertensive encephalopathy

- Investigation**
- Look for signs of raised ICP + papilloedema
  - Do 4 limb BP
  - Urinalysis for blood/protein + U&Es
- PICU and NEPHROLOGY**
- Discuss when DeCon + Hypertension (BP >95<sup>th</sup> centile for age)

### Metabolic

- Hypoglycaemia**
- Hypoglycaemia screen if lab Glucose <3mmol/L
  - 2ml/kg bolus 10% Dextrose
  - Then infusion of 10% Dextrose (Target 4-7mmol/L)
- Hyperammonaemia**
- If plasma level >100mmol/L
  - Analyse free flowing sample within 10 min or on ice
  - SEEK EXPERT METABOLIC ADVICE**
- DKA** [www.bsped.org.uk/clinical/docs/DKAGuideline.pdf](http://www.bsped.org.uk/clinical/docs/DKAGuideline.pdf)

### Prolonged fits/Post convulsive

- Investigation** Mg<sup>2+</sup> and Ca<sup>2+</sup> and Na<sup>+</sup>
- PICU**
- Discuss treatment if:**
- Na <125 mmol/L
  - Ionised Ca<sup>2+</sup> <0.75 mmol/L
  - Mg<sup>2+</sup> <0.65 mmol/L
- and the convulsion is ongoing despite anticonvulsant treatment

### Cause unclear

- Consider additional tests and involvement of specialists e.g. Neurologist or Metabolic expert
- Additional tests:**
- Investigation**
- CT/MRI
  - LP See 'LP WARNING' box
  - Urine Toxicology
  - Urine organic and plasma aminoacids
  - Plasma lactate/EEG

### Sepsis

- Diagnosis** T<sup>o</sup> >38°C or <35.5°C or ↑HR or ↑RR  
WCC >12x10<sup>9</sup>/L or <4x10<sup>9</sup>/L or a purpuric rash
- Investigation**
- CXR
  - Urine culture
  - Blood PCR (meningococcus+pneumococcus)
  - Clotting
  - Skin swab (from areas of inflammation)
  - Joint aspiration (if septic arthritis)
  - Thick and thin film (for malarial parasites if foreign travel to endemic area)
- Treatment** Broad spectrum antibiotics ≤1 Hour + Follow 'Sepsis 6 pathway': <http://www.survivingsepsis.org/Bundles/Pages/default.aspx> + EARLY SENIOR REVIEW

### Intracranial infection

- Differential**
- Bacterial meningitis
  - Herpes Simplex Encephalitis (HSE)
  - Intracranial abscess
  - TB meningitis
- Investigation**
- LP including CSF HSV PCR if no contraindications
- See 'LP WARNING' box
- Treatment**
- Bacterial:** [www.nice.org.uk/guidance/cg102](http://www.nice.org.uk/guidance/cg102)
  - HSE:** Aciclovir (Duration decided by local ID experts)
  - TB:** [www.nice.org.uk/guidance/cg117/resources/guidance-tuberculosis-pdf](http://www.nice.org.uk/guidance/cg117/resources/guidance-tuberculosis-pdf)

### Raised ICP

- Diagnosis** See 'Signs of raised ICP'
- Treatment**
- Refer to the NICE Bacterial meningitis and meningococcal septicaemia Guideline for recognition and Rx [www.nice.org.uk/guidance/cg102](http://www.nice.org.uk/guidance/cg102)
- PICU**
- Discuss acute management with local PICU
  - Position head in midline
  - 20° head up tilt
  - Avoid internal jugular CVCs
  - Isotonic fluids (restricted)
  - Mannitol or Hypertonic saline
  - Intubate and ventilate to a PaCO<sub>2</sub> of 4.5-5.0 kPa BEFORE IMAGING

### Alcohol intoxication

- Investigation** Consider blood alcohol test when suspected as a cause of DeCon
- Treatment**
- ABCD/APLS
  - Treat hypoglycaemia with IV glucose + maintenance Dex/Saline
  - Beware of and if present treat respiratory failure/aspiration pneumonia and hypotension
  - Other concurrent ingestions
  - And avoid emetics (in case of aspiration)
- Considerations**
- Consider all other likely contributory drugs
  - Consider contacting local poisons unit

### Shock

- Diagnosis** Mottled, cool extremities or diminished peripheral pulses + systolic BP <5<sup>th</sup> centile for age or urine output <1ml/kg/hr
- Differential** Sepsis, trauma, anaphylaxis, heart failure
- Treatment** 20 ml/kg isotonic fluid bolus (10 ml/kg if raised ICP or ketoacidosis)
- Reassessment**
- ↓ HR See 'Observation'
  - ↓ Capillary refill time
  - ↑ Level of consciousness See 'Neurological assessment'
  - ↑ Blood pressure (to normal level for age)
  - ↓ Lactate concentration and/or improvement in base excess
  - ↑ In urine output
- PICU** Consider for intubation/ventilation/inotropes if >40ml/kg fluid given



### Neurological assessment

#### GLASGOW COMA SCORE (GCS)

Eyes	Motor	Voice
4 Open	6 Obeys commands	5 Converses
3 To command	5 Localises pain	4 Confused
2 To pain	4 Flexion withdrawal	3 Inappropriate words
1 No response	3 Abnormal flexion	2 Incomprehensible
	2 Abnormal extension	1 No response
	1 No response	

#### GCS MODIFICATIONS IN CHILDREN UNDER 5 YEARS

Motor	Voice
6 Normal spontaneous movements	5 Alert, babbles, coos, words or sentences to usual ability
5 Localises to supraorbital pain (SOP) or withdraws from touch	4 Less than usual ability, irritable cry
4 Withdraws from nailbed pain	3 Cries to pain
	2 Moans to pain

#### AVPU SCALE

A = Alert V = Responds to voice P = Responds to pain U = Unresponsive



### Observation - normal ranges

Age	Respiratory Rate	Heart Rate	Systolic BP
Neonate	60	160	70
<1 year	35-45	110-160	75
1-5 years	25-35	95-140	80-90
5-12 years	20-25	80-120	90-110
>12 years	adult	adult	100-120



### Signs of raised ICP

- BRADYCARDIA (heart rate ≤60 bpm) or HYPERTENSION (MAP ≥95<sup>th</sup> centile for age)
- Pupillary dilation (unilateral or bilateral) or loss/impairment of reaction to light
- Abnormal breathing pattern or posture



### LP WARNING

- Do not attempt an LP if...**
- There are signs of raised ICP (Even if GCS is 15)
- See 'Signs of raised ICP'
- GCS ≤8 or deteriorating or focal neurological signs or GCS ≤12 after a seizure lasting ≥10 minutes
  - CT /MRI suggesting CSF pathway obstruction
  - Clinical evidence of circulatory shock/meningococcal disease

\*This does not include: Children with a previously diagnosed condition which may decompensate causing a decreased conscious level (e.g. epilepsy, ventriculo-peritoneal shunt, previously diagnosed metabolic condition), who already have an agreed management plan for acute illness; OR Children who on a day to day basis score 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).