PAEDIATRIC ACUTE CARE GUIDELINE	
Hypoglycaemia	
Scope (Staff):	All Emergency Department Clinicians
Scope (Area):	Emergency Department

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http://kidshealthwa.com/about/disclaimer/

Hypoglycaemia

Hypoglycaemia is a low Blood Glucose Level (BGL) and can be defined as:

- < 2.6 mmol/L in neonates
- < 2.5mmol /L in children

General

Causes of Hypoglycaemia
Increased glucose utilisation: • Hyperinsulinism • Hypoglycaemic drug administration • Sepsis • Multiple trauma
Abnormalities in hormone secretion: • Growth hormone deficiency • Adrenal insufficiency
Abnormalities in fuel substrate metabolism (defects in metabolism or utilisation): • Metabolic disorders – inborn errors of carbohydrate, amino acid or fatty acid metabolism (e.g. MCAD) • Acquired defects – liver disease, alcohol and salicylate ingestion
Abnormalities of substrate availability: • Starvation • Ketotic hypoglycaemia

Assessment

- Use of bedside glucometers are inaccurate in determining blood glucose levels below 4mmol/L
- Laboratory (including satellite laboratory blood gas machine) estimation of glucose values are essential

History

Symptoms of Hypoglycaemia

Autonomic	Neurological
Pallor Sweating Tremor Hunger Weakness Nausea Anxiety Abdominal pain	Confusion Irritability Drowsiness Coma Convulsions Headache Behaviour disturbance Visual disturbance

Investigations

The following should be performed at the time when the child is hypoglycaemic and are the most useful investigations for unexplained hypoglycaemia

Bedside Glucometer Bedside Glucometers are inaccurate in determining blood glucose levels below 4mmol/L. Laboratory (including satellite laboratory blood gas machine) estimation of glucose values are essential.
Critical Sample This is the most useful investigation of unexplained hypoglycaemia in childhood and **should be performed at the time when the child is hypoglycaemic.** The following samples should be taken:

Test	Tube		Minimum Volume
Insulin, Growth Hormone, Cortisol	Clotted (**analysed immediately)**	Red Top – black ring (6mL)	1 ml
Plasma glucose, ammonia, β-hydroxybutyrate, amino acids, acylcarnitines	Lithium heparin **(on ice)**	Green Top (4mL)	1.5 ml
Blood Gas	Heparinised blood gas syringe		
Urine metabolic screen (taken as close to the event as possible)	Standard urine collection container		5 ml

Results during Hypoglycaemia:
• Insulin levels should be undetectable (*Increased levels = hyperinsulinism*)
• Growth hormone and cortisol should be increased (*No rise = deficiency*)
• Ketones should be present in urine (*Lack of ketones = hyperinsulinism or MCAD*)

Resuscitation

For Severe Hypoglycaemia
• 10% Dextrose 2mL/kg (200mg/kg) given IV over 5-10 minutes
• Continue IV 10% Dextrose infusion at maintenance rates until BGL is normalised (> 5mmol/L for 2 hours)
• Repeat BGL at 30 minutes, then at hourly intervals
• Be aware of recurrent hypoglycaemia, especially as a result of oral hypoglycaemic drug ingestion
Note: • In some circumstances (e.g. hyperinsulinism) infusion concentrations greater than 10% Dextrose may be needed to maintain BGL's • Central venous lines are preferred for infusions of high Dextrose concentrations as extravasation is extremely irritant

Nursing

Routine nursing care.

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