

The not so sweet truth of paediatric hypoglycaemia

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- Paediatric hypoglycaemia is a medical emergency with serious consequences.
- Investigations need to be performed urgently prior to treatment being given.
- In reality complete and comprehensive investigation can be difficult to perform in children in a time pressured situation.

Aim

- To assess whether investigations performed in children presenting with hypoglycaemia are appropriate and complete.

Why is this important?

- Investigation is aimed at diagnosing underlying endocrine and metabolic disorders to ensure appropriate management.
- Incomplete 'Hyposcreens' risk patient safety and may necessitate future avoidable investigations.
- A 'Hyposcreen' costs ~£450 to perform and therefore it is important to target this correctly.

Methods

- Patients aged ≤16 years who were recorded as having an episode of proven or suspected hypoglycaemia.
- Clinical notes review for details of events.
- Investigations and results reviewed.
- Appropriateness and completeness of investigations assessed.

Intermediary metabolites	£65.24
Lactate	£2.56
Cortisol	£5.47
Insulin	£139.77
Growth hormone	£33.06
Plasma amino acids	£14.03
Acylcarnitine	£65.72
Ammonia	£10.22
Urine ketones, aminoacids, organic acids, sugar TLC	£75.21
+/- urine toxicology	£39.36

Tests constituting a 'Hyposcreen' and cost

Results

49 patients; 35/49 neonates, 14/49 children, 5/49 planned admissions, 44/49 emergency.

- 42 cases of proven hypoglycaemia
- 23 patients had investigations sent
- Only 2/23 'Hyposcreens' were complete

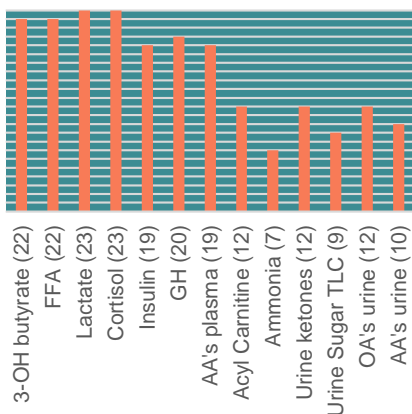
5 patients were admitted for a planned fast. 3 remained normoglycaemic but all 5 patients were investigated. None of these planned 'hyposcreens' were complete.

A 'Hyposcreen' was required where there was no identifiable cause for the hypoglycaemia.

	Hyposcreen needed	Hyposcreen not needed	Totals
Hyposcreen done	17	6	23
Hyposcreen not done	3	23	26
	20	29	49

£5934.95 spent on investigations
£1524.79 spent unnecessarily
Est. £2000 spent on planned admission

Frequency of investigations performed in 23 patients



10 patients had abnormal results;

- 9 abnormal intermed metabolites
- 8 low cortisol
- 4 high insulin

Diagnoses;

- Ketotic hypoglycaemia
- Pituitary aplasia
- Transient hyperinsulinism

Discussion

- 'Hypo packs' have been introduced to improve complete investigation.
- Concerning that 3 patients had no investigations despite cause being unknown.
- Recent new guidelines on when to investigate from the Paediatric Endocrine Society should improve targeting of resources.
- Guidance currently unclear about result interpretation and thresholds of normality.

Conclusion

- Investigations into hypoglycaemia are generally incomplete (91%) or inappropriate (21%).
- Only 40% of patients required investigation to establish a cause.
- We need to consider more stringent recommendations and dissemination of these to avoid inappropriate investigations and delay in diagnosis.

Key Points

- Need to carefully consider who and why we are investigating for hypoglycaemia
- Investigations should be as complete as possible at the time of hypoglycaemia
- New guidance from Paediatric Endocrine Society released August 2015
- Consideration should be given to both financial and patient safety costs when deciding who to investigate