

RECURRENT UNDIAGNOSED HYPOGLYCAEMIA

Priority patient: must not wait in A&E

Label

The patient has experienced episodes of hypoglycaemia the cause of which has yet to be determined. If there are signs indicative of hypoglycaemia (pallor, sweating, unusual fatigue, seizures) or in cases of prolonged fasting (vomiting, anorexia, diarrhoea, etc.), the parents are instructed to take the patient immediately to A&E for a **capillary blood glucose test and for tests specific for hypoglycaemia**.

If coma or hypoglycaemic seizures occur: Do not perform tests, the urgency is to restore glucose levels straightaway.

1 IF HYPOGLYCAEMIA < 3mmol/L (0.55g/L), take samples for the following tests BEFORE GIVING GLUCOSE (except if coma or seizures)

- Capillary blood ketones if available or urine analysis (ketones)
- Blood glucose, lactate: 1 grey tube (fluoride) - confirmation in all cases by venous blood glucose -
- Insulin, C peptide, GH and IGF1: 1 red tube (dry, min. 3 ml)
- Blood cortisol: 1 violet tube (EDTA, min. 1 ml)
- Blood gases, electrolytes (with bicarbonates), liver function tests, CPK, uric acid: 1 gas syringe + 1 green tube (heparin)
- Blood ammonia: 1 green tube (lithium)
- PT and factor V: 1 blue tube (citrate)
- Acylcarnitine profile: 1 green tube (heparin)
- Urinary organic acid chromatography (collect the first urine sample after the episode, after glucose restoration therapy), minimum 2 ml of urine to be frozen
- Search for toxic drugs in blood and/or urine: hypoglycaemic sulfonamides, oral anti-diabetic drugs, etc. (blood: 1 green heparin tube)

Key investigations: those which must be performed during hypoglycaemia before glucose administration. The others remain interpretable if samples are taken within 1/2 hour after glucose restoration. Samples for metabolic and endocrine biochemistry: take the tubes to the on-call laboratory for centrifugation and storage.

2 TREATMENT TO BE INITIATED AS AN EMERGENCY, after testing

- **Glucose administration by oral or enteral (NG tube) routes:** 30% glucose 1ml/kg max. 30mL, or 1 sugar cube / 20kg weight. **If enteral route not possible: 10% glucose 3mL/kg by direct IV injection** (30% possible by central line or intraosseous route, some teams allow injection of 30% glucose via a peripheral line in cases of refractory hypoglycaemia). Capillary blood glucose test 10 minutes later. If still hypoglycaemic, second glucose administration using the same methods and test 10 min later, to be repeated as many times as necessary.
- **Then in all cases:** Infusion using **10% glucose** with standard electrolyte additions* (not pure 10% glucose), following the rates below, to be adjusted according to the blood glucose level:

Age	Infant 0-24 months	Child 2-14 years	> 14 years / adult	MAX INITIAL FLOW RATE
Polyionic 10% glucose*	5 ml/kg/h (i.e. 8 mg/kg/min)	3.5 ml/kg/h (6 mg/kg/min)	2.5ml/kg/h (4mg/kg/min)	120ml/h (3L/24h)

*e.g.: Polyionic, Bionolyte, B45, Glucidion, etc. if no solutes available, 10% glucose + 4 to 6g/L of NaCl (70 meq/L) and 2g/L of KCl (27 meq/L)

If unable to infuse the patient => Nasogastric tube or gastrostomy: prepare the IV fluids listed above and pass them through the tube at the same rates.

3 MONITORING while on infusion

- Check capillary blood glucose, blood ketones or urinary ketones every 3 hours, then depending on progress. Monitor serum electrolytes if initially abnormal.
- Adjust the rate of glucose administration according to the blood glucose level: **target: between 0.7 and 1.2 g/L (4 - 7 mmol/L)**. If necessary, adjust the infusion rate of 10% glucose in steps of +/- 0.3 mL/kg/h (0.5 mg/kg/min).
- Continue infusion until blood ketones are negative (< 1 mmol/L) AND appropriate resumption of eating over 2 successive meals. The infusion must be discontinued progressively.

4 IN CIRCUMSTANCES CREATING A RISK (food intolerance, vomiting)

- **Even in the absence of hypoglycaemia:** Admit the child to hospital and start an infusion as above, until appropriate feeding is resumed.

SURGERY:



WARNING: never leave the patient fasting without an infusion. Implement the emergency protocol with infusion as above, in preparation for surgery.

REFERENCE DOCTORS AND CONTACT DETAILS

On-call telephone numbers for metabolic emergencies of:

At night, only the medical teams can call in emergency situations and only if the emergency certificate has not been understood or if the clinical state or test results are worrying. As far as possible make calls before night time.

Secretarial issues must be dealt with via the medical secretariat during the week or by email addressed to the patient's referring metabolic doctor.

Certificate issued on

Dr