

Glycaemic Emergencies (Adults)

1. Introduction

- A non-diabetic individual maintains their blood glucose level within a narrow range from 3.0 to 5.6 mmol per litre.
- This is achieved by a balance between glucose entering the blood stream (from the gastrointestinal tract or from the breakdown of stored energy sources) and glucose leaving the circulation through the action of insulin.

SECTION 1 – Hypoglycaemia

- A low blood glucose level is defined as <4.0 mmol/L, but the clinical features of hypoglycaemia may be present at higher levels and clinical judgement is as important as a blood glucose reading.
- Correction of hypoglycaemia is a medical emergency.
- If left untreated hypoglycaemia may lead to the patient suffering permanent brain damage and may even prove fatal.
- Hypoglycaemia occurs when glucose metabolism is disturbed – see Table 3.57 for risk factors.
- Any person whose level of consciousness is decreased, who is having a convulsion, is seriously ill or traumatised should have hypoglycaemia excluded.
- Signs and symptoms can vary from patient to patient (Table 3.58) and the classical symptoms may not be present.
- Some patients are able to detect the early symptoms for themselves, but others may deteriorate rapidly and without apparent warning.
- Abnormal neurological features may occur, for example, one-sided weakness, identical to a stroke.
- Symptoms may be masked due to medication or other injuries, for example, with beta-blocking agents.

2. Assessment and Management

For the assessment and management of hypoglycaemia refer to Table 3.59 and or Figure 3.12.

SECTION 2 – Hyperglycaemia

- Hyperglycaemia is the term used to describe high blood glucose levels.
- Symptoms include unusual thirst (polydipsia), urinary frequency, and tiredness (Table 3.60). They are usually of slow onset in comparison to those of hypoglycaemia.

Diabetic ketoacidosis (DKA)

- A relative lack of circulating insulin means that cells cannot take up glucose from the blood and use it to provide energy. This forces the cells to provide energy for metabolism from other sources such as fatty acids.
- This produces acidosis and ketones. The body tries to combat this metabolic acidosis by hyperventilation to blow off carbon dioxide. High blood glucose level means glucose spills over into the urine dragging water and electrolytes with it causing dehydration and glycosuria.
- New onset diabetes type 1 may present with DKA.

Table 3.57 – RISK FACTORS FOR HYPOGLYCAEMIA

Medical

- Insulin or other hypoglycaemic drug treatments.
- Tight glycaemic control.
- Previous history of severe hypoglycaemia.
- Undetected nocturnal hypoglycaemia.
- Long duration of diabetes.
- Poor injection technique.
- Impaired awareness of hypoglycaemia.
- Preceding hypoglycaemia (< 3.5 mmol/L).
- Severe hepatic dysfunction.
- Renal dialysis therapy.
- Impaired renal function.
- Inadequate treatment of previous hypoglycaemia.
- Terminal illness.
- Metabolic illness.
- Endocrine illness (including Addisonian crisis).
- Drug ingestion e.g. oral hypoglycaemic drugs, beta-blockers, alcohol.
- Sudden cessation of peritoneal dialysis.
- Hypothermia.
- Sudden cessation of tube or IV feeding.

Lifestyle

- Inadequate carbohydrate intake.
- Increased exercise (relative to usual)/excessive physical activity.
- Irregular lifestyle.
- Increasing age.
- Excessive or chronic alcohol intake.
- Early pregnancy.
- Breast feeding.
- Injection into areas of lipohypertrophy.
- Inadequate blood glucose monitoring.

Table 3.58 – SIGNS AND SYMPTOMS OF HYPOGLYCAEMIA

Autonomic	Neurological
Sweating Palpitations Shaking Hunger	Confusion Drowsiness Odd behaviour Speech difficulty In-coordination Aggression Fitting Unconsciousness
General malaise	Headache Nausea

More frequently it complicates intercurrent illness in a known diabetic. Infections, myocardial infarction (which may be silent) or a CVA may precipitate the condition.

- Omissions or inadequate dosage of insulin or other hypoglycaemic therapy may also contribute or be responsible. Some medications, particularly steroids may greatly exacerbate the situation.
- Patients may present with one or more signs and symptoms (Table 3.60) and this should alert the pre-hospital provider to the possibility of hyperglycaemia and DKA.