



# YOU AND YOUR TREATMENT: HYPOGLYCAEMIA (LOW BLOOD GLUCOSE) IN TYPE 1 DIABETES

*S Afr J Diabetes Vasc Dis* 2008; **5**: 135

## WHAT IS LOW BLOOD GLUCOSE?

Hypoglycaemia, also known as low blood sugar (or insulin reaction), occurs when levels of glucose (sugar) in the blood are too low. A person with symptoms and a blood glucose level below 3.3 mmol/l has hypoglycaemia. Some people with diabetes develop symptoms of hypoglycaemia at slightly higher levels, especially if blood glucose levels are high for long periods of time. Symptoms of low blood glucose may then become apparent as blood glucose levels decrease to 5.6 mmol/l.

## HOW DOES LOW BLOOD GLUCOSE MANIFEST ITSELF?

The symptoms of hypoglycaemia vary from person to person, and can change over time. Early manifestations are: sweating, tremor or shakiness, fast heartbeat, hunger and anxiety.

Late manifestations are: lack of coordination, weakness, tiredness, blurred vision, inappropriate behaviour, combativeness, confusion, unconsciousness and seizures.

Hypoglycaemia may manifest differently in children, and parents may typically observe pallor or sleepiness. Hypoglycaemia in children may also manifest with behavioural symptoms and signs such as aggressiveness, irritability, sadness, fatigue, headache or naughtiness. Hypoglycaemia can be frightening and unpleasant. Patients who have experienced severe hypoglycaemia may deliberately keep their blood glucose levels above target levels.

## WHAT CAUSES LOW BLOOD GLUCOSE?

Hypoglycaemia happens when a person with diabetes does one or more of the following:

- takes too much insulin
- misses a meal or snack, eats less food or eats later than usual
- exercises without eating a snack or decreasing the dose of insulin beforehand, or does more physical activity than usual
- waits too long between meals
- drinks alcohol on an empty stomach or with a low blood glucose.

## HOW CAN HYPOGLYCAEMIA BE AVOIDED?

Frequent monitoring of blood glucose at home and also before, during and after exercise may help to detect blood glucose levels necessitating treatment. Apart from the person with type 1 diabetes, a close friend, relative or teacher should also be informed about the symptoms and management.

## HOW SHOULD HYPOGLYCAEMIA BE TREATED?

Treatment should not be delayed if it is not possible to monitor blood glucose immediately.

- Mild hypoglycaemia (a blood glucose level between 2.8 and 3.9 mmol/l) is treated by oral glucose or carbohydrate, usually 5 g per 20 kg body weight. In an adolescent or adult, this amounts to half a cup of fruit juice or a sugary drink like Coca Cola or three to four glucose sweets.
- If the level is less than 2.8 mmol/l, eat 20–30 g of fast-acting carbohydrates.
- Retest blood glucose level after 15 min and repeat treatment if necessary. If the next meal is more than an hour away, a more substantial starch-containing snack should be added, such as half a sandwich with peanut butter.
- Oral glucose should not be given to an unconscious person. A glucagon injection (1 mg intramuscularly or subcutaneously) ensures recovery within 15 min. Nausea and vomiting may follow 60–90 min later. As soon as the person is awake and able to swallow, a fast-acting carbohydrate should be offered.
- If the patient is not awake within 10–15 min, a second glucagon injection may be given and/or emergency help should be called immediately.
- Do not attempt to drive immediately after recovery from a hypoglycaemic episode.
- Inform your general practitioner or healthcare provider after recovery. Discuss with your general practitioner the possibility of obtaining a prescription for glucagon.

## WHAT IS HYPOGLYCAEMIA UNAWARENESS?

Hypoglycaemia unawareness occurs when a person does not have the early warning symptoms of low blood glucose levels. As a result, an early response to hypoglycaemia is then less likely. It is a common occurrence in people who have had type 1 diabetes for longer than five to 10 years. Inform your general practitioner or healthcare worker should you suspect that you are no longer able to recognise the early warning signs of hypoglycaemia.

## IMPORTANT TO REMEMBER

- always wear an identification bracelet or necklace
- always carry glucose-containing sweets with you
- check your blood glucose level before driving; never drive when your blood glucose is low
- frequent episodes of hypoglycaemia necessitating the intake of additional carbohydrate inevitably results in unwanted weight gain.

(References available on request)

