

GUIDELINES FOR THE TREATMENT OF HYPOGLYCAEMIA IN THE CHILD WITH TYPE 1 DIABETES

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(Based on ISPAD Clinical Practice Consensus Guidelines 2014 Compendium, Chapter 12)
(Available on Intranet)

These are general guidelines. They may be altered to suit individual situations.

DEFINITION OF HYPOGLYCAEMIA

There is no consistent or agreed definition of Hypoglycaemia for the child with Type 1 Diabetes, but generally this is recognised as a blood glucose level $<3.9\text{mmol/l}$

- In theory, hypoglycaemia is the level of blood glucose at which physiological neurological dysfunction begins.
- In practice, neurological dysfunction can be symptomatic or asymptomatic, and the levels at which it occurs varies between individuals, may vary with time and circumstances in the same individual and is affected by antecedent hypoglycaemia (ISPAD 2014)

NB If a child's symptoms do not match a low blood glucose reading, **CHECK THE METER READING AGAIN BUT BE AWARE THIS COULD BE HYPOGLYCAEMIA UNAWARENESS WHERE THE CHILD HAS HYPOGLYCAEMIA BUT IS ASYMPTOMATIC THEREFORE IS AT HIGHER RISK OF SEVERE HYPOGLYCAEMIA.**

SIGNS AND SYMPTOMS

Clinically, hypoglycaemia causes signs and symptoms of:

Autonomic activation: HUNGER
TREMBLING OF HANDS
PALPITATIONS
ANXIETY
PALLOR
SWEATING

NB: Blood Glucose threshold for autonomic activation has been shown experimentally to be at a higher BG level in children than adults, varies with level of metabolic control, is lowered by sleep and may be lowered by previous hypoglycaemia.

Neuroglycopenia: IMPAIRED THINKING
CHANGE OF MOOD
IRRITABILITY
DIZZINESS
HEADACHE
CONFUSION
CONVULSIONS, COMA & DEATH

NB: Neuroglycopenia may occur before autonomic activation (causing hypoglycaemic unawareness)

TREATMENT GOAL:

The treatment goal is to restore the blood glucose level to euglycaemia (This corresponds to BG above 4 mmol/l, ideally to 5.6 mmol/L)

The Following treatment should be used in the following cases:

MILD / MODERATE HYPOGLYCAEMIA (BLOOD GLUCOSE 3.5 – 3.9 mmol/l)

*** If the child or teenager is aware of and capable of self-treating the hypoglycaemia:**

1. Use sugar or food containing rapidly absorbed simple carbohydrate immediately. Any **one** of these options is appropriate.
2. For child weighing 30kg or less, give 9g carbohydrate eg
 - 3 Dextro Energy or Lucozade glucose tablets
 - 2 Glucotabs
 - 60 ml Lucozade
 - 100 ml Coca Cola
3. For a child weighing 50kg or more, give 15g carbohydrate eg
 - 5 Dextro Energy or Lucozade glucose tablets
 - 3.5 Glucotabs
 - 90 ml Lucozade
 - 150 ml Cola
4. For a child weighing 30-50kg, give 9-15g carbohydrate – any of the options above
5. DO NOT GIVE “DIET” DRINKS.
6. Wait 10-15 minutes. Retest blood glucose. If no positive response, but no deterioration - Repeat oral intake as above
7. As the child feels better or normal, blood glucose levels are restored, this **should be followed by the next meal or snack if due**. If neither is due, an additional

snack containing longer acting carbohydrate should be eaten eg: 1 slice toast, 1-2 plain biscuits eg digestive, cereal bar (15g carbohydrate), fruit etc

8. Retest blood glucose in 20-30 minutes to confirm blood glucose levels have been restored to normal.

***If the child or teenager cannot respond to hypoglycaemia and requires help from someone but can co-operate and swallow safely, or is deteriorating from a milder hypoglycaemia:**

1. Use Glucogel (Hypostop) (40% glucose in 23 g ampoule)
 - Twist off cap
 - Place tip of ampoule in the mouth between gum and cheek
 - Slowly squeeze in the contents of up to one ampoule
 - Massage the outer cheek to disperse the gel.
2. Wait 10 minutes. If no positive response, but no deterioration – Repeat Glucogel (Hypostop) again.
3. As the child feels better follow with longer acting carbohydrate as above (point 3).
4. If there is **no improvement, administer Glucagon injection OR IV Glucose** as detailed below. (If Glucogel is not available, honey or jam may be used).

SEVERE HYPOGLYCAEMIA

***If the child or adolescent is semi-conscious, in a coma with or without convulsions, or deteriorating from grade 2 treatment, then it is an EMERGENCY and URGENT treatment is required.**

1. Place in **recovery position** and attend to Airway, Breathing, Circulation as appropriate.
2. Inject Glucagon IM or deep SC
 - 0.5 mg for age <12 yrs
 - 1.0 mg for age 12+ yrs

• **IN HOSPITAL SETTING**

Give GLUCOSE intravenously as an initial bolus slowly over 2 – 3 minutes – 2 ml/kg of 10% dextrose. Be prepared to repeat the bolus followed by an infusion of 5% dextrose + 0.9% saline until the child is fully awake. Monitor blood glucose regularly.

DO **NOT EVER** use solution stronger than 10% dextrose in peripheral IV access, because of the dangers of hyperosmolality.

Reference: ISPAD Clinical Practice Consensus Guidelines 2014 for the Management of Type 1 Diabetes Mellitus in Children and Adolescents.