

ENDOCRINOLOGY & DIABETES UNIT

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DATE: _____

MANAGEMENT OF HYPOGLYCEMIA IN HYPERINSULINISM

Hypoglycemia (low blood sugar) can occur when the blood glucose (sugar) drops below the normal range, i.e. below 3.0 mmol/L. The onset can be sudden.

Causes: Hypoglycemia can result from late or missed meals, increased exercise without food, a missed dose of medication, or unknown causes.

How will you recognize hypoglycemia?

	MILD BG 2.5-3.0 mmol/L	MODERATE BG 2.0-2.4 mmol/L	SEVERE BG 1.9 mmol/L or below
SIGNS & SYMPTOMS	<ul style="list-style-type: none">• sweaty• shaky• hungry• pale• dizzy• mood changes• tired/sleepy	<ul style="list-style-type: none">• irritable• blurry/double vision• difficulty concentrating• confused• poor coordination• difficulty speaking• headache• tired/sleepy• nightmares	<ul style="list-style-type: none">• unconscious• convulsions/seizures

What is glucagon and when do I use it?

Glucagon is a hormone made by the alpha cells in the islets of the pancreas. It raises the blood sugar level by stimulating the liver to release some of its store of carbohydrate (glycogen) into the blood.

Glucagon is to be used when the child is having a **severe hypoglycemic reaction**, when s/he is unconscious, is having a seizure, or is so uncooperative that juice or sugar water cannot be given by mouth.

Please note that paramedics can not give glucagon; therefore, we suggest you give glucagon yourself even if you've called 911.

Glucagon can also be used in small doses to treat milder hypoglycemia during times of stomach illness, or when your child is unable to keep any food or fluids down or refuses to eat (see "mini-dose" glucagon instructions below on page 3).

What should you do if you suspect hypoglycemia?

If possible, test the blood sugar with a meter to confirm hypoglycemia., then proceed with the treatment described on the next page.

Daily medications and schedule:

Your child has been prescribed _____ and should take this as follows:

If a dose is forgotten, give it as soon as you remember. If it is close to the next dose, give the next dose and continue with doses as scheduled.

Mild hypoglycemia (2.5-3.0 mmol/L):

Older children:

- Give 10 to 15 grams of fast-acting glucose (for example: $\frac{1}{2}$ cup apple or orange juice; 1 tablespoon of honey; 3-5 Dextrosol®, or 2-4 Dex®4 glucose tablets).
- Check blood sugar again 15 minutes after giving the fast-acting sugar, and re-treat if blood sugar remains less than 3.0 mmol/L.
- If it is more than 30 minutes to the next meal, give a carbohydrate and protein snack (for example: $\frac{1}{2}$ peanut butter sandwich, or 3 crackers with cheese, or 1 cup of milk) once blood sugars are above 3.0 mmol/L.

Infants (under 1 year of age):

- Give 8 grams of fast-acting glucose, e.g. 2 ounces of sugar water, made by adding 2 teaspoons of sugar to $\frac{1}{4}$ cup (60 cc) of sterile water. Do not use honey!
- Check blood sugar again 15 minutes after giving the fast-acting sugar, and re-treat if blood sugar remains less than 3.0 mmol/L.
- Follow with breast milk or formula once blood sugars are above 3.0 mmol/L.

Moderate hypoglycemia (2.0-2.4 mmol/L):

- Give octreotide (Sandostatin®) _____ units subcutaneously (small syringe, short needle).
- If it is less than 1 hour before the regular dose time, this is an early dose.
- If it is more than 1 hour before the regular dose time, this is an extra dose.
- Recheck the blood sugar 15 minutes later.
- If above 3.0 mmol/L, follow with treatment for mild lows.

Glucagon for severe lows (seizuring or loss of consciousness):

- Glucagon cannot be taken by mouth. To use the emergency kit, mix the glucagon according to the package insert. Give the injection into the muscle, that is, "straight in", not at an angle. Your child's glucagon dosage is:

_____ units for infants under 1 year of age

_____ $\frac{1}{2}$ mL (50 units, $\frac{1}{2}$ mg) for a child under 20 kg (40 lb)

_____ 1 mL (100 units, 1 mg) for a child over 20 kg (40 lb)

- The child may take a little time to respond fully, possibly 10-20 minutes.
- Check blood sugar every 15 minutes until stable.
- Repeat glucagon if sugar is still below 3.0 mmol/L after 20 minutes and child cannot take juice by mouth.
- Contact physician for further instructions at 604-875-2161 (ask to speak with the Pediatric Endocrinologist-on-call).
- If unconscious, turn the child onto his/her side and call 911 for emergency transport to hospital.

Mini-dose glucagon for stomach illness for food refusal:

- Glucagon _____ units subcutaneously. This is 1 unit per year of age, minimum 2 units, maximum 15 units. Use a small syringe and short needle.
- Check the blood glucose every 30 minutes.
- If after 30 minutes the blood glucose levels remain below 3.0 mmol/L, then repeat the glucagon using double the dose.
- Dose may be repeated every 30-60 minutes as needed to keep blood glucose levels above 3.0 mmol/L.
- Contact physician for further instructions at 604-875-2161 (ask to speak with the Pediatric Endocrinologist-on-call) if you are unable to maintain the blood glucose above 3.0 mmol/L with food and liquids or with the mini-dose glucagon.