

Hypoglycaemia

HYPOGLYCAEMIA or a 'HYPO' = a blood glucose value of less than 4mmol/L

This is a term used for too low a level of glucose in the blood.

In an individual whose diabetes is well controlled, it is expected that insulin therapy may lead to 2 – 3 episodes of mild hypoglycaemia per week.

The aim is to have a good diabetes control without more frequent or severe episodes of hypoglycaemia.

What can cause hypoglycaemia?

- Not enough food to match the insulin
- Too large a dose of insulin
- Extra exercise or more activity than usual
- Excitement and/or anxiety
- New site for an injection

Sometimes, however, there is no obvious cause.

How might I feel when having a hypo?

You/your child may have no symptoms, or may look/feel different.

- Hungry
- Sweaty
- Pale
- Grumpy
- Wobbly/shaky
- Tearful/weepy
- Headache or tummy ache
- Feeling 'not right'



If you feel like you might be having a hypo

- Stop whatever you are doing immediately.
- Tell whoever you are with how you are feeling.
- Test your BG – you may need help to read the number clearly on your meter as your vision may be blurred.
- If you are having a hypo, follow the flow chart 'Treating a Hypo' on the following page.



Remember to sit quietly whilst waiting for the BG to rise above 4mmol/L.



Treating a 'Hypo'

Hypo = any blood glucose less than 4mmol/L

Step 1

- Give 10g of fast acting glucose (3 glucose tablets or 2 teaspoons glucose powder in 10-20mls water/sugar free juice or 50mls original Lucozade).
- If child unco-operative go to **Step 4**.
If child unconscious go to **Step 5**.

Step 2

- **Wait for 10-15 minutes** and recheck the blood glucose reading. (Ensure your child's hands are washed).
- If above 4mmol/L go to **Step 3**.
If not, repeat **Step 1**.

Step 3

- Blood glucose above 4mmol/L.
- Do not allow your child to go straight out to play again.
- Give a 10-15g CHO snack or if just before a meal, allow to eat as soon as possible after the blood glucose is 4mmol/L or higher. The aim is to keep the blood glucose above 4mmol/L once the fast acting sugar has been used up.
- Check blood glucose again in an hour or so.
Was there an obvious cause? Note in diabetes diary.

**DO NOT BE
TEMPTED TO
OVERTREAT
THE HYPO**

Step 4

If child unco-operative

- Rub **GLUCOGEL** into the inside of the cheeks (a little at a time). It takes about 5-10 minutes to reach the blood stream.
- Once co-operative, go to **Step 1**.
- Monitor blood glucose readings carefully - every 15 minutes for at least an hour afterwards.
- If no response, proceed to **Step 5**.
- If concerned, contact the RHSC Diabetes Emergency Helpline: 0131 536 0701/0704

Step 5

If child unconscious

Never attempt to give drink/food/Glucogel

- Administer **GLUCAGEN** (follow simple injection kit instructions).
- Inject into thigh or bottom.
- If you cannot give injection or there is no immediate recovery, **dial 999!**
- Once child awake and co-operative follow **Step 1**.
- Monitor blood glucose readings carefully. Check readings every 15 minutes for at least an hour afterwards - it is not uncommon for blood glucose readings to fall again.
- Urgent review in hospital is required (either 999 ambulance or own transport).
- If this is not the first episode, contact the RHSC Diabetes Emergency Helpline as it may be appropriate to remain at home with a reduction in insulin dose.



Always inform the diabetes team if you have/your child has had a hypo seizure or required Glucagen.



Actions after a ‘hypo’

- Consider a short-term reduction of the next insulin dose to be given by 20%.
e.g. Insulin: carbohydrate ratio - 1 unit:10g → 1 unit:12g
e.g. Levemir dose: 10 units
A 20% reduction = (insulin dose x 0.2) = 10 x 0.2
= 2 units
Reduced Levemir dose = 10-2
= 8 units
- If the blood glucose reading is greater than 7mmol/L immediately after the hypo, do not be tempted to give a corrective dose of insulin for up to 2 hours after the hypo. This will increase the risk of another hypo.
- Can you explain why the hypo happened?
The insulin doses need to be reviewed if there have been more than 2-3 mild hypos per week, or if there has been a hypo <3.0 mmol/l. See ‘day to day’ management section or contact the diabetes nurse specialists.
- Remember to replace the Glucagen!

After hypoglycaemia:

- It may take 1-2 hours after the BG is back to normal before returning to a level of maximum performance (**however a recovery period of 45 minutes is recommended during an exam situation**).
- Headaches are common after a hypo.

Definition of different types of hypoglycaemia

Mild	Self treatment is possible but obviously help is always required for young children. Your body gives you warning symptoms and you have enough time to follow the usual hypo management plan.
Severe	You will always need help from another person to manage a severe hypo. The brain cannot function normally without glucose and a severe hypo will cause confusion, irrational behaviour, weakness and may cause lapses in consciousness.
Hypo seizure	This is usually the result of a very low BG reading (less than 2mmol/L) and some children are more susceptible to seizures than others. <ul style="list-style-type: none"> • Although very frightening to watch, seizures are not usually dangerous as breathing is seldom affected. • A seizure is the body’s ‘natural’ response to a very low blood glucose reading to allow the release of stored energy from the liver. • The release of this stored energy will raise the BG reading immediately after a seizure. • It is very important to realise that extra glucose energy (carbohydrate) is required to make sure that the BG does not drop again. <p>Every young person with diabetes is provided with a Glucagen kit – and a responsible adult should know how to use it. Do not give anything to eat or to drink to someone who is unable to swallow or who is unconscious.</p>
Hypo unaware	This is a hypo which comes on without any of your/your child’s ‘normal’ warning symptoms. <ul style="list-style-type: none"> • The BG level at which you experience hypo symptoms changes depending on how often your BG has been low in the last few days. • Frequent hypos will cause you to recognize your hypos at a lower BG level than normal. This can lead to hypo unawareness. • Hypo unawareness occurs when you miss the normal warning triggers and you may be unable to react in time to treat your hypo at an early stage.

I am worried about hypos during the night

- Remember that the body stores energy which can be released slowly during the night.
- Even if a person with diabetes does not waken with a hypo, the body will release stored glucose to treat the hypo.
- It is extremely unlikely that you/your child will come to any harm following a night-time hypo.
- Alcohol consumption can cause significant hypoglycaemia - this will be addressed at the adolescent clinic.
- Symptoms include nightmares, night-time sweats, headache in the morning and tiredness on waking.
- The best way to avoid hypos at night is to:
 - Check a blood glucose reading at bedtime.
 - When indicated check BG readings at times during the night as requested by the diabetes team.
 - Be especially aware if you are unwell and eating poorly.
 - Review your evening insulin/food plans if you have had a very active day (as your energy stores may have been used up during the day and will not be available to be released during the night).

 **Hypo treatment during the night is exactly the same as throughout the day - please follow the 'Treating a Hypo' flow chart on page 2 of this section.**

REBOUND PHENOMENON: Sometimes my BG is high in the morning, and sometimes it is too low. Why could this be?

- If your blood glucose is a little low through the night and you sleep through it, your stress hormones are released and cause a higher BG reading on waking.
- Alternatively your BG may not have been low enough to trigger the release of stress hormones, so you see a 'true' low BG on waking.

Therefore it will be important to check some BG readings during the night (e.g. 00:00hrs, 03:00hrs and 06:00hrs) to identify if this is the cause.

Always remember to check a BG reading 2 hours after the last food/drink is taken in the evening.

This is to ensure that this is not the cause of the high morning BG value.

How do I manage hypos and exercise?

Please see the section on Exercise and Sport.

 **Remember to wear some form of medical ID so people know how to help you if you have a severe hypo or a seizure.**

Individualised Hypo Management

How many glucose tablets (3g) are needed to treat different levels of hypoglycaemia?

The hypo flow chart gives general advice about the amount of glucose required to treat a hypo. Some people find it more helpful to give a set amount of glucose to raise the BG level by an identified amount.

Generally 1 glucose tablet (3g CHO) for every 10kg of body weight will raise the individual's BG by 3-4mmol/L.

You need to know your/your child's weight in kg to use the following table.

If your BG value is:	Suggested amount of glucose tablets to take					
4.0 mmol/L						
3.5 – 3.9 mmol/L	0.5	1	1.5	2	2.5	3
3.0 – 3.4 mmol/L	0.5	1	1.5	2	3	3
2.5 – 2.9 mmol/L	1	1.5	2	3	4	4
2.0 – 2.4 mmol/L	1.5	2	3	4	5	6
1.5 – 1.9 mmol/L	1.5	2	3	4	5	6
1.0 – 1.4 mmol/L	2	3	4.5	6	7.5	9
Weight (kg)	10-19	20-29	30-39	40-49	50-59	60 + higher

Remember: if you have recently taken very fast acting insulin and your blood glucose is falling, you may need more glucose.

Example

You weigh 22kg

Your BG is 2.8mmol/L

Using the table above, the suggested amount of glucose tablets = 1.5

This should increase your BG to ≥ 4 mmol/L