

Children and Young People's Diabetes Service Insulin Pump Therapy information Hypoglycaemia

What is Hypoglycaemia?

Hypoglycaemia means a low blood glucose level; sometimes it is called a hypo. In someone without diabetes the body is able to keep the blood glucose levels within very narrow targets by constantly changing the amount of insulin that is produced. In Type 1 Diabetes this is much harder to do. Hypoglycaemia happens when blood glucose levels go too low usually when there is a mis match between insulin, food and activity levels. A low blood glucose level in a child or young person with diabetes is **3.9mmol/L or below**.

What may cause hypoglycaemia?

- ✚ Too much insulin being delivered this could be a basal rate that is too high or a bolus that was too much for the amount of carbohydrate eaten.
- ✚ Insulin at the wrong time
- ✚ Fasting
- ✚ Physical activity and exercise
- ✚ Hot or cold temperatures
- ✚ Stress or illness
- ✚ Alcohol

The body does not like the blood glucose level to drop too low, so it will produce warning signals that mean the blood glucose level may be falling too low.

Symptoms are divided into 2 types; symptoms caused by the body trying to raise the blood glucose level and symptoms caused by the effect of the low blood glucose level on the brain.

Not everybody will have the same symptoms, it is important to check the blood glucose level if you suspect a hypo.

A hypo may be **mild** and easily treated, **moderate** which needs some help or **severe**. A severe hypo usually needs treatment with glucagon, medical help or hospital.

Signs and Symptoms of a Hypo

Mild or early		Moderate	Severe
Pale	Tired or sleepy	Blurred vision	Fainting
Hunger	Headache	Aggressive	Fitting
Shaky	Trembling	Moody or irritable	Loss of consciousness
Wobbly legs	Tingling	Slurred speech	
Sweating	Faint or dizzy	Confused	
		Strange behaviour	

Often it is possible to explain why a hypo has happened, but sometimes they may happen unexpectedly. The symptoms of a hypo may be any one or a combination of the above. It is important to treat a hypo immediately. Untreated hypos can lead to loss of consciousness or fitting.

What to use to treat a mild or moderate hypo

A hypo is treated by giving extra fast acting carbohydrate to bring the blood glucose level up. The amount of treatment needed depends on your age and size, as well as how active you are and when you last had any insulin.

Age	Amount of carbohydrate	Examples
Under 1 year	2-3g	1 glucose tablet, ¼ tube Glucogel, 4g Polycal powder mixed with 20ml water
1-5years	5g	1-2 glucose tablets (check the label), 60ml Lucozade, 1 jelly babies, 2 fruit pastilles, 100ml fruit juice, ½ tube Glucogel
5-10 years	10g	3-4 glucose tablets (check the labels), 120ml Lucozade, 2-3 jelly babies, 4 fruit pastilles, 200ml fruit juice, 1 Glucogel
10-18years	15g	4-5 glucose tablets (check the label), 180ml Lucozade, 4-5 jelly babies, 6 fruit pastilles, 300ml fruit juice, 1 ½ tubes Glucogel

Chocolate is not recommended as a hypo treatment as it is broken down to glucose slowly. If fruit juice is used a double dose may be needed as the natural sugars are absorbed more slowly.

Long acting carbohydrate is not recommended in addition to fast acting rescue treatment. Sometimes a snack may be needed. No more than 20g of carbohydrate should be taken. Consider an extra snack if

- ✚ Hypo is just before or after exercise
- ✚ Too much insulin is the cause of the hypo
- ✚ Alcohol is the cause of the hypo
- ✚ If your child has had a hypo in the last 24hours or you are worried.

How to manage hypoglycaemia

How to treat a mild or moderate hypo

1. Check the blood glucose level and give the hypo treatment.
2. Wait 10-15minutes and recheck blood glucose level. If the blood glucose level is below 5.6mmol/L repeat steps 1 and 2 until blood glucose level is greater than 5.6mmol/L.

If the blood glucose level is 5.6mmol/L or more no further action unless:

- You are about to sport/physical activity – have an extra 15-20g carbohydrate snack before activity.
- You are concerned the blood glucose level may drop again because the hypo was caused by too much insulin or alcohol. If you have treated 2 or more hypos already consider using a temporary basal rate decrease or stopping your pump.

How to treat a severe hypo

If the child is unconscious, having a fit or is unable to take anything by mouth follow the steps below:

Do not give anything by mouth – this can cause choking

- ✚ Place your child in the recovery position, away from danger
- ✚ Check the time
- ✚ Give the glucagon injection
- ✚ ½ dose for under 8 years (0.5mg)
- ✚ Full dose for over 8 years (1mg)
- ✚ Check the blood glucose
- ✚ Disconnect or suspend the pump

If you are not able to give the glucagon injection call 999 for an ambulance
Stay with the child, if there is no sign of recovery after 10 minutes or if they are not fully recovered after 30 minutes call 999 for an ambulance.

When fully awake follow the steps 1 and 2 (on page 2)
Reconnect/resume the pump once the blood glucose level is above 5.6mmol/L.

A severe hypo can cause vomiting. If this happens after the hypo treatment is given wait a few minutes and then repeat the fast acting carbohydrate.

A severe hypo will leave you feeling tired and unwell. Always recheck the blood glucose before falling asleep and eat a long acting carbohydrate snack.

Check the blood glucose level every 30minutes for 2-3hours after a severe hypo.

Hypos at night

A hypo at night is treated in the same way as you would in the day. A hypo at night may cause a child to be agitated and call out as if they are having a bad dream. It is possible for a child/young person to sleep through a hypo. This is common after exercise in the afternoon or evening, after a hypo in the day or when alcohol has been consumed.

A hypo at night may cause

- ✚ Frequent nightmares
- ✚ Feeling sick, with a headache in the morning
- ✚ Blood glucose of less than 4mmol/l before breakfast
- ✚ Blood glucose above 14mmol/L in the morning.
- ✚ No symptoms at all

If you suspect a night hypo you should check blood glucose levels between midnight and 3am. If you find night time hypos are happening discuss this with the diabetes team.

Preventing and treating Hypoglycaemia Checklist

- ✚ Everyone who looks after a child with diabetes needs to be able to recognise and treat a hypo
- ✚ Always carry some hypo treatment for example *Lucozade Energy* drink or glucose tablets
- ✚ Hypos can happen quickly at any time, treat them quickly
- ✚ If possible check the blood glucose before treating the hypo
- ✚ Think about why the hypo might have happened
- ✚ If you use *Glucagon* or *Glucogel*, always make sure you replace it.
- ✚ Check that your Glucagon and Glucogel are in date
- ✚ Always carry or wear some diabetes identity
- ✚ Calculate your carbohydrate and insulin doses as carefully as possible
- ✚ Use different ICRs (insulin to carb ratios) at different times of day if needed
- ✚ Check your ICR if hypos happen within 4 hours of a meal bolus
- ✚ Avoid only using normal or standard boluses for large meals, low GI meals or high and fat protein meals.
- ✚ Use correction doses carefully, use a bolus advisor or calculator whenever possible and remember that fast acting insulin works for 2-5hours in the body.
- ✚ Treat any high blood glucose levels after hypos with caution. A high blood glucose level 2-4hours after a hypo may not need a correction dose.
- ✚ Adjust your insulin doses for planned exercise.
- ✚ Never give a bolus for alcohol unless you know how it affects the blood glucose levels
- ✚ Check that your basal rates are correct every 6-12weeks

Who to contact for further help or advice

If you are concerned about hypos, especially after a night time or severe hypo contact the diabetes team for advice or support as needed.

You do not have to rely on this leaflet alone for information. You can contact the diabetes team for advice by calling 0151 228 4811 and asking for your diabetes nurse or dietitian.

You can also email the diabetes team diabetes@alderhey.nhs.uk

This information can be made available in other languages and formats if requested.

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Leaflet code DIABHYPO/pump
Date Produced August 2017
Date of next Review: August 2018
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