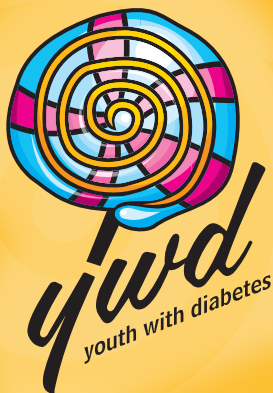


# YOUTH WITH DIABETES



## Caring for Children with Diabetes



The purpose of this booklet is to educate the caregivers of children with diabetes about diabetes and how to care for and support the child to ensure their diabetes is well managed.

Youth With Diabetes (YWD) is a non-profit organisation registered with the South African Department of Social Welfare (NPO 057-954; PBO 93 0025 364).

We were founded in 2005 by Sister Hester Davel and Prof David Segal in Johannesburg. Since our establishment, we have empowered thousands of children with diabetes in South Africa and 8 other African countries to live **happy, healthy lives.**

Our lollipop logo dispels misconceptions about diabetes and supports our slogan:

*life can be sweet*

YWD relies on donations and sponsorships to achieve our objectives and save lives!



[www.youthwithdiabetes.com](http://www.youthwithdiabetes.com)



[facebook.com/groups/youthwithdiabetes/](https://facebook.com/groups/youthwithdiabetes/)



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Endorsed by the Centre for Diabetes  
and Endocrinology (CDE)



Your value driven partner in care

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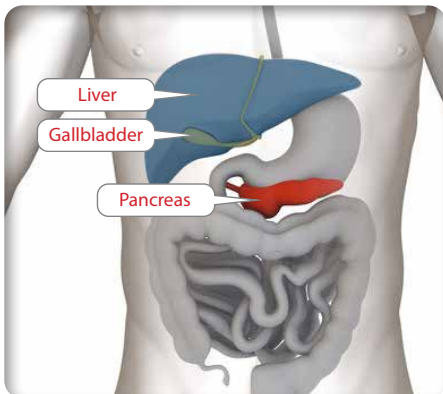
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*Life can be sweet*

## 1. What is Diabetes?

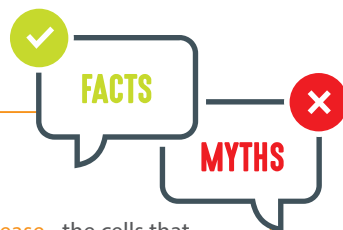
### 1.1 What is Diabetes?

- When you eat or drink, your body breaks down the food to create sugar (glucose).
- The sugar moves into your blood stream and through your body.
- Your pancreas makes insulin.
- Your body needs this insulin to move the sugar from the blood into the muscles to use for energy.
- Without insulin the sugar builds up in your blood stream and it becomes dangerous!



TYPE 1 DIABETES	TYPE 2 DIABETES
<p>The body makes NO insulin. Cells in the pancreas that make insulin have been destroyed.</p> <div data-bbox="148 1031 525 1295"> <p><b>TREATMENT</b></p> <ul style="list-style-type: none"> <li>• Injecting insulin                             <ul style="list-style-type: none"> <li>• more than once a day</li> <li>• for the rest of their lives</li> </ul> </li> <li>• Eating healthy</li> <li>• Doing exercise</li> </ul> </div>	<p>The body can still make some insulin, but not enough, and the insulin does not work properly.</p> <div data-bbox="595 1031 972 1295"> <p><b>TREATMENT</b></p> <ul style="list-style-type: none"> <li>• Diabetic medication – pills</li> <li>• Sometimes also insulin injections</li> <li>• Losing weight</li> <li>• Eating healthily &amp; exercise</li> </ul> </div>
CAN <b>NOT</b> BE PREVENTED	CAN BE PREVENTED WITH LIFESTYLE CHANGES

## 1.2 True or False?



Eating sugar causes diabetes	<p><b>False</b></p> <p>Sugar does not cause diabetes.</p> <p>Type 1 diabetes is an autoimmune disease - the cells that produce insulin are destroyed by the body so sugar levels get dangerously high.</p> <p>Type 2 is a metabolic condition - there is a problem in the way the body uses insulin.</p> <p>Eating &amp; drinking a lot of sugar (and other unhealthy lifestyle habits) can increase the risk for type 2 diabetes.</p>
People with diabetes cannot eat sugar	<p><b>False</b></p> <p>People with diabetes can eat sugar in moderation – as part of a healthy meal plan. When someone with diabetes has low blood sugar (hypoglycaemia), they must eat food containing sugar to increase their blood sugar levels.</p>
People with diabetes should only eat special or diabetic food	<p><b>False</b></p> <p>People with diabetes do not need special food. Food labelled as “Diabetic friendly” will often still affect blood glucose levels, is expensive, and may have side effects.</p>
People with diabetes shouldn't play sport or exercise	<p><b>False</b></p> <p>People with diabetes should take part in exercise to maintain a healthy lifestyle. They must consider some factors and manage their diabetes.</p>
People with diabetes are more likely to be ill	<p><b>False</b></p> <p>People with well controlled diabetes are not more likely to have colds or other illnesses.</p> <p>Managing your blood sugar when you are ill is more difficult which can increase the severity of an illness or infection.</p>

Diabetes is contagious	<b>False</b> You cannot catch diabetes from someone else, like you catch a cold or flu.
Cinnamon, turmeric, stone fruit, or hibiscus leaves, can cure diabetes	<b>False</b> There is no cure for any type of diabetes. No spice, herb, plant or food can cure anyone of any type of diabetes.
Taking insulin means you have the 'bad' diabetes	<b>False</b> Uncontrolled diabetes is 'bad' diabetes. High blood sugars over time leads to complications such as blindness, neuropathy, kidney failure, heart attacks, strokes, hearing loss, etc.

## 2. Controlling your blood sugar

### 2.1 What is a target blood sugar level?

People with diabetes each have their own blood sugar target - depending on many factors.

A general guideline is to keep the blood sugar at the following level:



- Toddlers and pre-school: **between 6.0 – 11.0 mmol/l**
- Primary school children: **between 5.0 – 10.0 mmol/l**
- Teenagers and adolescents: **between 5.0 – 10.0 mmol/l**

If the level is high, talk to your child's doctor or nurse and let them help you bring it down – little by little.

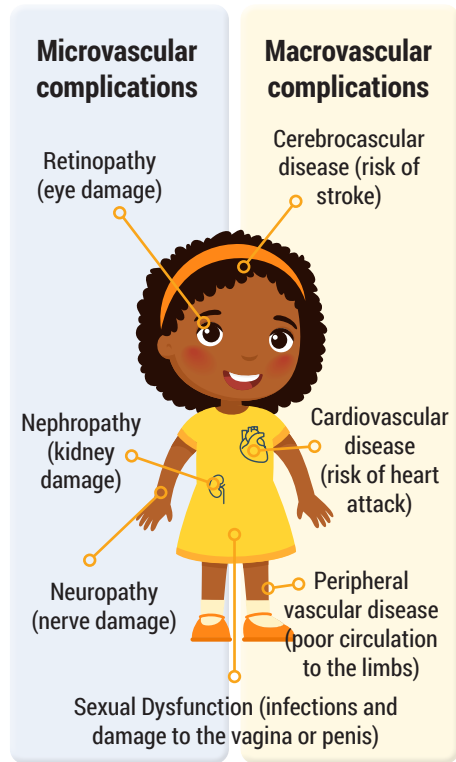
## 2.2 Why is it important?

Diabetes can lead to health complications later in life if it is not properly managed.

Proper diabetes management and blood sugar control can help prevent these complications.

Make sure that:

- you check your child's feet regularly (including in between the toes and heel)
- the doctor checks once a year (or more often if there are problems):
  - o kidney function (blood and urine tests)
  - o eye function (go to the eye clinic for a scan)
  - o heart function (may need an ECG or Echo)
  - o blood pressure
- tell your doctor as soon as your child has any problem with skin infections, burning or tingling feeling in their feet



## 2.3 How to control your blood sugar level



When your child's sugar is controlled, it will be like sitting comfortably on a balanced three-legged chair.



BUT if any of the three (insulin, food or exercise) are not properly managed their blood sugar level will not be controlled.

Diabetes management is easier when:

- There is a routine: regular blood sugar checks, insulin, food, exercise – everything at a certain time.
- Everyone in the family understands what is going on and why things have changed.

Let us look at what you can do to make sure you manage all three legs of the chair.

### 3 Checking blood sugar

#### 3.1 Why test blood sugar?

You can only help your child to take care of their diabetes if the blood glucose level is as close as possible to the blood glucose level of a person without diabetes. To do this your child needs to:

- test regularly,
- understand their reading, and
- take the right decisions.

No blood glucose reading is bad. If your child tested, that is a good thing!

EVERY reading is important and helps to make good decisions.



Each time you test, write down the number (on a logsheet, diary or notebook), and ask the following questions about the reading:



- Is this in the target range?
- What may have caused this reading?
- Do we need to do anything differently in future?
- How can we correct it now?
- What did we learn?

Remember to take your child's meter and log sheet/notebook with you when you go to see the doctor or diabetes educator!
















### 3.2 When to test blood sugar?

When and how often you test depends on how many strips you have for a month. Let us look at some guidelines for different situations. Choose the one that suits your situation.

#### Option 1: We get 1 box of strips per month (50 test strips)





























- To help your doctor understand when the child might need to take more insulin, test 3 to 4 times a day, for **three days in a row before going to the clinic or doctor**
  - When the child wakes up – before breakfast
  - Before lunch (or your first meal at school)
  - Before dinner
  - Before they go to sleep

	DAY 1	DAY 2	DAY 3	Clinic Day
When waking up				
Before lunch (or first meal at school)				Seeing your doctor
Before supper				
Before bed				

- This means you will use 17 test strips in the 3 days before you see your doctor or go to the clinic. That leaves you with 33 more test strips to use during the other days of the month. We recommend you use the remaining test strips as follows:
  - If you feel that your sugar is low (see page 21)
  - If you feel that your sugar is high (see page 25)
  - If you feel that you have ketones (see page 26)
  - During the three days before your appointment, also keep a note on what you have been eating and what exercise you have done
- Choose 3 days of every month to test like this, even if you are not going to see the doctor and are only going to collect your medication

**Option 2: We get 2 to 3 boxes of test strips per month (100 – 150 per month)**

- Every day, test 3 to 4 times a day, e.g.
- When the child wakes up – before breakfast
- Before lunch (or your first meal at school)
- Before dinner
- Before they go to sleep

	Mon	Tue	Wed	Thurs	Fri	Sat	Sun
When waking up							
Before lunch (or first meal at school)							
Before supper							
Before bed							

- We recommend you use any remaining test strips as follows:
  - If you feel that your sugar is low (see page 21)
  - If you feel that your sugar is high (see page 25)
  - If you feel that you have ketones (see page 26)
- When blood glucose is high (and you have the confidence) you can give a correction dose – extra short acting insulin, in addition to the usual amount of insulin that you give per meal, that will help bring the blood sugar down to the target range. The higher the blood glucose, the more insulin is given:
  - **The following is an example only – please ask your child’s doctor for their own individualised sliding scale**

Blood glucose level (mmol/l)	Extra units of fast-acting insulin Eg. Actrapid, Novorapid <b>NOT for mixed insulins like Actraphane or Humalog 30/70</b>
4.0-10.0	Give no extra insulin
10.1-15.0	Give 1U extra
15.1-20.0	Give 2U extra
20.1 or more	Give 3U extra

- Counting carbs will help you make wise decisions and vary the child's diet. This involves calculating the number of grams of carbohydrate eaten at each meal and adjusting the fast-acting insulin dose accordingly. This is an advanced learning topic. You can ask your doctor to refer you to a dietician to help teach you and your child these skills.

### Option 3: My child has a CGM and counts carbs

- A continuous glucose monitor (CGM) is a device that your child can wear that measures blood sugar levels through the skin. There are various companies that make these devices in South Africa. Unfortunately, CGM is very expensive and most medical aids do not cover the costs at the time this booklet was published. Ask your doctor for more information about CGM if you are interested in this technology.
- Aim to keep your child's blood sugar level in range 70% of the time.
- Each week, look at the data from your child's CGM to see how often they are achieving this target.
- Look at the trend graphs to see if you can pick up any patterns of your child's sugar going high or low.
- Discuss this with your diabetes nurse educator or doctor. You can share your child's CGM data with them online.

Write down your readings in your diabetes log sheet.

Here is an example from Simphiwe. He is 12 years old and in Grade 6. He takes Actrapid as his short-acting insulin before every meal (including for break at school) and Protophane as his long-acting insulin before bedtime.

You will notice that Simphiwe increases his Actrapid insulin if his sugar is more than 10.0mmol/L at meal times, but he always keeps his Protophane the same, no matter what his sugar readings are. Remember to keep your long-acting insulin the same every day.



Month: January		Mon	Tues	Wed	Thurs	Fri	Sat	Sun
Day		15th	16th	17th	18th	19th	20th	21th
Wake up	Reading	7.8	4.2	11.4	6.1	5.0	12.6	13.9
	Insulin	4U	4U	5U	4U	4U	5U	4U
Before Lunch	Reading	10.2	9.1		14.4	3.8	8.9	7.2
	Insulin	5U	4U		5U	4U	4U	4U
Before Dinner	Reading	5.3	12.7	14.1	8.2	15.4	16.6	
	Insulin	4U	5U	5U	4U	5U	5U	
Before Bed	Reading	3.6	9.5	10.9	3.8	12.2	14.7	19.5
	Insulin	10U	10U	10U	10U	10U	10U	10U
Feelings			☹				☺	
Activity		Swimming			Swimming			
Actrapid Protophane				Forgot to take insulin to school		Didn't eat breakfast	Birthday party for Thembu	Forgot to test inject dinner

At the back of this booklet you will find some blank forms for you to use.

Remember to take the child's meter and completed logbook with you when you go to see the doctor or diabetes educator!

### 3.3 HbA<sub>1c</sub>

For this test the nurse or doctor will draw blood and send it to the laboratory for testing. This is NOT the same as the blood sugar checks you do each day.

The HbA<sub>1c</sub> blood test gives you an idea of your overall blood sugar levels over the past three months. The target for many people with diabetes is below 7.0%. It may be



different for your child. Ask your doctor what your child's target should be. You and your child should always know what your child's last HbA1c reading was because this gives doctors a way to see what your child's risk for having diabetes complications is.

If your child's HbA1c is more than 10%, you and your child need to really focus on taking better care of their diabetes – these high blood sugar levels are damaging to your child's body.

### 3.4 How to test?



- 1 Let the child wash their hands with soap and warm water. You want accurate results.



- 2 Put the test strip in the meter.



- 3 Gently prick the side of their finger to get a small drop of blood. If you prick on the top of the finger they will lose the feeling in their fingers over many years of pricking.

- 4 Choose a different finger every time.



- 5 Add the blood to the test strip.

- 6 The blood glucose reading will appear in 5-10 seconds.



- 7 Throw away the used test strip, e.g. in the sharps container or the dustbin.

- 8 Write down the reading in the logbook or diary. It will help you understand why the readings are low or high at certain times.



## 4 Injecting Insulin

### 4.1 What is insulin?

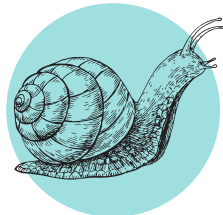
In a child with Type 1 diabetes, their pancreas does not make insulin. Without insulin their blood glucose (blood sugar) will be too high.



Taking insulin makes it possible for them to live a long and happy life with Type 1 diabetes.

Some insulin works quickly (short-acting) and other insulin work over a longer time (long-acting).

- **Short-acting insulin** (e.g. Actrapid, Novorapid, Humalog, Apidra, Humulin R, Biosulin R) is used to control blood glucose levels for the food the child eats and to decrease high blood glucose levels to the target range. It works over 1 to 4 hours.
- **Long-acting insulin** (e.g. Protophane, Humulin N, Biosulin N, Lantus, Levemir) is used to control blood

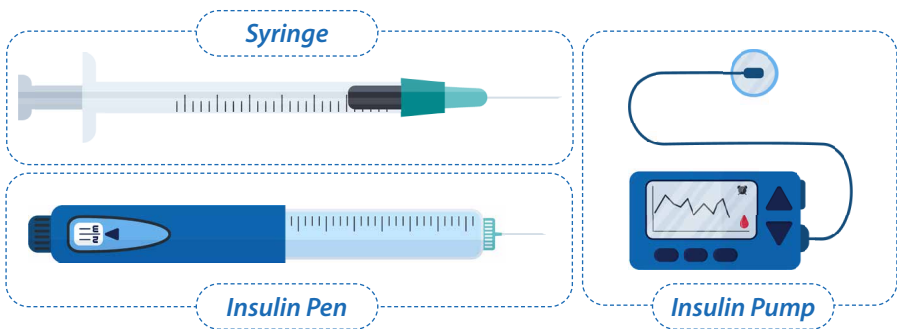


glucose levels that are increasing because of the sugar released from the liver. This insulin acts over 8 to 24 hours. This insulin ALWAYS needs to be given, even if the child doesn't eat. [pic 20]

- Some insulin is a **mixture of short-acting and long-acting** together (e.g. Actraphane, Humalog 30/70, Biosulin 30/70).



The doctor or nurse will explain what insulin must be injected, and when. You can get your insulin by:



**Remember to:**



- Never** leave the insulin in the **car or sun** where it can get warm
- Keep extra insulin that you are not yet using in the **fridge** (but not at the back where it can freeze as this will damage the insulin)



## 4.2 How to inject insulin?

### How to inject using an insulin pen

1 Wash and dry your hands.



2 Take the correct type of insulin.

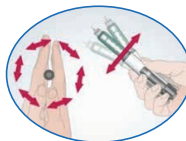


OR



3 Change your needle – as often as possible.

4 Roll and tip the pen gently to mix.



5 Make sure there are no bubbles in the pen. If there are bubbles, hold the pen upright, flick it so that all the bubbles go to the top, dial 5 units and push the back of the pen down. Repeat this until you see a big squirt of insulin.

6 Dial the correct dose that you need by looking at the numbers.



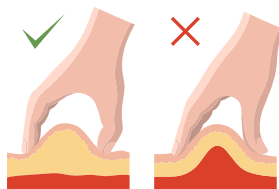
7 Pick a different site (spot) every time you inject – don't inject into lumps.

- Your child's insulin will be absorbed better
- Your child's sugar levels will be better controlled
- This will prevent scars and fat build-up



8 Make sure the site is clean and dry.

9 Pinch and lift the skin – not the muscle.





- 10 Insert the needle into the skin and inject the insulin slowly. Count to ten while you keep the needle in.
- 11 Slowly take out the needle.
- 12 Let go of the skin.
- 13 Put the used needle in the sharps container – ask for one at the pharmacy or put the needles into a plastic container (e.g. an empty 2L cooldrink bottle). When it is full, take this bottle to the hospital for it to be thrown away safely.



## 5 Eating healthy food

### 5.1 Why is it important?

Eating a balanced diet is important to give your child's body all the nutrients, vitamins and minerals it needs to grow well and stay healthy.

### 5.2 General guidelines

- Do not skip meals
- Have regular meal times every day
- Limit intake of high sugar food such as sweets, cold drinks and fruit juice – these will increase blood glucose too quickly.

### 5.3 How to eat healthily?

- Choose a variety of food from the different food groups for growth and development.
- Eat the right amount from each group – this is known as correct portion sizes.

With each meal the following is recommended: If you are a smaller person, your hand and your portion sizes will be smaller



**FIST size serving:**  
Carbohydrates /  
Fruit

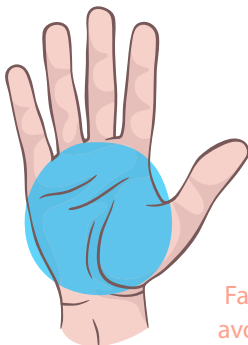


**TWO HAND size serving:**

Non-starchy veg i.e.  
Cucumber, tomato,  
gem squash, spinach,  
cabbage, onion, broccoli

**PALM size serving:**

Protein (meat,  
sardines, bean,  
eggs, chicken)



**THUMB**

**size serving:**

Fat (butter, sunflower oil,  
avo, mayonnaise, cheese)



## 5.4 Understanding Carbohydrates

As someone taking care of a person with diabetes, you need to understand what carbohydrates are. Carbohydrates are broken down in the stomach into glucose which raises blood glucose levels. Foods that contain carbohydrates do not need to taste sweet to raise blood sugar levels. There are different groups of carbohydrates that you need to know about.

Groups of carbohydrates	Examples	Effect on blood sugar level
Grains and starches	Bread, pap, pasta, rice	All these food increases your child's blood sugar level, but that doesn't mean the food isn't healthy. Eg, Fruit contains vitamins and minerals needed for growth
Starchy vegetables	Potatoes, mielies, peas	
Dairy	Milk, yoghurt	
Fruit	Apples, pears, bananas, grapes, oranges	
Sweetened foods	Sweets, jam, syrup, cake, chocolate, sugar	

### Carbohydrates can be fast-acting or slow-acting.

Foods that are **fast-acting** carbohydrates contain sugar that doesn't need to be broken down and will be absorbed quickly into the blood stream. This means that blood glucose levels will be affected soon after the meal. Examples: fruit juice, regular coke, sugar, sweets, syrup, jam, processed carbohydrates like white bread.

**Slow-acting** carbohydrates first need to be broken down by the stomach and intestines before they can be absorbed into the blood stream. Foods that are less processed and have higher fibre content will take longer to affect the blood glucose levels. These foods also keep us fuller for longer. Examples: brown rice, brown bread, low-fat yoghurt.

This means that both white bread and brown bread increases blood sugar levels by the same amount, but the brown bread has more fibre and keeps your child fuller for longer. If your child really hates brown bread, white bread is still okay to eat instead. The same principle can be applied to brown vs white rice, and low-fat vs full cream milk.

## How much carbohydrates should your child be eating?

At each main meal, your child should have one closed fist worth of these foods. You can combine foods from the different types of carbohydrates to make up this portion, but be aware that the more carbohydrate eaten, the more insulin will be needed.



**1 fist-size or 1 small cup**

**Fruit: apple, pear, banana,  
orange  
OR Carbohydrate**



**1 fist-size or 1 small cup**

**Starches and Grains:  
samp, rice, pap, Weetbix, All  
Bran, Oats, Malta Bella**



**1 fist-size or 1 small cup**

**Dairy: milk, yogurt,  
amazi maas**



**1 fist-size or 1 small cup**

**Starchy Vegetables:  
mielies, butternut, pumpkin,  
potato**



The emphasis is that your child should not be eating an apple AND a sandwich AND a glass of milk as this is A LOT of carbohydrates all at the same time, so their blood sugar will rise very quickly.

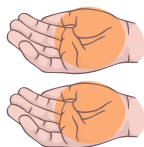
### 5.5 Understanding other food groups

There are also other food groups that have very little effect on blood sugar levels. These foods also need to be included in a healthy meal plan. If you are hungry, eat more food from these categories.

Category	Examples	Effect on blood sugar level
Protein	Meat, chicken, fish, eggs, beans & lentils	No effect
Non-starchy vegetables	Cabbage, carrots, spinach & onion	No effect
Fats	Cheese, oil, butter, mayonnaise	No effect, but can slow down the absorption of carbohydrates in a meal – this means that your child's blood sugar may be low/in target soon after the meal but then increase a few hours after injecting because the food lasts longer than the insulin.

**PROTEIN:**

Sardines, chicken, beans, beef, sardines, eggs

**NON-STARCHY VEGETABLES:**

Cucumber, tomato, gem squash, spinach, cabbage, broccoli

**FAT:**

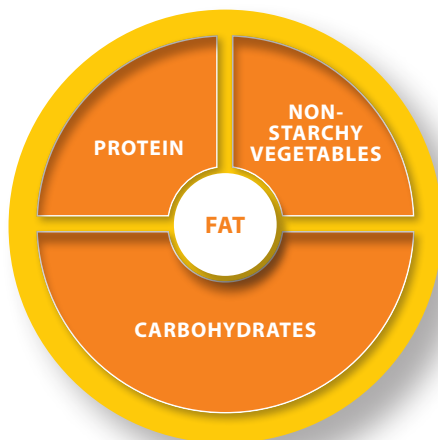
Butter, sunflower oil, avocado, mayonnaise, cheese

Here is an example of a meal that follows all of these portion sizes:



*Half cup of pap (15g of carbs), tomato and onion sauce, spinach and two chicken wings*

*Guideline to  
portion sizes on a  
plate:*



## 6 Low blood sugar

### 6.1 What is low blood sugar?

Low blood glucose is also called hypoglycaemia and occurs when blood glucose levels are below a child's target range, usually under 4.0 mmol/l.

### 6.2 What causes it?

This can happen when:

- The body gets too much insulin or not enough food
- Meals or snacks are missed or eaten late
- Not eating all the carbohydrates in the meal or snack
- The child gets more exercise than planned

### 6.3 Symptoms

Shakiness, dizziness, sweating, sleepiness, heart beating fast, headache, hunger, slurred speech, irritability, crying, lack of concentration, daydreaming, aggression, giggling or being silly.



## How to treat it?

- Do not leave your child alone – stay with them.
- Check your child's blood glucose level, if you are not able to do so, treat as hypoglycaemia.
- Immediately give your child a fast-acting carbohydrate food or beverage.
- Any ONE of the following can be used:

- ½ can of regular coke (NOT Coke Light or Tab)
- ½ glass of fruit juice
- 2-3 teaspoons honey or syrup
- 3 - 5 glucose tablets (e.g. Super C)
- 7 jelly babies



- Re-check your child's blood glucose level after 15 minutes.
- Give another fast-acting carbohydrate if their blood glucose remains low (<4.0 mmol/l).
- When your child feels better, feed a meal or snack as soon as possible, such as a sandwich, fruit, milk.
- Give your child time to recover.
- Your child should not do any activity or exercise after hypoglycaemia until they have fully recovered with stable, in-target blood glucose levels.
- Headaches are common after hypoglycaemia.





## 6.4 Severe Hypoglycaemia

### THIS IS A MEDICAL EMERGENCY



#### Symptoms

- Loss of consciousness (not being able to wake up)
- Seizures or fits
- Cannot swallow or follow commands

Very young children who aren't aware of the symptoms or who can't communicate that they are feeling 'low' need careful observation for subtle signs like daydreaming, lying on their arms, not reacting to any interactions or irritability.

#### Treatment

- If your child is having a fit, move all objects away from them; do not hold them down or put anything into their mouths. Once the fit is over, go to the next step.
- Place your child onto their side so that any spit/liquid can run out of their mouth and not into their airway; check that there is nothing in their mouth and that your child is breathing.
- Have a designated person give your child a Glucagon injection. **THIS IS NOT INSULIN.**
- If you do not have a Glucagon injection, you can rub jam or syrup on your child's gums. **KEEP** the child on their side to avoid choking.
- Call your child's doctor or an ambulance immediately for help.
- Never put food or liquid into the mouth of a child that is unconscious (not awake), convulsing or cannot swallow – this will cause them to choke.

#### Glucagon injection

*(You can watch the YouTube video on how to give this injection on YWD's website.)*

Glucagon is a hormone which raises blood glucose within 10 minutes. It needs to be given by injection when the child is unable to wake up, fitting or unable to swallow due to severe hypoglycaemia in order to save the child's life. Any person

who is trained to give Glucagon should know where it is kept at all times. You cannot harm the child by giving them a Glucagon injection.

Glucagon comes in a bright orange box. Inside is a dry powder or tablet in a glass bottle and a syringe containing sterile water that is used for dissolving the powder.



- 1 Take the orange cap off the bottle.
- 2 Inject all the water into the bottle.
- 3 Mix the solution by shaking it.
- 4 Draw up the solution with the same syringe.
- 5 Inject the solution into the buttocks or upper thigh of the child.
  - For children under 30kg (< 8 years old) inject half of the solution
  - For children over 30kg (> 8 years old), inject all of the solution
  - If the child is fitting, have another person hold the child down while injecting the Glucagon or if you are alone, wait for the child to stop fitting
- 6 Rub the injection site to increase absorption.
- 7 The child should recover within 15 minutes, if not, call an ambulance.
- 8 Give the child fast-acting carbohydrates and a snack as described in hypoglycaemia treatment when they regain consciousness. Make sure that they swallow properly to avoid choking.
- 9 Stay with the child, do not leave them alone.
- 10 Test their blood sugar every 15 minutes to make sure it is not going low again. Once blood sugar levels are above 6.0 mmol/L, then the child can sleep, but continue testing regularly.

Headaches and vomiting are common symptoms after administering Glucagon. The child will most likely want to rest after experiencing severe hypoglycaemia. Do not let the child sleep until their blood sugars have stabilised above 6.0 mmol/L twice in a row.

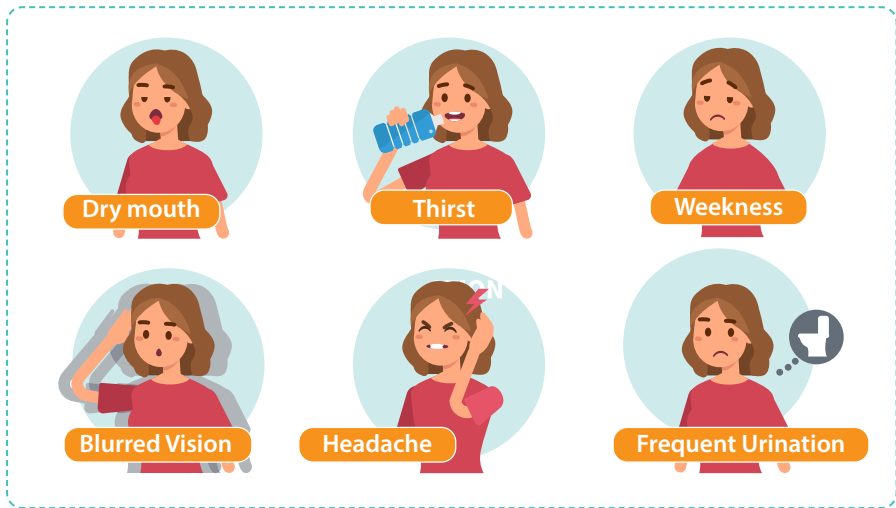
## 7 High blood sugar

### 7.1 What is high blood sugar?

High blood sugar is also called hyperglycaemia, and occurs when blood glucose levels are above a child's target range, usually above 10.0 mmol/l.

### 7.2 Symptoms

Increased thirst, weakness, increased need to urinate, blurred vision, nausea, grumpiness.

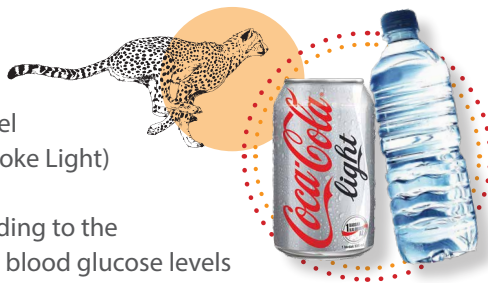


### 7.3 What causes it?

- The body gets too little insulin, too much food, or less exercise than usual
- The body is under stress from a cold, sore throat, or other illness
- The child is emotionally upset

## 7.4 How to treat it?

- Check your child's blood glucose level
- Give sugar-free drink (e.g. water or Coke Light)
- Allow them to go to the bathroom
- Give extra short-acting insulin according to the doctor's instructions to decrease the blood glucose levels
- Check for ketones (see the next section)
- If your child does not have ketones, they can do extra exercise like playing, running around or sports to help bring down their blood glucose level



## Ketones

When your child's body doesn't get enough insulin, the body starts to burn fat instead of glucose for energy, producing waste products called ketones. Very high levels of ketones cause a condition called diabetic ketoacidosis (DKA), which makes the pH of the blood more acidic. Ketones can be detected with a simple urine or blood test. DKA is a dangerous condition and must be treated immediately. If left untreated for many hours or days, it can lead to a diabetic coma and possibly death. Ketones also occur when a child with diabetes becomes ill (e.g. flu, tonsillitis). The body needs more insulin at this time. Ketones may also occur when the child has missed an insulin injection or when the blood glucose is over 14.0 mmol/l over a long period of time. picture of strips from teacher's manual.



## Symptoms

Ketones have the same symptoms as high blood sugar levels, but the child will also have stomach pain or cramps; Nausea; Vomiting; or fast breathing  
A positive urine test for ketones occurs when the colour of the strip changes to

a pink or purple colour. The darker the colour, the higher the level of ketones. Another way of testing for ketones is using a ketone meter (not the same machine that is used to test blood sugar). Any value  $\geq 3.0$  mmol/l requires immediate treatment.

If the child has a high blood sugar level with these symptoms, and you do not have a way to test for ketones, go to your nearest clinic or hospital immediately (even if it is in the middle of the night – do not wait until the morning!)

## Treatment

Test for ketones using a urine or blood test under any one of the following conditions:

- Blood glucose is above 14.0 mmol/l
- Stomach pain or cramps
- Nausea and/or vomiting
- Any other illness
- Notify your doctor or nurse immediately if ketones are present
- Give insulin and fluid according to the doctor's instructions
- Allow free access to the bathroom
- Do not let the child perform any physical activity for the rest of the day

## 8 Feelings

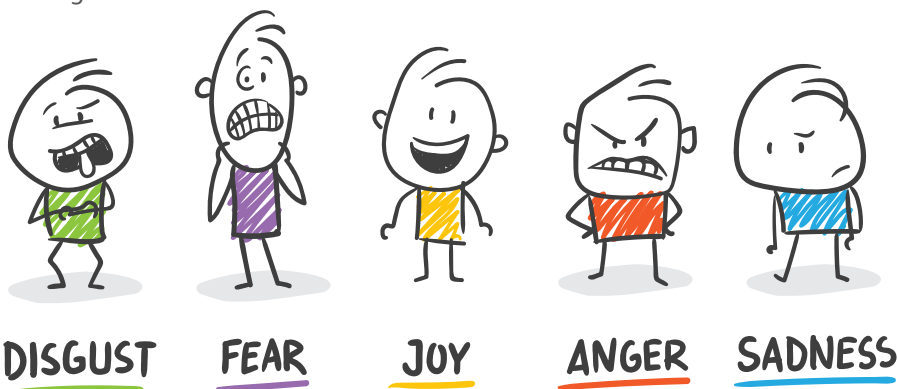
### 8.1 How does diabetes make you feel?

Having diabetes and managing it every day is stressful for children, young people, and their families.

Children with diabetes may have the following feelings:

- Fear
- Shame
- Feeling left out

- Depression
- Anger



Sometimes it is difficult for them to talk to others about their diabetes. But diabetes is nothing to be ashamed of.

## 8.2 How to support a child with diabetes?

1. Make sure you share diabetes management tasks with your child/young person.
2. Ask them how they feel about all that is expected of them.
3. Let your child know it is OK not to like diabetes.
4. Focus on what they can do (checking blood glucose levels, taking insulin) rather than the 'numbers' (blood glucose levels, HbA1c).
5. Do not punish your child for high or low numbers. If you put consequences in place, put them in for the behaviours that your child has control over.
6. Talk about things other than diabetes.
7. Discuss their diabetes with the teacher, school nurse and principal and make sure they know and what it means.
8. Explain the diabetes to the parents of your child's friends.
9. Help them to share their diabetes with others:
  - Help your child to practice talking about their diabetes.
  - Help your child to decide who else needs to know:

- Their closest friend
- Friends they hang out with a lot
- Friends they do sport with
- Help your child to choose a good time to talk about their diabetes, for example when they are having lunch or a snack with their friend.

### 8.3 Supporting other children

Take into account the emotional impact on their brothers and sisters. They go through the same emotions as other family members.

They may feel:

- **Guilty** that their brother or sister has diabetes and they do not
- **Fear** that they too may get diabetes
- **Fear** that their brother/sister with diabetes may become really sick
- **Anger** that you stopped buying treats they used to enjoy
- **Jealous** because their brother/sister with diabetes seems to get all the attention

Give everyone the opportunity to express their feelings. Let them know that they are still loved. Make sure they all understand diabetes and the treatment. Regularly spend time with all the children.

### 8.4 Looking after yourself

It is normal to feel overwhelmed and fearful when your child is diagnosed with type 1 diabetes. People react differently to this. Some seek comfort - they eat more, drink more alcohol, use drugs or work harder, and block out difficult feelings. Others try to control everything to protect themselves and withdraw from people.

It is very important that the carer and parents look after themselves too. As a carer you need to strengthen yourself so you can be strong for your child. Use the support systems available to you and talk to others that you trust about your feelings.

## 9 Staying active

To stay healthy, every person must do some exercise.

When you have diabetes, you just have to take some extra steps to make sure you do it safely.

Exercise and sport will affect the blood glucose level of the child with diabetes. Depending on the type of exercise or sport, it can cause blood glucose levels to go up (hyperglycaemia) or go down (hypoglycaemia).

There are things you can do to avoid this. Ask your nurse or doctor what you should do for the type of exercise you are doing.

This may include:

- Checking your blood sugar more regularly (before, during or after the exercise)
- Adjusting your insulin dose (get advice from your doctor on this)
- Eating a snack
  - If the child's blood glucose level is less than 6.0mmol/L, it is better for them to eat a snack before the exercise to prevent low blood sugar (e.g. a fruit or slice of bread)
  - If the child's blood glucose is more than 6.0mmol/L, they may not need a snack before the exercise

Your child should NOT do any exercise when they have ketones.





## 10 Sick day management

### 10.1 Extra care

When a child with diabetes gets ill, they need extra care and attention from someone who understands their diabetes.

When they get ill, e.g. from flu, their blood glucose levels will change. It can go high or low, depending on the illness.

- Infections that cause fever and pain often cause high glucose levels
- Some medicine can cause high glucose levels
- Vomiting can cause low glucose levels
- Diarrhoea can cause low glucose levels



FEVER



VOMITING



DIARRHEA



MEDICINE

### 10.2 What happens when a child with diabetes is sick?

Their body makes more of the stress hormone cortisol. Cortisol makes their body more insulin resistant and they will need more insulin when they are sick.



**Remember:** if your child is not eating, they still need to inject their long-acting insulin (e.g. Protophane, Humulin N, Biosulin N, Lantus, Levemir). If this is skipped, the child has a high risk of ketones and needing to be admitted to hospital.

### 10.3 Signs and Symptoms

- High blood glucose levels make you thirsty and urinate more often which can lead to dehydration which causes more stress.
- Ketone build-up leads to stomach aches, nausea and eventually vomiting.

- Vomiting without diarrhoea could be a sign of ketone build-up.
- Rapid breathing without a cough or fever could be a sign of ketone build-up.
- If you cannot keep fluids down or have symptoms that make you worried, call for help.

Most sick day problems can be solved with your doctor's advice over the phone.

#### 10.4 What else must be done to control the diabetes?

- Test blood glucose more regularly when your child is ill
- Check for ketones if your child is ill, even if their blood sugar is not high
- Make sure they drink enough water - small sips to prevent vomiting.
- There is no need to eat when they are sick.
- Inject the normal long-acting or pre-mix dose – DO NOT SKIP THIS
- You may need to inject short-acting insulin more often - your doctor or nurse will help plan this with you
- Call your doctor if you are worried, or if things gets worse.

#### 10.5 What about medications?

- Keep giving the medication as prescribed, even if they have not eaten much.
- DO NOT skip long-acting insulin.
- Over the counter medications that contain sugar are okay (you are using very small amounts).
- Medication for nausea may not work if ketones are present.



Diabetes Log sheet - Remember to take the meter and completed log sheet with you when you go to see the doctor or diabetes educator!

Month:		Day	Mon	Tues	Wed	Thurs	Fri	Sat	Sun
Wake up	Reading								
	Insulin								
Before Lunch	Reading								
	Insulin								
Before Dinner	Reading								
	Insulin								
Before Bed	Reading								
	Insulin								
Feelings									
Activity									
Notes									

Month:		Mon	Tues	Wed	Thurs	Fri	Sat	Sun
Wake up	Day							
	Reading							
Before Lunch	Insulin							
	Reading							
Before Dinner	Insulin							
	Reading							
Before Bed	Insulin							
	Reading							
Feelings								
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Notes								

Month:		Day	Mon	Tues	Wed	Thurs	Fri	Sat	Sun
Wake up	Reading								
	Insulin								
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Activity									
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Month:		Mon	Tues	Wed	Thurs	Fri	Sat	Sun
Wake up	Day							
	Reading							
Before Lunch	Insulin							
	Reading							
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