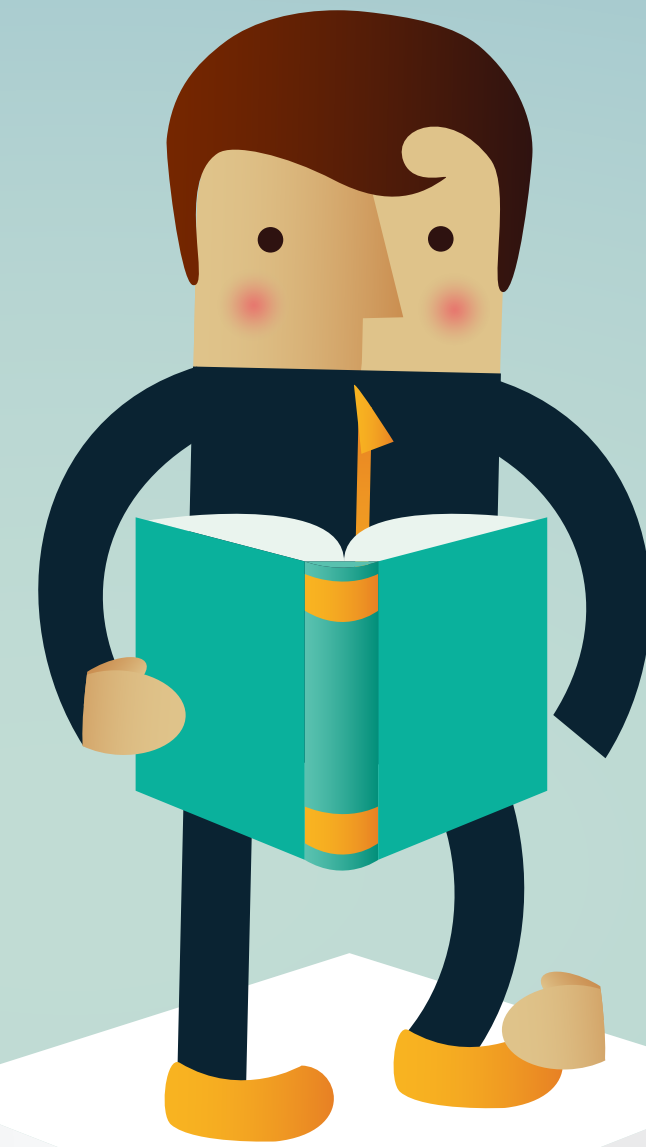


The Story of Diabetes

The inside story on diabetes

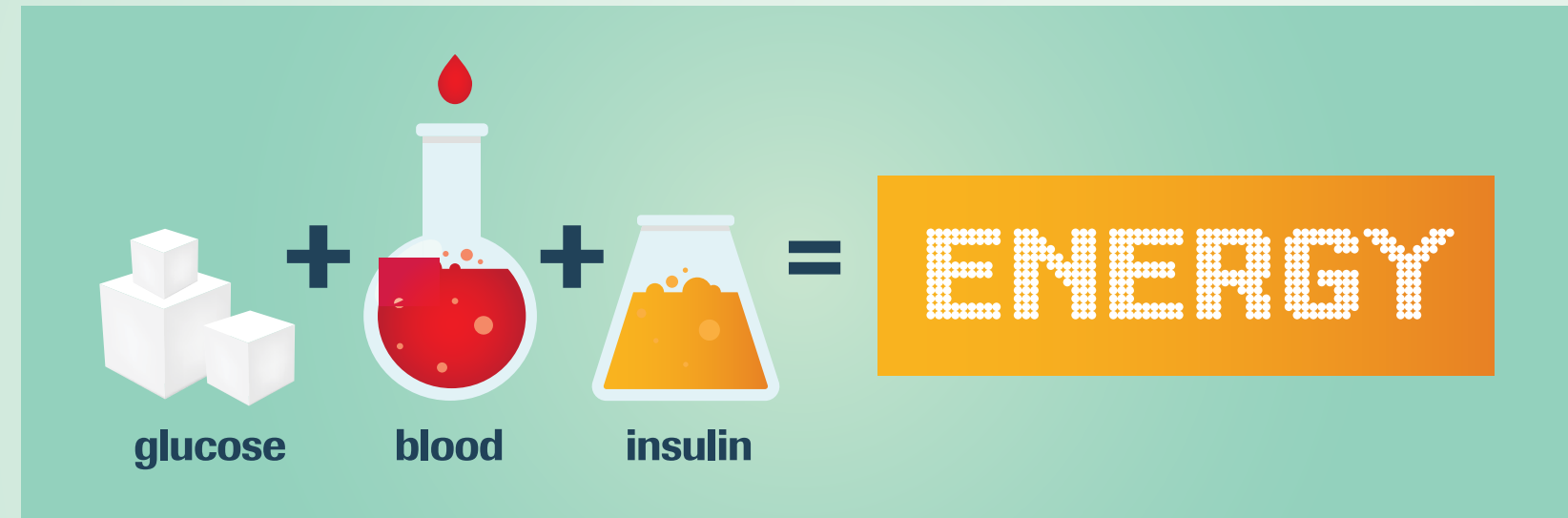


Essential advice for people with diabetes from Roche Diabetes Care

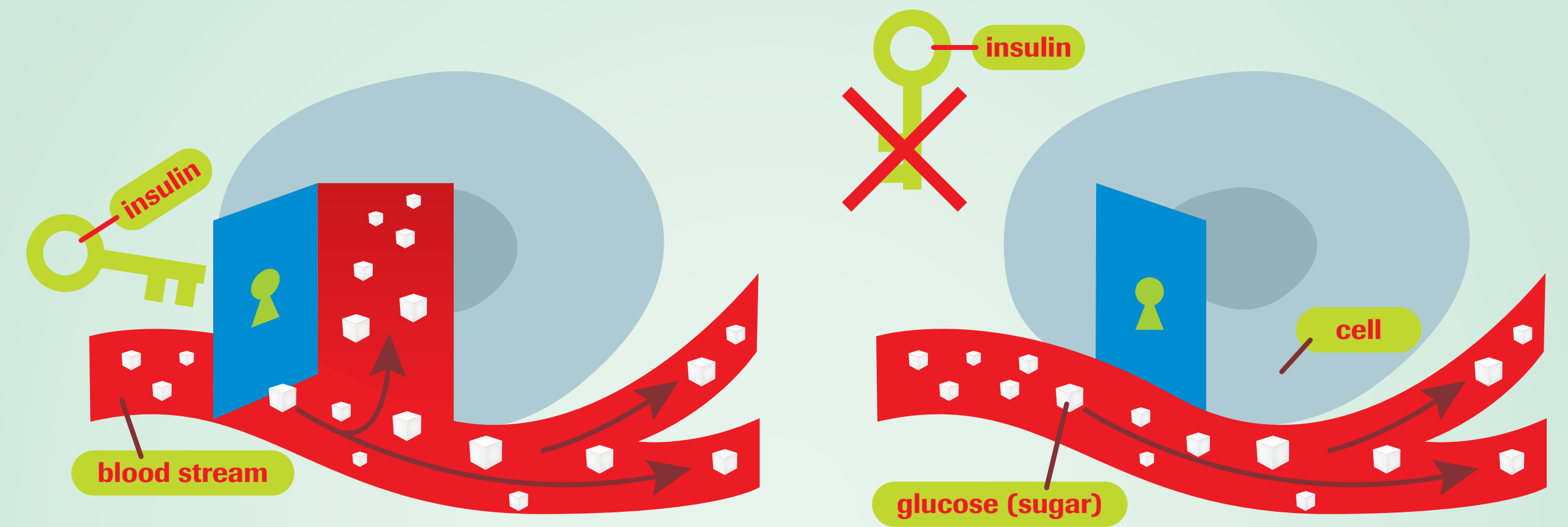
What is Diabetes?

Diabetes is a chronic disease characterized by high blood sugar levels over a prolonged period. It can be caused either when the pancreas does not produce enough insulin or when the cells of the body do not respond properly to the insulin produced.

Why is insulin important?



Insulin is a hormone produced by the pancreas that helps to maintain normal blood glucose levels. When food moves through the digestive system, the proteins, fats and carbohydrates found in the food are broken down into their smallest components to enable absorption. When we eat foods containing carbohydrates (e.g. bread, rice, potatoes, sugar, sweets), they are broken down into glucose (a type of sugar). The role of insulin is to facilitate the movement of glucose from the blood to the cells in the liver, fat and skeletal muscles. Insulin acts almost as a key that opens up the door of the cell. Once the glucose is inside the cell it can be converted to energy for use in the body.



What happens in your body if you have diabetes?

If you have diabetes your body is unable to properly process sugar. This is because either you don't have enough insulin produced or the insulin is not working properly. As a result, blood sugars remain high in the body.



What are the symptoms of diabetes?



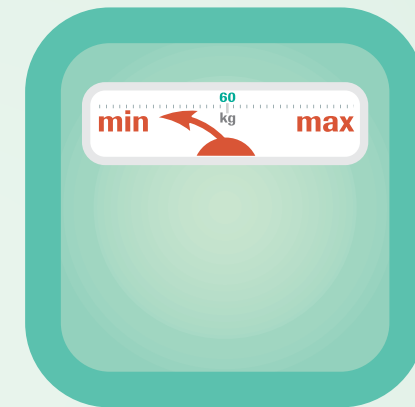
Extreme tiredness



Blurred Vision



Frequently passing urine, particularly at night



Unplanned weight loss



Increased thirst



Cuts and wounds that heal slowly

If you haven't been diagnosed with diabetes but are experiencing any or all of the above symptoms, make an early appointment to see your doctor. Also note that not all people with diabetes will encounter these symptoms. That is why screening for diabetes if you have any risk factors is very important.

Most common types of diabetes

Type 1 diabetes

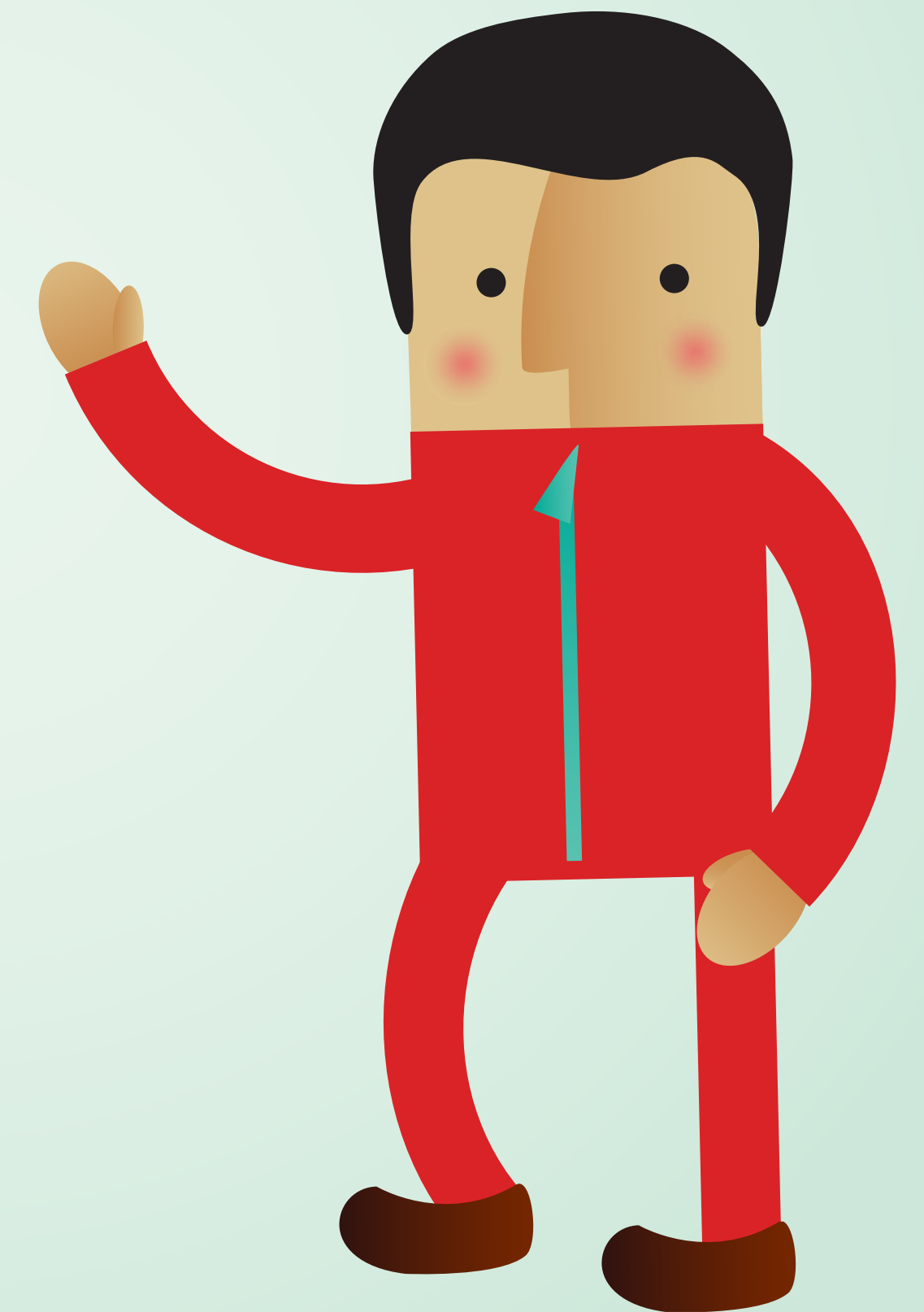
This type of diabetes describes the condition which occurs when your pancreas stops producing insulin.

Type 1 diabetes usually starts earlier in life. The treatment for type 1 diabetes is insulin replacement. Insulin can be administered via a syringe, insulin pen or insulin pump.

Regular home blood glucose monitoring is also very important in people with type 1 diabetes.

Type 1 diabetes is a rare condition. Only 5 – 10% of all patients that have diabetes have type 1.

Type 1 diabetes can not be prevented.



Most common types of diabetes

Type 2 diabetes

In type 2 diabetes your pancreas is still able to make insulin, but either there isn't enough to meet your body's needs, or the insulin it produces is not properly used (insulin resistance).

This type of diabetes usually starts later in life. Type 2 diabetes is very common and approximately 90 – 95% of patients that have diabetes have type 2.

There are many risk factors for the development of type 2 diabetes (see next page) and it has been found that most of type 2 diabetes is preventable by following a healthy lifestyle and having a normal body weight.

Type 2 diabetes is treated with oral blood glucose-lowering medication (and in some cases insulin), healthy lifestyle and regular home blood glucose monitoring. It is also important to control cholesterol and blood pressure in people with type 2 diabetes.



Gestational diabetes

This type of diabetes occurs in pregnant women who never had diabetes before but who develop high blood glucose levels during pregnancy. This typically occurs in the 2nd or 3rd trimester. In gestational diabetes the insulin that the pancreas makes doesn't work properly (insulin resistance), and the pancreas can't make enough insulin. This condition affects both the mother and the baby if poorly controlled and unrecognized.

Blood glucose levels usually return to normal after the baby has been delivered, but the mother has a very high risk of developing type 2 diabetes later in life. Regular follow-up is thus important.



What are the risk factors for type 2 diabetes?

- Having a family member with type 2 diabetes
- Being overweight
- Having unhealthy eating habits
- Having a sedentary lifestyle
- Age (45 years and older)
- High cholesterol
- High blood pressure



How do you keep your diabetes in control?

Self-monitoring of blood glucose (SMBG) and HbA1c testing are two ways to monitor your glucose control. This information will also help you and your healthcare team to determine if you need any changes in your treatment.

SMBG

Self-monitoring of blood glucose is self-performed through the use of a glucometer. It gives you an instantaneous picture of what's happening and allows you to act quickly in case of low and high blood glucose. Your healthcare team will tell you what your optimal blood glucose target range is.



HbA1c test

An HbA1c test tells you how well your blood glucose levels have been controlled in the past 2-3 months. It is a test that is performed in the lab and, ideally, should be done at least 2 times per year. Your healthcare team will tell you what your target HbA1c percentage is.

What are the complications of diabetes?

Hyperglycemia

Hyperglycemia is the medical term for high blood glucose levels (blood glucose higher than 180 mg/dL (10 mmol/L)). There are several potential causes of high blood glucose. Some of these include missing a dose of your medication, eating more carbohydrates than your body or medication can cope with, or illness. Hyperglycaemia can cause symptoms such as being very thirsty, urinating more frequently or being very tired. However sometimes a person might have hyperglycemia without any symptoms.

In type 1 diabetes, uncontrolled and untreated hyperglycemia may result in a very serious condition called diabetic ketoacidosis (DKA). Having chronic high blood glucose levels will cause the development of long-term diabetes complications. The treatment of high blood glucose levels will depend on what caused it.

Hypoglycemia

Hypoglycemia is the medical term for low blood glucose levels (blood glucose lower than 70 mg/dL (3.9 mmol/L)). There are several potential causes of low blood glucose. Some of these include taking more insulin or other diabetes medication than needed, skipping a meal, and alcohol consumption. Common symptoms of hypoglycemia include hunger, sweating, dizziness, trembling, headache, and loss of concentration. If blood glucose levels fall very low there might be behavior changes, confusion, seizures and even coma. Mild hypoglycaemia can be treated by consuming small amounts of fast-acting carbohydrates (e.g. sugar or cold drink). Frequent blood glucose monitoring in addition to having a good management plan will help you to avoid and successfully treat hypoglycemia.

Consult with your healthcare professional regarding the signs and symptoms of hyperglycemia and hypoglycemia and make sure to have a plan to manage either condition encountered.

What are the complications of diabetes?

Long Term Complications

Long term complications of diabetes develop gradually. The longer you have diabetes, and the less controlled your glucose, the higher your risk is of complications.



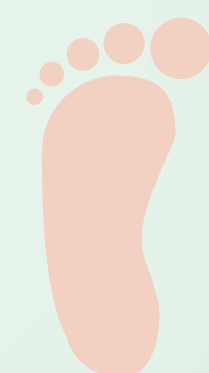
- Cardiovascular disease leading to heart attack and stroke



- Eye damage



- Nerve damage



- Diabetic foot



- Kidney disease



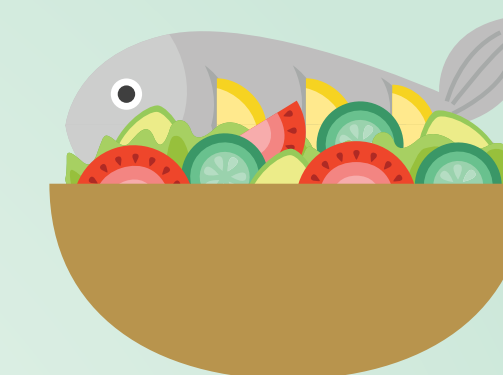
- Oral health problems

Keeping your blood sugar in range helps to prevent and delay these complications. Consult with your healthcare professional to ensure periodic checkups on the above.

Tips to prevent diabetes complications

1. Follow a healthy and balanced eating plan.

Include wholegrain and high-fiber starchy foods, fruits, vegetables, lean protein, and small amount of healthy fats on a daily basis. Limit your intake of refined carbohydrates, sugar and sugar-containing foods and drinks, and fatty foods. A registered dietitian will be able to provide you with an individualized eating plan.



2. Become more physically active.

Include a minimum of 30 minutes of moderate intensity aerobic exercise at least 5 days a week and include resistance exercises 2-3 times per week. Also try to be more active during the day e.g. take the stairs instead of the elevator.

3. Check your blood glucose regularly.

Self-monitoring of blood glucose (SMBG) is an important part of managing your diabetes. The frequency of measuring your blood glucose depends on the type of diabetes that you have and also on which medication you are. Your doctor will advise how often you should be checking.



What are the treatment options for diabetes?

Type 2 diabetes

In addition to following a healthy lifestyle your doctor will prescribe oral blood glucose lowering medication that suits your needs. These will be reevaluated and readjusted if necessary with every follow up that you have with your healthcare team.

Tablets
that help your
pancreas
produce more
insulin

- Sulphonylureas (e.g. gliclazide)
- Meglitinides (e.g. nateglinide)
- DPP-4 inhibitors (gliptins e.g. sitagliptin)

Tablets
that slow glucose
entering the
blood after
a meal

- Alpha-glucoside inhibitors (e.g. acarbose)

Tablets
that help your
insulin work
harder

- Biguanides (metformin)
- Thiazolidinediones (glitazones e.g. pioglitazone)

Injections
that slow digestion,
help lower blood
sugar levels and
promote weight
loss.

- GLP-1 analogues (e.g. liraglutide, exenatide)

Tablets
that increase
glucose excretion
via kidneys and
urine

- SGLT2 inhibitors (gliflozins e.g. empagliflozin)

**Insulin
Injections**

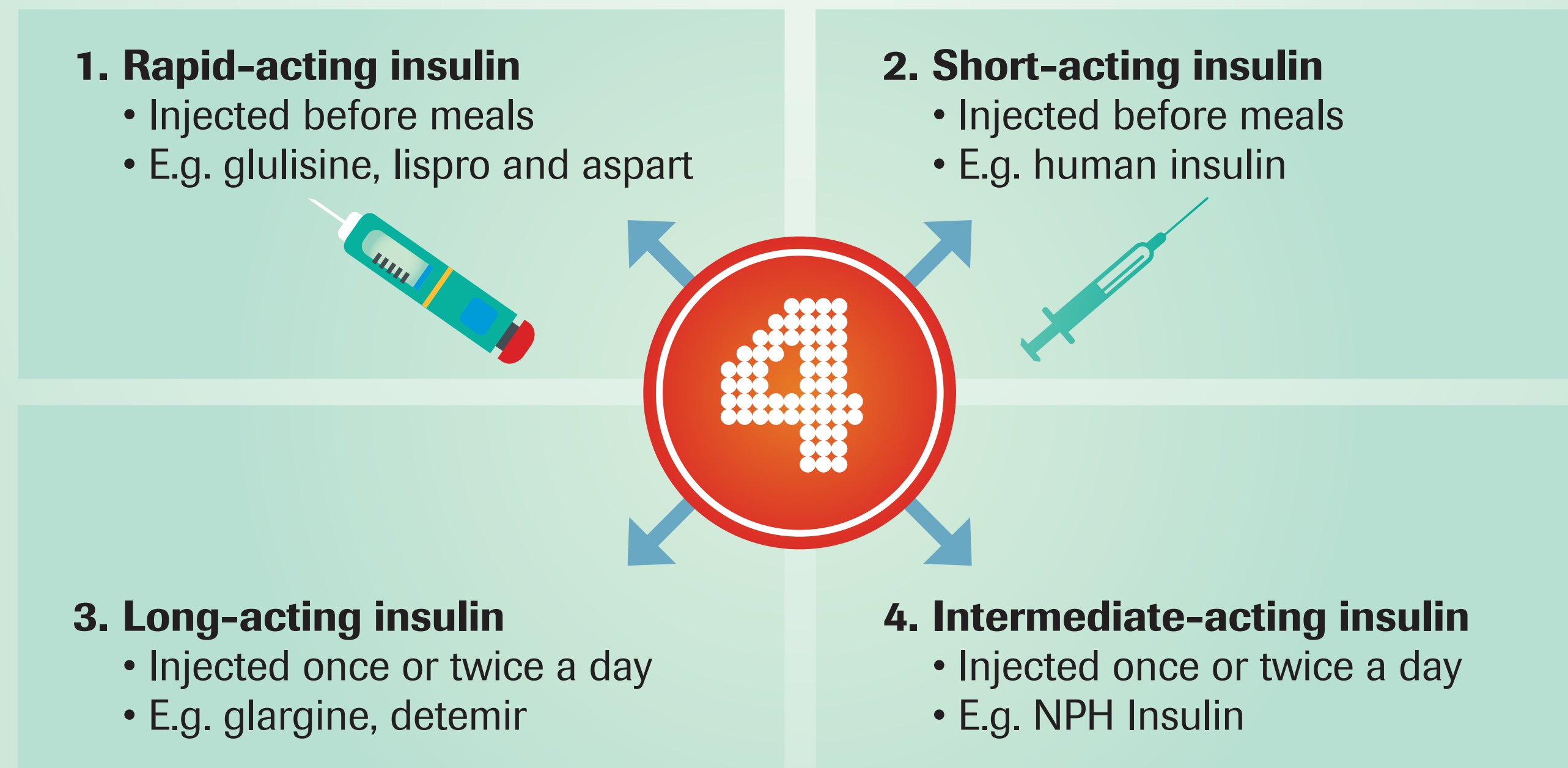
Insulin injections can be used in people with type 2 diabetes who do not produce sufficient amounts of insulin (see the next page for examples of insulin).

Insulin treatment

Type 1 and some type 2 diabetes

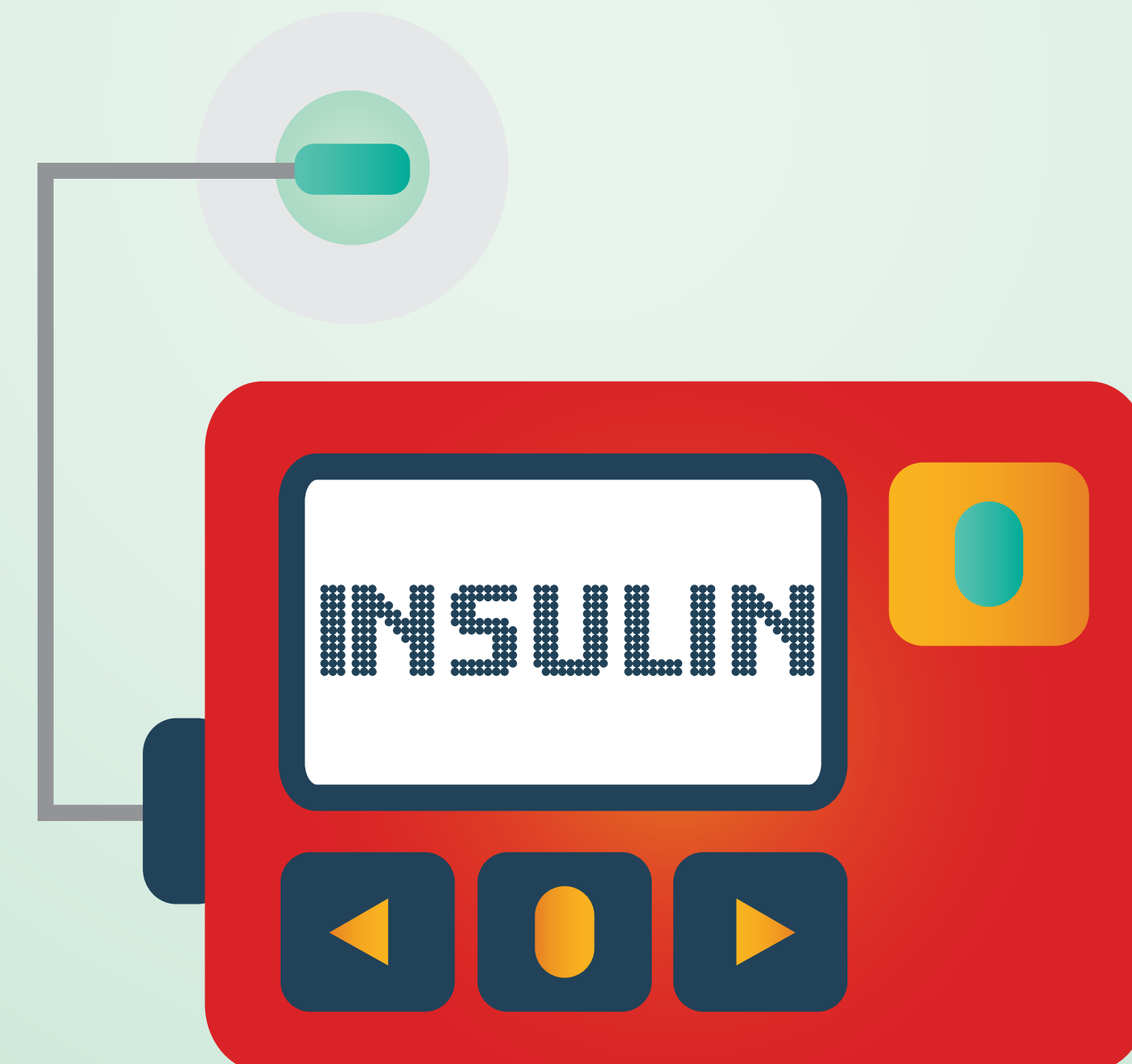
Insulin replacement is the cornerstone of type 1 diabetes treatment. As mentioned earlier, insulin may also be used in patients with type 2 diabetes. There are a few different forms of insulin available. They are usually made in a lab derived from animal sources or are made to match human insulin. Modified versions are called analogues. Insulin can be administered in three ways: using an insulin vial and syringe, using an insulin pen or using an insulin pump. Each of these has its own advantages and disadvantages.

There are FOUR main types of insulin:



Insulin pump therapy

An insulin pump is programmed to continuously deliver insulin 24 hours a day to meet your personal requirements. It is a small device attached to your abdomen or thigh via a fine needle called a cannula. Many people find that using an insulin pump can help to improve their control and reduce the number and severity of hypos.



Diabetes care plan

Your care plan

Caring for your diabetes is a joint responsibility between you and your diabetes healthcare team. You should decide together on an individual care plan.

You should include:

- An agreed HbA1c target.
- Dietary advice and exercise recommendations.
- Information on different treatment options.
- Advice on the frequency of blood glucose monitoring and your glucose target range.
- Regular check-ups (blood pressure, blood lipids, eyes, feet and kidneys).
- Advice on how often you should see your nurse or doctor.

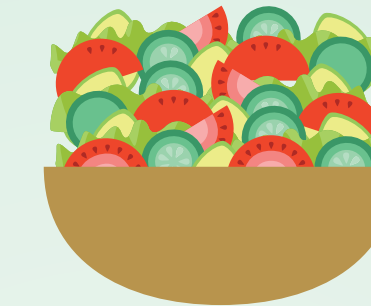
Taking control of your diabetes

Staying in control of your diabetes can sometimes be tough, but regular monitoring, and a healthy lifestyle can really help you stay on top of your diabetes.

Tips to stay on top



- Exercise regularly.



- Eat more unprocessed, high-fibre foods (e.g. wholemeal bread, vegetables) and cut down on fatty and sugary foods.



- Do not smoke.



- Get detailed feet, eye, dental and cardiovascular examinations on a yearly basis.



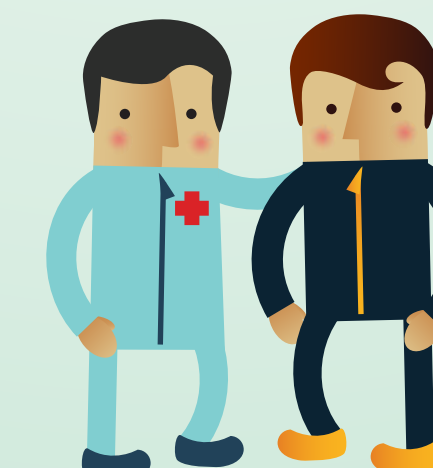
- Keep a record of your blood glucose tests.



- Check your feet regularly for cuts and bruises.



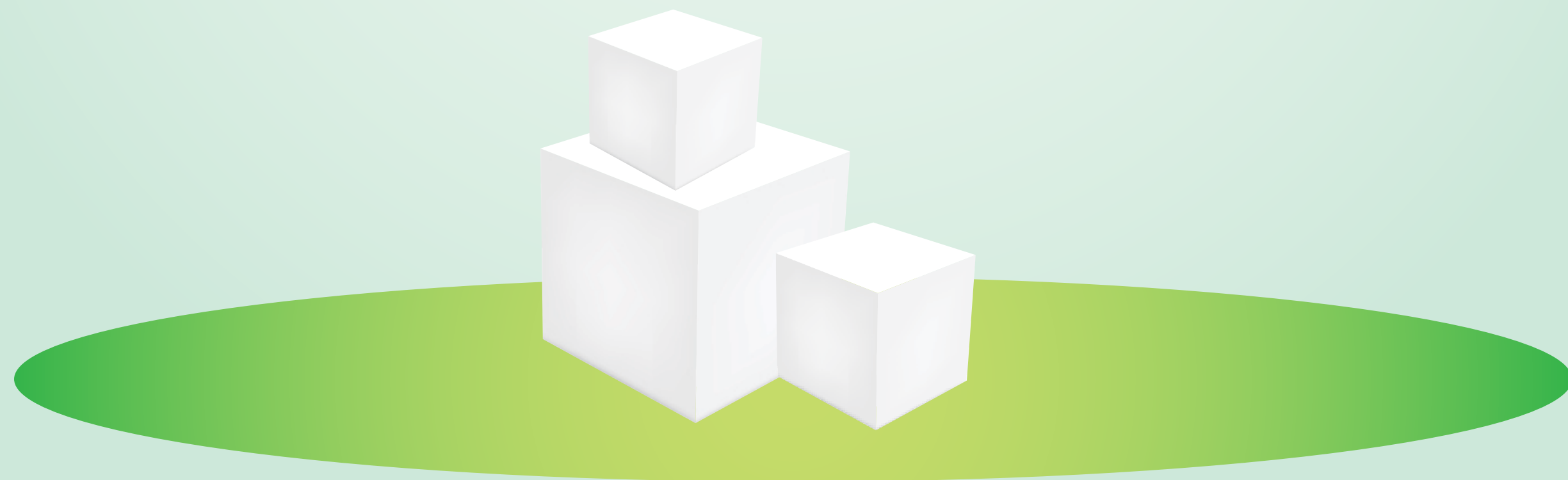
- Attain or maintain your ideal body weight.



- Talk to your doctor or nurse if you are unsure or need advice.

Key Reminders:

- Both a healthy diet and exercise are very important for all people with diabetes.
- Good blood glucose control helps you be in control and can lower your risk of developing diabetes complications.
- Regular blood glucose monitoring is an essential part of diabetes management. Keep a record of your blood glucose results so that you can discuss them with your healthcare team.
- Have regular follow-ups with your healthcare team.



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4. International Diabetes Federation (IDF). Global guideline on self-monitoring of blood glucose in non-insulin-treated type 2 diabetes. 2009. [updated 2009; cited 2019 Nov 9]. Available from: http://www.idf.org/webdata/docs/SMBG_EN2.pdf.

For more information please contact your healthcare professional.

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