



**Ignite the Revolution in  
Type-2 Diabetes Management**



# Understanding Diabetes

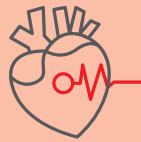
Diabetes represents among top 10 causes of death globally.<sup>1</sup>



Diabetes concerns every family and is a leading cause of



blindness



heart disease



kidney failure



early death<sup>2</sup>



India is home to the **second largest number** of adults with diabetes globally.<sup>2</sup>



**About 77 million**

Indians are diagnosed with diabetes.<sup>2</sup>



**Around 43.9 million**

people are with undiagnosed diabetes.<sup>2</sup>

Diabetes Today





## What is Diabetes Mellitus?

Diabetes mellitus is a condition in which the level of sugar (glucose) in the blood is too high.<sup>3</sup>

Let us understand how diabetes occurs?



When you eat, some of your food is broken down into sugar called glucose.<sup>3</sup>



Sugar travels in the blood to the body's cells. Your body needs the glucose for energy.<sup>3</sup>



Insulin helps move the sugar from the blood into your cells. It acts as the "key" that opens the body's cells and lets sugar in.<sup>3</sup>

But, when you have diabetes, the body doesn't make or use insulin correctly.

There are two types of diabetes mellitus<sup>4</sup>

The body makes little or no insulin

Type 1 Diabetes

Type 2 Diabetes

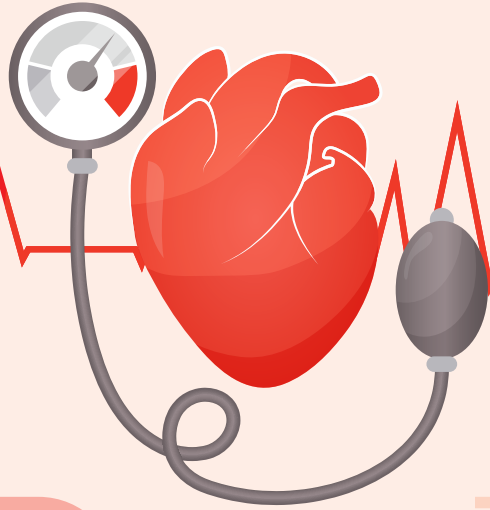
The body does not make enough insulin or use it well.

Gestational diabetes is type of diabetes



when changes during pregnancy can make it hard for the mother's body to make and use insulin











# Risk Factors<sup>4</sup>





## Non-modifiable Factors

Risk factors that cannot be changed

- 1 45 years of age or older 
- 2 Have a parent, brother, or sister with type 2 diabetes 
- 3 Belong to a high-risk ethnic group 
- 4 Have a history of heart disease 
- 5 Had diabetes during pregnancy 
- 6 A woman with polycystic ovary syndrome 

## Modifiable risk factors

Risk factors that can be managed

- Are overweight or obese 
- Are not physically active 
- Have high blood pressure 
- Have high levels of fats in your blood 



# Symptoms<sup>4</sup>



Diabetes symptoms vary from person to person. Some people have no symptoms at all.

Common symptoms include:

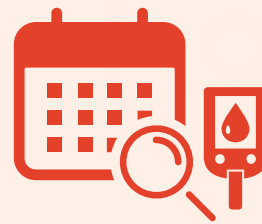




# Daily Monitoring and Tracking Blood Sugar

While experiencing some of these symptoms, it is important to check your blood sugar levels. Health care providers will take blood glucose readings and provide recommendations.

If you're diagnosed with type 2 diabetes, you will need to monitor your blood sugar level regularly. Knowing diabetes levels can help you manage type 2 diabetes.



People with pre-diabetes have blood sugars that are higher than normal, but not as high as with diabetes.<sup>5</sup>

Numbers for diagnosing prediabetes and diabetes		
	Fasting blood sugar	HbA1c
Normal	Below 100 mg/dL	5.6% or below
Prediabetes	100 mg/dL-125 mg/dL	5.7%-6.4%
Diabetes	126 mg/dL or above	6.5% or above

Checking often will tell you how physical activity and the foods you eat affect your blood sugar and if your insulin or other diabetes medicine is working.<sup>5</sup>



One can also self-monitor the blood glucose levels. A blood glucose meter uses a small drop of the blood to show how much glucose is in your blood at that time.



Blood sugar level is measured in terms of fasting blood sugar level, post-prandial blood sugar level, and HbA1c.



## Daily checks

Tells you about your blood sugar at the time of the test.

Two blood sugar parameters contribute to measurements.<sup>5</sup>



### Fasting plasma glucose (FPG)

is the blood sugar number when you have been fasting (not eating) for at least 8 hours.<sup>6</sup>



### Postprandial plasma glucose (PPG)

is the after-meal blood sugar level, which you check about 1 to 2 hours after you start eating. It measures the blood sugar spikes that happen after you eat.<sup>6</sup>



## HbA1c Test

It detects your average blood sugar level over a period of past 3 months. It is a best way to know if you have diabetes under good control over time.<sup>6</sup>




Everyone have different goal for diabetes level. You and your diabetes care team will set the goals that are right for you.

According to the



Lowering your A1c to below 7% may reduce your risk of problems from diabetes.<sup>6</sup>



Time	Goals for most nonpregnant adults with diabetes	Your goals
 Before meals	80 to 130 mg/dL	_____
 1 to 2 hours after the start of a meal	Less than 180 mg/dL	_____
 A1c	Less than 7%	_____

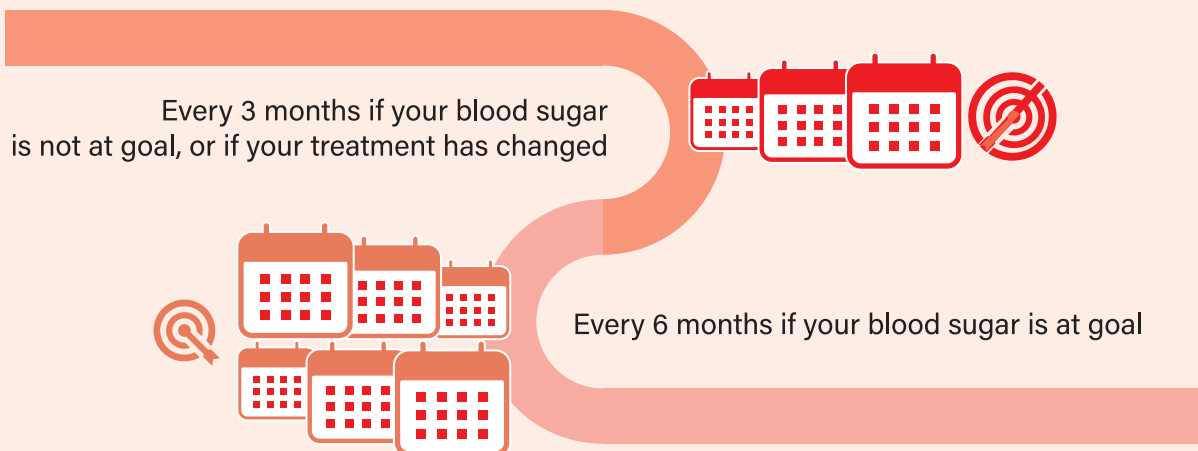
Adapted from the American Diabetes Association. Standards of medical care in diabetes—2017. Diabetes care. 2017;40 (Suppl 1): S1–S142.

Your blood sugar goes up and down all day.  
It is affected by what, when, and how much you eat, as well as how active you are

Common timings for daily blood sugar levels:<sup>5</sup>

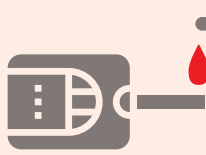


HbA1c should at least be check at:<sup>6</sup>



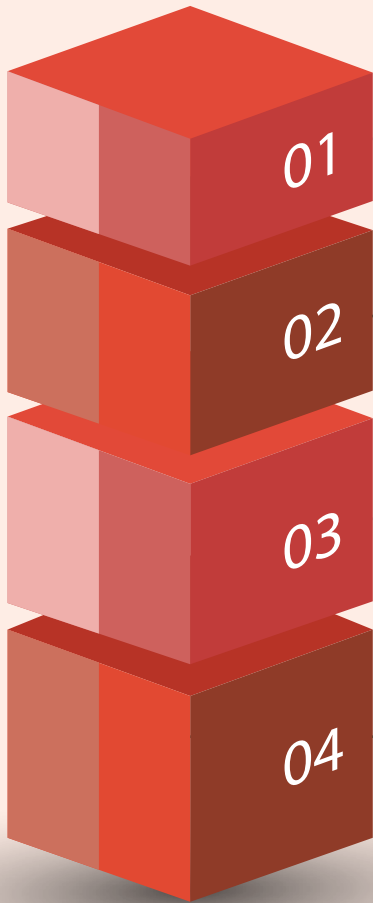


How to check blood sugar levels?



Write down the date for the start of the week.

Write the name(s) and dose(s) of your medicines.<sup>6</sup>



Insert test strip



Pierce your finger with lancing device



Collect blood sample into strip



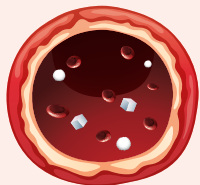
Get test value after 10s



# Complications of Diabetes

Having diabetes puts you at risk for other serious health problems.<sup>7</sup>

## Short-term Complications<sup>7,8</sup>



### Hypoglycemia

Also known as low blood sugar, is when blood sugar decreases to below normal levels

Consumption of too many carbohydrates

Body expects high levels of glucose

Too much insulin is released

Glucose levels drop

Craving more glucose

01

Trembling



02

Sweating



03

Numbness or tingling



04

Hunger



05

Irritability



06

Pounding heart



07

Sleepiness



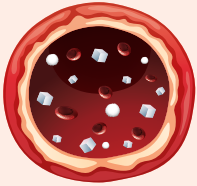
08

Headache



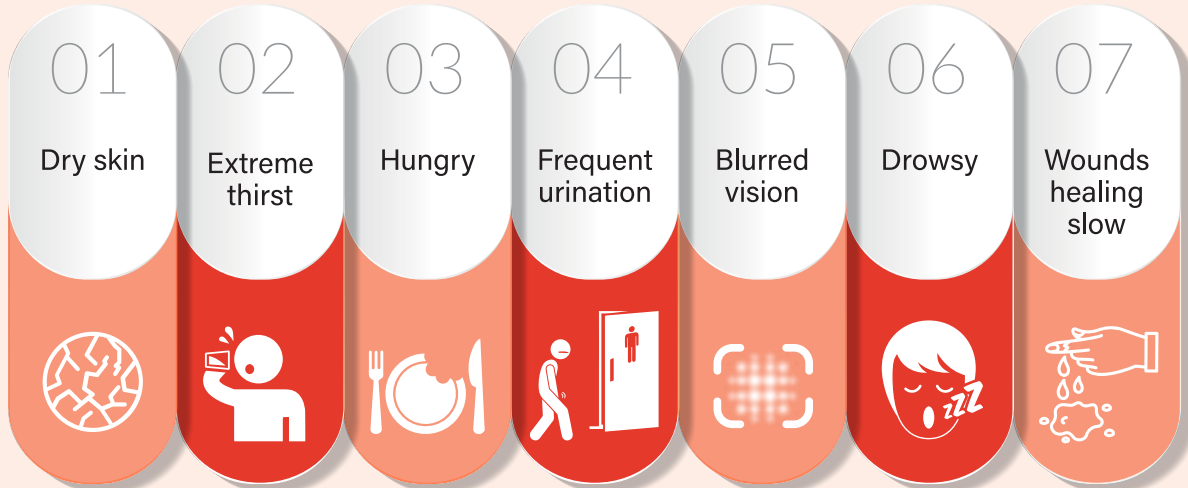
Hypoglycemia should be treated immediately. If hypoglycaemia is not treated, symptoms can become worse and a person can become unconscious.<sup>8</sup>





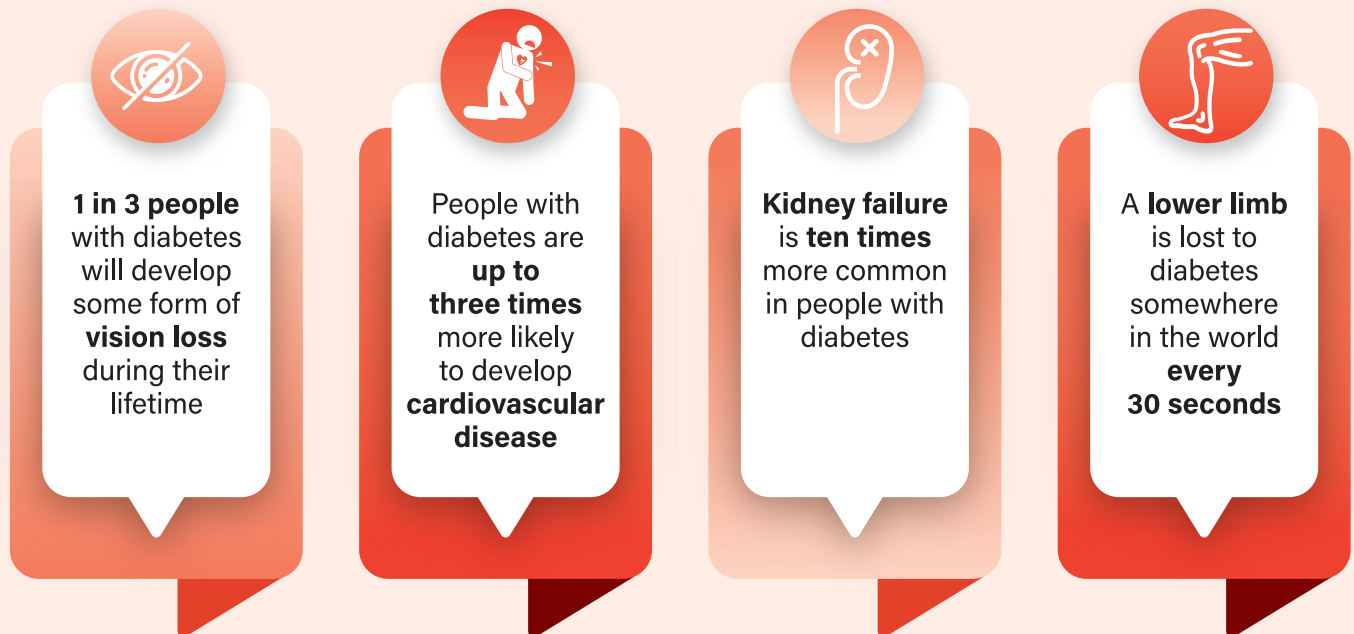
## Hyperglycaemia

Consistently high blood glucose levels, if left untreated, can lead to a dangerous condition.<sup>8</sup>



## Long-term Complications<sup>3,7</sup>

Chronic complications tend to arise over years or decades. Often, there is damage before there are symptoms so routine screening is recommended to catch and treat problems.



Here are the most common diabetes complications

01

**Cardiovascular diseases (heart attack) and Stroke**  
Having diabetes increases the risk for heart disease



**Dyslipidemia**  
Dyslipidemia is commonly seen in diabetic patients, which increases the risk of heart attack.

02

03

**Kidney diseases**  
Diabetes can damage the kidneys and cause them to stop working as they should.



**Vision loss**  
People with diabetes also have a high risk for eye problems like glaucoma (gradual loss of sight) and blindness.

04

05

**Hearing loss**  
It can happen at any age. It is more common in people with diabetes.



**Dental problems**  
It is more common in diabetics. High blood glucose weakens the ability to fight germs.

06

07

**Neuropathy (pain, numbness, or ulcer in the foot)**  
May cause tingling, pain, or weakness in the feet and hands. If not properly treated, it can lead to amputation.





# Healthy Habits

## Healthy Eating<sup>1</sup>

Embracing your healthy-eating plan is the best way to keep your blood glucose level under control and prevent diabetes complications.

Choose plenty of fruit, vegetables, fiber and wholegrains<sup>8,9</sup>



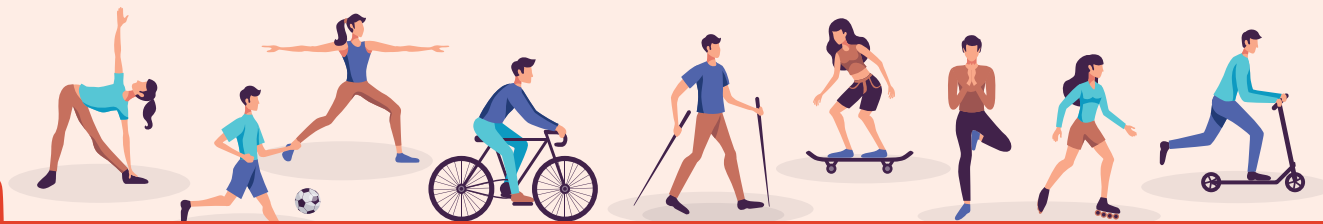
Aim for at least five portions a day to provide you with vitamins, minerals and fibre.

The best choices are fresh fruits such as apple, blueberries, orange, grapefruit and vegetables such as carrots, cabbage, broccoli and etc.



Look for whole wheat flour, whole oats or brown rice.

Eating fiber can help to manage the blood sugar and help you feel full.



## Consider healthy low fats and oils<sup>8,9</sup>

Limit the amount of fats and sweets you eat. Prefer foods containing monounsaturated and polyunsaturated fats for better heart.

Monounsaturated fat includes fats such as canola and olive oils



Polyunsaturated fats are found in corn and safflower oils



**⊘** Avoid high-fat dairy products and animal proteins such as butter, beef, hotdogs, sausage and bacon. Also limit coconut and palm kernel oils.

## Limit sugar and sugary foods<sup>4,9</sup>



Sugary foods and drinks, such as desserts, fruit juices, and soda pop. They raise your blood sugar very quickly after you eat them.

Starchy foods, such as bread, pasta, potatoes, rice, and corn. They do not raise blood sugar levels as fast as sugary carbs do.



Skip the foods made with processed white flour and choose whole grains for more nutrients.

## The plate method<sup>3,4</sup>

The **American Diabetes Association**<sup>®</sup> offers a simple method of meal planning. Basically, it focuses on eating more vegetables.

It will likely include a variety of foods from all food groups.



### Complex carbohydrates

such as whole-grain bread, oats, and brown or wild rice



### Fiber

which is found in beans, whole grains, fruits and vegetables



### Lean protein

such as chicken (without skin), tofu, fish, and eggs



### Non-starchy vegetables

such as broccoli, carrots, and leafy greens



### Low-fat dairy products

such as milk, yogurt, and calcium fortified plant-based milk

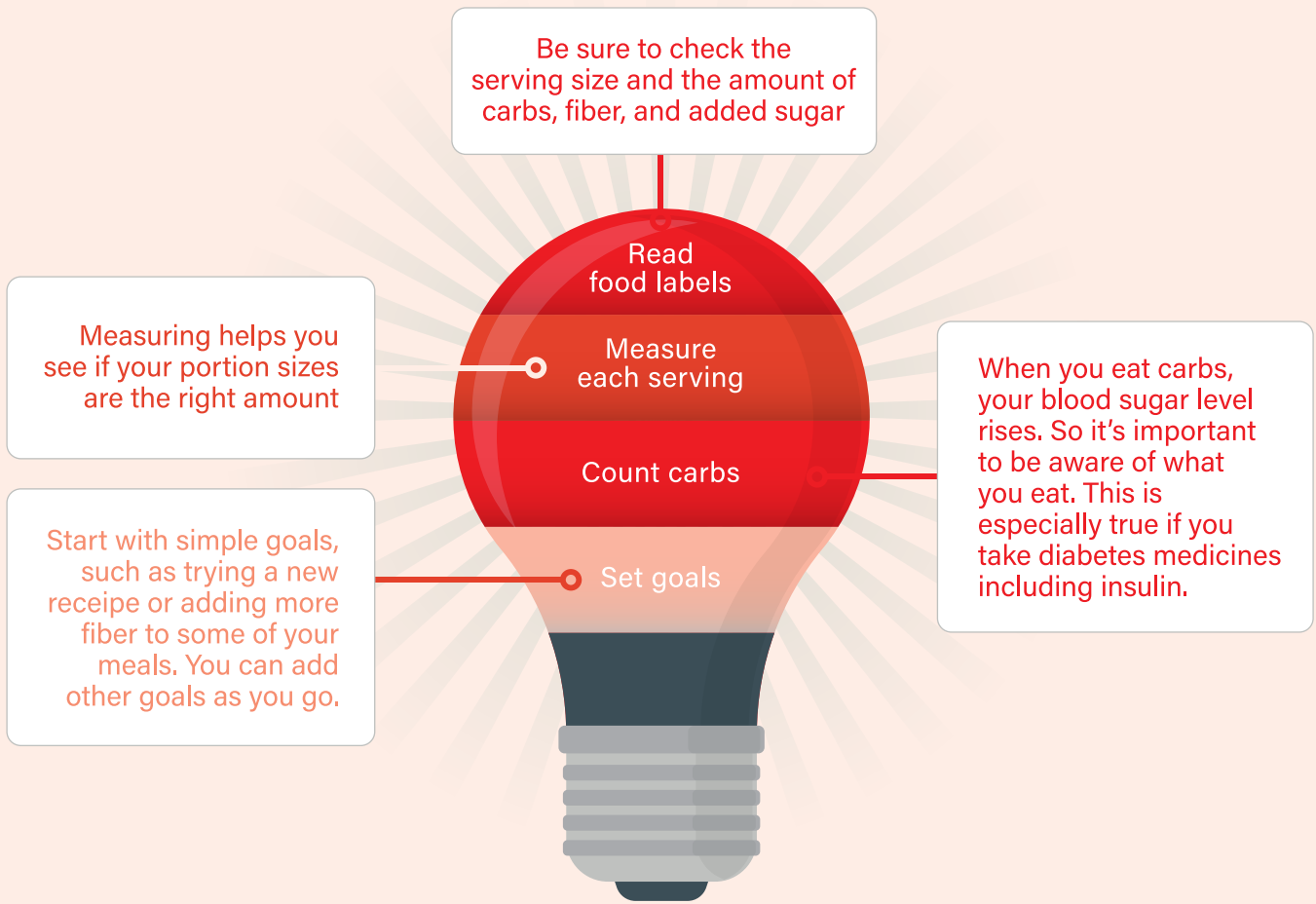


### Heart-healthy fats

such as olive or canola oil, nuts and seeds



Healthy eating is when you follow these tips which may help you make good food choices and follow your meal plan<sup>3,4</sup>



Eat a wide variety of foods each day



Watch your portion sizes



Space your meals evenly throughout the day



Don't skip meals



# Being Active

Exercise is one of the ways to control diabetes as high blood sugar levels and being overweight can make diabetes worse.

Physical activity helps:<sup>5</sup>

Improve your heart health

Lower your blood pressure and cholesterol

Lower stress and Improve your sleep

Lower your blood sugar

Burn calories to help manage your weight



## Choose an activity<sup>4,6</sup>



Talk with your doctor before you start. Let your doctor know that you'd like to become more active. Talk about what kind of activity is best for you.

Choose an activity that you enjoy. Just about anything that gets you moving is good.



### AT WORK

Park far away, take the stairs, walk at lunch, try chair exercises



### AT HOME

Walk with a friend or pet, do yardwork or garden, clean the house, go up and down the stairs



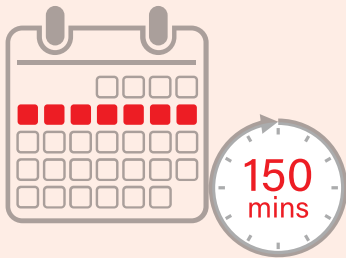
### WHEN YOU'RE OUT

Walk in a park or at the mall, take a yoga class, dance with a partner





Try taking small, active steps each day that can add up to a lot of activity by the end of a week!  
Here are some examples:



Being active for at least 150 minutes a week, spread over at least 3 days a week.<sup>4</sup>



Resistance exercise 2 to 3 times a week, spread out during the week<sup>4</sup>



Flexibility and balance exercises, such as yoga and tai chi for older adults 2 to 3 times a week<sup>4</sup>

Safety first<sup>4</sup>



## Dietary Tips during Ramadan/fasting



Divide daily calories between Suhoor and Iftar, plus 1-2 snacks if necessary.<sup>10</sup>



Ensure meals are well balanced: 45-50% carbohydrate; 20-30% protein; <35% fat

Include plenty of fruit, vegetables and salads

Minimise foods that are high in saturated fats (ghee, samosas, pakoras)

Use small amounts of oil when cooking (olive, rapeseed)

Stay hydrated between the two main meals by drinking water or other non-sweetened beverages. Avoid caffeinated, sweetened drinks and sugary desserts

Include low glycaemic index, high fibre foods that release energy slowly before and after fasting (granary bread, beans, rice)



# Taking Medicine

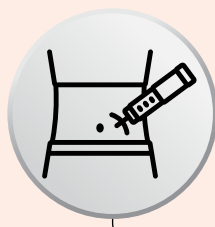
In diabetes, medicine is almost always necessary. If the blood sugar levels are above the recommended goal range or A1c is higher than desired with meal planning and physical activity alone, then one might need medicine for diabetes.<sup>5</sup>

However, medication adherence is important in diabetes. Medicines do not work in patients who do not adhere to them. People with diabetes who do not follow their treatment regimen have poor sugar control, which can lead to problems such as disease advancement, hospitalisation, early damage, and deaths.<sup>11,12</sup>

There are 2 main types of diabetes medicines to treat type 2 diabetes:<sup>4</sup>



Medicines that are taken by mouth in the form of a pill



Medicines that are taken as an injection

## Taking Diabetic Pills

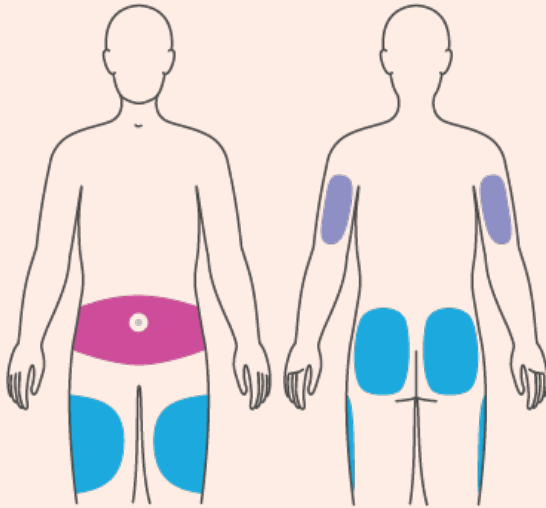
There are many different types of diabetes pills. Each type of pill works differently to help lower your blood glucose.<sup>4</sup>

- 1  
Some pills help the body release more insulin
- 2  
Some pills lower the amount of sugar the liver releases
- 3  
Some pills help insulin work better in muscle and fat
- 4  
Some pills slow the breakdown of food into sugar

Depending on your treatment needs, you may need to take more than one of these medicines.



## Injectable Diabetes Medicines



In addition to diabetes pills, there are diabetes medicines that are taken by injection. Some of these are non-insulin injectable medicines, and some are insulin.

### Insulin

Insulin cannot be taken as a pill. It must be injected or given through a pump. Injected insulin works like the insulin that the body makes. It is injected in areas of body such as Abdomen (except a 2-inch circle around your belly button, Thighs (outer parts), Back of upper arms, and buttocks.<sup>4,5</sup>



Follow these tips for maintaining medications<sup>3</sup>

1

Take all of your medicines exactly as your doctor tells you



2

Keep medicines in a cool, dry place



3

Use a pill organizer



4

Use a reminder timer, an alarm clock, or your mobile phone






# Preventing Complications

Having diabetes puts you at risk for other serious health problems. Another way you can take control of your health is to follow a diabetes care schedule. It includes recommended tests and how often they should be done.

## Managing Low Blood Sugar<sup>4,5</sup>



If you have any symptoms of low blood sugar, check your blood sugar right away. If you can't check it, treat it anyway. Eat or drink 15 grams of carbohydrates right away, such as:

-  Have a half glass of regular fruit juice (like orange, apple, or grape juice)
-  Take 4 glucose tablets or 1 tube of glucose gel
-  Eat 1 tablespoon of sugar, honey, or corn syrup

## Managing High Blood Sugar<sup>4,5</sup>



The best thing to do about high blood sugar is prevent it.

If you have signs or symptoms of high blood sugar, check the blood sugar level and do some physical activity (follow your physical activity plan) and take your medicine as directed.

## Managing Dyslipidemia<sup>13</sup>



Limit the fat intake and regular exercise is recommended to keep the cholesterol under control. Experts suggest statin pills to reduce bad cholesterol and further the risk of heart events for all patients with diabetes.

Ask your doctor whether you require statin therapy or not.

## Preventing Other Complications<sup>4,5</sup>

- Regular doctor's office visit
- A1c blood test
- Blood pressure check
- Weight check
- Foot check

Every  6 months

➔ A1c blood test every 6 months if blood sugar number is good

➔ Teeth and gums exam

Every  12 months

➔ Complete foot exam  
➔ Complete eye checkup

➔ Kidney test  
➔ Lipid profile



# Diabetes, Infection Risk & Vaccination

High blood sugar levels can weaken immune system of a person. People who have had diabetes for a long time may have peripheral nerve damage and reduced blood flow to their extremities, which increases the chance for infection. Also, the high sugar levels in the blood and tissues allow bacteria to grow and allow infections to develop more quickly.<sup>14</sup>



## Ear, nose, and throat infections

Fungal infections of the nose and throat are seen almost exclusively in patients with diabetes.



## Urinary tract infections (UTIs)

Uncontrolled diabetes is one of the major causes for UTIs. Kidney infections and inflammation of the bladder are also common.

Most common infections in people with diabetes<sup>14,15</sup>



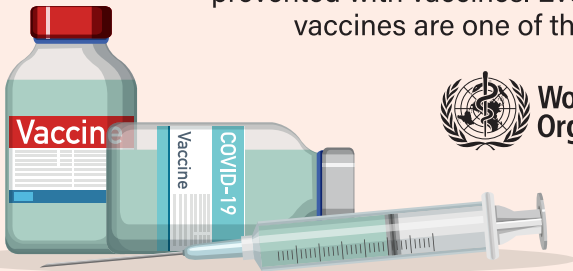
Some illnesses, like influenza, can raise your blood glucose to dangerously high levels. People with diabetes have higher rates of hepatitis B than the rest of the population.



## COVID-19 infection

People with diabetes are more likely to have serious complications from COVID-19. Having heart disease or other complications with diabetes could worsen the chance of getting seriously ill from COVID-19

Vaccination offers the best protection against diseases or infections that can be prevented with vaccines. Even if you are using prescription medications, vaccines are one of the safest ways to protect your health.<sup>16</sup>



World Health Organization

recommended vaccination against COVID-19 infection for people with diabetes as a priority group. Vaccinations are encouraged and they have been proven to be safe and effective.<sup>17</sup>

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