



# STAND AGAINST PREDIABETES

*Don't sugarcoat it*

**Manage Prediabetes,  
Reclaim Your  
Health!**



# DO YOU HAVE **PREDIABETES?**

It's estimated that 1-in-4 Malaysians have an unhealthy condition called prediabetes<sup>1</sup>. With guidance from your healthcare professional, you will be able to manage prediabetes and regain your health.

## What Is **Prediabetes?**

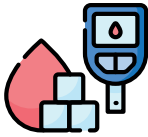
Having prediabetes means your blood sugar levels are higher than normal, but not high enough for you to be considered diabetic<sup>2</sup>. Prediabetes can only be diagnosed with a blood test. If your blood test results match the range of values in the table below, you're considered prediabetic.

<b>TYPE OF TESTS</b>	<b>Fasting Plasma Glucose</b>	<b>Oral Glucose Tolerance Test</b>	<b>HbA1c</b>
<b>PREDIABETIC VALUES</b>	6.1-6.9 mmol/L	7.8-11.0 mmol/L	5.7-6.2% (39 – 44 mmol/mol)

Table 1: Prediabetic Values Based on Different Blood Tests<sup>3</sup>

## Why Should You Be Concerned?

People with prediabetes are at higher risk of developing the following medical conditions.



**1 in 10**

develop diabetes within a year<sup>4</sup>  
(7 in 10 develop diabetes within  
10 years<sup>5</sup>)



**1 in 20**

get a stroke<sup>3</sup>



**1 in 5**

suffer nerve damage in hands  
and feet<sup>8</sup>



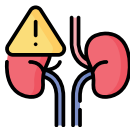
**3 in 20**

develop heart diseases<sup>6</sup>



**2 in 25**

Have vision loss due to eye damage<sup>7</sup>



**3 in 25**

Develop chronic kidney disease<sup>5</sup>

# HOW DO YOU *EFFECTIVELY* MANAGE PREDIABETES

Most people with prediabetes will be able to manage their condition by losing excess weight, exercising regularly, adopting healthy lifestyle habits, and if necessary, taking prescribed medications. The more positive changes you make, the better your chances. ***So, don't wait – start now!***





## LOSE EXCESS WEIGHT

Being overweight or obese can lead to higher-than-normal blood sugar levels<sup>9</sup>. This explains why 9-in-10 people with prediabetes are overweight or obese<sup>10</sup>. Aim to lose about 7-10% of the weight you are at right now<sup>3</sup>. It will help get your blood sugar level back to normal.

### First, Check Your Weight

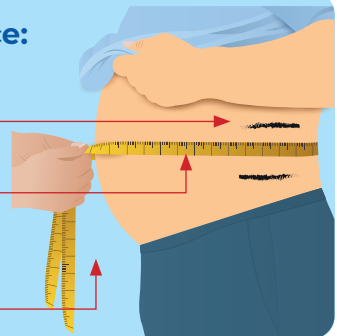
- **Overweight:**
  - » Body mass index (BMI) is 23.0 kg/m<sup>2</sup> – 27.4 kg/m<sup>2</sup>
  - » Waist measures 90 cm or more (for males) or 80 cm or more (for females)<sup>9</sup>
- **Obese:**
  - » BMI is 27.5 kg/m<sup>2</sup> or higher<sup>11</sup>.

#### How to calculate BMI:

Use this formula<sup>12</sup>:  $\text{BMI} = \frac{\text{Weight (kg)}}{\text{Height (m}^2\text{)}}$

#### How to measure waist circumference:

1. Find the bottom of your ribs and the top of your hip bones
2. Place measuring tape around your middle at a point halfway between your ribs and hip bones
3. Breathe out naturally and record your measurement



## Second, Set Your Weight Loss Goal

- Target for weight loss: 7-10% of initial weight
- Lose weight gradually, the current recommendation is 0.5-1 kg of weight loss per week<sup>12</sup>
- Weigh or measure yourself at the same time and day every week to monitor your progress<sup>13</sup>
- If you need extra guidance, seek help from a healthcare professional

## Third, Reduce Your Calorie Intake

- The food and drinks we consume every day (except water) give us energy and is measured as calories
- The extra calories consumed are stored as body fat, and that is how you become overweight or obese<sup>14</sup>
- The key to losing weight is to reduce your calorie intake



### Minimise Fatty Foods

- Fatty foods are high in calories even when eaten in small amounts<sup>13</sup>
- Minimise fat intake by choosing foods prepared using **low-fat cooking methods** (eg steaming, boiling, stir-frying, grilling, pan-frying and air-frying)
- **Minimise the use of cooking oil** whether you are eating out or at home
- **Limit intake of saturated fats** found in foods like red meat, processed meat and food prepared using animal fat
- **Prefer healthier unsaturated fats** from sources like fish (sardines and mackerel), vegetable oils (eg corn oil, soybean oil, sunflower oil, olive oil), nuts, and seeds

1 thumb ≈  
1 serving of oil  
or butter



## BEWARE OF THESE HIGH-FAT FOODS

### Deep-fried and batter-fried foods



Vadai



Yue char kuay



Keropok lekor



French fries

### Food prepared with santan or animal-based fat such as butter, lard, and ghee



Cendol



Curry laksa



Nasi lemak



Nasi briyani

### Processed meats



Luncheon meats



Sausages

### Foods made with shortening, vanaspati or margarine



Roti canai



Curry puff

**TIP**  
**#2**

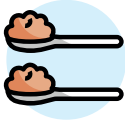
### Control Carbohydrate Intake and Choose More Whole Grains

- Rice, noodles, bread and other starchy foods provide energy-giving carbohydrates
- But eating too much of these foods can lead to unhealthy weight gain
- Limit to **3-4 servings of these foods a day**<sup>13</sup> and distribute them equally in your day

1 fist ≈  
1 serving of  
carbohydrate



## EXAMPLES OF ONE (1) SERVING<sup>13</sup>



2 flat scoops  
(60 g) of cooked  
brown rice



1 cup (120 g) of  
boiled/steamed  
corn



2 square slices  
(60 g) of whole  
grain bread



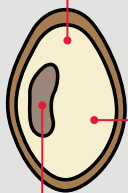
1 cup (50 g) of  
noodles/mee-  
hoon made of  
brown rice flour

- **Prioritise whole grains** (eg oats, brown rice, corn and whole grain bread)
- They are a healthier and more nutritious choice of carbohydrate than refined grains (eg white bread or white rice)
- Alternatively, cook white rice mixed with whole grains such as brown rice, barley, oats or corn

## WHOLE GRAINS PROVIDE MORE THAN JUST FIBRE

### What Is Inside A Whole Grain?<sup>16</sup>

Whole grain



#### **Bran:**

Fibre-filled outer layer rich in B vitamins and minerals (eg iron, copper, magnesium, zinc)

#### **Endosperm:**

Middle layer containing starchy carbohydrate and some protein

#### **Germ:**

Nutrient-packed core with B vitamins, vitamin E, phytochemicals and healthy fats

Refined Grain





### TIP #3

## Minimise or Avoid Sugar

- White sugar, brown sugar, gula Melaka, honey, molasses and syrup all give you extra calories that can lead to weight gain<sup>16</sup>
- **Less is better**
  - » Minimise intake of sugary foods and drinks
  - » Some may not be sweet but contain 'hidden' sugars
  - » Check for ingredients like syrup, sucrose, dextrose, maltose, fructose on the food label
- **None is best** – If possible, avoid adding sugar to your foods and drinks altogether

### TIP #4

## Eat More Fibre

- Dietary fibre helps keep you feeling full for longer, which will help with your weight loss efforts<sup>17</sup>
- **Eat a high-fibre diet (20-30 g of fibre a day)** by including plant-based foods in every meal and prioritising cereal fibre

## HIGH-FIBRE FOODS YOU SHOULD EAT<sup>20</sup>



### Lentils

- 1 cup (191 g) of dhal  
≈58 g of fibre



### Beans

- 1 cup (172 g) of black beans  
≈15 g of fibre



### Peas

- 1 cup (164 g) of green peas  
≈13 g of fibre



### Oats

- 1 cup (95 g) of rolled oats  
≈9 g of fibre



### Brown rice

- 1 bowl (230 g) ≈3 g of fibre



### Whole grain wheat-based breakfast cereals

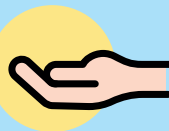
- 1 bowl (30 g) ≈2 g of fibre

**TIP  
#5**

**Eat More Vegetables and Fruits**

- Vegetables and fruits contain vitamins, minerals and antioxidants<sup>13</sup>, and have fibre that make you feel full longer, enriching your diet
- **Eat at least 3 servings of vegetables a day<sup>13</sup>**; enjoy vegetables of every type and colour
- **Eat 2 servings of fruits a day<sup>13</sup>**; choose those with lower sugar content

1 cupped hand  
≈ 1 serving of  
vegetable or  
fruit



**VEGETABLES & FRUITS ARE GOOD FOR YOU**

**Examples of One (1) Serving of Vegetables**



½ cup (40 g) green leafy vegetables



½ cup (40 g) coloured vegetables



½ cup (40 g) fruit vegetables



½ cup (50 g) bean vegetables



½ cup (50g) cabbages, broccoli, cauliflower



1 cup (50 g) Ulam-ulam

**Examples of One (1) Serving of Fruits**



1 whole medium sized (110 g) apple



1 whole medium sized (160 g) pear



1 big slice (110 g) guava



1 big slice (250 g) watermelon



1 slice (110 g) papaya

\*Other fruits may be eaten in moderation, **seek advice from your healthcare professionals**

**TIP**  
**#6**

**Eat Your Meals Following the Healthy Plate**

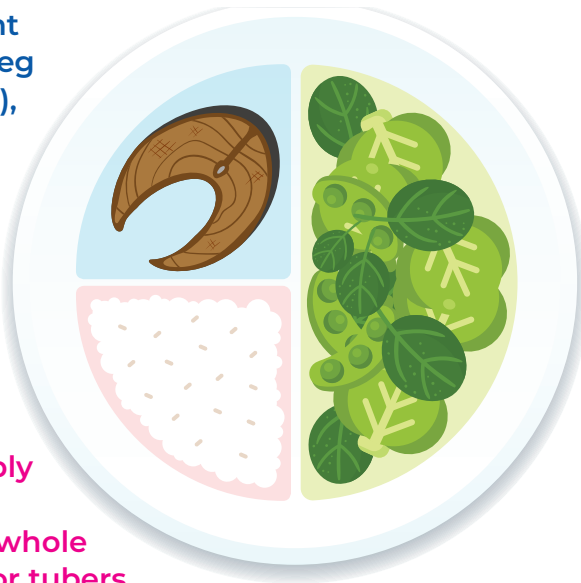
- Portion out your food on the plate according to the '*suku suku separuh*' rule to achieve a healthy and balanced meal<sup>13</sup>
- Make sure to start your meals with eating vegetables and proteins (to feel full faster), and save carbohydrates for the last

**THE HEALTHY PLATE - 'SUKU SUKU SEPARUH'**<sup>21</sup>

9 inch / 23cm plate

$\frac{1}{4}$  plate of fish, plant protein (eg legumes), poultry or lean meat

$\frac{1}{4}$  plate of rice, bread, noodles, crackers (preferably whole grain or whole wheat), or tubers (eg tapioca)



$\frac{1}{2}$  plate of leafy vegetables (eg spinach)



1 glass of plain water (250 mL)



1 serving of fruit

## TIP #7

### Adopt Good Eating Habits

Change the way you approach every meal by being more aware of how much and what you have eaten so you can have better control over your hunger<sup>22</sup>

#### MIND HOW YOU EAT

##### DO



Take small bites



Chew your food well



Eat slowly



Stick to a regular mealtime

##### DON'T



Avoid late-night eating



Avoid snacking



Avoid emotional eating (especially feeling stressed or down)



Don't be distracted while eating

#### MIND YOUR CALORIES

- Recommended daily calorie limit<sup>3</sup>:
  - a. 1200-1500 kcal/day (females)
  - b. 1500-1800 kcal/day (males)
- You can still enjoy your favourite food and drinks occasionally, just be aware of the calories to stay on track

## CALORIFIC CONTENT IN COMMON MALAYSIAN MEALS

### Examples Of Meals That Could Exceed Your Limit



1 plate (405 g) of nasi briyani ayam  
+ 1 glass (250 mL) of sirap bandung  
**642 + 125 = 767 kcal**



1 bowl (650 g) of curry laksa  
= **761 kcal**



1 plate (325 g) of mee goreng mamak  
+ 1 glass (240 mL) of teh tarik  
**598 + 166 = 764 kcal**



2 pieces (190g) of fried chicken  
+ 1 large cup (145 g) of french fries  
+ 1 cup (250 mL) of soft drink  
**542 + 423 + 128 = 1,093 kcal**

### Examples Of Meals That Help You Stay On Track



1 plate (169 g) of nasi kerabu +  
1 glass (225 g) of water  
**352 + 0 = 352 kcal**



1 bowl (200 g) of bihun soup  
= **350 kcal**



1 piece (100 g) of capati  
+ ½ cup (80 g) of dhal  
+ 1 cup (250 g) of teh c kosong  
**300 + 76 + 30 = 406 kcal**



1 roasted chicken rice set plate (315g):  
rice, chicken breast, plain soup +  
1 cup (97g) extra cucumbers + 1 mug  
(250ml) of Chinese tea  
**476 + 15 + 0 = 491 kcal**



**FOR BEST RESULTS IN WEIGHT LOSS,  
SEEK GUIDANCE FROM A DIETITIAN**



## BE ACTIVE AND EXERCISE REGULARLY

An active lifestyle is crucial in managing prediabetes. It helps you lose weight by burning excess calories. More importantly, it activates your muscle and other body cells to use more glucose, thus bringing your blood sugar levels down to normal<sup>23</sup>.

### TIP #1

#### Be Active in As Many Ways as You Can

- Inactive behaviours (eg sitting or lying down for too long in a day) can increase your risk of chronic diseases such as heart disease, diabetes and cancers<sup>24</sup>
- **Break inactive behaviours every 30 minutes** with short spurts of movement (eg standing up, or taking a 1- to 3-minute walk) throughout the day

### TIP #2

#### Let's Exercise!

- As you get more active, make exercise a part of your daily routine
- Do aerobic exercise daily and muscle-strengthening exercise on two or more days a week (non-consecutively)<sup>13</sup>

### TIP #3

#### Increase Your Exercise Intensity

- Do **moderate exercise for more than 150 minutes a week<sup>3</sup> or 75 minutes of vigorous intensity activity**, spread evenly over the week.
- Either increase duration of current physical activity or advance to more intense activities
- Check with your healthcare professional to find out which exercise is safe and right for you

## ADD MORE MOVEMENT INTO YOUR DAY



Use the stairs instead of elevator



Park further from your destination and walk



Do house chores

## AEROBIC EXERCISE



Brisk walking



Cycling



Jumping rope

## MUSCLE-STRENGTHENING EXERCISES



Push-ups



Tai Chi or Qi Gong



Yoga

## MODERATE-INTENSITY EXERCISE



Jogging



Cycling on flat ground



Leisure sports

## VIGOROUS-INTENSITY EXERCISE



Running



Cycling on steep uphill slope



Competitive sports



## ADOPT HEALTHY LIFESTYLE HABITS

Your sleep quality, stress levels and habits like smoking, vaping, drinking alcohol or substance abuse can all affect how you manage your prediabetes. Make sure you address these factors as you work towards a healthier lifestyle.



### Get Enough Good Quality Sleep Every Night

- Lack of sleep will make you feel more tired. It makes you crave more food to get energy, which can lead to overeating and weight gain<sup>25, 26, 27</sup>
- Experts generally recommend getting at least 7 hours of good quality sleep every night<sup>28</sup>

## HEALTHY SLEEPING HABITS FOR A GOOD, RESTFUL SLEEP

### Adopt The 10-3-2-1 Sleep Rule



**10hr**  
before bed

No more caffeine



**3hr**  
before bed

No more food or alcohol



**2hr**  
before bed

No more work



**1hr**  
before bed

No more screen time

#### BONUS TIPS



Have a regular bedtime and wake-up routine, even on weekends and public holidays<sup>13</sup>



Create a dark, quiet and cool environment for your bedroom<sup>13</sup>



## TIP #2

### Manage Your Stress

- When you face overwhelming stress, it can make you overeat "comfort foods" like sugary and fatty snacks, which can lead to weight gain<sup>30,31</sup>
- Adopt ways to prevent stress from building up so you can protect your physical and mental health



Exercise to relieve tension



### EFFECTIVE WAYS TO MANAGE STRESS



Self-reflect, pray or meditate



Practise breathing and relaxation techniques



Get support from a friend, family member, counsellor or a healthcare professional

## TIP #3

### Quit smoking, vaping, excessive alcohol consumption or substance abuse

- Smoking, vaping, excessive alcohol consumption or substance abuse are addictions that are harmful for your health<sup>32, 33</sup>
- As you work on improving your lifestyle, quit these habits now
- Start by seeking help from a healthcare professional for advice and support



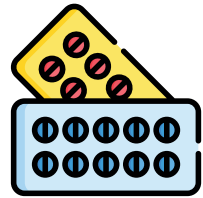


## TAKE MEDICATION, IF PRESCRIBED

Your healthcare professional might prescribe metformin during consultation if your blood sugar level stays high even after making lifestyle changes for some time.

### What is metformin?

- It is a medication to treat prediabetes, prescribed alongside lifestyle changes<sup>34</sup>
- Taken orally as a tablet, usually with or after meals



### How does metformin work?

- It helps your body manage sugar more effectively<sup>35</sup>



### How much do I need to take?

- It is usually started at a low dose and may be increased gradually<sup>3</sup>
- Follow your healthcare professional's advice for the right dosage for you



## Are there any side effects?

- Some people experience side effects such as nausea, diarrhoea, bloating or vomiting<sup>29</sup>, but they usually get better with time in most patients
- If you do experience any side effects, be sure to let your healthcare professional know or submit a report to the national Adverse Drug Reaction (ADR) using this link: [https://quest3plus.bpfk.gov.my/front-end/adr\\_web\\_form\\_mid.php](https://quest3plus.bpfk.gov.my/front-end/adr_web_form_mid.php)



## How long do I need to take metformin?

- Discuss this with your healthcare professional during regular check-ups
- If you can successfully normalise your blood sugar levels, your healthcare professional may advise you on the next step
- However, individuals at high risk or with other health conditions may require long-term treatment<sup>36</sup>



## Should I keep up with the lifestyle changes if I am taking metformin?

- Yes, effective lifestyle changes should continue
- Lifestyle changes can reduce your need for metformin, and in time, you may not require such a high dose or the medication at all<sup>37</sup>
- Always get your healthcare professional's advice before making changes to your medication





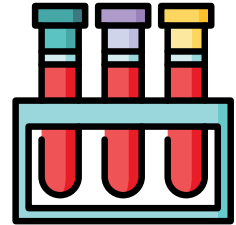
## TEAM UP WITH YOUR HEALTHCARE PROFESSIONALS

As you strive to improve your lifestyle and manage your prediabetes, know that you are not alone. Your healthcare professionals are here to guide and support you.



### Go for regular check-ups

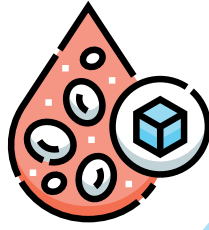
- During check-ups, your healthcare professional may do blood tests to monitor your blood sugar levels as well as other health indicators (eg blood pressure or cholesterol level)
- Talk about your efforts in making lifestyle changes and share your concerns so they can find the best approach for you



### Follow advice and treatment plan



Healthcare professionals provide advice according to your specific needs, thus following their recommendations is important for your well-being.



## How to know if my blood sugar level is back to normal?

Your blood sugar is restored to normal if it matches the values shown in the table:

TYPE OF TESTS	VALUES
Fasting Plasma Glucose	3.9 – 6.0 mmol/L
Oral Glucose Tolerance Test	3.9 – 7.7 mmol/L
HbA1c	Less than 5.7% or less than 39 mmol/mol

Table 2: Normal Blood Sugar Level Values Based on Different Blood Tests<sup>2</sup>



## MY PREDIABETES MANAGEMENT TO-DO LIST

### Lose Excess Weight

- Check my weight

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- Set weight loss goal (7-10% of initial weight)

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- Reduce calorie intake

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- Minimise fatty foods

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- Control carbohydrate intake and choose more whole grains

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- Minimise or avoid sugar

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- Eat more fibre

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- Eat more vegetables and fruits

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- Eat my meals following the Healthy Plate – suku suku separuh

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- Adopt good eating habits

## Be Active and Exercise Regularly

- Be active in as many ways as I can
- Add more movement into my day
- Exercise regularly
- Do aerobic exercise
- Do muscle-strengthening exercises
- Increase my exercise intensity
- Moderate exercise for more than 150 minutes per week
- Vigorous exercise for 75 minutes per week

## Adopt Healthy Lifestyle Habits

- Get enough good quality sleep at least 7 hours every night
- Manage my stress effectively
- Quit smoking, vaping, excessive alcohol consumption or substance abuse

## Take Medication, if Prescribed

- Take metformin following the prescribed dose and time

## Team Up With My Healthcare Professionals

- Go for regular check-ups
- Follow advice and treatment plan

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