

Diabetes and Hypertension Care For Adults in Primary Care Settings



基層醫療
PRIMARY CARE

Diabetes

What is Type 2 Diabetes?

The carbohydrates including sugar and starch which we take become glucose after digestion. It will then be absorbed by the small intestine and enter the blood circulatory system as blood glucose.

The pancreas secretes a hormone called insulin to control the blood glucose level. Glucose level rises when there is insufficient insulin secretion or the body cannot make use of the insulin produced. Approximately 10% of adults in Hong Kong suffer from diabetes.

Type 2 diabetes, previously known as “non-insulin dependent diabetes”, is the most frequent form of diabetes and it mainly affects adults. It happens when body cells are resistant to insulin and thus cannot uptake and use glucose effectively and excess blood glucose is resulted. This type of diabetes is mainly related to genetic factors, unhealthy diet, obesity and lack of exercise.

Impacts of Diabetes on Health

Failure to maintain normal blood glucose level in your body will result in high blood glucose level. Persistent high blood glucose levels may lead to vascular damages which lead to diseases in various systems and organs including cardiovascular, retina, kidneys and nerves. Therefore, diabetes is the leading cause of kidney failure, blindness, cardiovascular diseases, stroke and lower limb ulcers.



How to live with Diabetes?

There is no proven cure for diabetes. Therefore, in order to control diabetes and prevent its complications, you should adhere to the treatment plan:

- You should have knowledge about the risk factors for diabetes and its symptoms.
- Your family doctors and other healthcare professionals can provide you with continuing, comprehensive and person-centred healthcare service. Therefore, you should develop a close partnership with them for early identification and treatment.
- You should also empower yourself to control diabetes effectively.

Risk factors for diabetes

There are different risk factors for developing diabetes at various stages of life, such as:

- Age 45 or over
- Overweight and obesity (Note 1)
- History of impaired glucose tolerance or impaired fasting glucose
- Patients with metabolic syndrome
- Patients with hypertension
- Patients with cardiovascular diseases (coronary heart disease, peripheral vascular disease and stroke)
- Presence of cardiovascular risk factors (hyperlipidaemia, low level of HDL-cholesterol, high level of LDL-cholesterol, smoking and lack of exercise)

Note 1:

· According to the BMI classification for Chinese adults adopted by the Department of Health, overweight is defined as BMI from 23.0 kg/m² to less than 25.0 kg/m², while obesity is defined as BMI 25.0 kg/m² or above.

· BMI is measured as weight in kg/height in m².

· Central obesity is defined as waist circumference ≥ 90 cm and ≥ 80 cm in male and female respectively for the Chinese population.

- History of diabetes of first degree relatives
- History of gestational diabetes or polycystic ovary syndrome (for women)
- On long-term steroid treatment

Reference Value for Blood Glucose

	Blood glucose level (mmol/L)
Normal blood glucose	Fasting ^(Note 2) : below 6.1
Impaired fasting glucose	Fasting: 6.1 to 6.9 and 2 hours after meal: below 7.8
Impaired Glucose Tolerance	Fasting: below 7 and 2 hours after meal: 7.8 to 11.0
Diabetes	Fasting: 7 or above; or 2 hours after meal: 11.1 or above

Symptoms of diabetes

Patients with diabetes may experience thirst, frequent urination and increased volume of urine (particularly at night), tiredness, unexplained weight loss, itching skin (some women may have genital itchiness), blurred vision, tingling and numbness in extremities, pain or burning sensation in oral cavity.

Most patients with diabetes may not have any symptoms or signs at all. Therefore, those with risk factors are recommended to discuss with your family doctor and conduct regular check-up, for example once every three years, or more frequently depending on the risk factors you have, to avoid delayed diagnosis or treatment.



How is Diabetes diagnosed?

Your doctors may arrange the following tests:

- Fasting blood glucose test: fasting after midnight and blood sample will be taken the following morning to measure the blood glucose level.
- Oral glucose tolerance test: After the fasting blood glucose test, the patient is given 75 grams of glucose water and blood sample is drawn after 2 hours for observation of the change in blood glucose level.

If you have symptoms of diabetes and one of the following test results, you will be diagnosed as diabetes according to WHO's recommendation for the Diagnostic Criteria for Diabetes.

- Fasting plasma glucose higher or equal to 7.0mmol/L
- 2 hours plasma glucose higher or equal to 11.1mmol/L
- HbA1c (reflecting blood glucose control in the last 2 to 3 months) higher or equal to 6.5%

How do We know the Blood Glucose Control Status?

Glycated haemoglobin (HbA1c)

Information about blood glucose control in the last 2 to 3 months can be obtained through regular measurement of HbA1c. Optimal control of blood glucose (the optimal HbA1c level is less than 7%) can effectively delay and prevent complications.

Fasting and postprandial blood glucose level

For better control of diabetes, doctors will ask patients to monitor blood glucose regularly by themselves if necessary.

Optimal blood glucose level	Unit (mmol/L)
Fasting	4 to 7
2 hours after meal	5 to 10

How to control Diabetes?

Your participation and self-monitoring is crucial to the effective control of diabetes. Enhance your knowledge and skills on the management of diabetes could enable you to better control your own health. Therefore, you should :

- understand the nature of diabetes
- maintain a healthy lifestyle
- understand the consequences of undesirable blood glucose control
- take oral medication(s) or inject insulin according to doctor's prescription
- understand the treatment options and the possible side effects of medications
- develop a close partnership with your family doctor and other healthcare professionals



Actions

Recommendations

Follow up regularly with your family doctor

- Work with your family doctor to set targets for blood glucose, blood pressure and blood lipid level, as well as body weight
- Perform health assessment annually

Follow the diet suggested by family doctor or dietitian

- Balanced diet, regular portion, regular mealtime, smaller but more frequent meals will help stabilise blood glucose level
- Ensure balanced nutrition and eat more high fibre food such as vegetables, fruits, whole wheat bread and brown rice
- Adopt healthy cooking methods e.g. steaming, poaching or boiling
- Reduce the intake of high fat food e.g. animal fats and skins, fried food, whole milk, cakes or coconut milk
- Pay attention to the value of fats, sodium (or salt) and sugar on nutrition labels. Choose food lower in fats, sodium and sugars
- For more information, please refer to the following websites: Health Zone of the Department of Health and Smart Patient of the Hospital Authority. See appendix for the website address



Actions

Recommendations

Increase physical activities

- Engage in moderate-intensity physical activities for 150 minutes every week e.g. brisk walking, swimming and cycling supplemented with strength-training exercise
- Reduce sedentary activities such as watching TV, surfing the internet or playing video games
- For more information on exercises, please refer to the Exercise Prescription website of the Department of Health. See appendix for the website address

Avoid alcohol intake

Avoid alcohol drinking because alcohol causes a wide range of diseases. Excessive use of alcohol not only adversely affects physical health, it also influences psycho-social health and work performance. If you choose to drink alcoholic beverages, you should limit the amount to minimise alcohol-related harm. Suggestions:

- No more than 2 standard drinks daily for male
- No more than 1 standard drink daily for female



Actions	Recommendations
	<ul style="list-style-type: none">● A standard drink ^(Note 3) equals to:<ul style="list-style-type: none">◆ 250 ml of beer (5% alcohol)◆ 1 small glass (100 ml) of wine (12% alcohol)◆ 1 pub measure (30 ml) of spirits (40% alcohol)
Avoid smoking	<ul style="list-style-type: none">● Non-smokers should not try smoking and smokers should quit immediately● If you need help to quit smoking, please refer to the appendix
Control blood pressure	<ul style="list-style-type: none">● Keep your target blood pressure at or lower than 130/80mmHg● Check your blood pressure during every follow up visits for diabetes mellitus● Maintain healthy eating habit and lifestyle. Start medications when indicated
Control blood glucose	<ul style="list-style-type: none">● Develop healthy eating habits and lifestyle● Check blood glucose level regularly● Start medications when indicated

Actions

Recommendations

Control blood lipid

- Blood lipids are mainly made up of triglyceride and cholesterol. Dyslipidaemia means abnormal high level of triglyceride or lipoprotein in the blood. It is a major risk factor of cardiovascular diseases
- Maintain healthy eating habit, exercise regularly and start medications when indicated

Take oral medication(s) or inject insulin according to healthcare professionals' advice

- Understand clearly the medication(s) you take
- Understand why you are given the medication(s), how to take it and the possible side-effects such as hypoglycaemia
- Be aware of symptoms of hypoglycaemia (e.g. sweating, tremor, palpitations, fatigue and agitation) and its management

Receive influenza vaccination

- Receive influenza vaccination annually



Actions

Recommendations

Prevent complications

Diabetic kidney disease

- Annual check-up on renal function

Diabetic Foot

- Learn the skills of foot care. Observe the feet every day for problems such as ingrowing toenails, cuts and sores
- Consult your family doctor for advice on any foot problems

Diabetic Eye Disease

- Perform eye check-up annually.

Your family doctor will refer you to specialists for further assessment and treatment if indicated

Conclusion

To control diabetes effectively and prevent complications, you are strongly advised to have knowledge about diabetes and its management. You should also develop a close partnership with your family doctor for active disease management. For further information on the care of diabetes, please refer to the “Hong Kong Reference Framework for Diabetes Care for Adults in Primary Care Settings” (see website address on appendix) developed by the Task Force on Conceptual Model and Preventive Protocols under the Working Group on Primary Care or consult your family doctor.

Hypertension

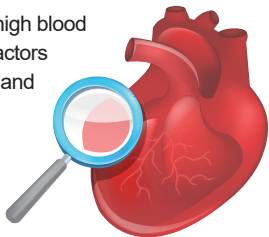
What is Hypertension?

Systolic blood pressure is the pressure exerted upon the walls of blood vessels when the heart contracts, while diastolic blood pressure is one when the heart relaxes. Blood pressure is measured in millimeters of mercury (mmHg).

Hypertension is a condition in which the systolic blood pressure is persistently higher than or equal to 140 mmHg or diastolic blood pressure is persistently higher than or equal to 90 mmHg.

Hypertension can be divided into “primary (essential) hypertension” and “secondary hypertension” based on different causes:

- Primary (essential) hypertension: the cause of high blood pressure is unknown, generally related to risk factors including aging, unhealthy eating habit, obesity and physical inactivity.
- Secondary hypertension: mainly caused by an identifiable underlying secondary causes, such as kidney diseases or endocrine disorders.



It is estimated that around 27% of the population aged 15 or above in Hong Kong suffers from hypertension.

Impact of Hypertension on Health

Poorly controlled hypertension may lead to heart failure, coronary heart disease, stroke and kidney failure etc.



How to live with Hypertension?

There is no proven cure for hypertension. Therefore, in order to control hypertension and prevent its complications, you should adhere to the treatment plan:

- You should have knowledge about the risk factors for hypertension and check your blood pressure regularly
- Your family doctor and other healthcare professionals can provide you with continuing, comprehensive and person-centred healthcare service. Therefore, you should develop a close partnership with them for early diagnosis and treatment.
- You should also empower yourself to control hypertension effectively

Risk Factors for Hypertension

There are different risk factors for developing hypertension at various stages of life, such as

- Aging
- Overweight and obesity
- Unhealthy eating habits and excessive salt intake
- Physically inactive
- Excessive alcohol intake
- Smoking
- Family history of hypertension, particularly in first degree relatives

Regular Monitoring of Blood Pressure

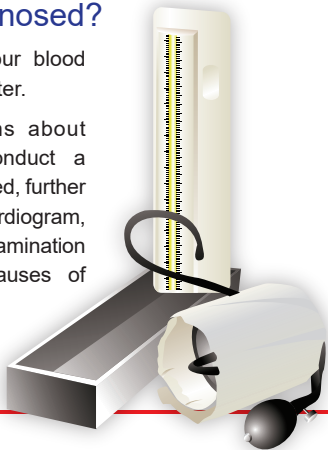
Most patients with hypertension have no obvious symptoms. They are only found when blood pressure is measured. Therefore, adults are advised to have regular measurement of blood pressure according to the following blood pressure categories –

Blood Pressure Categories	Blood pressure level (mmHg)		Recommendations
	Systolic blood pressure	Diastolic blood pressure	
Optimal	lower than 120	lower than 80	Recheck in 2 years (Once a year for people aged over 75)
Normal	120 to 129	80 to 84	Recheck in 1 year
High normal	130 to 139	85 to 89	Recheck in 6 months
Hypertension	higher than or equal to 140	higher than or equal to 90	Consult your family doctor as soon as possible for advice

How is Hypertension diagnosed?

The simplest way is to measure your blood pressure by using a sphygmomanometer.

The doctor will also ask questions about your past medical history and conduct a comprehensive health check. If indicated, further tests such as blood tests, electrocardiogram, chest x-ray, urine tests and retinal examination will be arranged to identify the causes of hypertension and detect complications.



How to control Hypertension?

Your participation and self-monitoring is crucial to the effective control of hypertension. Enhance your knowledge and skills on the management of hypertension could enable you to better control your own health. Therefore, you should –

- understand the nature of hypertension
- maintain a healthy lifestyle
- understand the consequences of undesirable blood pressure control
- take medication(s) according to doctor's prescription
- understand the treatment options and the possible side effects of medication(s)
- develop a close partnership with your family doctor and other healthcare professionals

Actions

Recommendations

Follow up regularly with your family doctor

- Work with your family doctor to set targets for blood pressure level, blood lipid level and body weight
- Conduct health assessment annually

Develop healthy eating habit and avoid excessive salt intake

- Eat a balanced diet; maintain ideal body weight
- Choose high fibre food such as vegetables, wholegrain food and fruits
- Choose fresh meat and vegetables; avoid processed or preserved food products
- Reduce the intake of high fat food such as animal fats and skins, fried food, whole milk, cakes or coconut milk
- Pay attention to the values of fats, sodium (or salt) and sugar on nutrition labels. Choose food lower in fats, sodium and sugars
- Avoid excessive salt intake; no more than 1 teaspoon (around 5g) a day
- Avoid food high in salt such as preserved mustard cabbage, fermented bean curd, ham or sausages
- For more information, please refer to the following websites: Health Zone of the Department of Health and Smart Patient of the Hospital Authority. See appendix for website address



Actions

Recommendations

Increase physical activities



- Engage in aerobic exercises for 30 to 60 minutes (continuous or accumulated) every day. For example, walking, jogging, and cycling supplemented with strength-training exercise
- Reduce sedentary activities such as watching television, surfing the internet or playing video games
- For more information on exercise, please refer to the Exercise Prescription website of the Department of Health. See appendix for the website address

Avoid alcohol intake

Avoid alcohol drinking because alcohol causes a wide range of diseases. Excessive use of alcohol not only adversely affects physical health, it also influences psycho-social health and work performance. If you choose to drink alcoholic beverages, you should limit the amount to minimise alcohol-related harm. Suggestions:

- No more than 2 standard drinks daily for male
- No more than 1 standard drink daily for female
- A standard drink equals to:
 - ◆ 250 ml of beer (5% alcohol)
 - ◆ 1 small glass (100 ml) of wine (12% alcohol)
 - ◆ 1 pub measure (30 ml) of spirits (40% alcohol)

Actions	Recommendations
Avoid smoking	<ul style="list-style-type: none">● Non-smokers should not try smoking and smokers should quit immediately● If you need help to quit smoking, please refer to the appendix
Relax your body and mind	<ul style="list-style-type: none">● Relax yourself; don't be too stressful
Self-monitoring of blood pressure	<ul style="list-style-type: none">● You should know the meaning of blood pressure readings and the skills for measuring blood pressure accurately● For patients with uncomplicated hypertension, keep blood pressure below 140/90 mmHg● For patients with other chronic diseases such as diabetes, keep blood pressure below 130/80 mmHg
Take medication(s) according to healthcare professionals' advice	<ul style="list-style-type: none">● Understand clearly the medication(s) you take● Understand why you are given the medication(s), how to take it and the possible side-effects
Receive influenza vaccination	<ul style="list-style-type: none">● Receive influenza vaccination annually



Conclusion

To control hypertension effectively and prevent complications, you are strongly advised to have knowledge about hypertension and its management. You should also develop a close partnership with your family doctor for active disease management. For further information on the care of hypertension, please refer to the “Hong Kong Reference Framework for Hypertension Care for Adults in Primary Care Settings” (see website address on appendix) developed by the Task Force on Conceptual Model and Preventive Protocols under the Working Group on Primary Care or consult your family doctor.

*Our partner for
better health*

Appendix

Myths about diabetes

- 1. I am healthy all along. Is it necessary to screen for diabetes?**

Fact: It is recommended that persons aged 45 years or above should screen for diabetes. If the results are normal, screening should be conducted again every 3 years. Persons of any age who have other risk factors for diabetes, such as overweight, obesity, family history of diabetes, etc. should have more frequent screening (e.g. yearly).
- 2. Patients with diabetes would always have symptoms**

Fact: A lot of patients with diabetes may not have obvious symptoms. Therefore, it is unreliable to determine whether a person has diabetes just by the presence of symptoms. It is recommended that persons with risk factors for diabetes should discuss with their family doctors for regular assessment.
- 3. I have used the test strip of my family member and found that there was no sugar in my urine. I am certain that I do not have diabetes**

Fact: Urine strip test is not an accurate method to ascertain whether a person has diabetes or not. It is because there is usually no glucose in your urine unless the blood glucose has risen to high level. Therefore, not all diabetic patients will have positive test strip result for urine sugar.
- 4. Only those who are eating too much sugar will get diabetes**

Fact: Diabetes is mainly due to insufficient insulin secretion or insulin resistance which impairs our body's ability to absorb and utilise glucose, resulting in too high blood glucose level. In addition to sugar, our body will also obtain calories from protein and fat in our diet. Excessive intake of calories will lead to overweight and obesity, which in turn increase the risk of diabetes. Therefore, having a balanced diet and an optimal weight control is of paramount importance.



Appendix

5. Carbohydrates should be skipped completely from diet as they are bad for diabetes

Fact: Carbohydrates are the foundation of a healthy diet. Some contain vitamins, minerals and fibers which are essential to our health. There is no need to skip carbohydrates completely from diet if the daily consumption is appropriately adjusted.

6. Artificial sweeteners are harmful to diabetic patients

Fact: Artificial sweeteners are usually much sweeter than sugar. Only a very little amount can achieve the same degree of sweetness as sugar, thus reducing caloric intake from sugar.

7. Fruit is a healthy food. Therefore, diabetic patients can eat as much as they want

Fact: Fruit is a healthy food that contains nutrients and fibres. However, fruit also contains carbohydrates which contribute to our caloric intake and hence affects our blood glucose level. Therefore, we should pay attention to the amount of fruits or any other types of food that are taken.

8. Can people effectively control diabetes by choosing food with low glycaemic index (GI) value?

Fact: The glycaemic index (GI) is a measure of various carbohydrates according to the extent to which they raise blood sugar levels after feeding. The GI value of individual food reflects the situation when a person eats that particular food only. Eating other food at the same time, different cooking methods or food handling procedures, variations in individual food's chemical structure and place of origin, and/or the ripeness of fruit, can affect the usefulness of the GI. Therefore, GI is only one of the factors to be considered in meal planning. Diabetic patients should pay attention to the total amount of food taken in each meal and the combination of food items. They should consume more food with high fibre content, and control the amount of fat intake. The

Appendix

nutrients and portions required vary among individuals. To effectively control diabetes, please consult dietitians and healthcare professional.

9. People with diabetes should take special diabetes meal only

Fact: There is NO standardised special diabetes meal. People with diabetes should also adopt a healthy meal plan according to the principles of “Healthy Eating Food Pyramid” , aiming for balanced diet, regular meal time, regular portion and optimal caloric control. However, as the nutritional needs and living habits of each diabetic patient are different, individuals should set their own meal plan according to their particular health and nutritional needs.

10. Can people with diabetes do exercise?

Fact: Regular physical activity is very important for diabetes management. It is recommended that diabetic patients should perform at least 150 minutes moderate-intensity or 75 minutes vigorous-intensity aerobic physical activities every week. In addition, patients are also advised to perform muscle strengthening activities at least twice weekly (on non-consecutive days). Diabetic patients may have certain risk factors, for instance, retinopathy, undiagnosed ischemic heart disease, etc., and in addition to these, certain drugs for diabetes may result in hypoglycaemia during exercise. In this regard, it is recommended that diabetic patients discuss with their doctor on the type, frequency and intensity of exercise before starting exercise.

11. If I start taking drugs for diabetes, I would need to take it for life. So I had better not start taking it

Fact: Diabetes is a chronic disease, apart from adopting well balance diet and regular exercise, drug treatment is commonly used for achieving optimal blood glucose level. On the other hand, if you do not adhere to the treatment regime continuously as advised by your doctor, your risk of developing diabetic complications will be increased.



Appendix

12. The need to use insulin means my diabetes is at a terminal stage

Fact: Insulin therapy is NOT a treatment specific to people with poor diabetic control. Some patients are prescribed with insulin therapy even shortly after diagnosis. Doctors would prescribe oral antidiabetic drugs or insulin according to the condition and need of the patient. In some cases both types of drugs are used to optimise the control of diabetes.

Source: Centre for Health Protection website, Department of Health – Myths about Diabetes

http://www.chp.gov.hk/en/view_content/43948.html

Appendix

Myths about hypertension

1. Hypertension cannot be prevented.

Fact: The risk of hypertension can be reduced by having a healthy lifestyle, in particular reduced salt intake.

2. Patients with hypertension experience headache and fatigue.

Fact: Most patients with hypertension have no symptom at all. Therefore, it is not reliable to only look out for symptoms. Regular check of the blood pressure is needed.

3. Only overweight or anxious people get hypertension.

Fact: The risk of having hypertension increases with age. Therefore, everybody should watch their blood pressure, and seek medical advice if in doubt.

4. I have hypertension. My doctor told me that if I start taking medication, I need to take it for life. So I'd better not start taking it.

Fact: Avoiding drug use will not change the fact that you have hypertension. But if you don't take medication as directed, you run a much higher chance of having complications and a shorter life.

5. There is no need to continue taking medicine after the blood pressure returns to normal.

Fact: Hypertension is a chronic disease. It can be controlled with medication, but it cannot be cured. Therefore, patients need to continue with the treatment and lifestyle modifications as advised by their doctor, and attend regular medical follow up, usually for life.

Source: Centre for Health Protection website, Department of Health – Hypertension – the Preventable and Treatable Silent Killer
http://www.chp.gov.hk/en/view_content/28272.html



Appendix

Related websites

Hong Kong Reference Framework for Diabetes Care for Adults in Primary care Settings

https://www.healthbureau.gov.hk/pho/rfs/english/reference_framework/diabetes_care.html

Hong Kong Reference Framework for Hypertension Care for Adults in Primary care Settings

https://www.healthbureau.gov.hk/pho/rfs/english/reference_framework/hypertension_care.html

Health Zone, Department of Health - Diabetes

http://www.cheu.gov.hk/eng/info/otherdiseases_06.htm

Health Zone, Department of Health - Hypertension

http://www.cheu.gov.hk/eng/info/commonkiller_04.htm

Exercise Prescription website, Department of Health

<https://exerciserx.cheu.gov.hk/en/index.asp>

Smart Patient website, Hospital Authority - Diabetes

<http://www21.ha.org.hk/smartpatient/SPW/en-US/Disease-Information/Disease/?guid=c73a0386-fe66-42eb-a979-7619ac8359da>

Smart Patient website, Hospital Authority - Hypertension

<http://www21.ha.org.hk/smartpatient/SPW/en-US/Disease-Information/Disease/?guid=d41c67f5-f6f6-4d12-a1e4-b659ef2f6e43>

Smoking Cessation Service

<u>Service</u>	<u>Organisation</u>	<u>Telephone number</u>
Integrated Smoking Cessation Hotline of the Department of Health	Department of Health	1833 183 (press 1)
Integrated Smoking Cessation Hotline of Hospital Authority	Hospital Authority	1833 183 (press 3) 2300 7272
Tung Wah Smoking Cessation Hotline	Tung Wah Groups of Hospitals	1833 183 (press 2) 2332 8977
Pok Oi Smoking Cessation Service using Traditional Chinese Medicine	Pok Oi Hospital	1833 183 (press 4) 2607 1222
HKU Youth Quitline	The University of Hong Kong	1833 183 (press 5) 2855 9557



