

# Taking care of yourself in daily life

for patients with diabetes

*A noncommunicable disease education manual for primary health care professionals and patients*







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The Noncommunicable Disease Education Manual for Primary Health Care Professionals and Patients results from the contributions and hard work of many people. Its development was led by Dr Hai-Rim Shin, Coordinator, and Dr Warrick Junsuk Kim, Medical Officer, of the Noncommunicable Diseases and Health Promotion unit at the WHO Regional Office for the Western Pacific (WHO/WPRO/NCD) in Manila, Philippines.

WHO graciously acknowledges the intellectual contributions of Dr Jung-jin Cho, Co-director, Community-based Primary Care Project Committee and Professor, Department of Family Medicine, Hallym University Sacred Heart Dongtan Hospital, Republic of Korea; Dr Hyejin Lee, Volunteer, WHO/WPRO/NCD (currently PhD candidate, Department of Family Medicine, Seoul National University, Republic of Korea); Ms Saki Narita, Volunteer, WHO/WPRO/NCD (currently PhD candidate, Department of Global Health Policy, Graduate School of Medicine, University of Tokyo, Japan); and Mr Byung Ki Kwon, Technical Officer, WHO/WPRO/NCD (currently Director, Division of Health Promotion, Ministry of Health and Welfare, Republic of Korea).

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All illustrations were provided by the source publication.

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# Noncommunicable disease education manual for primary health care professionals and patients

## Part 1 Prevention and management of hypertension

- Module 1 Diagnosis and management
- Module 2 Healthy lifestyles
- Module 3 Healthy eating habits
- Module 4 Low-salt diet
- Module 5 Physical activity
- Module 6 Medication and management of associated diseases
- Module 7 Complication prevention

## Part 2 Prevention and management of diabetes

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- Module 2 Healthy lifestyles
- Module 3 Healthy eating habits 1
- Module 4 Healthy eating habits 2
- Module 5 Physical activity
- Module 6 Taking care of yourself in daily life** ◀ YOU ARE HERE
- Module 7 Complication prevention

## Part 3 Quit smoking

# How to use this manual

This book is one of fifteen modules of the “Noncommunicable disease education manual for primary health care professionals and patients”. This manual is intended to provide health information on the prevention and control of hypertension and diabetes.

This will be used in the form of a flip chart for health professionals to educate their patients with either hypertension or diabetes.

Diagnosis and management for patients with hypertension

### Blood pressure target

<p>Systolic blood pressure</p> <p>Under 140 mmHg</p>	<p>Diastolic blood pressure</p> <p>Under 90 mmHg</p>
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\*Age more than 60: blood pressure to be controlled below 150/90 mmHg

FOR PATIENTS

## FOR PATIENTS

On one side of the flip chart is the ‘**For patients**’ page. This side has simple images and key messages that are easy to understand. However, health professionals may need to provide education for patients to fully understand the content.

Diagnosis and management for patients with hypertension

### Blood pressure target

<p><b>Patient education</b></p> <ul style="list-style-type: none"><li>• Blood pressure below 140/90 mmHg is generally advised to prevent complications.</li><li>• However, blood pressure targets can be adjusted according to age, number and type of risk factors, and associated diseases.</li><li>• Therefore, if you have hypertension, you should consult your physician to set a target after evaluating your current health status and risk factors.</li></ul>	<p><b>Professional information</b></p> <p>Target blood pressure</p> <ul style="list-style-type: none"><li>• According to the Eighth Joint National Committee (JNC8), those over age 60 are advised that their target blood pressure should be below 150/90 mmHg.</li><li>• Target blood pressure should be below 140/90 mmHg for hypertension combined with cardiovascular disease and atherosclerosis.</li><li>• For those under age 60 maintain below 140/90 mmHg, those over age 60 maintain below 150/90 mmHg.</li></ul>
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Systolic blood pressure Under 140 mmHg

Diastolic blood pressure Under 90 mmHg

\*Age more than 60: blood pressure to be controlled below 150/90 mmHg

REFERENCES  
1. WHO. *2010 hypertension guideline for the management of high blood pressure in adults*. Report from Regional committees approved by the Eighth Joint National Committee (JNC8). 2010. July 14. 2010.

FOR PHYSICIANS

## FOR PHYSICIANS

On the other side of the flip chart is the ‘**For physicians**’ page. This side includes information that the health professional can read out to the patient during counselling. Professional information is also provided for further understanding. A small image of the ‘For patients’ side is included so that the health professional is aware of what the patient is looking at.

This publication is intended to serve as a template to be adapted to national context. Images and graphs that have been watermarked should be replaced with images or graphs that represent the national situation. If assistance is required, or if you have any questions related to the publication, please contact the Noncommunicable Diseases and Health Promotion unit at WHO Regional Office for the Western Pacific (wproncd@who.int).

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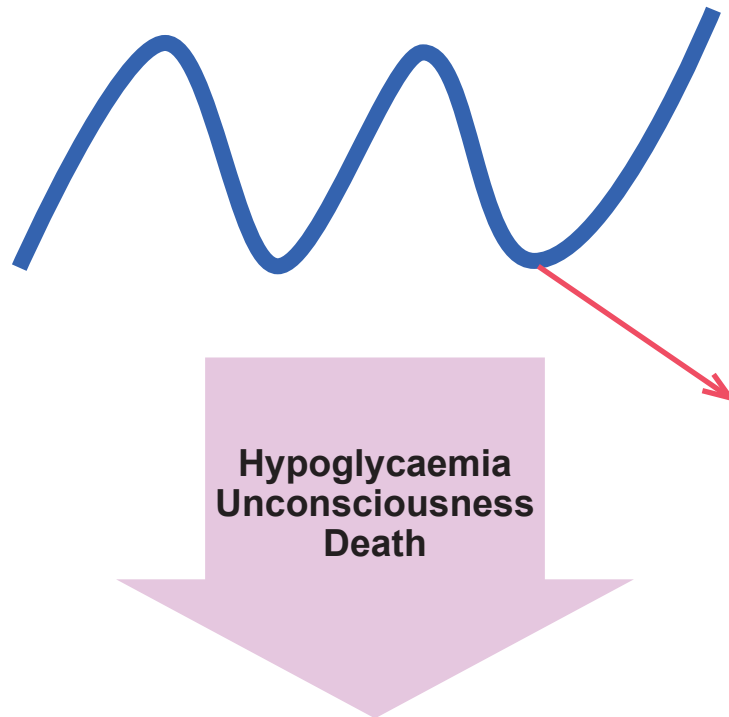
## Module 6

### **Taking care of yourself in daily life** for patients with **diabetes**

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# What is hypoglycaemia?

What happens when blood sugar drops drastically?





# What is hypoglycaemia?

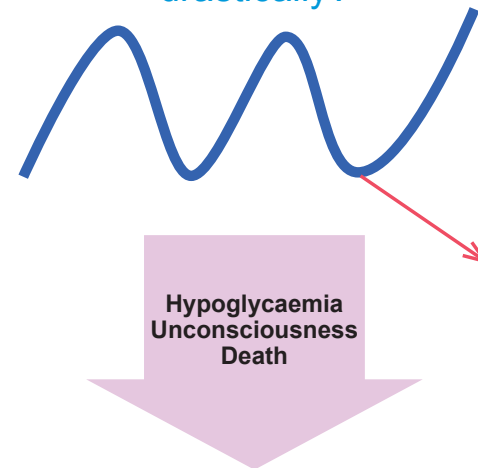
## Patient education

- Hypoglycaemia can occur in people with diabetes.
- Symptoms of hypoglycaemia are mainly autonomic nerve symptoms such as sweating, anxiety and increased heart rate.
- In severe cases, it can cause loss of consciousness and death.
- Hypoglycaemia usually presents when blood glucose level is below 70 mg/dL.
- However, when hyperglycaemia lasts for a long time, or blood sugar levels fall dramatically, symptoms of hypoglycaemia can occur in blood sugar levels above 70 mg/dL.

## Professional information

- Hypoglycemia is defined as serum blood sugar concentration below 70 mg/dL.

What happens when blood sugar drops drastically?



#### REFERENCES:

Hypoglycemia (low blood glucose). American Diabetes Association. 2016. (<http://www.diabetes.org/living-with-diabetes/treatment-and-care/blood-glucose-control/hypoglycemia-low-blood.html>, accessed 28 September 2016).

Cryer, Philip E., Stephen N. Davis, and Harry Shamoon. Hypoglycemia in diabetes. *Diabetes Care*, 2003, 26.6: 1902-1912.

## Symptoms of hypoglycaemia



Dizziness and  
nausea



Weakness  
Fatigue



Hunger



Sweating,  
chills and  
clamminess



Rapid  
heartbeat



Anxiety

# Symptoms of hypoglycaemia

## Patient education

- Early signs and symptoms of hypoglycaemia are weakness and hunger, sweating and dizziness.
- When blood sugar levels decrease rapidly, you can even lose consciousness.
- Therefore, it is important to know what the symptoms of hypoglycaemia are, to monitor your blood sugar levels regularly and keep track of how you are feeling when your blood sugar is low.



Dizziness and  
nausea



Weakness  
Fatigue



Hunger



Sweating,  
chills and  
clamminess



Rapid  
heartbeat



Anxiety

### REFERENCE:

Hypoglycemia (low blood glucose). American Diabetes Association. 2016. (<http://www.diabetes.org/living-with-diabetes/treatment-and-care/blood-glucose-control/hypoglycemia-low-blood.html>, accessed 28 September 2016).

# Risk factors for hypoglycaemia (1)

Hypoglycaemia can occur when you are taking diabetic medications (oral medications or insulin)

- Too much diabetes medication or insulin overdose
- Irregular intake of oral medications or injection of insulin
- Under-eating
- Drinking alcohol, especially on an empty stomach.



# Risk factors for hypoglycaemia (1)

## Patient education

- The risk factors of hypoglycaemia include taking too much insulin or diabetes medications, or not taking them at the right time.
- Lack of food is also a cause.
- Drinking alcohol on an empty stomach is another risk, as our bodies use up glucose to break down alcohol.

### Hypoglycaemia can occur when you are taking diabetic medications (oral medications or insulin)

- Too much diabetes medication or insulin overdose
- Irregular intake of oral medications or injection of insulin
- Under-eating
- Drinking alcohol, especially on an empty stomach.



#### REFERENCE:

Factors affecting blood glucose. American Diabetes Association. 2016. (<http://www.diabetes.org/living-with-diabetes/treatment-and-care/blood-glucose-control/factors-affecting-blood-glucose.html>, accessed 28 September 2016)

## Risk factors for hypoglycaemia (2)

### Too much physical activity

- Exercising on an empty stomach
- Intense or prolonged physical activity



# Risk factors for hypoglycaemia (2)

## Patient education

- Doing vigorous exercise for a long time or exercising on an empty stomach are also risk factors for hypoglycaemia.
- Prevention includes being consistent in the amount you eat and the timing of your meals. Regular physical activity and taking medication on time are important.

### Too much physical activity

- Exercising on an empty stomach
- Intense or prolonged physical activity



#### REFERENCE:

Factors affecting blood glucose. American Diabetes Association. 2016. (<http://www.diabetes.org/living-with-diabetes/treatment-and-care/blood-glucose-control/factors-affecting-blood-glucose.html>, accessed 28 September 2016)

## Managing hypoglycaemia

Eat or drink adequate amounts of sugar/sweets to increase blood sugar levels.

Consult your physician about preventing future hypoglycaemic episodes.





# Managing hypoglycaemia

## Patient education

- When you have symptoms of hypoglycaemia you need to eat or drink foods containing simple carbohydrates which will quickly increase your blood sugar level.
- Examples of simple carbohydrates are sweet drinks, sugar and candy; 15 g of sugar increases blood glucose by about 30 mg/dL.
- Three to five pieces of candy, or half a glass of cola or orange juice, is equivalent to 15 g of sugar.
- It is important to visit your doctor if you have had hypoglycaemia because you may need a change of medication or dosage.

Eat or drink adequate amounts of sugar/ sweets to increase blood sugar levels.

Consult your physician about preventing future hypoglycaemic episodes.



### REFERENCES:

Diabetes advanced theory course. Centers for Disease Control and Prevention, Republic of Korea. 2016. ([http://www.kncd.org/down/sub09/01/9\\_1\\_2\\_2.pdf](http://www.kncd.org/down/sub09/01/9_1_2_2.pdf), accessed 28 September 2016)

American Diabetes Association. Standards of medical care in diabetes—2015. Diabetes Care, 2015.

Hypoglycemia (low blood glucose). American Diabetes Association. 2016. (<http://www.diabetes.org/living-with-diabetes/treatment-and-care/blood-glucose-control/hypoglycemia-low-blood.html>, accessed 28 September 2016).

## Loss of consciousness due to hypoglycaemia

- Get the patient to the emergency department at a hospital as soon as possible.
- Do not try to force the patient to eat.



# Loss of consciousness due to hypoglycaemia

## Patient education

- When the patient loses consciousness due to hypoglycaemia, do not try to force-feed.
- Head straight to a hospital emergency department.

- Get the patient to the emergency department at a hospital as soon as possible.
- Do not try to force the patient to eat.



### REFERENCES:

Diabetes advanced theory course. Centers for Disease Control and Prevention, Republic of Korea. 2016. ([http://www.kncd.org/down/sub09/01/9\\_1\\_2\\_2.pdf](http://www.kncd.org/down/sub09/01/9_1_2_2.pdf), accessed 28 September 2016)

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Hypoglycemia (low blood glucose). American Diabetes Association. 2016. (<http://www.diabetes.org/living-with-diabetes/treatment-and-care/blood-glucose-control/hypoglycemia-low-blood.html>, accessed 28 September 2016).

# Hyperglycaemic coma

- Complications that occurs when blood sugar levels are too high include:
  - feeling thirsty, urinating frequently, vomiting, abdominal pain
  - delirium, unconsciousness, coma.
- If hyperglycaemic coma is suspected, go to the emergency department immediately.



# Hyperglycaemic coma

## Patient education

- Hyperglycaemic coma is a complication that occurs when blood sugar levels are extremely elevated.
- Skipping medications, infection, or severe diseases can cause hyperglycaemic coma.
- Symptoms include dehydration, frequent urination, vomiting, abdominal pain and loss of consciousness.
- In severe cases, it can lead to death. Hospitalization is vital.
- In the case of suspected hyperglycaemic coma, the patient must be taken to the nearest hospital immediately.

- Complications that occurs when blood sugar levels are too high include:
  - feeling thirsty, urinating frequently, vomiting, abdominal pain
  - delirium, unconsciousness, coma.
- If hyperglycaemic coma is suspected, go to the emergency department immediately.



### REFERENCES:

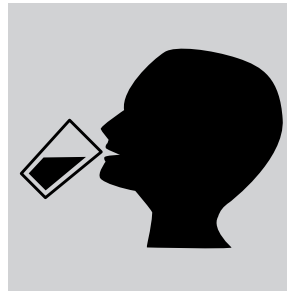
American Diabetes Association. Standards of medical care in diabetes—2015. *Diabetes Care*, 2015.  
Hypoglycemia (low blood glucose). American Diabetes Association. 2016. (<http://www.diabetes.org/living-with-diabetes/treatment-and-care/blood-glucose-control/hypoglycemia-low-blood.html>, accessed 28 September 2016).

## Management of diabetes when acutely ill

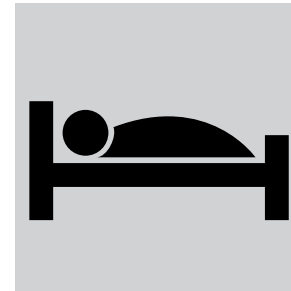
- Acute diseases such as the common cold and diarrhoea can cause hyperglycaemia.
- Management of diabetes when acutely ill:



Never skip or quit medications without consulting your doctor.



Drink enough water.



Rest, do not exercise.

# Management of diabetes when acutely ill

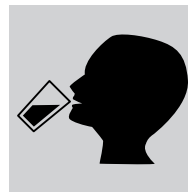
## Patient education

- When you are sick and have high fever, general weakness, vomiting or dehydration, your blood glucose level can increase continuously.
- You should never skip or quit diabetic medications or insulin at this time.
- But you may need to reduce the dosage so consult your doctor about your physical state and medication.
- Drink enough water to prevent dehydration.
- Rest, and do not overly exert yourself.

- Acute diseases such as the common cold and diarrhoea can cause hyperglycaemia.
- Management of diabetes when acutely ill:



Never skip or quit medications without consulting your doctor.



Drink enough water.



Rest, do not exercise.

# Get vaccinated

## Diabetic patients are more vulnerable to infection

- influenza vaccination (yearly)
- pneumonia vaccination
- basic vaccinations:
  - hepatitis B, tetanus, diphtheria





# Get vaccinated

## Patient education

- Diabetic patients are more vulnerable to infection.
- Some of the vaccinations needed for diabetic patients are influenza, pneumococcus and hepatitis B.

### Diabetic patients are more vulnerable to infection

- influenza vaccination (yearly)
- pneumonia vaccination
- basic vaccinations:
  - hepatitis B, tetanus, diphtheria

## Professional information

- The American Diabetes Association (ADA) 2014 guidelines state that influenza, pneumococcus and hepatitis B vaccinations are recommended for diabetic patients.



#### REFERENCE:

American Diabetes Association. Standards of medical care in diabetes—2015. Diabetes Care, 2015.

## Things to bring when travelling

### Pack your:

- prescription drugs
- diabetes patient card
- snacks in case of hypoglycaemia
- comfortable shoes and clothes



# Things to bring when travelling

## Patient education

- When travelling, diabetes patients should bring comfortable shoes to protect their feet and snacks in case of hypoglycaemia.
- If you carry your diabetes card, it will be very helpful in the event of loss of consciousness due to hypoglycaemia.
- Preparing other emergency drugs can be helpful. If you are using insulin, do not forget to bring your glucometer.

### Pack your:

- prescription drugs
- diabetes patient card
- snacks in case of hypoglycaemia
- comfortable shoes and clothes



### REFERENCE:

When you travel. American Diabetes Association. 2016. (<http://www.diabetes.org/living-with-diabetes/treatment-and-care/when-you-travel.html>, accessed 28 September 2016)

# Self-monitoring of blood glucose

## The benefit of self-monitoring blood glucose:

- Enables the patient to figure out when and why their blood glucose levels are beyond the normal range
- Check blood glucose levels as advised by your doctor

		Blood glucose level (mg/dL)			
Date	Medication	Before breakfast	Two hours after breakfast	Before dinner	Before bedtime

# Self-monitoring of blood glucose

## Patient education

- Monitoring your own blood glucose is important for checking whether treatment goals are reached, and if not, figuring out why your blood sugar level is too low or too high.
- Consult your doctor about your target sugar level, since treatment goals are personalized according to age, co-morbid disease, medications and lifestyle.
- Self-monitoring of blood glucose is especially helpful for people on insulin treatment, or when patients have hypoglycaemic symptoms.

## Professional information

- For patients **not** on insulin, there is debate as to whether self-monitoring of blood glucose helps reach treatment goals.

### The benefit of self-monitoring blood glucose:

- Enables the patient to figure out when and why their blood glucose levels are beyond the normal range
- Check blood glucose levels as advised by your doctor

		Blood glucose level (mg/dL)			
Date	Medication	Before breakfast	Two hours after breakfast	Before dinner	Before bedtime

#### REFERENCES:

Diabetes advanced nutrition course. Centers for Disease Control and Prevention, Republic of Korea. 2016. ([http://www.kncd.org/download/sub09/01/9\\_1\\_2\\_4.pdf](http://www.kncd.org/download/sub09/01/9_1_2_4.pdf), accessed 28 September 2016).  
 American Diabetes Association. Standards of medical care in diabetes—2015. Diabetes Care, 2015.  
 International Diabetes Federation. Global guideline for type 2 diabetes. Brussels: IDF Clinical Guidelines Task Force, 2012.  
 Scottish Intercollegiate Guidelines Network. Management of Diabetes. Edinburgh. 2011.

# How to use a glucometer



# How to use a glucometer

## Patient education

- First, turn on the glucometer.
- Remove the cap of the lancing device and insert a new lancet.
- Twist off the protective cap of the new lancet, and replace the cap of lancing device.
- Wash your hands, or swab the fingertip you are going to use to draw your sample with alcohol.
- Adjust the puncture depth on the lancing device.
- Usually depth 2 is enough for most people.
- After pricking your fingertip for the blood sample, place a drop of blood on the test strip of the glucometer.
- Do not squeeze blood to place it on the test strip.
- Most strips have a “wicking” action that will draw the blood up into the test strip.

## Professional information

- The accuracy of blood glucose self-monitoring depends highly on the glucometer itself and the patient.
- Therefore, to check whether the self-measured blood glucose readings are accurate, compare to blood tests done at the hospital at least once a year.

**Step 1**  
Turn on the  
glucometer



**Step 2**  
Prepare lancing  
device



**Step 3**  
Take the blood  
sample



**Step 4**  
Place sample on  
glucometer for  
results



## Take-home message

### Taking care of yourself in daily life

- Be aware of the symptoms of hypoglycaemia and what to do when you have hypoglycaemic symptoms.
- Be aware of how to manage yourself when acutely ill.
- Get required vaccinations.
- Be aware of what to pack when travelling.







