

Medication and management of associated diseases

for patients with hypertension

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.

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Noncommunicable disease education manual for primary health care professionals and patients

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- Module 2 Healthy lifestyles
- Module 3 Healthy eating habits
- Module 4 Low-salt diet
- Module 5 Physical activity
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Part 2 Prevention and management of diabetes

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- Module 6 Taking care of yourself in daily life
- 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

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

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

Patient education

- Blood pressure below 140/90 mmHg is generally advised to prevent complications.
- However, blood pressure targets can be adjusted according to age, number and type of risk factors, and associated diseases.
- Therefore, if you have hypertension, you should consult your physician to set a target after evaluating your current health status and risk factors.

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

Professional information

Target blood pressure

- 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.
- Target blood pressure should be below 140/90 mmHg for hypertension combined with cardiovascular disease and atherosclerosis.
- For those under age 60 maintain below 140/90 mmHg, those over age 60 maintain below 150/90 mmHg.

REFERENCES

World Health Organization. Guidelines for the management of high blood pressure in adults: report from the regional committees for the World Health Organization (JNC8). 2013. <http://www.who.int>

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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Medication and management of associated diseases for patients with hypertension

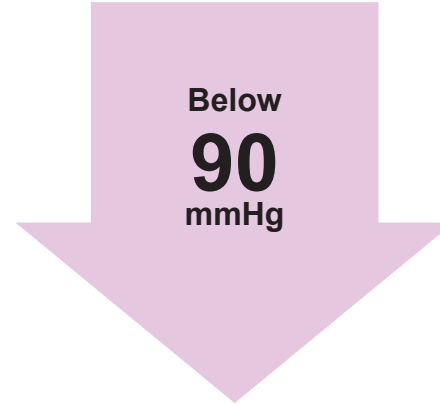
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Blood pressure

Systolic blood pressure



Diastolic blood pressure



*Age more than 80: blood pressure to be controlled below 150/90mmHg

Blood pressure

Patient education

- Blood pressure below 140/90 mmHg is generally advised to prevent complications.
- However, blood pressure targets can be adjusted according to age, number and type of risk factors, and associated diseases.
- Therefore, if you have hypertension, you should consult your physician to set a target after evaluating your current health status and risk factors.

Systolic blood pressure



Diastolic blood pressure



*Age more than 80: blood pressure to be controlled below 150/90 mmHg

Professional information

Target blood pressure

- According to the Eighth Joint National Committee (JNC8), those over age 80 are advised that their target blood pressure should be below 150/90 mmHg.
- Target blood pressure should be below 140/90 mmHg for hypertension combined with cerebrovascular disease and atherosclerosis.
- For those under age 80 maintain below 140/90 mmHg; those over age 80 maintain below 150/90 mmHg.

REFERENCE:

James, Paul A., et al. 2014 evidence-based guideline for the management of high blood pressure in adults: report from the panel members appointed to the Eighth Joint National Committee (JNC 8). JAMA, 2014, 311.5: 507-520.

Principles of drug intake

- Know the **generic name and common side-effects** of your medication.
- Do not discontinue medication just because your blood pressure returns to normal range.
- You may need to take two or more drugs depending on your associated symptoms or conditions.



Principles of drug intake

Patient education

- It is important to know the generic name and common side-effects of the medication you are taking.
- Some people stop taking their medicines because their blood pressure has returned to normal, which is dangerous.
- Depending on the associated symptoms or diseases, you may need to take more than one drug.
- It is very important to visit the hospital or clinic regularly and to take medication continuously once you begin drug therapy.

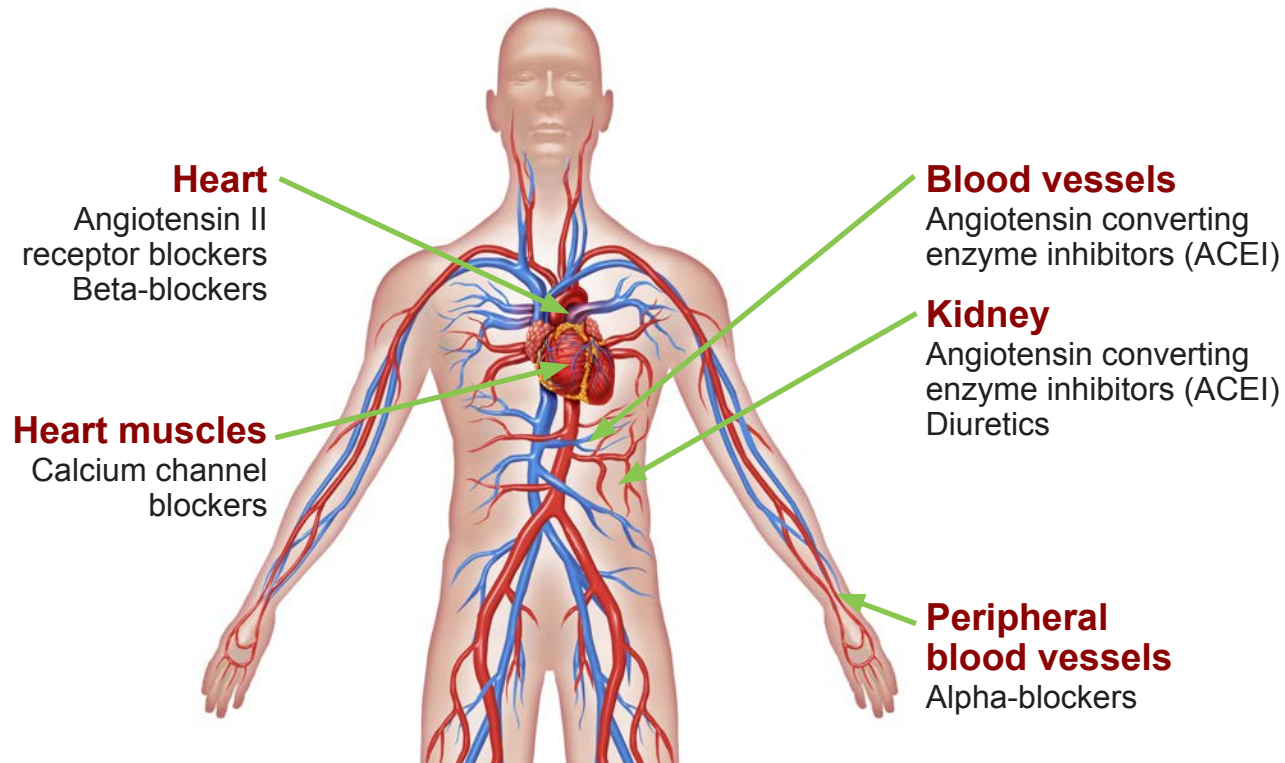
- Know the **generic name and common side-effects** of your medication.
- Do not discontinue medication just because your blood pressure returns to normal range.
- You may need to take two or more drugs depending on your associated symptoms or conditions.



REFERENCE:

Mancia, Giuseppe, et al. 2013 ESH/ESC guidelines for the management of arterial hypertension: the Task Force for the Management of Arterial Hypertension of the European Society of Hypertension (ESH) and of the European Society of Cardiology (ESC). Blood Pressure, 2013, 22.4: 193-278.

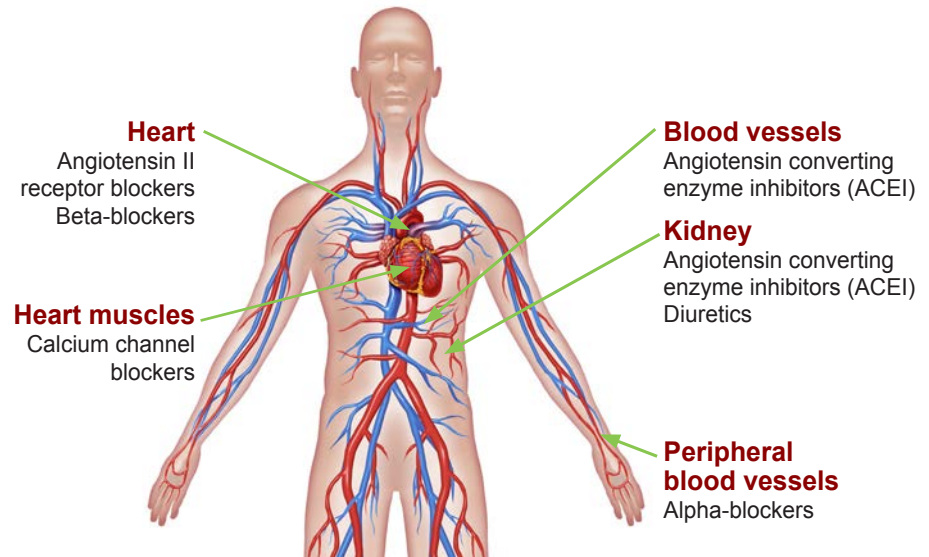
Classes of antihypertensive medicine



Classes of antihypertensive medicine

Patient education

- Know what kind of medication you are taking.
- Antihypertensive drugs are classified into the following categories: diuretics, calcium channel blockers, angiotensin II receptor blockers (ARBs), angiotensin II receptor blockers (ARBs), angiotensin converting enzyme inhibitors (ACEIs), alpha-blockers and beta-blockers.
- Some pills have a combination of these.
- Your doctor will prescribe the best choice depending on your current health status.



REFERENCES:

Weber, Michael A., et al. Clinical practice guidelines for the management of hypertension in the community. The Journal of Clinical Hypertension, 2014, 16.1: 14-26.

James, Paul A., et al. 2014 Evidence-based guideline for the management of high blood pressure in adults: report from the panel members appointed to the Eighth Joint National Committee (JNC 8). JAMA, 2014, 311.5: 507-520.

National Institutes of Health, and National Heart, Lung, and Blood Institute (United States). Your guide to lowering blood pressure. NIH publication, 2003, 03-5232.

Side-effects

- Most antihypertensive drugs do not have side-effects.
- Consult your doctor if you have any uncomfortable symptoms after taking medication.
- Side-effects are usually temporary and can be managed by your doctor.

Class	Possible side-effects
Diuretics	Gout, electrolyte imbalance
Beta-blockers	Asthma, bradycardia
Calcium channel blockers	Oedema, headache, flushing, gingival swelling, constipation
Angiotensin converting enzyme inhibitors Angiotensin II receptor blockers	Dry cough, angioedema, rash
Alpha-blockers	Orthostatic hypotension

Side-effects

Patient education

- Most antihypertensive drugs do not have any side-effects.
- However, like any other medicines, antihypertensive drugs could show side-effects depending on a patient's characteristics.
- The most common are gastrointestinal discomfort, peripheral oedema and headache for calcium channel blockers, and dry cough for angiotensin converting enzyme inhibitors.
- If you experience any side-effects, let your doctor know.

Class	Possible side-effects
Diuretics	Gout, electrolyte imbalance
Beta-blockers	Asthma, bradycardia
Calcium channel blockers	Oedema, headache, flushing, gingival swelling, constipation
Angiotensin converting enzyme inhibitors Angiotensin II receptor blockers	Dry cough, angioedema, rash
Alpha-blockers	Orthostatic hypotension

- Most antihypertensive drugs do not have side-effects.
- Consult your doctor if you have any uncomfortable symptoms after taking medication.
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REFERENCE:

Weber, Michael A., et al. Clinical practice guidelines for the management of hypertension in the community. The Journal of Clinical Hypertension, 2014, 16.1: 14-26.

Drug-drug interactions

Be careful when taking the following drugs

- Nonsteroidal anti-inflammatory drugs (decreases the effect of anti-hypertensive drugs)
- Common cold medicine, allergy medicine (increases blood pressure)

Consult your doctor before taking additional drugs.



Drug-drug interactions

Patient education

- Most medicines do not have interactions with antihypertensive drugs.
- However, some drugs such as nonsteroidal anti-inflammatory drugs, common cold drugs and allergy remedies could have interactions.
- Therefore, if you are planning to take new medications, consult your doctor.

Be careful when taking the following drugs

- Nonsteroidal anti-inflammatory drugs (decreases the effect of anti-hypertensive drugs)
- Common cold medicine, allergy medicine (increases blood pressure)

Consult your doctor before taking additional drugs.



REFERENCE:

Chobanian, Aram V., et al. Seventh report of the joint national committee on prevention, detection, evaluation, and treatment of high blood pressure. Hypertension, 2003, 42.6: 1206-1252.

Q & A (1)

Q

When is the best time to take antihypertensive drugs?

A

It is best to take these drugs **at the same time every day as prescribed.**



Q & A (1)

Patient education

- You are advised to take antihypertensive drugs at a consistent time every day.
- Many physicians prescribe these drugs to be taken in the morning because most antihypertensive drugs are to be taken once a day and if patients take medicines in the evening, they are more likely to forget due to dinner appointments.
- It is fine to take your medicine at another time of the day if it suits your personal lifestyle.

Q

When is the best time to take antihypertensive drugs?

A

It is best to take these drugs at **the same time every day as prescribed.**



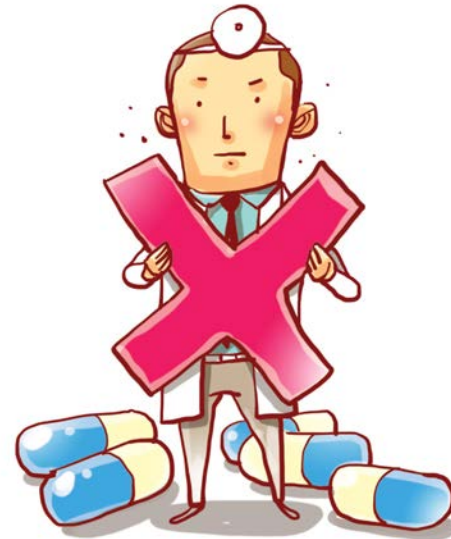
Q & A (2)

Q

What should I do if I **forgot** to take my medication?

A

- If you forgot to take your dose and just remembered, you should take it right away, unless it is nearly time for the next round.
- In that case, you should just wait. **Never take two doses at the same time or near each other's time.**



Q & A (2)

Patient education

- If you forgot to take your dose and just remembered, you should take it right away.
- However, if it is nearly time to take the next dose, you should wait.
- Never take two doses at the same time or near each other's time.

Q

What should I do if I **forgot** to take my medication?

A

- If you forgot to take your dose and just remembered, you should take it right away, unless it is nearly time for the next round.
- In that case, you should just wait. **Never take two doses at the same time or near each other's time.**



Q & A (3)

Q

Do I have to take antihypertensive drugs for the rest of my life?

A

If your blood pressure has been maintained below the target figure for a long time, your doctor may consider adjustments. Do not stop medication on your own.



Q & A (3)

Patient education

- The key thing for hypertension management is to maintain blood pressure in the target range.
- If your blood pressure has been maintained below the target range for several months, then you could consider adjusting the dosage.
- The habit of checking blood pressure, maintaining a healthy lifestyle of low salt intake, regular exercise and weight control should be checked thoroughly before the decision.
- However, blood pressure can suddenly increase, so you should never stop or decrease the drug without careful consideration.

Q

Do I have to take antihypertensive drugs for the rest of my life?

A

If your blood pressure has been maintained below the target figure for a long time, your doctor may consider adjustments. Do not stop medication on your own.



Professional information

- Most patients who have maintained their blood pressure below the target range hope to cut their drug dosage.
- When considering this, you should check whether the patient is pursuing a healthy lifestyle, such as less salt intake, regular exercise, less alcohol intake, and weight reduction.
- If the patient's blood pressure has been below the target range for more than a year, then you could consider cutting the dosage.
- The drug should be gradually reduced, and as well as monitoring their own blood pressure, the patient should visit the hospital or clinic at a three-month interval.
- Always bear in mind that blood pressure could suddenly increase.

REFERENCE:

World Health Organization. Salt matters for Pacific island countries: mobilizing for effective action to reduce population salt intake in the Pacific island countries. 2014.

Associated disease: obesity

Overweight/obesity

Body mass index

$\geq 25 \text{ kg/m}^2$

Body mass index=weight (kg)/height (m)²

Abdominal obesity

Abdominal circumference

Male: $\geq 102 \text{ cm}$
Female: $\geq 88 \text{ cm}$

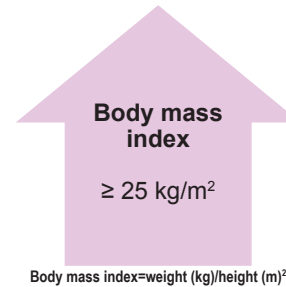
- A 10 kg weight reduction in an obese person results in a decrease in blood pressure of 5–20 mmHg.
- Abdominal obesity causes hypertension, dyslipidaemia and diabetes, and increases mortality from atherosclerosis.

Associated disease: obesity

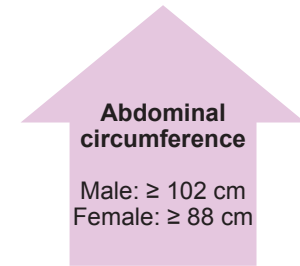
Patient education

- Obesity should be treated together with hypertension.
- Obesity is determined using body mass index (BMI) and abdominal obesity is determined using abdominal circumference. BMI is a ratio of body weight to height.
- Overweight is when the BMI is over 25 and obese is over 30.
- Abdominal obesity is defined as waist measures over 102 cm for males and over 88 cm for females.
- Blood pressure decreases when you lose weight.
- Continuing abdominal obesity is associated with increased incidence of diabetes and dyslipidemia as well as higher mortality from atherosclerosis.

Overweight/obesity



Abdominal obesity



- A 10 kg weight reduction in an obese person results in a decrease in blood pressure of 5–20 mmHg.
- Abdominal obesity causes hypertension, dyslipidaemia and diabetes, and increases mortality from atherosclerosis.

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Chobanian, Aram V., et al. Seventh report of the joint national committee on prevention, detection, evaluation, and treatment of high blood pressure. Hypertension, 2003, 42.6: 1206-1252.

Associated disease: dyslipidaemia

What is dyslipidaemia?

- Increase of low-density lipoprotein (LDL) cholesterol and triglyceride
- Decrease of high-density lipoprotein (HDL) cholesterol

Managing dyslipidaemia is important in preventing cardiovascular diseases.

- Maintain a low-fat, low-cholesterol diet.
- Be physically active.
- For drug therapy take lipid-lowering agents when needed.



Patient education

- Dyslipidaemia is when LDL cholesterol and triglyceride are abnormally high or when HDL cholesterol is low.
- In hypertension patients with dyslipidaemia, it is important to manage both conditions to prevent cardiovascular complications.
- Management includes dietary management, regular exercise and drug therapy.
- Maintain a low-fat, low-cholesterol diet and exercise.
- Medication is needed if a healthy lifestyle does not change the laboratory profile after 3–6 months.
- In drug therapy, lipid-lowering agents can be used when needed.

REFERENCE:

Weber, Michael A., et al. Clinical practice guidelines for the management of hypertension in the community. The Journal of Clinical Hypertension, 2014, 16.1: 14-26.

Professional information

- Lipid-lowering agents are recommended to hypertensive patients with kidney function impairment, diabetes with target organ damage, or with risk factors for cardiovascular diseases.



What is dyslipidaemia?

- Increase of low-density lipoprotein (LDL) cholesterol and triglyceride
- Decrease of high-density lipoprotein (HDL) cholesterol

Managing dyslipidaemia is important in preventing cardiovascular diseases.

- Maintain a low-fat, low-cholesterol diet.
- Be physically active.
- For drug therapy take lipid-lowering agents when needed.

Associated disease: diabetes

To reduce mortality from complications of diabetes and cardiovascular disease, blood pressure and blood sugar management is vital.

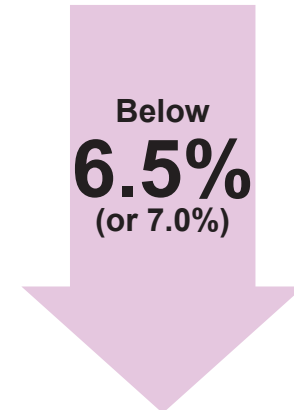
Systolic blood pressure



Diastolic blood pressure



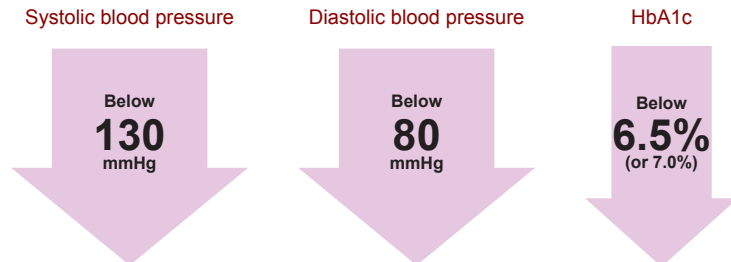
HbA1c



Associated disease: diabetes

Patient education

- A prediabetic state is when the fasting glucose level is 110–125 mg/dL.
- Diabetes occurs when the fasting blood sugar level is ≥ 126 mg/dL or HbA1c $\geq 6.5\%$.
- In hypertensive patients with diabetes, active management of blood pressure and blood glucose is recommended to reduce the risk of complications.
- It is important to maintain blood pressure below 130/80 mmHg and HbA1c below 6.5%.



To reduce mortality from complications of diabetes and cardiovascular disease, blood pressure and blood sugar management is vital.

Professional information

- Patients with diabetes are recommended to manage their blood glucose to reduce the risk of microvascular and macrovascular complications.
- The target blood pressure range differs by organizations (JNC 8: $< 140/90$, Korean Society of hypertension: 140/80, American Diabetes Association (ADA) 2013: 130/80).
- The ideal target for diabetes control is to maintain HbA1c below 6.5%, but patients' individual health status should be considered.
- Total period with diabetes, mean residual life, diabetes complications, associated diseases, frequency of hypoglycaemia incidents and patient compliance need to be factored in.

REFERENCE:
International Diabetes Federation. Global guideline for type 2 diabetes. Brussels: IDF Clinical Guidelines Task Force, 2012.

Take-home message

Medication and management of associated diseases

- Know the generic name and side-effects of your drug.
- Don't stop or change your medication without consulting your doctor.
- Talk to your doctor before taking a new drug.
- Manage associated conditions such as overweight/obesity, dyslipidaemia, and diabetes.



