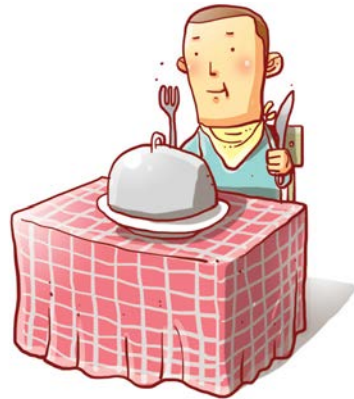


# Healthy eating habits

## for patients with hypertension

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







# Healthy eating habits

for patients with hypertension

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



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.

#### **Photo credits**

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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** ◀ YOU ARE HERE
- 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

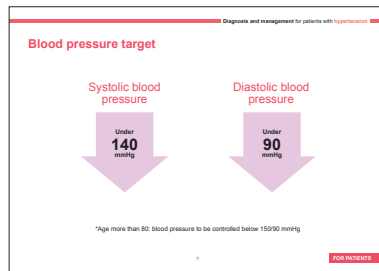
- Module 1 Diagnosis and management
- Module 2 Healthy lifestyles
- Module 3 Healthy eating habits 1
- Module 4 Healthy eating habits 2
- Module 5 Physical activity
- Module 6 Taking care of yourself in daily life
- Module 7 Complication prevention

## Part 3 Quit smoking

# How to use this manual

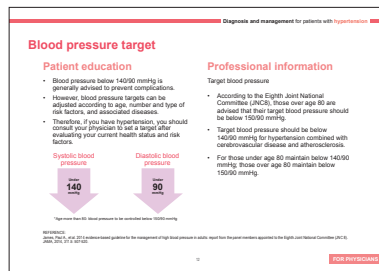
This book is one of fifteen modules of the “Noncommunicable disease education manual for primary health care professionals and patients”. This manual is intended to provide health information on the prevention and control of hypertension and diabetes.

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



## 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.



## 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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# Lifestyle management: diet



Increase fruit and vegetable consumption



Maintain healthy/ appropriate weight



Reduce salt and fat intake





# Lifestyle management: diet

## Patient education

- Managing your diet is very important in controlling hypertension.
- Methods include reducing salt and saturated fat intake and consuming adequate amounts of vegetables and fruits to maintain a healthy weight.



Increase fruit and vegetable consumption



Maintain healthy/ appropriate weight



Reduce salt and fat intake



## Professional information

- When a patient with hypertension eats food high in salt, the sodium in the salt increases blood volume, resulting in higher blood pressure.
- It is very important to reduce salt intake from the estimated global level of 9-12 grams per day to the recommended WHO maximum target of 5 grams per day.
- This has demonstrated the potential to reduce the global cardiovascular disease rate by 17% and global stroke rate by 23%.

### REFERENCES:

Strazzullo, Pasquale, et al. Salt intake, stroke, and cardiovascular disease: meta-analysis of prospective studies. *BMJ*, 2009, 339: b4567.

World Health Organization. The joint WHO/FAO report on diet, nutrition and the prevention of chronic diseases. Geneva, 2003.

World Health Organization and World Economic Forum. From Burden to "Best Buys": reducing the economic impact of non-communicable diseases in low- and middle-income countries, 2011.

# Healthy foods to lower blood pressure

## How should I eat to lower my blood pressure?

- Eat a wide variety from **all food groups**.
- Eat adequate amounts of healthy carbohydrates.
- Reduce saturated fats and trans fats.
- Reduce salt.



# Healthy foods to lower blood pressure

## Patient education

How should I eat to lower my blood pressure?

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### REFERENCES:

Ray, Kausik K., et al. The ACC/AHA 2013 guideline on the treatment of blood cholesterol to reduce atherosclerotic cardiovascular disease risk in adults: the good the bad and the uncertain: a comparison with ESC/EAS guidelines for the management of dyslipidaemias 2011. *European Heart Journal*, 2014, ehu107.

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Department of Health and Human Services, National Institutes of Health, National Heart, Lung, and Blood Institute (United States). *Your guide to lowering your blood pressure with DASH. DASH eating plan*, 2006.

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

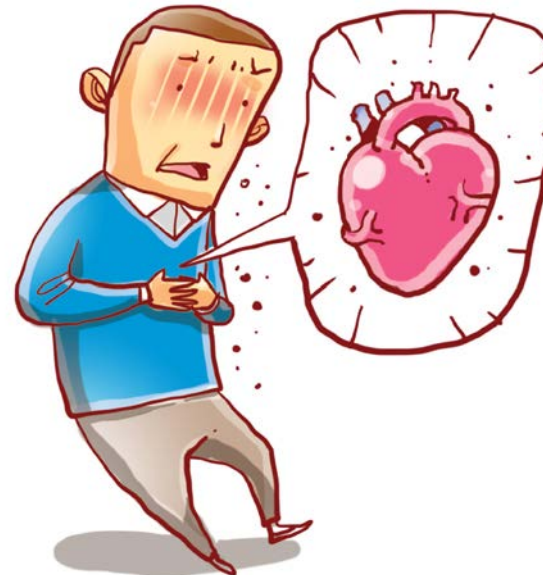
# Why a low-fat diet?

## Dyslipidaemia\* prevention

- 50% of patients with high cholesterol levels have hypertension
- **Associated hypertension and dyslipidaemia raise the risk of cardiovascular complications**
- It is important to maintain blood cholesterol and triglyceride levels in the normal range

\* **Dyslipidaemia**

Abnormally elevated blood cholesterol and triglyceride levels



# Why a low-fat diet?

## Patient education

- For patients with hypertension, managing dyslipidaemia is very important.
- Dyslipidaemia is when blood cholesterol and triglycerides are abnormally high.
- The risk of cardiovascular complications increases when a hypertension patient also has dyslipidaemia.
- Therefore, it is important to maintain blood cholesterol and triglycerides within a normal range.
- For dyslipidaemia management, a low-fat, low-cholesterol diet and regular exercise are recommended first. If it is not controlled after 3–6 months of dietary restriction and regular exercise, drug therapy is needed.

## Professional information

- Modifying lifestyles that have a bigger effect scale (+++ being the highest) and stronger evidence (A being the strongest) of effectiveness in lowering blood cholesterol

Lifestyle habit change	Effect scale	Strength of evidence
Less saturated fat	+++	A
Less trans fat	+++	A
Food abundant in phytosterols	+++	A
Abundant dietary fibre intake	++	A
Physical activity	+	A
Less cholesterol intake	++	B
Weight reduction	+	B

## Dyslipidaemia\* prevention

- 50% of patients with high cholesterol levels have hypertension
- **Associated hypertension and dyslipidaemia raise the risk of cardiovascular complications**
- It is important to maintain blood cholesterol and triglyceride levels in the normal range



### \* Dyslipidaemia

Abnormally elevated blood cholesterol and triglyceride levels

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Ray, Kausik K., et al. The ACC/AHA 2013 guideline on the treatment of blood cholesterol to reduce atherosclerotic cardiovascular disease risk in adults: the good the bad and the uncertain: a comparison with ESC/EAS guidelines for the management of dyslipidaemias 2011. European Heart Journal, 2014, ehu107.

# Low-fat diet: less saturated fat

Ways to achieve lower saturated fat intake  
= regular and even intake from various food groups

Dietary factor	Goal (% of total energy, otherwise stated)
Total fat	15–30%
Saturated fat	< 10%
Polyunsaturated fat	6–10%
Monounsaturated fat	By difference <sup>a</sup>
Trans fatty acids	< 1%
Cholesterol	< 300 mg per day
Carbohydrate	55–75% <sup>b</sup>
Free sugars <sup>c</sup>	< 10%
Protein	10–15% <sup>d</sup>

<sup>a</sup> This is calculated as: total fat – (saturated fatty acids + polyunsaturated fatty acids + trans-fatty acids).

<sup>b</sup> The percentage of total energy available after taking into account that consumed as protein and fat, hence the wide range.

<sup>c</sup> The term “free sugars” refers to all monosaccharides and disaccharides added to foods by the manufacturer, cook or consumer, plus sugars naturally present in honey, syrups and fruit juices.

<sup>d</sup> The suggested range should be seen in the light of the Joint WHO/FAO/UNU Expert Consultation on Protein and Amino Acid Requirements in Human Nutrition, held in Geneva from 9 to 16 April 2002.



Adequate amount



Regular time



Variety of foods

# Low-fat diet: less saturated fat

## Patient education

- Many studies have been published about the relationship between fat intake and blood pressure, one of which showed that saturated fat intake is associated with the risk of cardiovascular diseases.
- The easiest way to cut the intake of saturated fat is to be in the habit of eating a variety of food groups regularly.



Adequate amount



Regular time



Variety of foods

Dietary factor	Goal (% of total energy, otherwise stated)
Total fat	15–30%
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Protein	10–15% <sup>d</sup>

### REFERENCE

World Health Organization (2003) Diet, nutrition and the prevention of chronic diseases: report of a joint WHO/FAO expert consultation.

## Low-fat diet: choosing healthy fats

Reduce saturated fat, replace with unsaturated fat

Saturated fat	Monounsaturated fat	Polyunsaturated fat	
		Omega-6	Omega-3
<ul style="list-style-type: none"> <li>• Animal fat (oxtail, rib, bacon)</li> <li>• Dairy products (milk, cheese, ice cream)</li> <li>• Coconut oil</li> <li>• Palm oil (noodles, crackers)</li> <li>• Butter</li> </ul>	<ul style="list-style-type: none"> <li>• Olive oil</li> <li>• Canola oil</li> <li>• Avocado oil</li> </ul>	<ul style="list-style-type: none"> <li>• Corn oil</li> <li>• Safflower seed oil</li> <li>• Sunflower oil</li> <li>• Peanut oil</li> <li>• Sesame oil</li> <li>• Grape seed oil</li> <li>• Soybean oil</li> <li>• Primrose oil</li> </ul>	<ul style="list-style-type: none"> <li>• Fish oil (mackerel, salmon, herring, tuna)</li> <li>• Seafood</li> <li>• Soybean oil</li> <li>• Perilla oil</li> <li>• Canola oil</li> <li>• Nuts</li> </ul>



# Low-fat diet: choosing healthy fats

## Patient education

- Substituting unhealthy fat (saturated) with healthy fat (unsaturated) is better than reducing total fat itself.
- If you cut fat intake just because you think “fat is bad” and instead eat more carbohydrates such as sugar, white bread, white rice and potatoes, you will gain more weight and your blood triglyceride levels will increase.
- While excess energy intake through too much fat causes obesity, it is still important to eat an adequate amount of the right kind of fat (unsaturated).

### Reduce saturated fat, replace with unsaturated fat

Saturated fat	Monounsaturated fat	Polyunsaturated fat	
		Omega-6	Omega-3
<ul style="list-style-type: none"> <li>• Animal fat (oxtail, rib, bacon)</li> <li>• Dairy products (milk, cheese, ice cream)</li> <li>• Coconut oil</li> <li>• Palm oil (noodles, crackers)</li> <li>• Butter</li> </ul>	<ul style="list-style-type: none"> <li>• Olive oil</li> <li>• Canola oil</li> <li>• Avocado oil</li> </ul>	<ul style="list-style-type: none"> <li>• Corn oil</li> <li>• Safflower seed oil</li> <li>• Sunflower oil</li> <li>• Peanut oil</li> <li>• Sesame oil</li> <li>• Grape seed oil</li> <li>• Soybean oil</li> <li>• Primrose oil</li> </ul>	<ul style="list-style-type: none"> <li>• Fish oil (mackerel, salmon, herring, tuna)</li> <li>• Seafood</li> <li>• Soybean oil</li> <li>• Perilla oil</li> <li>• Canola oil</li> <li>• Nuts</li> </ul>

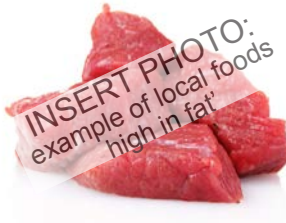
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## Low-fat diet: reduce cholesterol

### Eat less unhealthy fat

- Meat: remove skin, trim fat, reduce processed meat intake
- Reduce liver, intestine intake
- Milk, dairy products: eat low-fat or fat-free milk



X



X



O

# Low-fat diet: reduce cholesterol

## Patient education

- It is important to cut down on fat because most patients with hypertension normally have dyslipidaemia and need to control their weight. When you eat meat, try to avoid the fat.
- Reduce liver, intestine or processed meats consumption. Choose low-fat or fat-free dairy products.

### Eat less unhealthy fat

- Meat: remove skin, trim fat, reduce processed meat intake
- Reduce liver, intestine intake
- Milk, dairy products: eat low-fat or fat-free milk



#### REFERENCES:

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 Department of Health and Human Services, National Institutes of Health, National Heart, Lung, and Blood Institute (United States). *Your guide to lowering your blood pressure with DASH. DASH eating plan*, 2006.

## Low-fat diet: more fibre

### Eat more dietary fibre

#### Fibre

- Prevents cholesterol absorption and synthesis.
- Decreases the absorption speed of carbohydrates.
- Decreases the incidence of complications and cancer.
- Aids the digestive system.
- Abundant in vegetables, fruits, grains and seaweeds.



# Low-fat diet: more fibre

## Patient education

- Eating fibre has benefits, such as aiding weight loss, even if it does not reduce blood pressure directly. Foods high in fibre are fruits, vegetables, oats, dry beans, seaweed and grains.
- Fibre also prevents absorption and production of cholesterol.
- It also has the positive effect of reducing the absorption rate of carbohydrates, as well as the incidence of constipation and cancer.
- Some studies report decreasing blood pressure as a result of eating more dietary fibre, but this needs more research.

## Eat more dietary fibre

### Fibre

- Prevents cholesterol absorption and synthesis.
- Decreases the absorption speed of carbohydrates.
- Decreases the incidence of complications and cancer.
- Aids the digestive system.
- Abundant in vegetables, fruits, grains and seaweeds.



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Department of Health and Human Services, National Institutes of Health, National Heart, Lung, and Blood Institute. Your guide to lowering your blood pressure with DASH. DASH eating plan, 2006.

## Low-fat diet Q & A (1)

Q

Can I have high cholesterol even if I don't eat meat or fatty foods?

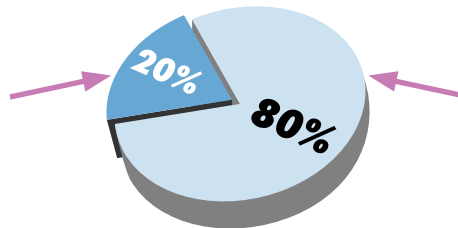


A

People who have genetic factors or eat too much saturated fat hidden in processed foods can also have high cholesterol.



Animal fat from foods  
(Dietary factor)

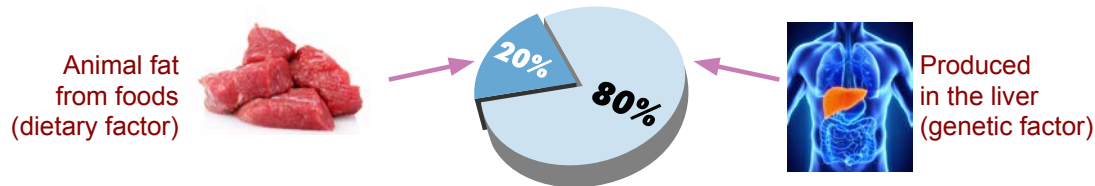


Produced in the liver  
(Genetic factor)

# Low-fat diet Q & A (1)

## Patient education

- There are many patients with dyslipidaemia who are vegetarian, but still have high blood cholesterol.
- It is often due to eating too much (non-animal) saturated fat, causing an increase in cholesterol production.
- Sources may include pastries, cakes and biscuits.
- You can also find saturated fat in vegetable oils such as palm oil.
- Moreover, if you have genetic diseases like familial hypercholesterolaemia or have hypothyroidism, blood cholesterol could increase by inhibition of cholesterol metabolism.



### REFERENCE:

McGuire, Shelley. U.S. Department of Agriculture and U.S. Department of Health and Human Services (United States), Dietary Guidelines for Americans, 2010. Advances in Nutrition: an international review journal, 2011, 2.3: 293-294.

## Professional information

- If blood cholesterol level is high, even though the patient does not eat any fatty food, checking the intake of confectionary and whether the patient has familial hypercholesterolaemia or thyroid dysfunctions is required.

### Q

Can I have high cholesterol even if I don't eat meat or fatty foods?

### A

People who have genetic factors or eat too much saturated fat hidden in processed foods can also have high cholesterol.

## Low-fat diet Q & A (2)

Q

Is vegetable oil OK?

A

Some vegetable oils are high in saturated fat too.

### Recommended oils

**Higher in unsaturated fat:**

olive oil  
sesame oil  
perilla oil

### Non-recommended oils

**Higher in saturated and trans fat:**

palm oil  
coconut oil



## Low-fat diet Q & A (2)

### Patient education

- Some types of vegetable oil can increase blood cholesterol.
- Oils such as palm oil and coconut oil have a lot of saturated fat.
- Margarine is made from vegetable oil, but should be avoided because of its abundance of trans fats, even though it also contains a lot of unsaturated fat.
- Meanwhile, beans, corn and olives are rich in unsaturated fat, so they normally act to reduce the level of blood cholesterol.

### Professional information

- Vegetable oils rich in saturated fat and trans fat should be avoided because they increase blood cholesterol.
- Unsaturated fats reduce blood cholesterol, but overeating can lead to weight gain.
- Therefore, restricting intake by 20% is recommended.
- This means that dyslipidaemia patients should cut their total fat intake, as well as reduce the proportion of saturated fat.

Q

Is vegetable oil OK?

A

Some vegetable oils are high in saturated fat too.

#### Recommended oils

##### Higher in unsaturated fat:

olive oil  
sesame oil  
perilla oil

#### Non-recommended oils

##### Higher in saturated and trans fat:

palm oil  
coconut oil

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## Low-fat diet Q & A (3)

# Q

Is it better not to eat any meat, egg, or squid?

# A

- Rather than pork, choose chicken breast, fish and tofu.
- Squid, prawn, crab and egg are high in cholesterol, but at the same time reduce cholesterol absorption – they are safe to eat once in a while.
- Substituting healthy fat (unsaturated) for unhealthy fat (saturated) is better than reducing total fat only.



## Low-fat diet Q & A (3)

### Patient education

- Patients with hypertension and dyslipidaemia should eat an adequate amount of protein.
- It is better to eat protein from chicken, fish and tofu, than from beef or pork.
- In the past, eggs, squid, prawns and crabs were restricted because they are high in cholesterol.
- However, they are also abundant in sterols that have the effect of blocking cholesterol absorption.
- In conclusion, seafood and eggs that are known to be high in cholesterol can be consumed as long as you don't eat too much or too frequently.

## Q

Is it better not to eat any meat, egg, or squid?

## A

- **Rather than pork, choose chicken breast, fish and tofu.**
- **Squid, prawn, crab and egg are high in cholesterol, but at the same time reduce cholesterol absorption – they are safe to eat once in a while.**
- **Substituting healthy fat (unsaturated) for unhealthy fat (saturated) is better than reducing total fat only.**



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## Specific plans for a low-fat diet



- Start cooking after removing excess fat.
- Use methods that reduce oil (grill rather than fry).
- Eat less than the size of your palm (60–90 g) per day.



- Remove skin before cooking or eating.
- Eat less than the size of your palm (60–90 g) per day.



- Use **unsaturated** vegetable oil when cooking.
- Cook in ways that use less oil such as grilling and steaming.



- Buy low-fat or fat-free products.
- Check the fat content and buy products with no saturated fat.

# Specific plans for a low-fat diet

## Patient education



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## Choose healthy carbohydrates

- Excessive carbohydrates → increase in triglycerides
- Accumulation of fatty acids → obesity, arteriosclerosis
- Instead of white rice, instant noodles and white bread, choose brown rice, rye bread and potatoes.



white rice



multi-grain bread



brown rice



# Choose healthy carbohydrates

## Patient education

- Moderate intake of carbohydrates is recommended because they can increase serum triglyceride, leading to obesity and arteriosclerosis.
- It is important to eat brown rice and whole grain bread rather than carbohydrates with a high glycemic index such as white rice, instant noodles and white bread.

- Excessive carbohydrates → increase in triglycerides
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- Instead of white rice, instant noodles and white bread, choose brown rice, rye bread and potatoes.



white rice



multi-grain bread



brown rice

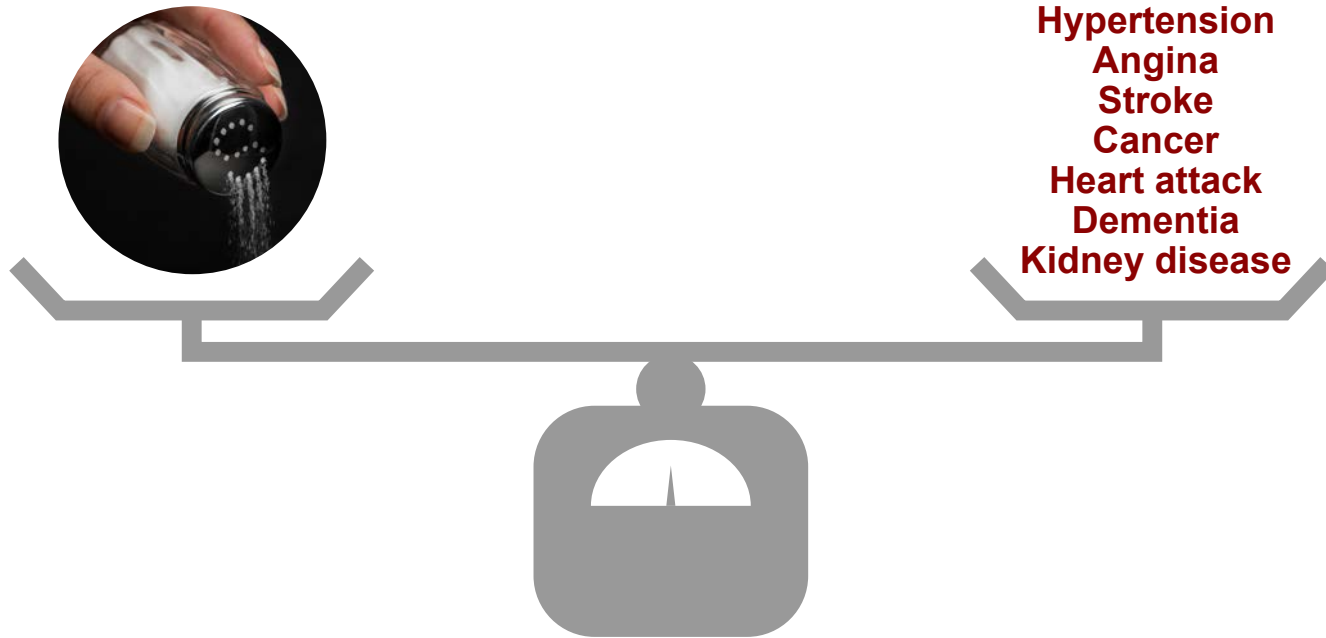


### REFERENCES:

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.

## Health risks of eating too much salt

high sodium intake = disease burden ↑

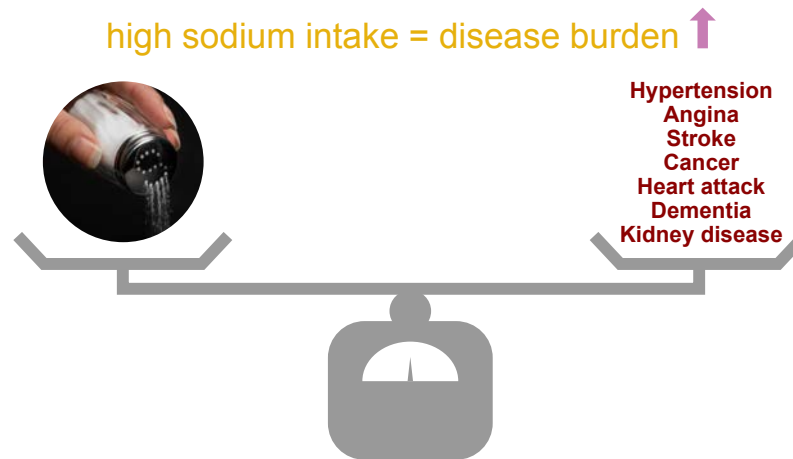




# Health risks of eating too much salt

## Patient education

- Consuming too much salt (sodium) can cause various diseases.
- It increases the risk of not only hypertension and cardiovascular diseases, but also chronic kidney disease, osteoporosis, and gastric cancer.
- Risk rises as intake increases.
- Salt makes your body hold on to more water.
- This extra stored water raises your blood pressure and puts strain on your kidneys, arteries, heart and brain.



### REFERENCE:

McGuire, Shelley. U.S. Department of Agriculture and U.S. Department of Health and Human Services (United States), Dietary Guidelines for Americans, 2010. Advances in Nutrition: an international review journal, 2011, 2.3: 293-294.

# Eat healthy

## Reduce salt intake

- Eat less soup broth.
- Eat less pickled and processed foods.
- Eat fresh, local food.



X



X



O

# Eat healthy

## Patient education

- A balanced diet is very important for people with hypertension.
- It is also vital to eat less salt (sodium).
- For example, instead of drinking the soup broth, eat only the ingredients in the soup.
- Also cut back on pickled and processed foods like ketchup, sausages and ham.

### Reduce salt intake

- Eat less soup broth.
- Eat less pickled and processed foods.
- Eat fresh, local food.



X



X



O

#### 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.

Department of Health and Human Services, National Institutes of Health, National Heart, Lung, and Blood Institute (United States). Your guide to lowering your blood pressure with DASH. DASH eating plan, 2006.

# Take-home message

## Healthy eating habits

### Healthy eating habits

- Less saturated fat, adequate unsaturated fat.
- Eat from various food groups regularly.
- Choose healthy carbohydrates.
- Reduce salt.





