

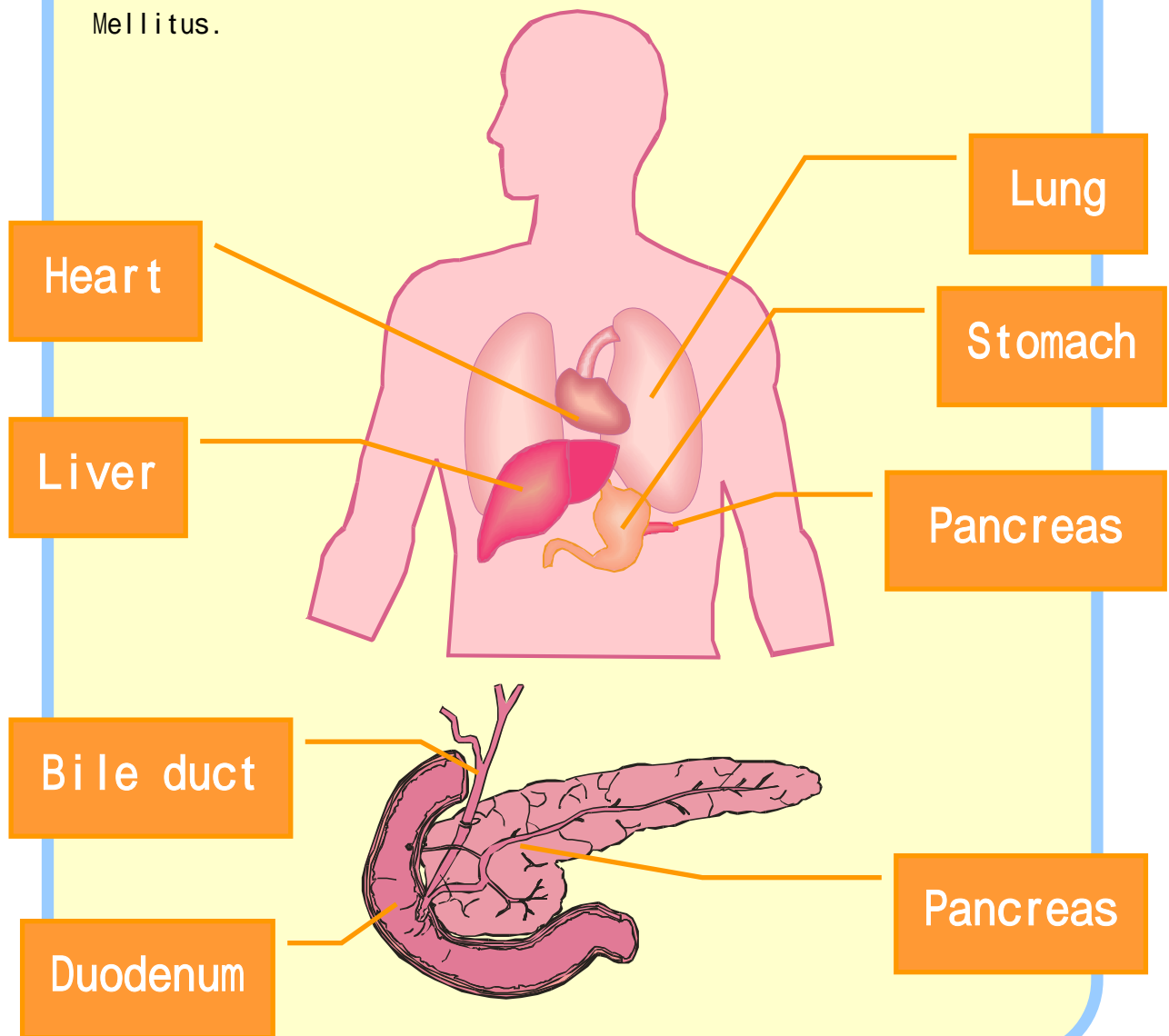
# Knowing Diabetes

# Index

What is Diabetes Mellitus (DM)?	2
Types of diabetes	3
Who is susceptible to diabetes?	4
Signs and symptoms of diabetes mellitus	5
Complications of acute diabetes mellitus	6
Complications of chronic diabetes mellitus	9
Significant record of a diabetic patient	10
Basic rule in diabetes treatment	11
Insulin injection	13
Oral Anti-diabetic Agent	14
Points to note when using oral anti-diabetic agent	15
Basic rule in dieting	16
Diabetes and exercise	17
Self monitoring of blood glucose/urine sugar	18
Self record of glucose monitoring	20
Points to note for diabetic patients	21
Healthy life style	23
Self empowerment	24

# What is diabetes mellitus (DM)?

The pancreas secretes a hormone called insulin to control the blood glucose level. When the insulin secreted is insufficient or malfunctioned, the glucose inside the blood cannot be converted to a form that the body can utilize as energy, leading to a high blood glucose level. The body then tries to balance this by passing out excessive glucose through the urine. This condition is called Diabetes Mellitus.



# Types of diabetes

## Type 1 Diabetes

Previously called 'Insulin Dependent Diabetes', caused by a destruction of the  $\beta$  cells of the pancreas, making it unable to produce insulin. The reason for this can be genetical, immunological, or environmental.

## Type 2 Diabetes

Previously known as 'Non-insulin dependent diabetes', happened when the body does not produce enough insulin or when the cells ignore the insulin. This can be hereditary, or due to unhealthy eating habits, obesity and lack of exercise.

# Who is susceptible to diabetes?



Lack of exercise



Obesity



After middle-age

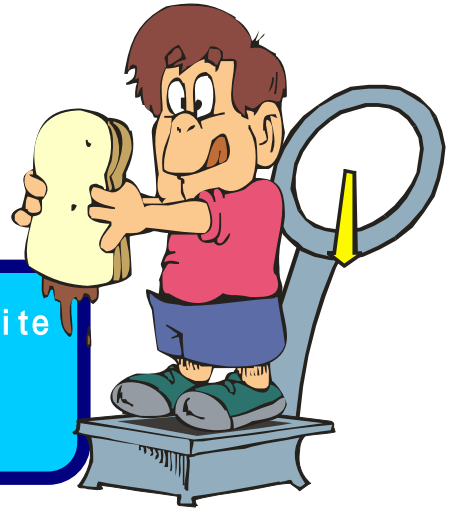


Women with history  
of gestational  
diabetes or giving  
birth to big babies  
(over 4 kgs)

# Signs and symptoms of diabetes mellitus



Very thirsty



Increased appetite  
with decreased  
body weight



Polyuria or frequency of urination

Getting tired easily



Prone to wound  
infection or delay  
in wound healing



Skin or perineal  
itchiness



Blurring of  
vision

# Complications of acute diabetes mellitus

## Raised blood glucose level

### Symptoms:



Rapid and deep breath



Extremely thirsty



Nausea and vomiting



Confusion and unconscious

### Reasons:

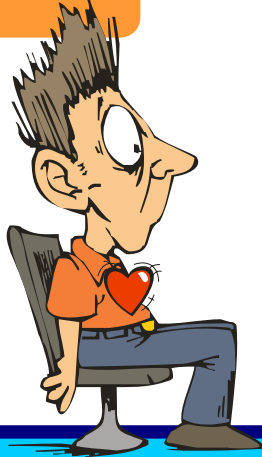
1. untreated diabetes
2. missing dose of oral anti-diabetic agent
3. over eaten a few hours ago
4. severely ill

Seek the doctor at once when you experienced high blood glucose!

# Complications of acute diabetes mellitus

## Low blood glucose level

### Symptoms:



Rapid heart beat



Hungry and craving for food



Shivering, cold sweating



Confusion and unconscious

### Reasons:

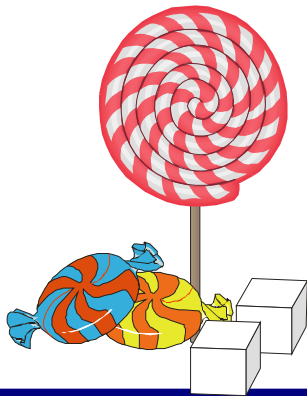
1. over dose of oral anti-diabetic agent
2. missing meal after medication
3. not eating enough
4. over exercised



# Complications of acute diabetes mellitus

## Management

**EAT SOMETHING IMMEDIATELY**



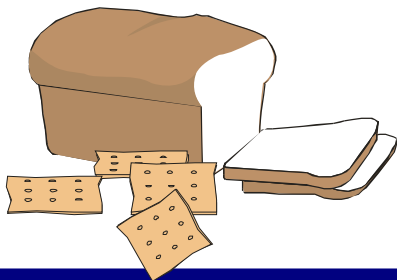
1-2 nos. of sugar cubes or candies

OR



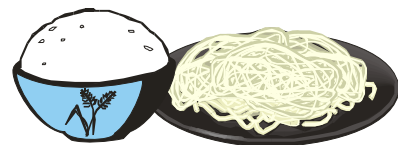
1/3 cups of fruit juice or soft drinks

Plus



Snacks: 1-2 pieces of bread or 4 biscuits

OR

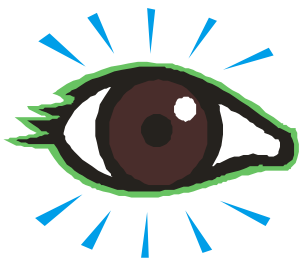


1 small bowl of rice or noodle

If a diabetic patient is unconscious, don't try to give him food or drinks, but instead, lie him on his side to maintain a patent airway, and send him to the hospital immediately.

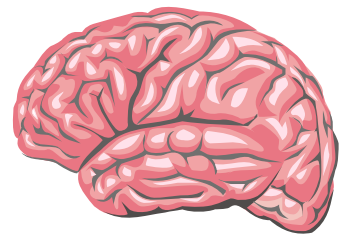
# Complications of chronic diabetic mellitus

In uncontrolled diabetes mellitus, prolonged high blood sugar can seriously damage the blood vessels and the nervous system, causing dysfunctioning of internal organs, and leads to the following complications:

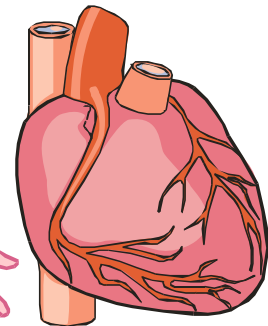


## Blindness

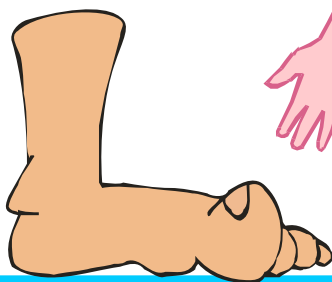
- retinopathy
- cataract
- glaucoma



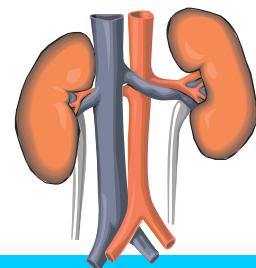
## Stroke



## Heart diseases



- Nerve damage and peripheral neuropathy
- infection
- ulceration and gangrene
- in the worst case, amputation



## Infection or Renal failure

## Significant record of a diabetic patient

A diabetic patient is likely to risk hypoglycemia or hyperglycemic coma, and other complications. Therefore, may need to bring along a medical identification, to give the ambulance or medical personnel a brief guide to your medical history and other information.

Department of Health  
**Diabetes Card**

Name: \_\_\_\_\_ Tel: \_\_\_\_\_

Next of Kin: \_\_\_\_\_ Tel: \_\_\_\_\_

Medication	Dosage	Frequency

**I have Diabetes**

- If I am found confused, with cold and clammy skin, hands trembling, I may be experiencing an hypoglycemic attack
- If I can swallow
  - Please give me some candies or 1/3 can of soft drink
  - Please send me to the nearest emergency department and inform my relatives if I do not recover in 15 minutes
- If I have a coma
  - Please send me to the nearest emergency department and inform my relatives

## Basic rule in diabetes treatment

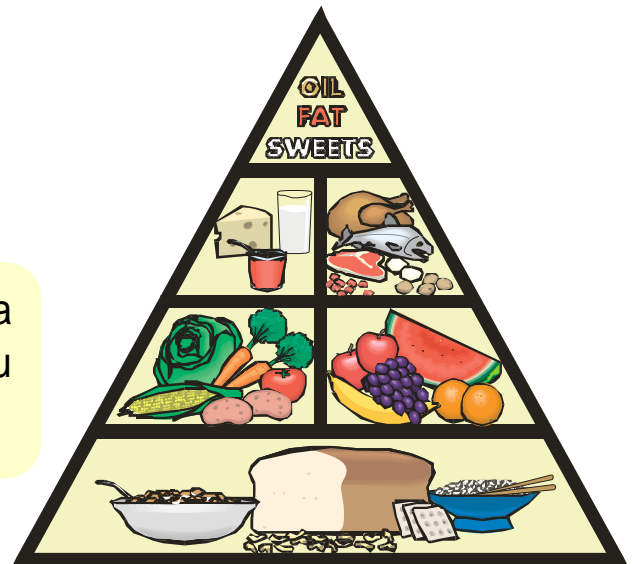
Diabetes is a chronic disease that cannot be cured, but can be controlled with medicine and the adoption of a healthy life style, so as to keep the blood glucose within normal limit, decreasing the risk of having hyperglycemic complications.

Complications induced by acute and chronic diabetes are serious and threatening, they do not only decrease the quality of living but can be fatal. Therefore diabetic patients must co-operate with the medical personnel. Putting diabetes under control can decrease the emerging rate of complications, enabling the patient to lead a normal and healthy life.

# Basic rule in diabetes treatment

## Dietary adjustment

To come to mutual agreement on a tailor-made, well balanced menu by the patient and dietitian



## Healthy Life style

Regular exercise

## Medication

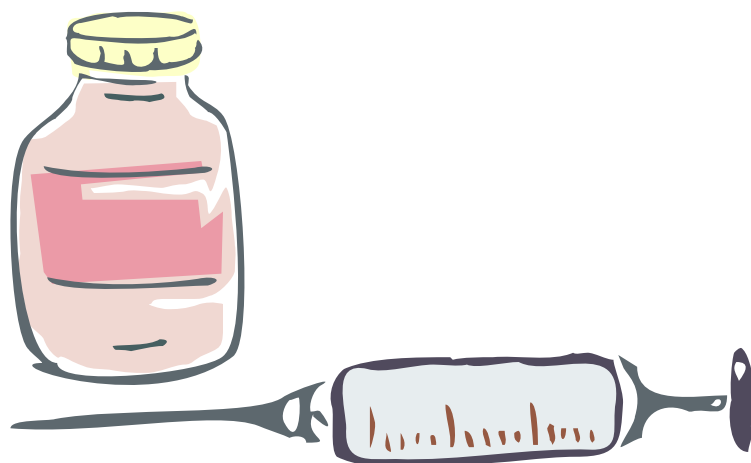
Oral Anti-diabetic Agent  
or Insulin Injection  
(according to doctor's  
prescription)



# Insulin injection

Insulin is a kind of protein, which its function can be destroyed by the digestive enzymes of the gastro-intestinal tract, making injection the only route of administration.

Insulin can be classified into 4 formulations according to its onset of action, namely, rapid acting, short acting, intermediate acting and long acting. They can be used on its own, or in combination to achieve a desirable blood sugar level.



# Oral Anti-diabetic Agent (OAD)

- 1) Sulphonylureas  
e.g. Glibenclamide (Daonil)
- 2) Biguanides  
e.g. Metformin (Glucophage)
- 3) -Glucosidase Inhibitors  
e.g. Acarbose
- 4) Glitazones (Thiazolidinediones)  
e.g. Avandia (Rosiglitazone)



## Side effects:

You may experience the following side effects initially when starting the OAD, which will tail-off gradually. If the condition persists or aggravates, seek for medical consultation.



Diarrhoea



Vomiting



Dizziness

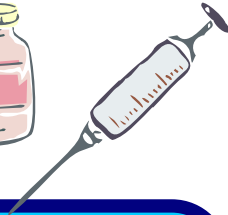


Flushing



Headache

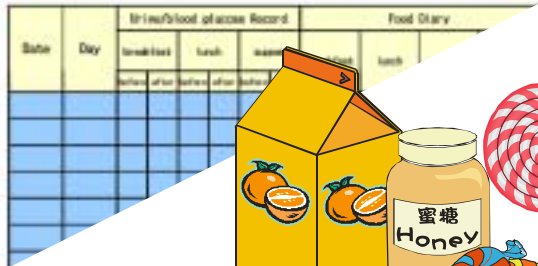
## Points to note when taking oral anti-diabetic agent (OAD)



(1) Take medicine or injection according to the doctor's prescription, and keep a consistent mealtime and carbohydrate intake



(2) Inform the doctor if you are taking medicine other than OAD



(3) In case of hypoglycemic attack, eat some simple sugar or glucose drink, e.g. fruit juice, honey, soft drinks, etc. Record the frequency and time of the attack and tell your doctor at the next follow up, so that he can make necessary adjustment for the dosage

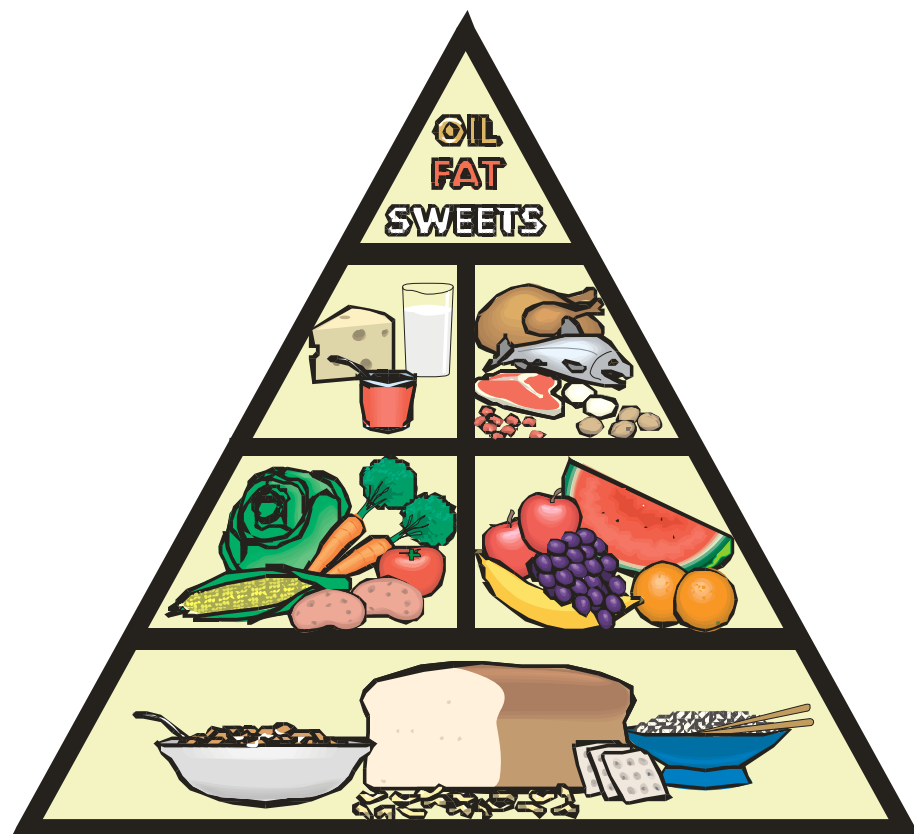


(4) In case of confusion or unconsciousness, transport the patient to the emergency department immediately



## Basic rule in dieting

- (1) Eat in balance according to the Food Pyramid (includes foods from cereals, vegetables, fruits, milk, meat or meat substitutes)
- (2) Small frequent meals with consistent time and quantity
- (3) Reduce intake of sugary, high cholesterol and high fat content foods
- (4) Increase the amount of fibre in diet
- (5) Drink at least 6 –8 glasses of water each day



# Diabetes and exercise

## Advantage:

- controlling body weight
- controlling blood sugar effectively



## Points to note:

- choose aerobic exercises e.g. walking, cycling, swimming etc., according to your endurance
- keep them regular and on-going
- to prevent injury, do some warm up and stretching exercise before you commence
- note your body 's response to the exercise, stop at once if you feel uneasy
- bring along some simple, easily absorbed sugar (candies, sugar cubes)
- bring along your medical/DM record card

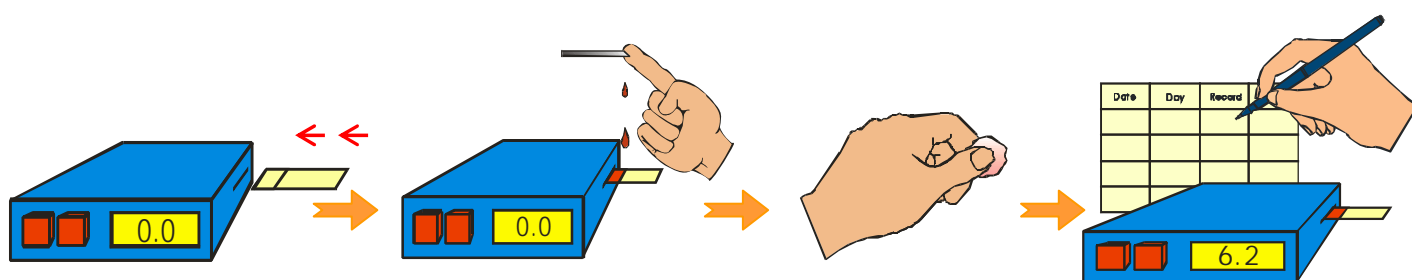


## Self monitoring of blood glucose/urine sugar

To control the blood sugar successfully, participation of the patient is important. Therefore, self-monitoring and recording of blood glucose and urine sugar can help not only in understanding and regulating the diet, but to keep an account that the doctor can refer to, so as to adjust the OAD if necessary.

### Blood Glucose Testing

Self-monitoring of blood glucose is easy. All you have to do is to place a mini drop of blood onto the test strip, then the blood sugar level can be read via the blood glucose meter. This test is far more accurate than measuring urine sugar.



1) Assemble the tests strip and glucose meter

2) prick the finger with the help of a lancet and squeeze a small drop of blood onto the test strip

3) clean the finger and apply pressure to stop bleeding

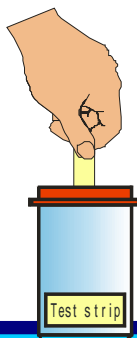
4) read and record the result

# Self monitoring of blood glucose/urine sugar

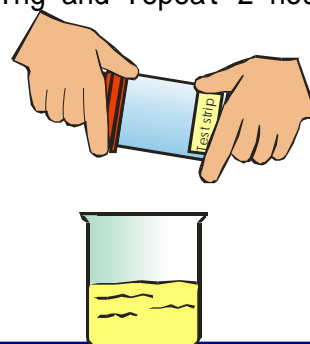
## Urine Sugar Testing

The urine contains no sugar under normal circumstances. Yet when the blood sugar level is too high to be reabsorbed by the renal tubules, sugar will pass out through the urine.

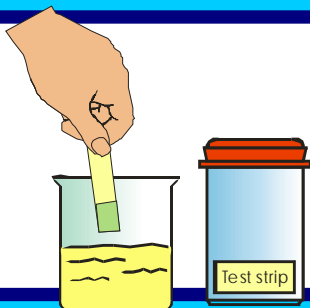
**Method:** Test the second voided urine in the morning and repeat 2 hours after meal



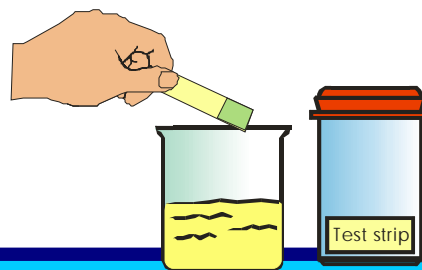
1. Take 1 test strip out from the container



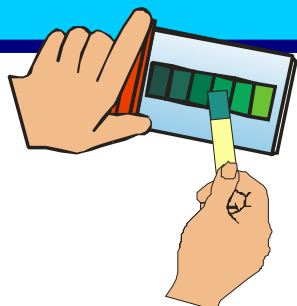
2. Close the lid immediately



3. Dip the test portion of the strip into the urine and remove at once



4. Rest the test strip along the rim of the urine container to drop off excessive urine



5. Read and compare the strip with the colour chart on the test strip container

A hand is shown writing in a record book with a pen. The book has a table with columns for Date, Day, and Record.

Date	Day	Record

6. Record

## Self record of Urine/Blood Glucose Monitoring and Food Diary

Date	Day	Urine/blood glucose Record						Food Diary			
		breakfast		lunch		supper		breakfast	lunch	supper	snacks
		before	after	before	after	before	after				

# Points to note for diabetic patients

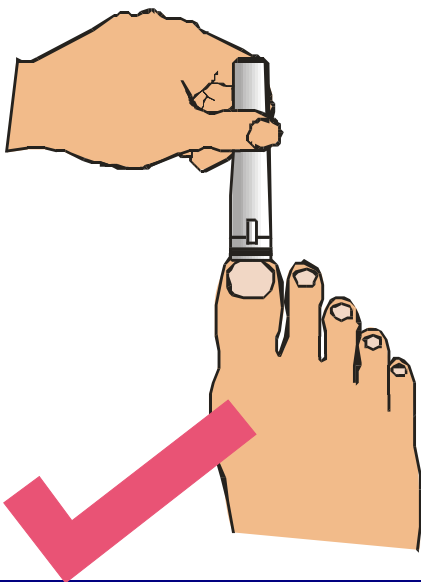
## Foot Care



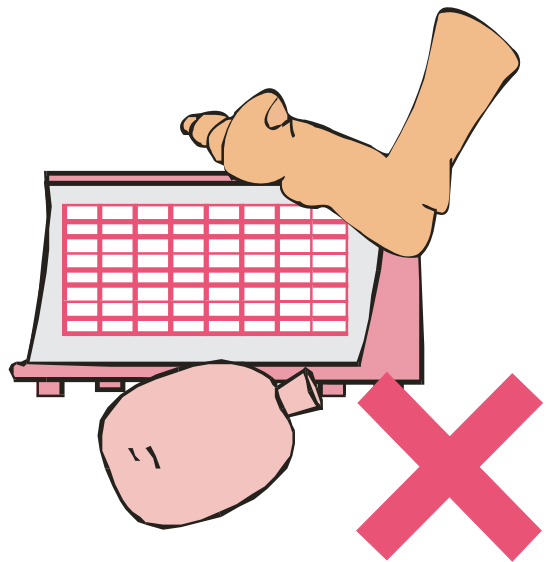
Keep the toe webs dry after washing, emollients can be apply to keep it supple



Examine the feet carefully for early detection of abrasions, blisters or callus, etc



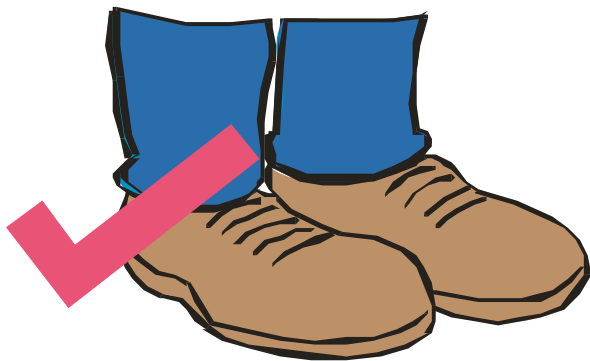
Trim the toe nails horizontally to avoid cuts and infection or in-growing nails



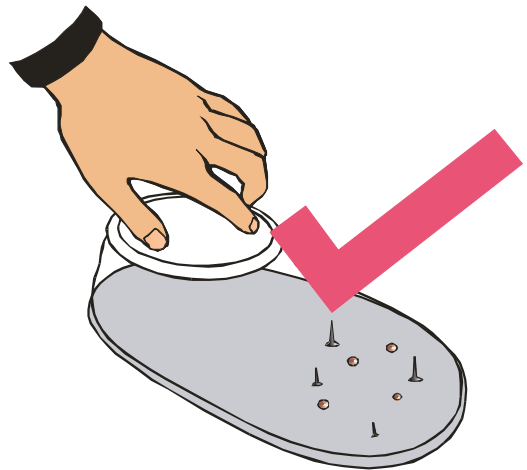
Do not use hot water for foot bath, and avoid using hot water bags and radiators to warm the feet

## Points to note for diabetic patients

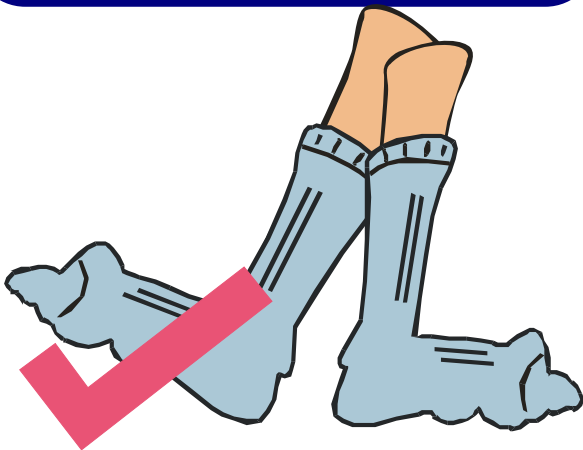
### Foot wears



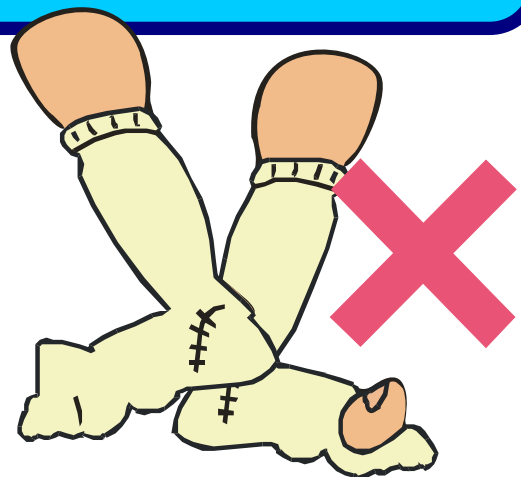
Choose shoes with suitable size, to avoid clumping of toes which may result in blisters and callus



Check for any grains or debris inside the shoes before wearing them, to decrease the chance of injury as a result of peripheral neuropathy



Choose to wear cotton socks and change it daily. Socks should not be too tight to obstruct circulation



Avoid wearing torn socks. Circulation of the protruded toe may be constricted by the hole, whereas mended socks will create friction and impair skin integrity

# Healthy life style



A diabetic patient can gain control of his illness by understanding the disease, good drug compliance, diet modification and performing appropriate exercises. This can even be enhanced with the adoption of a healthy life style.

‘A healthy life style’ implies the way of living which include the consumption of a well balanced diet, regulation of life style, having adequate rest, regular exercise, refrain from smoking and alcohol, observation on personal hygiene and maintain a healthy mental state.



## Self empowerment

- (1) Co-operate with the medical personnel and adopt a positive attitude in facing the disease
- (2) Accept the disease as an irreversible condition
- (3) Open and share your experience with your peer patients, so as to learn from each other
- (4) Develop sound human relationship
- (5) Maintain a good self-image
- (6) Stay happy, stay calm