

Diabetes
Take up the Challenge



The Diabetes Team enjoys exercise, beside Lake Pupuke, North Shore Hospital.

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Issued by: WDHB Diabetes Service
Issue Date: September 2004
Review Date: September 2006
Classification No. 010-03-03-001

Self-Management of
Type 2 Diabetes

This booklet is to provide the information you and your family need to understand and successfully manage your diabetes.



The key to managing diabetes is physical activity.

Have fun, stay healthy.

It's up to you

September 2004



Making a healthy difference



This publication is adapted from
 “It’s Time to Shed Some Light “ written by the Auckland Diabetes
 Nurse Specialist Group 1992.

by

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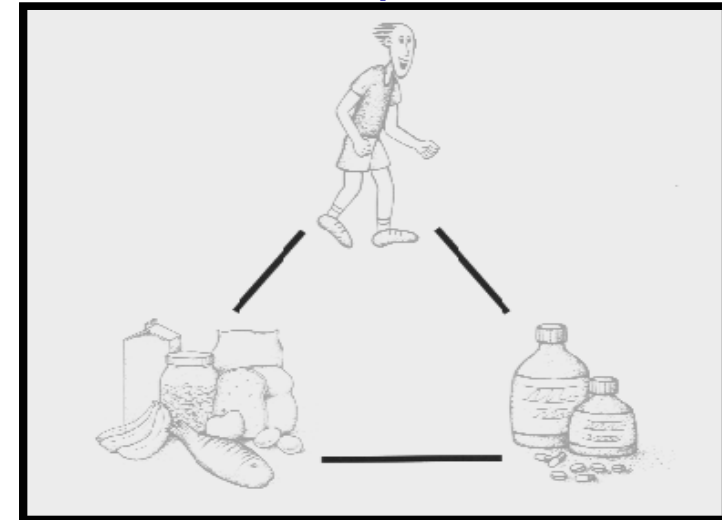
Updated and revised September 2004,

With special thanks all members of the Diabetes Team for their
 input and to Janene Cooper, Dietitian,
 for reviewing and updating the nutrition information.

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Creed for People with Diabetes



I am not sick

I have a condition that needs to be managed well

My diabetes is my responsibility

I must ask questions of my health professionals

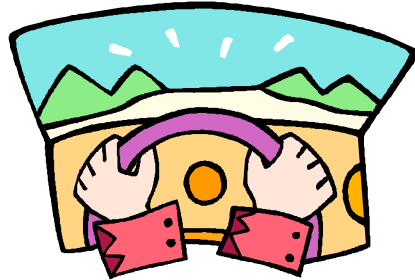
I want to know how well I am doing

I appreciate the support of family and friends

I feel great when I am in control of my diabetes

Living with Diabetes

Diabetes puts you in the driving seat. You are in charge of the daily decisions and what road you take to manage your health. Your health care team, (doctor, nurse, dietitian, podiatrist) can help you, but ultimately the management choices rest with you.



When you are diagnosed with diabetes, you may feel anxious, sad or angry. Many people find it difficult to keep a balance between the management of their diabetes and the competing demands of life.

Managing your diabetes will get easier if you make changes one at a time, are realistic about the changes you can make and give yourself a 'pat on the back' for your successful changes.

Approximately 95% of diabetes care is self-care. You make the decisions that will affect your general health and blood glucose control, such as deciding what and how much to eat, remembering to take your tablets, checking blood glucose levels and choosing to be more active.

By continuing to take care of yourself every day, you are preventing or delaying the long-term damage that can be caused by persistent high blood glucose, high blood pressure and high cholesterol.

You are in control.



What is Diabetes?

Diabetes occurs when there is too much glucose in the blood because the pancreas cannot make enough effective insulin.



Carbohydrate foods (see picture above) are changed into glucose after we eat them and then pass into the bloodstream.

The glucose (sugar) from these foods provides energy for the body. Everyone has some glucose in their blood all the time.

The healthy blood glucose range in diabetes is between 4 - 8 mmol/L.

Insulin (produced by the pancreas) is required to transport glucose from the blood to the body's cells. We cannot live without insulin.

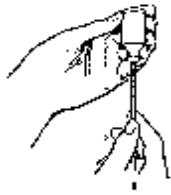
Our body is like a car – insulin (the key) transports glucose (the petrol) from the bloodstream (petrol tank) into the body cells (motor) where it is used for energy.



The Different Forms of Diabetes

Type 1

People who do not make any, or very little insulin have Type 1 diabetes. Because they have stopped making insulin, their body is unable to use glucose for energy.



They tend to lose weight very quickly because their body is actually being starved. Their health rapidly deteriorates and they would die if insulin were not given.

They therefore require insulin by injection plus healthy eating to maintain good health.

Type 2

People with Type 2 diabetes are still making insulin but the production is sluggish or their body is resistant to insulin. If you are overweight, the body can become resistant to insulin and trigger Type 2 diabetes, even in young people.

Type 2 diabetes can be treated with healthy eating and regular physical activity. Tablets may also be required.

We now know that Type 2 diabetes is a progressive condition in that the pancreas gets more sluggish in producing insulin.

A person with Type 2 diabetes may eventually require insulin to effectively control their blood glucose and maintain good health.

Staying healthy and continuing to be active is the key in delaying the progression of diabetes.



The Feet

Damage to blood vessels and nerve endings can cause poor blood supply and gradual loss of feeling in the feet. This may lead to poor healing and possible loss of a limb.



To keep your feet healthy:

- Check your feet daily for broken skin, blisters. Infection or discolouration
- Wash your feet daily and dry carefully between the toes
- Keep toenails neatly trimmed. Avoid cutting too far down into the corners, this encourages ingrown toenails
- A correctly cut toenail has the same shape as the end of the toe.
- Apply a moisturising cream to dry skin daily
- Wear comfortable, good fitting shoes and socks
- It is not safe to use corn caps or to do 'bathroom surgery' on corns, calluses and ingrown toenails. See a podiatrist
- Seek early treatment from your Doctor for any injury or infection, which is not healing

**one pair
MUST
last a
lifetime**

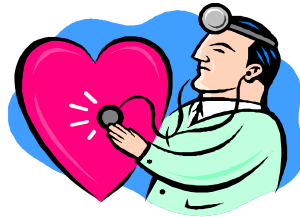
Other Complications

Damage to nerves can cause problems such as pain in the legs, disturbances of stomach and bowel function, poor bladder control, and loss of sexual function in especially in men. (See your doctor or nurse if these problems occur.)

Also it is important to see your Dentist regularly to maintain healthy teeth and gums.

The Heart

Damage to the heart and blood vessels can cause heart attacks (**and strokes.**)



You can help prevent this damage by:

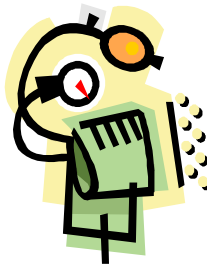
- Losing weight (if overweight)
- Decreasing the amount of fat you eat
- Keeping blood pressure under control, 130/80 or less is the goal
- Having regular exercise
- Not smoking
- Keeping blood cholesterol (lipid) levels in the normal range



The Kidneys

Damage to the kidneys can go undetected until the damage is quite advanced. **Have your blood pressure checked regularly.** Remember the goal is **130/80 or less.**

Your doctor will also order blood and urine tests to check your kidney s are working well.



What are the Symptoms of Diabetes?

- Tiredness, lack of energy
- Excessive thirst
- Passing urine more frequently
- Recurring infections e.g. Thrush, bladder or skin Infections
- Blurred vision
- Weight loss (more common in Type 1)



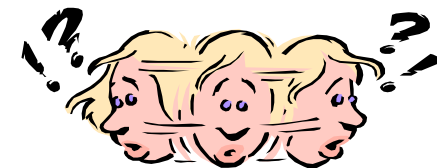
Remember.... in Type 2 because the onset is gradual, a person may not experience any of the above symptoms. It is therefore possible for someone to have Type 2 diabetes without knowing.

Who is at Risk of Developing Type 2 Diabetes?

Those who:

- Have a family history of diabetes
- Are overweight
- Are 40 years of age or over (the risk increases with age)
- Are of Maori, Pacific Island, Indian or Asian descent
- Have had diabetes during pregnancy (gestational diabetes)
- Have had a heart attack or stroke
- Have high blood pressure and/or raised blood cholesterol
- Are on medications which can induce diabetes (e.g. prednisone)

Anyone with symptoms or two or more of the above risk factors should have regular checks with their Doctor



False Information About Type 2 Diabetes

Unfortunately Type 2 diabetes is sometimes still called mild diabetes or the person is told they have “just a touch of diabetes”.

There is no such thing as mild diabetes or “just a touch”.

Regardless of which type of diabetes you have, if it is not treated adequately, damage or complications will result throughout the body.

Type 2 diabetes develops much more slowly than Type 1 and in fact it is possible to have diabetes for many years without knowing it.

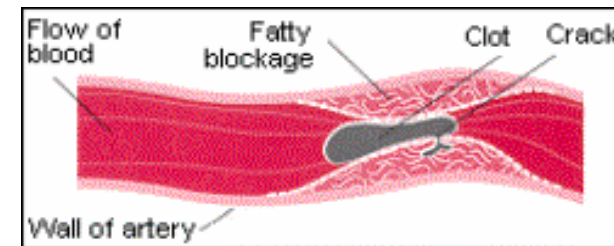
This increases the risk of developing long-term damage or complications that can be caused by undetected or uncontrolled diabetes.

Complications (long term damage) of Diabetes

The damage to blood vessels and nerves caused by diabetes is largely preventable. It occurs if your diabetes and other risk factors are not well controlled.

Damage can happen without you being aware. The damage is usually well advanced before the person knows they have Problems.

Areas of the body that can be affected by diabetes damage include the brain (strokes), eyes, heart, kidneys and feet.



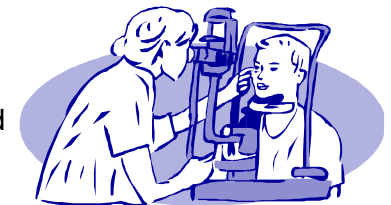
Damage or blocking of blood vessels that causes these problems

The good news is that research has shown that good control of blood glucose, blood pressure and cholesterol (lipids) can greatly reduce the risk of long term damage from diabetes.

The Eyes

Damage to the small blood vessels in the back of the eye can cause loss of vision and lead to blindness if not treated early enough. This damage may happen well before you notice a change in your eyesight.

It is important to have your eyes checked when diabetes is diagnosed, and every following 2 years after that, (or as recommended by the Eye Specialist).



3. Causes of Hypos

Missing a meal or snack, being late for a meal or snack or not eating enough carbohydrate foods.



More exercise than usual without extra carbohydrate food to top up.



Too many diabetes tablets (or too much insulin). This is likely to be the cause if hypos are happening frequently.



Alcohol without food.



Remember, you should not be having hypos. If you cannot find a cause for your hypos see your health care team for advice.

Managing Type 2 Diabetes

The key to maintaining good health is dependent on:

- Healthy eating e.g. food which is low in fat, low sugar and high in fibre
- Regular physical activity e.g. walking, swimming, gardening, dancing
- Weight loss (if overweight)
- Satisfactory blood pressure control (130/80 or less)
- Good control of blood glucose and cholesterol levels



If blood glucose levels do not improve within 3 months of diagnosis then tablets to assist the lowering of blood glucose will also be required.



Healthy Eating with Diabetes

Even though you may come to require tablets or even insulin to help control your blood glucose, these medications will not enable you to keep good control if you regularly eat foods that are high in fat and sugar, or eat more food than your body requires for its energy needs.

Food in excess of your body's energy requirements will be stored as fat. If you become overweight, the insulin your body is making does not work effectively and blood glucose levels will rise. This is called **insulin resistance**.

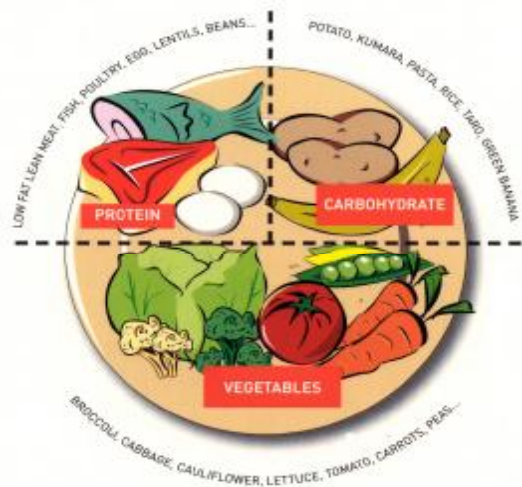
Healthy eating for people with diabetes is no different to healthy eating for all members of the family. You do not need a "special diet."

Healthy eating will help you to:

- Control blood glucose levels
- Achieve or maintain a healthy weight
- Lower blood cholesterol (lipid) levels
- Prevent long-term complications

What should a healthy eating plan include?

Healthy eating includes a wide variety of foods with an appropriate amount of carbohydrate, protein and fat.



2. Treatment of Hypos

Glucose is best. Take either:

- 2 heaped teaspoons glucose powder in water **or**
- 3-4 Dextro Energy tablets **or**
- 3-4 Vita Glucose tablets



If you have no glucose take :

- 1 tablespoon of jam, honey or sugar **or**
- 1/2 glass of ordinary lemonade **or**
- **6 large jelly beans**



If you feel no better within 5-10 minutes OR your blood glucose is still less than 4, repeat one of the above options again.

When your blood sugar is above 4, follow this with either a meal if it is due **or** a snack such as:

- A thin slice of bread **or**
- A glass of milk **or**
- 2 or 3 cracker biscuits

Once you have treated your hypo always ask yourself "why did this happen?" (See causes on page 19 and take the appropriate steps to prevent hypos from happening again).

It is important to know:

1. How you may feel when your blood glucose is too low
2. How to treat a hypo
3. Why hypos happen (causes)

1. How you might feel when your blood glucose is**Blurred vision****Pins & needles on the lips or tongue****Look pale and have sweaty skin****Thumping heart****Hungry****Headache****Light-headed****Dizzy****Trembling hands****Weak and trembling knees****Sometimes feel confused, anxious or irritable*****You may have some or all of these symptoms.*****Carbohydrates (should be limited)**

Carbohydrates are our fuel or energy foods. We need these foods but it is the amount as well as the type of carbohydrate that you need to be aware of in order to control your blood glucose levels. (Just as cars need different amounts and types of petrol.)



Car-

bohydrate foods e.g. wholegrain breads, high fibre cereals and crackers, potato, kumara, taro, green banana, pasta, rice, legumes, fruit. need to be included in each meal in moderate quantities.

If you eat more of these foods than your body needs for it's energy requirements, the excess is stored as fat and you will put on too much weight.

Carbohydrate foods that are slowly digested and produce a more gradual rise in blood glucose blood levels are good choices. These are known as low glycaemic index (GI) foods.

Low Glycaemic Index Foods (the healthy option)

Lower GI foods include:

- Wholegrain breads e.g. Burgen, Holsom's 9 Grain
- Basmati and Uncle Ben's rice
- Pasta
- Legumes
- Milk and milk products
- Fruit e.g. apples, kiwifruit, oranges, pears, peaches and plums



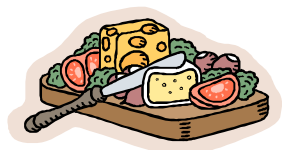
Protein

Include a small serve of low fat protein foods at one or two meals each day, such as:

A 'palm' size serve of lean meat, fish or chicken (cooked without skin).



Low fat cheeses e.g edam, cottage cheese, low fat 'lite' or 'diet' yoghurt.



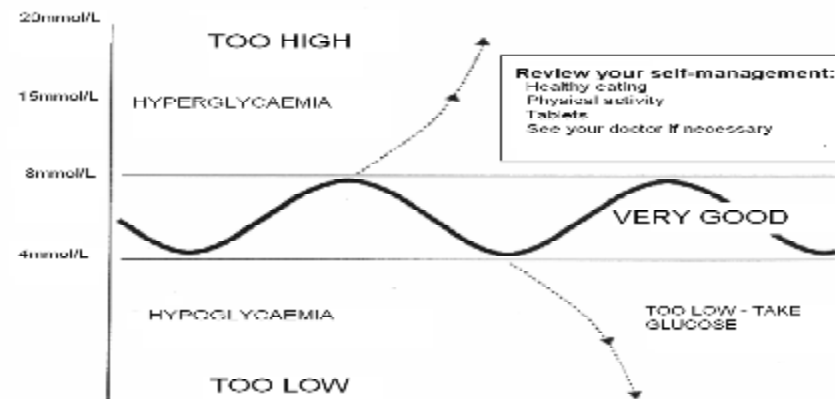
As well as these types of foods, add a wide variety of green or salad vegetables to your meals, such as: lettuce, spinach, broccoli, cauliflower, tomato, carrots, gerkins, capsicum, green beans, onions, mushrooms, zucchini etc.



These vegetables provide a good source of fibre, vitamins, minerals and antioxidants to keep us healthy but will not affect your blood glucose level or your weight.

Keep up your intake of fluids

Drink 6 – 8 (six to eight) cups of fluid each day e.g. water, tea, coffee (without sugar), diet or low calorie drinks such as Thriftee* or Diet Sprite.



Hypoglycaemia (Hypo)

A hypo is the common name given to a blood glucose level that is too low - less than 4.0mmol/L.

If you take any of the following tablets

Glipizide (Glipid)

Gliclazide (Diamicon)

Glibenclamide (Gliben)

or if you also require insulin, your blood glucose level can drop too low.

Make sure you read and understand the following information on hypos.

Hyperglycaemia

This is the term for a blood glucose level that is too high, that is above the healthy range, or the acceptable level for you.

The causes of hyperglycaemia are:

- eating too much, or the wrong type of carbohydrate food
- Too little exercise
- Missing doses of tablets or not enough medication
- Sickness or infection
- Emotional stress



The symptoms of hyperglycaemia may be increased thirst, passing urine more frequently, tiredness, loss of energy, and recurring infections.



Remember, many people with diabetes may experience no symptoms if their blood glucose has risen slowly.

It may not be until their blood glucose is very high that they are aware that something is not right.

If high blood glucose levels are not treated and the blood glucose becomes very high, you may require admission to hospital to lower the blood glucose.

It is therefore important to check your blood glucose levels regularly and drink plenty of fluids when you are unwell.

See your doctor if your blood glucose levels continue to rise.

Continuing hyperglycaemia is also known to cause the long-term complications (damage) associated with diabetes.

Limit Sugary Foods

Food with too much sugar adds extra carbohydrates and will raise blood glucose levels, e.g. sugar, honey, jam, marmalade, golden syrup, pudding, sweet biscuits, cakes, muesli bars, sweetened tinned fruit, ice cream, lollies, chocolate, cordials, soft drinks, fruit juices, beer, sweet wines, sweet sherry and some spirits.



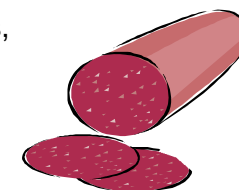
If you have diabetes, your body cannot cope with the concentrated amount of carbohydrate and sugar contained within these foods, and the blood glucose level will rise too high.

Limit Foods High in Fat

These foods promote weight gain, increase the risk of heart disease and impair the body's ability to use insulin effectively. (causing insulin resistance)

Visible sources of fat include: butter, oils, lard, chafade, dripping, fat on steaks or chops, skin on chicken.

However be mindful that many foods contain hidden fat: e.g. processed meat, sausages, luncheon sausage, salami, cheese, full fat dairy, products, cakes, pastries, chocolate, ice-cream, potato chips, corn chips, gravies, sauces, salad dressings and mayonnaise.



The golden rules are:

- remove all visible fat from foods before cooking
- use as little fat as possible when preparing or cooking food e.g. grill or steam food rather than frying
- if you do need to use a fat, choose a mono or poly-unsaturated fat such as olive, canola, soya bean or sun-flower oil

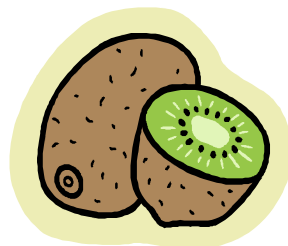
Healthy Snack Food Choices

A carbohydrate snack between meals is important if you are on some diabetes tablets or on insulin.

If you are not taking diabetes tablets, or if you are only taking Metformin, Acarbose Actos or Avandia, then in-between snacks are **not** necessary.

Some healthy snack choices are:

- 1 x small raw fruit or
- 1 x slice Burgen Fruit loaf or
- 1 x pottle of low fat 'lite' yoghurt or
- a small glass of low fat milk or
- 1 x slice of wholegrain bread or
- 2-3 x low fat, wholegrain crackers



There is a lot more to learn about healthy eating.

A dietitian can help you with your own personal healthy eating plan.

Monitoring your blood glucose levels is a tool to help you control your diabetes.

Blood glucose levels do go up and down during the day in response to many factors such as food intake, physical activity, stress,

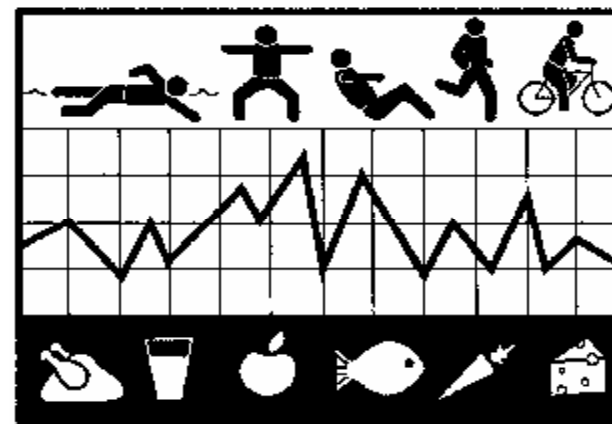
We recommend that you test your blood glucose levels approx 2 days per week:

- before breakfast
- before the evening meal and
- two hours after your evening meal

Keeping a record of your blood glucose levels, will help you to see what food, exercise, stress and tablets do to your blood glucose levels.

If your readings are regularly too high or too low at certain times of the day you can use this information to make changes to your **diabetes management plan**. Discuss your results with your diabetes health care team.

It is a good idea to also record food intake or activity levels when you get high or low results so you can find a reason for the result.



Physical activity, food and the tablets you are taking will affect your blood glucose levels.

Monitoring of Blood Glucose Levels

Do I need to check my own blood glucose levels?

If you are newly diagnosed with Type 2 diabetes and your diabetes can be managed with a healthy eating plan, regular physical activity and/or the tablets that do not cause blood glucose levels to drop too low (hypos), then checking your own blood glucose levels is not essential.

Your doctor can order a special blood glucose check called an **HbA1C** several times a year. This laboratory check tells you how well your blood glucose levels have been controlled over the past 2 - 3 months.

Your ideal blood glucose range should be between 4 - 8 which will enable you to achieve an HbA1C of less than 7.0%

However if your blood glucose is not well controlled, or you are on one of the tablets which can cause low blood glucose, then checking your blood glucose on a regular basis is a good idea.



Self-monitoring is easy to do, however accurate results are dependent on your ability to use your meter correctly.

Learning the correct steps in using your meter is essential. For example, if the blood sample is too small it will give a falsely low reading.

Incorrect storage of some glucose strips or incorrect calibration of the meter will give inaccurate results. Your Practice Nurse or Diabetes Nurse Educator will teach you how to use your meter correctly.

Physical Activity

Regular physical activity is good for everyone as well as being a key treatment in the management of Type 2 diabetes.

It helps to lower blood glucose in two ways:

- It promotes weight loss and decreases insulin resistance
- Exercising muscles 'burn' up more glucose than resting muscles.



Physical activity also

- Improves circulation,
- Strengthens the heart and lungs
- Helps lower LDL 'bad' cholesterol, and triglycerides,
- Increases HDL or 'good' cholesterol, and helps to lower blood pressure.

It also helps to relieve stress, improves health and well being, improves sleep and generally makes you feel good about yourself.

If you have not been regularly active, see your GP before starting. Find an activity that you enjoy and are physically able to do. It's okay to start modestly and then build an exercise routine little by little. The most important step is getting started! For those with mobility problems there are chair exercises that you can do.

Walking, swimming, cycling, gardening, dancing, joining a gym are all great ways to increase your daily activities.

Physical activity is a prescribed treatment for good health. No other single treatment can do so much.

If blood glucose levels remain above the acceptable range despite attention to healthy eating and regular physical activity, then you will need tablets to help control your diabetes.



Tablets to Treat Diabetes

There are several different tablets used to treat Diabetes.

Your Doctor will prescribe the tablets most appropriate for you.

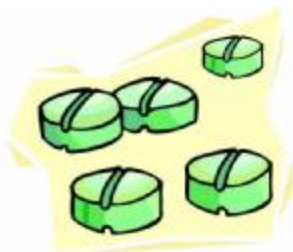
You should:

- Learn the names and doses of the tablets prescribed for you
- Know how many tablets to take and when to take them
- Take your tablets as prescribed every day
- Get another prescription from your Doctor before your tablets are finished
- Know the action of tablets and possible side effects

Currently in NZ the following diabetes tablets are available.

The first group includes:

- Metformin (Metomin)
- Acarbose (Glucobay)
- Rosiglitazone (Avandia)
- Pioglitazone (Actos)



These tablets help your insulin to work more effectively, and reduce insulin resistance.

When used alone, these tablets do not cause blood glucose levels to drop too low (hypoglycaemia), therefore it is not necessary to have in-between snacks if you are only taking any of these tablets.

The following tablets stimulate insulin production by the pancreas. As they can also cause blood glucose levels to drop too low (hypoglycaemia or hypo), regular meals and snacks are important..

They include:

- Gliclazide (Diamicron)
- Glipizide (Glipid)
- Glibenclamide (Gliben)
- Tolbutamide (Diatol)



It is important to know how to avoid hypos, the signs and symptoms you may experience when hypo and most importantly know how to treat a hypo. (See page 15–19.)

If you are regularly experiencing hypos your tablet dose will need to be reduced or stopped.

Similarly if your blood glucose levels are still too high on any of the tablets in the lists above, you may need a second tablet or eventually insulin added to your prescription.

With Type 2 diabetes, the body does make less insulin over time. This does not mean that your general health is deteriorating. It just means that you might need an alteration to your management plan. See your doctor.

Remember though:

without attention to healthy eating and regular physical activity, tablets, or even insulin, will not be able to keep your blood glucose stable.

