

featuring

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Chef, Restaurateur, TV Presenter
and Author of *Blood Sugar*



DVD

INSIDE

Type 1

Type 2

Gestational

Living Well with Diabetes



The Royal Australian
College of General
Practitioners

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Living Well with Diabetes DVD (25 minutes)

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Living Well with Diabetes

Intro

Overall, Australia is a healthy nation. The average life span is long, and the rates of many diseases are lower than world averages. But one health problem remains serious in Australia: diabetes.

About 1 million Australians have diabetes—double the number from 20 years ago. Diabetes is a particular problem for indigenous Australians, who are about 3 times more likely to have diabetes than non-indigenous Australians.

But it doesn't have to be this way! Some types of diabetes can be prevented or delayed. People with all types of diabetes can help prevent diabetes-related health problems, and improve their overall health, by taking steps to keep their blood glucose and cholesterol under control.

About 1 million
Australians have
diabetes. That's
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years ago.

Your first step is to learn more about this condition. This booklet and DVD program are a great start. Here you'll learn about:

- Types of diabetes
- Diet and lifestyle
- How to check your blood glucose levels
- Ways to keep your blood glucose levels as close to normal as possible

Note: the bulk of information in this booklet applies to people with any of the three major types of diabetes: type 1, type 2, or gestational. These are indicated with "T1," "T2," or "G" symbols and associated colours on page margins.

T1

If a page contains information that is most relevant to people with just one

T2

kind of diabetes, only the relevant

G

symbol and colour are used.

What is Diabetes?

Just like an engine, your body needs fuel. Carbohydrate is the body's main source of fuel. Your body turns carbohydrate into a type of sugar called *glucose*. Glucose travels in your blood to all parts of your body.

Glucose needs help to get from the blood into your cells. This helper is a hormone called *insulin*, which is made by the pancreas. When insulin is released, it acts like a key, unlocking a "door" in a cell so that glucose can enter. This lowers the amount of glucose in the blood. The pancreas acts to keep your blood glucose levels steady. After a meal, for example, insulin levels rise so that the extra glucose from the food can be used as energy.

Blood glucose levels can become high for two reasons:

- Reduction of and/or the absence of insulin production
- Inability of the body to use insulin

In either case, the effect is the same: the level of blood sugar rises because it cannot get into the body's cells.

There are 3 major types of diabetes:

T1 Type 1

T2 Type 2

G Gestational

Look for these symbols and colours throughout this booklet—they tell you which types of diabetes the information is about.



Diabetes by the Numbers

A person who has not eaten for 8 hours (called *fasting*) will normally have less than 6 millimoles per litre (mmol/L) of glucose in their blood.

If a person's fasting glucose levels are between 6.1 mmol/L and 6.9 mmol/L they have a condition called *pre-diabetes*, or impaired fasting glucose.

Fasting glucose levels of 7 mmol/L or higher mean you probably have diabetes.

Type 1

Your body cannot make its own insulin. This type of diabetes cannot be prevented.

Type 1 Diabetes

In type 1 diabetes, your body cannot make its own insulin. The immune system of a person with type 1 diabetes attacks the insulin-producing cells of the pancreas. Type 1 diabetes can occur at any point in life, but most commonly develops in childhood or the teen years.

This type of diabetes cannot be prevented. In Australia, about 1 in 10 people with diabetes have type 1—that's nearly 129,000 people. Because their bodies no longer make insulin, people with type 1 diabetes must take insulin every day to stay healthy. You'll learn much more about insulin later in this booklet.

Type 2

Type 2 Diabetes

In people with type 2 diabetes, the pancreas still makes insulin, but the cells of the body slowly become less responsive to that insulin. This is called “insulin resistance.” Excess weight, particularly around the waist, contributes to insulin resistance. After having type 2 diabetes for 6-10 years, the pancreas may also slow production of insulin. This may mean a person has to take insulin to keep blood glucose levels under control.

Type 2 diabetes usually develops later in life. But it can affect all ages. In fact, type 2 diabetes is appearing at increasingly younger ages in Australia, including in teens and children.

Type 2 diabetes is much more common than type 1—about 90% of those with diabetes have type 2. Most people have no symptoms in the early stages of type 2 diabetes. But higher blood glucose levels may still be harming your body. That’s why it is so important to get tested for diabetes on a regular basis, especially if you are at risk.



About 90%
of those with
diabetes have
type 2

Being overweight (especially around the waist) is a major cause of type 2 diabetes. But many other factors can put you at risk, including:

- Having pre-diabetes
- Being aboriginal, or a Torres Strait Islander, over 35 years old
- Being older than 45 years and having a close relative with type 2 diabetes
- Previous gestational diabetes

The good news is that type 2 diabetes can be managed—or even prevented—by keeping to a healthy weight, eating a good diet, and exercising regularly. Many people with type 2 diabetes, however, also need medicines or insulin to help control their blood glucose levels.

Most people
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2 diabetes.

Gestational



Gestational Diabetes

Another type of diabetes sometimes develops during pregnancy. This is called *gestational* diabetes. It affects between 5% and 8% of pregnant women. In Australia, about 15,000 women develop gestational diabetes every year.

Gestational diabetes happens because the mother's body must produce 2-3 times the normal amount of insulin during pregnancy. If the mother cannot produce that much insulin, or if she is insulin resistant, her blood glucose levels will rise.

This may put the mother and baby at risk for certain health problems during pregnancy. It also means both mother and child have a higher risk of developing type 2 diabetes later in their lives. Untreated gestational diabetes also has risks for the baby.



Gestational diabetes sometimes develops during pregnancy. It affects between 5% and 8% of pregnant women.

Once the baby is born, the need for insulin drops and symptoms usually disappear. But gestational diabetes can be a warning sign. Women with gestational diabetes are at higher risk for getting type 2 diabetes later in life. It's important to take gestational diabetes seriously. If you are pregnant or have had gestational diabetes in the past, talk to your health care practitioner about ways to remain healthy.



Both mother and child have a higher risk of developing type 2 diabetes later in their lives.

What's At Stake: Diabetes-Related Health Problems

All types of diabetes can lead to health problems, if blood glucose levels are not controlled. Some problems occur rapidly (short-term), while other complications take a long time to develop.

In the **short term**, high blood glucose levels can lead to symptoms such as:

- Thirst
- Frequent urination
- Tiredness
- Increased appetite
- Weight change
- Changes in vision
- Tingling or pain in the feet and lower legs
- Recurrent infections
- Wounds slow to heal
- Nausea and vomiting
- Fainting
- Confusion

Some diabetes related health problems occur rapidly (short-term).

Untreated diabetes raises your risk for long term complications.



In the **long term**, untreated diabetes raises your risk for complications, such as:

- Heart disease and stroke
- Blindness and other eye problems
- Nerve damage
- Nerve pain
- Kidney failure
- Amputation
- Erectile dysfunction (impotence)

These problems can be prevented or greatly reduced by maintaining good blood glucose control, and getting regular tests and checkups from a health care practitioner.

How Can I Track My Blood Glucose Levels?

No matter what type of diabetes you have, knowing your blood glucose level is the key to managing the condition. Your goal is to keep your blood glucose levels as close to normal as possible.

If you personally want to know if your blood glucose level is where it should be, you need to use a blood glucose meter. These machines give you a number that tells how much glucose is in your blood. You can use a blood glucose meter at home, or while you're out, to measure your blood glucose any time you want.



There are many types of blood glucose meters. Meters “read” your glucose level from a drop of blood placed on a test strip. Your glucose level shows up as a number on the meter’s screen.

Your health care practitioner can help you pick a blood glucose meter that is best for you. He or she can also show you how to use your meter.

Another type of monitor used by people with type 1 diabetes is worn continuously, and provides new measurements every few minutes. These are called “continuous glucose monitors.”

How often you need to measure your blood glucose depends on how active you are, what types of medicines you are taking, and your own health goals. Ask your health care practitioner how often you should check your blood glucose. You may want to keep track of your blood glucose levels in a paper or electronic diary.

It is especially important to check your blood glucose levels if you are sick, or if you change your routine or medication. Checking your blood glucose before and 2 hours after a meal, or before and after exercise, can help you see how your glucose levels respond.



Getting That Drop of Blood

Most blood glucose monitors require only a very small drop of blood. With most meters, the blood sample is obtained from the fingertip. Here are some tips for getting a good drop:

- The sides of a finger are often less sensitive than the centre
- Be sure to clean the testing site with soap and water and dry it well—this will ensure there is no sugar on your fingers that could affect the reading
- Be sure your meter is correctly set up (calibrated) for the test strips you are using

The table below shows the current recommended target ranges for blood glucose levels in those with type 1, type 2 and gestational diabetes.

Blood glucose targets*

	<i>Before a meal</i>	<i>After a meal</i>
Type 1 diabetes	4 – 6.7 mmol/L	5 – 10 mmol/L
Type 2 diabetes	6.1 – 8 mmol/L	6 – 10 mmol/L
Gestational	4 – 5.5 mmol/L	4 – 7 mmol/L

*Since individual circumstances may vary, please speak to your health care practitioner about what targets are right for you.

Blood glucose meters give you a “snapshot” of your glucose level. But you also need to know how you’re doing over a longer period. For that you need a different kind of test: the *haemoglobin A1c test* (HbA1c). The HbA1c test shows the amount of glucose that has been in your blood over a 2 – 3 month period. Too much glucose in your blood over that period will result in a higher reading.

In general, people with all types of diabetes should try to keep their HbA1c numbers ≤ 53 mmol/mol (below 7%). For some people it might not be safe to have a HbA1c too close to 53 mmol/mol because of the risk of low blood sugars. Ask your health care practitioner what your specific HbA1c target should be.

Managing Diabetes with Lifestyle Changes

All people with diabetes can greatly improve their health, and reduce their risks for complications, by having healthy exercise and eating habits. For those with type 1 diabetes, these changes will make controlling their blood sugar levels easier and may reduce their doses of insulin.

For those with pre-diabetes and sometimes newly-diagnosed type 2 diabetes, these changes alone may be enough to halt or delay the condition, and the need for medicine may be delayed. (Of course, you must stick to the changes you make—otherwise type 2 diabetes may return.) Even if you take medicines or insulin, living a healthy lifestyle is an essential part of your overall treatment.



You don't have to change everything about your diet and lifestyle overnight! Make one change at a time, and set realistic, achievable goals. Changes are easier to make, and more likely to last, if you make them gradually, rather than all at once.

Pick a change you think is most likely to work and break that change into smaller parts. For example, if you use regular (full fat) milk, don't switch straight to skim ("extra lite") milk. Take it in steps. First, switch to "lite" milk for a week. Then change from "lite" to "extra lite" milk. Remember: taking small steps is the best way to make a big difference!

It may help to make changes with others. Is there a friend or relative who would like to join you? Look for groups in your area that support losing weight, eating right, or that are for people with diabetes in general. Your health care practitioner may be able to point you to some of these groups.

Smoking

If you smoke, you raise your chances of having a wide range of complications from diabetes. In fact, of all lifestyle-related factors, smoking is the most important one for raising your risk of having complications related to blood flow in your brain, feet, and heart.



Being diagnosed with diabetes can provide the "push" that some people need to finally quit smoking. Your health care practitioner can give you options for ways to help you quit. Quitting is never easy, but it's one of the best steps you can take to improve your health, and the health of those who might be inhaling your smoke.



Losing weight

Losing excess weight may be an important step for people with type 2 diabetes. Losing weight isn't easy. But even losing as little as 5% of your total body weight can help you control your blood glucose levels.

Here are some tips:

- Check with your doctor before you start any diet, before you begin to exercise, or before you take any diet supplements
- Keep a written log of everything you eat
- Drink plenty of water
- Choose low-fat foods by checking food labels
- Look at the calorie count on food labels
- Be realistic—aim to lose no more than a half-kilogram of weight each week



Losing as little as 5% of your total body weight can help you control your blood glucose levels.



Healthy eating

Eating right is the most important way to control your blood glucose. Your blood glucose is affected by *what* you eat, *how much* you eat, and *when* you eat. Most food that we eat is made up of protein, carbohydrate and fat. Carbohydrate is the starchy part of food and has the biggest effect on your blood glucose. Some carbohydrate causes a slow rise in your blood sugar, such as pasta or whole grain bread, and some carbohydrates cause a rapid rise in your blood glucose, such as lollies and sugar.

In general, you should eat smaller portions of the starchy foods and very few sweets or sugary foods. Foods high in fat can also cause your blood glucose levels to rise as well as being high in calories.

In addition to following the information in this booklet, people with diabetes can get specific suggestions and diet plans by talking with a dietitian.

People with type 1 diabetes may measure the carbohydrates (carbs) in their meal by 10 or 15 gram portions

Examples of Healthy Snacks

- Small glass of low-fat milk
- 1 tub of low-fat yoghurt
- A serve of fresh or tinned un-sweetened fruit
- 1 small pikelet or wholemeal crumpet with 1 tsp of jam
- ½ cup of high fibre breakfast cereal
- 1 cup of plain popcorn



or serves, and then calculate the dosage of insulin based on their current glucose level and the amount of carbs they are about to consume. People who use this way of working out their insulin dose will also think about the amount of activity, the level of stress, and any other things that might affect their glucose levels before giving their injection.

Another way of measuring how rapidly types of carbohydrate can affect your blood glucose is called the Glycaemic Index (GI). Carbs that cause your blood glucose level to rise rapidly are known as high GI and carbs that cause a slow rise in blood glucose levels are called low GI. Speak to your health care practitioner about what diet and dosage of insulin is best for you.

Some foods now have labels that include GI information.

Here are some high-GI foods to watch out for:

- White bread
- White potatoes
- Jasmine and Arborio rice (short grain)
- Waffles
- Puffed wheat
- Jelly beans, barley sugar
- Regular soft drinks

You should try to avoid these foods as a regular part of your diet. These foods will cause your blood glucose to rise rapidly, but then fall quickly so you feel hungry again.

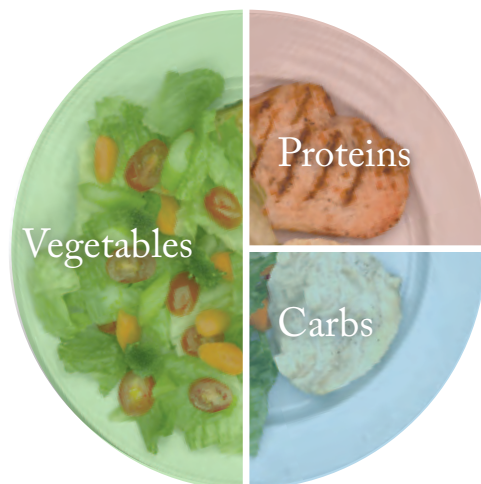
In any meal, carbs should be about one-quarter of the food on your plate. It is best if those carbs are low GI, such as whole grain breads, beans, or nuts. Low GI carbs cause a slow rise in your blood glucose, which helps you feel fuller for longer.

Another quarter should be some kind of lean protein, such as meat, fish, tofu, or eggs.

Half of your meal should be non-starchy fruits or vegetables, such as broccoli, tomatoes, lettuce, or asparagus. In general, fruit is very good for you. But some fruits contain a lot of natural sugar, which is another type of carb. So you may have to watch the amount of fruit you eat.

In addition to looking for GI information on a food label, you can learn a great deal from other package labels. Most foods come with nutrition labels, and many also have a Daily Intake Guide (DIG), which is a simpler way to tell how healthy a food is. The DIG tells you about:

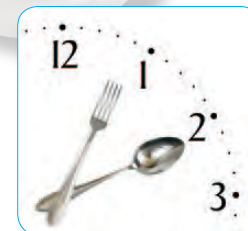
- Energy provided (in kilojoules)
- Fat
- Saturated fat
- Sugars
- Sodium (salt)



You'll also get information about the recommended serve. Be careful here, however. Sometimes a "single serve" is not realistic. For example, a package may say that a "serve" of biscuits is "2 biscuits," but many people eat more than that in a sitting. By learning to read food labels, you'll be able to choose foods that will be healthy and help you better control your blood glucose levels.

For those with type 2 diabetes, eating smaller portions will help you lose weight and may help control your blood glucose. Here are some tips to help you eat smaller portions:

- Drink a glass of water before each meal
- Eat regularly so you don't get too hungry
- Put food on a smaller plate
- Choose foods that make you feel full for longer (low GI)
- Eat more slowly, and put the fork/spoon down between bites!
- Don't eat in front of the TV



- Eat more vegetables
- Walk after eating
- Don't go food shopping when you are hungry

In the enclosed DVD, Chef Michael Moore shares his experience with managing type 2 diabetes.

Meal Planning

Eating a healthy diet does not mean you have to give up tasty food! The key is planning and moderation. You need to keep your choices in balance and watch your portion sizes. Many people find that working with a dietitian can really help.



Here are some tips to help you plan your meals:

- Eat 3 regular meals a day
- Include moderate amounts of carbs at each meal
- Eat 2 serves of fruit each day
- Eat at least 5 serves of vegetables each day
- Include low fat dairy foods each day
- Include at least one low-GI food at each meal
- Choose low-salt foods
- Drink plenty of water
- Limit juices, regular soft drinks and cordials

Eating at restaurants is fine, though it can be harder to control what you eat. Here are some tips:

- Avoid fats, fried foods, and rich sauces
- Ask for salad dressing on the side
- Split an entrée
- Ask the waiter to not bring any butter to the table
- Don't feel you must clean your plate—eat just half and take the rest home!

Alcohol and Drugs

People with diabetes need to be careful about drinking alcohol or using recreational drugs of any kind. Alcohol, and some recreational drugs, can interfere with insulin and raise your risk of low blood glucose levels. Alcohol use, specifically, can also worsen medical conditions that often go along with diabetes, such as liver disease or nerve damage.

The Australian National Health and Medical Research Council suggests that for healthy men and women, drinking no more than 2 standard drinks a day reduces the lifetime risk of harm from alcohol-related disease or injury. At least 2 days of the week should be alcohol free. A "standard drink" is: a 375 ml can or bottle of mid-strength beer; a 100 ml glass of wine; or 30 ml of a high-strength spirit.

If you have diabetes and drink alcohol or use other recreational drugs, be sure to discuss this with your health care practitioner.

Exercise

Regular exercise is one of the best things you can do for your health. Exercise helps people with diabetes use insulin more efficiently. But it also helps you prevent heart disease, improve your mood, and control your weight.

Fortunately, you don't have to be an athlete or join a gym to benefit from exercise! Daily walking can really improve your fitness and health. Housework, gardening, shopping, and other daily chores are all forms of exercise.

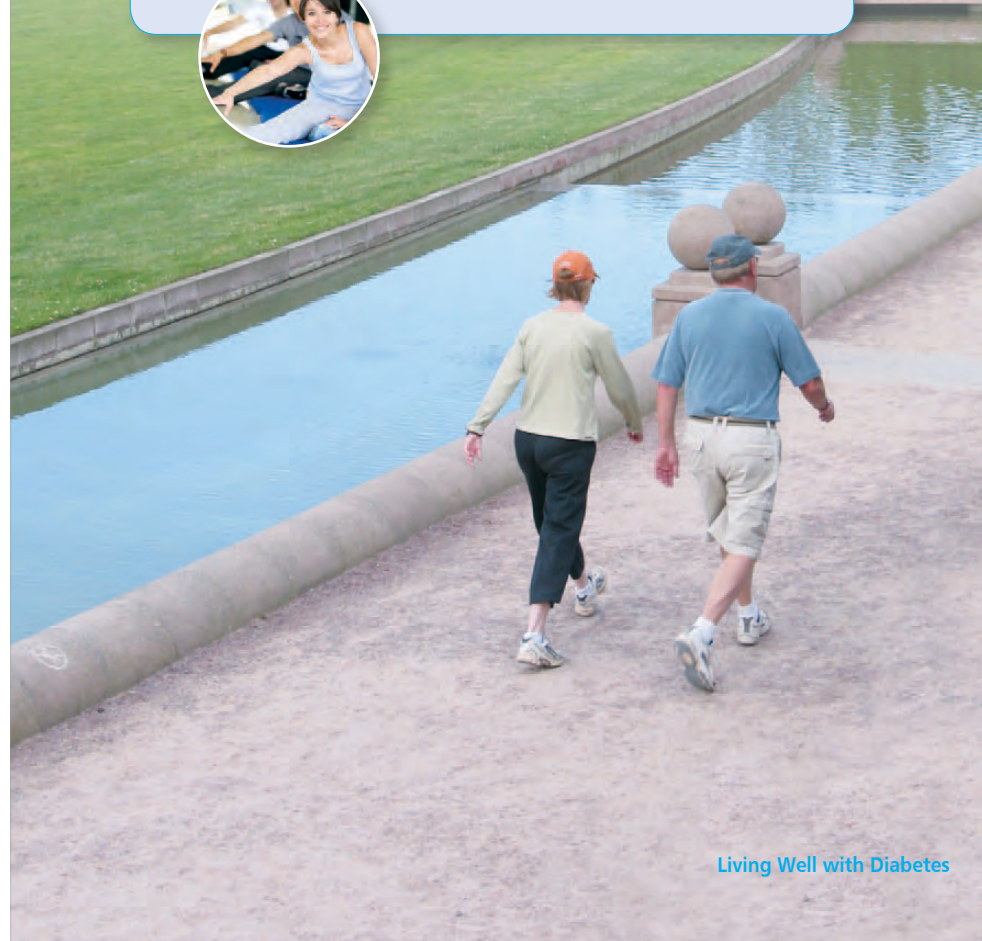
Keep in mind that when you are active, you may be more likely to see changes in your blood glucose levels. Check your blood glucose level before you exercise. If your level is low, have a snack such as a piece of fruit or a few crackers. Then test again. If your blood glucose level is at a safer level, go ahead and exercise. Remember to check your level again after exercising. Your blood glucose level should be at least 5.5mmol/L before you start your exercise.

Active Australia recommends that people with diabetes do 150 minutes or more of moderate intensity physical activity each week. If that seems like a lot, start slowly. Walk 5 minutes for a few days. Then build up to 10 minutes, and so on.



Exercise Tips

- Discuss exercise with your health care practitioner before starting a regular exercise program
- Always warm up and cool down
- Start slowly if you've never exercised before
- If you exercise alone, wear something that identifies that you have diabetes
- Make sure your shoes fit well
- Drink plenty of water
- If you are using insulin or certain medicines for type 2 diabetes you may need to carry a fast-acting carbohydrate to treat low blood glucose. Speak with your health care practitioner to see if this applies to you.



Managing Type 1 Diabetes with Insulin

Everyone with type 1 diabetes needs to use insulin to keep their blood glucose levels as normal as possible. (Insulin may also be used to help manage type 2 diabetes.) Insulin must be taken by injection. It cannot be taken as a pill because it is destroyed in the stomach.

People have different needs for insulin. Some need a lot, some need a little. And how much you need may change from hour to hour or from day to day. By monitoring your blood glucose levels, you will learn how your body responds to food, exercise, and illness. This knowledge will help you match your dose of insulin with your body's *need* for insulin. Talk with your health care practitioner about this very important subject.

Insulin comes in different types that vary in how fast they work, how long they are effective, and when their maximum strength is reached.

Summary of Insulin types

Type of Insulin	How quickly does it take effect?	When do peak levels occur?	Duration of effect
Rapid-onset (also called "fast-acting")	1 - 20 min	1 hr	2 - 4 hrs
Short-acting	30 min	2.5 - 5 hrs	6 - 8 hrs
Intermediate-acting	1.5 hrs	4 - 12 hrs	12 - 16 hrs
Long-acting	3 - 4 hrs	NA	18 - 24 hrs

You may be prescribed two types of insulin to suit changing demands for insulin throughout the day and night. Your health care practitioner will work with you to find a type of insulin that is right for you.

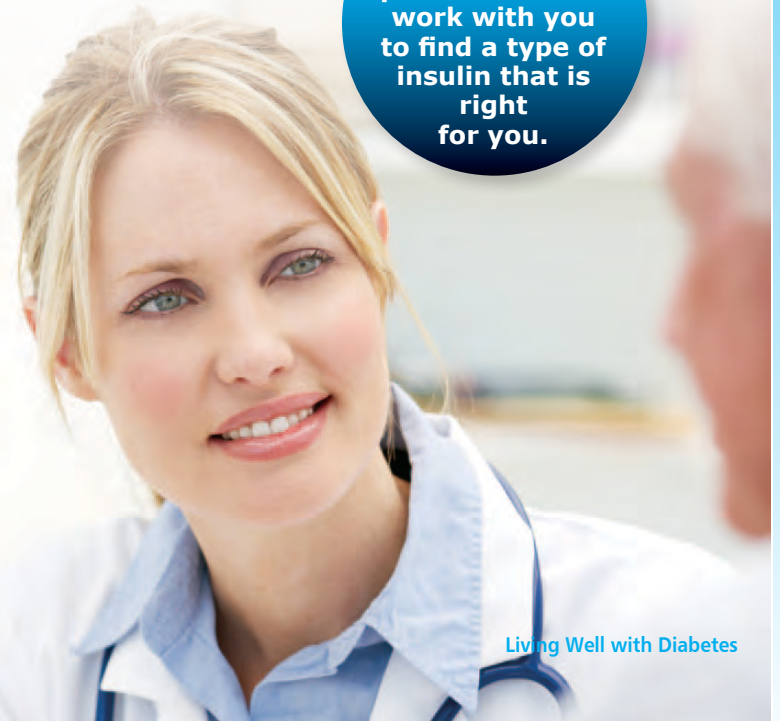
Ways to Take Insulin

There are three basic ways to get insulin into your blood:

- Injection with an insulin pen
- Insulin pump
- Injection with a needle and syringe

Each method has pros and cons, which you can weigh with the help of your health care practitioner. This section explains each method in more detail.

Your health care practitioner will work with you to find a type of insulin that is right for you.



Proper Pen Injection Technique

You will likely be taught how to load and use your particular type of pen injector by your health care practitioner or diabetes educator. But the 6 basic steps to follow apply to all types of pens.

Step 1: Wash your hands with soap and water, then rinse and dry well.

Step 2: Set up your needle on the pen. Check that you have the correct insulin pen and that there is enough insulin remaining in the cartridge for the current injection. Use a new needle for each injection.

Step 3: Mix insulin if needed. If you are using a cloudy long-acting or mixed insulin, mix the insulin well by gently tipping the pen 10-20 times (don't shake the pen). Clear insulins do not need to be mixed.

Step 4: Prime the pen. Get rid of any air bubbles by dialing a 2-4 unit dose and, holding the pen upright, inject into the air. Do this until a bubble-free stream of insulin is seen. Dial the required dose.

Step 5: Inject insulin. Select an injection site such as the abdomen, thighs, arms, and buttocks. Speak to your health care practitioner about the most appropriate injection site and technique for the type of needle you are using. It is very important that you rotate your injection sites to avoid scarring.

Step 6: Dispose of used needle. Remove the needle from the pen after injection and dispose of it in a special "sharps" container.

Insulin Pens

These devices use a disposable needle and insulin cartridge. Some insulin pens are disposable and



come pre-filled with insulin. Other pens are reusable and have a small cartridge that can be replaced. All insulin pens use disposable needles, which should be changed after each use. If you use an insulin pen, check with your health care team or pharmacist about how to use and store it safely. (See boxed information about injection technique.)

Insulin Pumps

Insulin pumps hold a reservoir of insulin that can be programmed to deliver different insulin doses throughout the day. A thin tube brings the insulin to a plastic cannula, which is placed under your skin. The cannula may be kept in place for up to 3 days.

Because a pump more closely matches how insulin is released by a healthy pancreas, this type of delivery is used almost exclusively by people with type 1 diabetes. Pumps have advantages and disadvantages that you should discuss with your health care practitioner.



Syringes

Syringe and needle is sometimes used by children who require twice daily insulin injections, where a quick acting and long acting insulin are mixed together in the one syringe. The techniques for injecting insulin with a needle and syringe are very similar to those for injecting insulin with a pen device. Your health care practitioner will go over the proper way to draw up the insulin and injection technique if you use this approach.



Your health professional will check and advise what is best for your health needs.



Medicines for Type 2 Diabetes

If diet and exercise changes alone do not allow a person with type 2 diabetes to reach his or her blood glucose goals, taking certain medicines or insulin may help. Taking insulin directly replaces, or adds to, the insulin your body is already making. Other types of medicines for type 2 diabetes help your body better use the insulin that it has, or stimulate the pancreas to make more insulin. Many people with diabetes also take medicine for high blood fats and high blood pressure. Your health professional will check and advise what is best for your health needs.

Each type of medicine has pluses and minuses. Talk to your health care practitioner. She or he will work with you to find the medicine, or combination of medicines, that is best for you. Remember to tell your doctor about any *other* medicines, diet supplements, or herbal products that you are using.

Here are some tips for using type 2 diabetes medicines:

- Take your medicine at the same time each day
- Don't skip meals
- Don't stop taking your medicine unless your doctor tells you to
- Take your medicines to every doctor's visit

If you are a woman with diabetes, you should plan your pregnancy carefully. It is very important that your diabetes be controlled as well as possible before you get pregnant. Most diabetes tablets are not suitable to take during pregnancy, so your doctor may recommend starting insulin injections even before you are pregnant. If you take tablets for your blood pressure, or for your cholesterol, these may need to be changed as well.

Managing Short-term Diabetes Problems

High blood glucose

Having high blood glucose is called *hyperglycaemia*. This can happen if you don't take enough of your diabetes medication, you eat more food than normal, or if you're stressed or ill.

If your blood glucose is high, you may feel:

- Thirsty
- Hungry
- The need to urinate frequently
- Extremely tired
- Nauseated

You and your health care practitioner should make a plan for dealing with high blood glucose. This way you will be prepared. In general, if you think you have high blood glucose, test your blood. You may be able to treat it by taking additional medication or insulin according to your plan. But if your blood glucose level remains above 15 mmol/L for more than 12 hours, call your health care practitioner.

You and your health care practitioner should make a plan for dealing with high blood glucose.

Low blood glucose

Low blood glucose is called *hypoglycaemia*. This may affect those who take insulin and some diabetes medicines. Hypoglycaemia may occur if you don't eat enough food, if you exercise more than usual, or if you drink too much alcohol. If your blood glucose is less than 4.0mmol/L, you are hypoglycaemic and must take action.

Symptoms of low blood sugar include:

- Feeling shaky or nervous
- A pounding heart
- Rapid pulse
- Sweating
- Chills
- Feeling irritable
- Headache
- Hunger
- Tingling or numbness in your lips or tongue
- Confusion or lack of concentration

If left untreated, low blood glucose may lead to fainting or seizures.

Some people, however, feel *no* symptoms of hypoglycaemia even if their blood glucose level is less than 4.0mmol/L. This is called having "hypoglycemic unawareness."

Frequent monitoring is especially important for such people.

If you think your blood glucose is low, use a blood glucose meter to confirm it. If your levels are low or if you can't test your blood, eat or drink something with sugar such as:

- Glucose tablets. These are usually the fastest way to treat low blood glucose levels. You will also have less chance of "overshooting" and raising your level too high. OR
- 6-7 jellybeans OR
- Half a can of regular soft drink (not diet) OR
- 3 teaspoons of sugar or honey OR
- ½ glass of fruit juice

If your next meal is more than 15 minutes away, you should also eat some kind of longer-acting carb such as a glass of milk, a piece of fruit, or a tub of low-fat yoghurt. If you faint from low blood glucose, someone will need to give you an injection of glucagon or glucose. Glucagon is a prescription medicine that quickly raises blood sugar levels. It is most often used by those with type 1 diabetes. You should get a glucagon emergency kit prescription from your health care practitioner. Make sure a family member or friend has been trained to give you glucagon. They need to know when it should be used, and where you keep the kit.

Diabetic ketoacidosis

When your body burns fat for fuel instead of glucose, substances called *ketones* are produced. Ketones make the blood more acidic. This is called *ketoacidosis*, and it is a serious medical problem. Ketoacidosis occurs in type 1 diabetes. It can sometimes happen in people with type 2 diabetes if they are very sick, but this is rare. The symptoms of ketoacidosis include:

- All the symptoms of hyperglycaemia
- Loss of appetite
- Stomach pains
- Nausea or vomiting
- Extreme tiredness
- A fruity smell on your breath

Ketones can be tested in the urine, or by using a blood ketone testing meter. You should test for ketones if your blood glucose levels are above 15 mmol/L, or when you are sick.

It May Not Be the Flu!

The signs and symptoms of ketoacidosis can be very similar to those of a bad cold or the flu. If you are having such symptoms and you have type 1 diabetes, test for ketones yourself or call your health care practitioner to get checked.

Hyperglycaemic Hyperosmolar Syndrome (HHS)

If you have type 2 diabetes which becomes very poorly controlled, you can develop a life threatening condition called Hyperglycaemic Hyperosmolar Syndrome. In this condition, very high glucose levels draw fluid out of the body's tissues. Your body becomes very dehydrated (dried out). This can lead to a coma if it is not treated quickly.

The symptoms include:

- Thirst
- Passing lots of urine
- Muscle cramps
- Slow heavy breathing
- Extreme tiredness



Sick day rules

If you are feeling sick, you need to take special care. Common colds, the flu, and other illnesses can cause your blood glucose level to rise. This can happen even if you are unable to eat or if you are vomiting. Work with a health care practitioner or diabetes educator to make a sick day management plan and a sick day kit.

The first rule is: don't stop taking your diabetes medication or insulin unless told to do so by your health care practitioner.

Here are other things to do if you are sick:

- Monitor your blood glucose levels more frequently than usual. For those with type 1 diabetes, that means every 2 hours or more frequently if blood glucose is below 4 mmol/L. or above 15mmol/L. Those with type 2 diabetes should monitor blood sugar every 2-4 hours, or more frequently if blood glucose is below 4 mmol/L or more than 15mmol/L.
- If you are alone, please let someone know you are sick so they can check on you
- Drink plenty of fluids—125-250 mls every hour
- Try to eat if you can, to keep up your energy and avoid low blood glucose levels
- If you feel too sick to eat, you should still try to drink:
 - Sweetened fluids, if your blood sugar level is less than 15 mmol/L
 - Unsweetened or sugar-free fluids, if your blood sugar level is higher than 15 mmol/L

If you can't control your blood sugar levels, or if you cannot eat or drink, you should contact a health care practitioner immediately.

Preventing Long-term Diabetes-Related Problems

High blood glucose levels from uncontrolled diabetes can hurt many parts of your body, including your blood vessels, nerves, eyes, kidneys, and sex organs. The best thing you can do to prevent these problems is to keep your blood glucose well controlled, by monitoring often and using insulin or diabetes medicines carefully.

This section covers some of the more common problems that you should watch for, and how to prevent them.

Keep your blood glucose well controlled by monitoring often and using insulin or diabetes medicines carefully.

Nerve Pain

One of the most common complications of diabetes is nerve damage in the feet or other parts of the body. Such damage can cause numbness or lack of muscle control. But the most common and troublesome problem caused by nerve damage is a burning or tingling pain.

When it strikes, diabetic nerve pain, also called diabetic peripheral neuropathy, can become the centre of your life. The pain hurts, of course, but it can also disrupt sleep and prevent you from doing the things you enjoy. In addition, diabetic nerve pain can lead to a depressed mood.

But your risk for diabetic nerve pain can be lowered by keeping your blood glucose levels close to the normal range. In addition, many types of medicines and some new devices, such as electrical stimulators, can help relieve diabetic nerve pain.

Did You Know?

Many people do not get the help they need for their diabetic nerve pain. If you are in pain, tell your health care practitioner. Many different options are available these days for treating nerve pain.

Heart Disease

Heart disease is 2 to 4 times more common in people with diabetes. That's because diabetes raises your risk for the two major causes of heart disease: high blood pressure and high cholesterol.

High blood pressure is a "silent" disease. People often don't know they have it until the damage is done. If you have diabetes, you should get your blood pressure checked every 3 months. If you already know you have high blood pressure, you may need to lose weight, exercise regularly, quit smoking (if you smoke) or take a medicine to lower your blood pressure.

High cholesterol levels can lead to blocked arteries. This can cause heart attacks, strokes, or leg problems. You can reduce your risk by stopping smoking, eating a low-fat diet, and exercising regularly. Some medicines can also help lower cholesterol levels.

Erectile Dysfunction

Diabetes can damage the small blood vessels and nerves of the penis. This can cause erectile dysfunction (ED), an inability to achieve or maintain an erection. About half of men with diabetes have some degree of ED.

Many treatments exist to restore erectile function, but they all work best when the problem is caught early. Talk openly and honestly with your health care practitioner about this issue, so you can get help sooner rather than later.

High blood pressure is a "silent" disease. People often don't know they have it until the damage is done.

Eye problems

Diabetes can cause low vision or blindness. In fact, diabetes is a leading cause of adult blindness in Australia. At first, the eye disease may not cause any noticeable changes to your vision. That means you may not know your eyes are being harmed by diabetes. The only way to tell is to get a complete eye exam every year.

The main point is that *nearly all diabetes-related blindness can be prevented*. Your risk of vision loss is much lower if you keep your blood glucose levels as close to normal as possible. You also need to have your eyes examined every year by a medical doctor who specialises in eye care (an ophthalmologist).



Diabetes is a leading cause of adult blindness in Australia.

Women and Diabetes

Diabetes can affect women in some unique ways. For example, a woman's menstrual cycle can affect her blood sugar levels. Keep track of your blood glucose before, during, and after your period. This will help you learn how your cycle affects you.



If you want to have a baby, you'll need to keep your diabetes under tight control.

If you are using a medicine for type 2 diabetes, you may need to switch to insulin before you become pregnant. You may need to check your blood glucose by using a blood glucose monitor up to 8 times each day. You also may need to change what you eat, how much you exercise, and the amount of insulin you take.

Please talk to your doctor if you're pregnant or intend to become pregnant. Poor diabetes control during pregnancy can lead to birth defects in the baby and complications during the pregnancy for the mother. The good news is that a well-planned pregnancy with well-controlled diabetes can lead to a healthy mother and healthy baby. Good planning and teamwork with your health care team is the key to a successful outcome!

Mature women experiencing change of life (menopause) can find that their diabetes becomes unstable. It can sometimes be difficult to tell the difference between the symptoms of a 'hot flush' and a low blood sugar. Talk to your health care team if you are concerned.

A Word to Teens

Most young people with diabetes have type 1 diabetes. But type 2 diabetes is becoming more common in Australian young adults, teens, and even children. The main cause of the increase in type 2 diabetes is that more young people are overweight, and don't get enough physical activity.

If you are a teen or young adult, with either type 1 or type 2 diabetes, you'll need to follow the advice in this booklet just like anybody else with diabetes.

Having diabetes can be more complicated for young people—especially teens:

- Hormonal changes during puberty make it harder to keep good control of your blood glucose levels
- Teens may be less likely to eat a healthy diet
- Using alcohol or other drugs can lead to swings in blood sugar levels

Having diabetes as a young person doesn't have to be a big deal. But you need to know what you're doing. If you're a teen, you can get lots of good suggestions from some of the websites listed in the Resources section.



Parenting a Child with Type 1 Diabetes

Finding out that your child has diabetes can be an unsettling time in a family. You and your child may feel a range of emotions, from shock and denial, to sadness or fear. Keep in mind that this phase will pass. You'll begin to learn more about the disease and how it can be managed. You'll also get help from a whole team of people, starting with your health care practitioner, and including a wide range of other professionals.



Don't be alarmed if your child copes with his or her own feelings by temporarily acting like a much younger child. This is a normal reaction to stress. Provide her or him with a lot of support and attention, and encourage them to share their feelings with you. It can help to talk to them about your own feelings.

If your child has brothers or sisters, managing the change in lifestyle and food choices can also be difficult for them. Siblings may feel that the child with diabetes is getting special attention, or treated to eating lollies when having a low blood sugar (hypoglycaemia). You can help to manage this change by including all of your children in the education about diabetes.

Children (like adults) usually don't want to be labelled as "diabetic." Try not to make diabetes the focus of your life or conversations. Be sure, also, to avoid getting "burned out" by the added demands of helping a child manage diabetes. The day-to-day chores and work can be shared by parents or other close relatives. Parents also need to take time for themselves. You can't help others if you are exhausted or stressed yourself!

With time, the various changes that come with managing diabetes will simply become normal for both parents and children. By helping children learn why it's so important to monitor and manage their blood glucose levels, you'll be helping them form life-long habits that will promote their health and future happiness.



Creating Your Diabetes Team

Effective diabetes care is a team effort and preventing problems *before* they happen is job #1 of the team! You can learn to be in charge of many things: you can eat well, you can exercise, you can monitor your blood sugar, and you can schedule regular check-ups with your doctor. You'll need help from other health care professionals as well, such as:

- An endocrinologist (doctor who specialises in diabetes)
- A diabetes educator (nurse who can help you learn how to test your blood, give injections, etc.)
- A dietitian (can give you specialised advice on healthy eating)
- A podiatrist (specialist in foot care)
- An ophthalmologist (doctor specialising in eyes)
- A dentist
- A support group or psychologist

It's also a good idea to have a close friend or relative on your team. This person should learn about diabetes and be able to help you in an emergency. Managing diabetes isn't always smooth. Sometimes it's easy, other times hard. It really helps to have a support network for the difficult days.



Schedule of Health Exams for Those with Diabetes

Every 3 months: weight; blood pressure

Every 3-6 months: Haemoglobin A1c; cholesterol levels

Every year: eye exam (could be every 2 years if no problems are found); kidney tests; exam of nerves and blood flow in feet

Now It's Your Turn

As you can see, there is a lot to learn about diabetes! It can be a little overwhelming at first. But you don't need to learn everything at once, or memorise everything in this booklet. You have the help and support of others. You'll learn what you need to know over time, including the specifics of the devices or medicines you use to control your diabetes.

The key thing is that diabetes is largely a SELF-managed disease—you play the central role in keeping your blood glucose levels as close to normal as possible. Of course, nobody is perfect, and it's normal to sometimes miss your targets. But keep trying. And keep reaching out to your health care practitioner and other professionals for help when you need it. At the end of the day, however, it's up to you to put your plans for managing diabetes into action and stick with it. By reading this booklet you've made a good start. Now it's time to act!

The key thing is that diabetes is largely a SELF-managed disease—you play the central role.

Resources

Australian Diabetes Educators Association

www.adea.com.au

Australian National Health and Medical Research Council

www.nhmrc.gov.au

Diabetes Australia

www.diabetesaustralia.com.au

Dietitians Association of Australia

www.daa.asn.au

Juvenile Diabetes Research Foundation

www.jdrf.org.au

National Diabetes Services Scheme

www.ndss.com.au

Nutrition Australia

www.nutritionaustralia.org

Credits

Living Well with Diabetes was made possible through the expertise, funding, time, and efforts of many contributors.

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We are committed to improving the health and well-being of Australians and New Zealanders through our diverse and extensive range of products that span the complete spectrum of wellness, treatment and prevention.



PRESENTERS

Australian Diabetes Educators Association

The Australian Diabetes Educators Association (ADEA) is Australia's leading organisation for health professionals providing diabetes education and care. The ADEA promotes a cycle of best practice in diabetes education and care by: setting standards of practice in diabetes care; providing professional development and continuing education opportunities to enhance professional competence; and conducting and disseminating research.

For more information: www.adea.com.au



Diabetes Australia (DA)

Diabetes Australia is the national peak body for diabetes in Australia providing a single, powerful, collective voice for people living with diabetes, their families and carers. A non-profit organisation, Diabetes Australia works in partnership with diabetes consumer organisations, health professionals, educators and researchers to minimise the impact of diabetes in the Australian community. Diabetes Australia is committed to turning diabetes around through awareness, prevention, detection, management and the search for a cure.



Juvenile Diabetes Research Foundation (JDRF)

JDRF's mission is to find a cure for type 1 diabetes and its complications through the support of research. This mission has been constant since the organisation was founded in 1970 in the US and 1982 in Australia. While the vision is a future free of type 1 diabetes, JDRF recognises the need to keep people healthy enough to fully benefit from the cure when it is found, as well as achieving the goal of preventing type 1 diabetes in future generations. This means JDRF is working towards a solution for everyone with type 1 diabetes and also those who may be at risk. JDRF brings together researchers, businesses, governments and members of the type 1 diabetes community to ensure that scientific breakthroughs become improvements in the lives of people with type 1 diabetes as quickly as possible.



The Royal Australian College of General Practitioners (RACGP)

The RACGP is Australia's largest professional general practice organisation and represents urban and rural general practitioners. We represent over 20,000 members working in or towards a career in general practice and are proud that in the 2010–2011 financial year over 18,000 GPs in Australia chose to be a member of the College.



The Royal Australian
College of General
Practitioners



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featuring

Michael Moore

Chef, Restaurateur, TV Presenter
and Author of *Blood Sugar*



DVD
INSIDE

Type 1

Type 2

Gestational

Living Well with Diabetes

Australians generally enjoy good health. But one health problem remains particularly serious in Australia: diabetes.

About 1 million Australians currently have diabetes, and the rate is rising fast. That's a big problem, because diabetes raises the risk of heart disease, blindness, nerve damage, kidney disease, and many other diseases and conditions.

Everyone with diabetes can improve their health and prevent complications by learning how to better control their blood glucose levels.

This booklet and DVD program will help you learn more about this common condition. Here you'll learn more about:

- Types of diabetes
- How you can reduce your risk by changing diet and lifestyle
- How to track your blood glucose levels
- Ways to keep your blood glucose levels as close to normal as possible

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