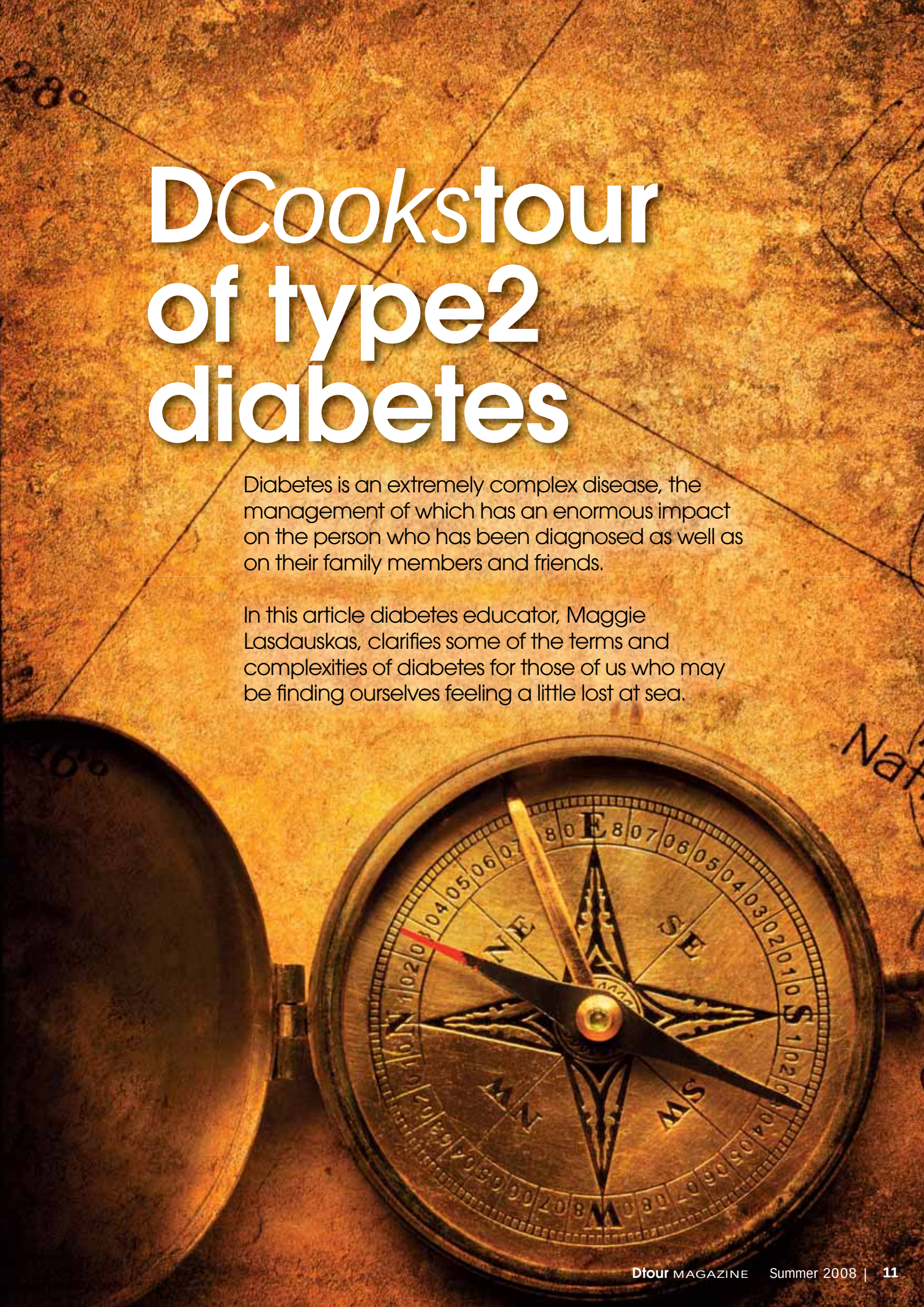
DCookstour of type2 diabetes

Diabetes is an extremely complex disease, the management of which has an enormous impact on the person who has been diagnosed as well as on their family members and friends.

In this article diabetes educator, Maggie Lasdauskas, clarifies some of the terms and complexities of diabetes for those of us who may be finding ourselves feeling a little lost at sea.



Eighteen or so years ago a person with type 2 diabetes could expect to die 20 years younger than a person who did not have diabetes, and it was possible that their last five years of life could have been very miserable.

Very few people were checked routinely for type 2 diabetes, even when it ran strongly in their family. As a result of this, most people had suffered a heart attack, stroke, amputation or blindness before they were diagnosed. No wonder diabetes was regarded as a terrible disease by those who had it!

Life for people with diabetes was frightening and relentless. Medical knowledge was limited; many doctors referred to this life-threatening and life-changing disease as “a touch of sugar”! Tablets were often very severe, overly long-lasting and caused hypoglycaemic episodes rather than stable blood glucose levels. Blood glucose monitors were expensive and health funds would only refund for people with type 1 diabetes.

Diabetes education as a profession was in its infancy. It was constrained by how little research had been done, even on such basic areas as diet where a rigid, restrictive and actually unhealthy diet was imposed. Exercise was not recommended as being helpful for controlling diabetes.

How things have changed! Now the medical profession, based on scientific proof, is screening people for diabetes before the symptoms are apparent.

Someone diagnosed with diabetes today has an excellent chance of living a normal lifespan if they take advantage of all the help available to them to do so. This promise is possible because of the findings of the long-running United Kingdom Prospective Diabetes Study (UKPDS). This study showed that if blood glucose, blood pressure and blood fats are controlled and kept close to the non-diabetic range, diabetic complications are reduced and length of life is increased.

Type 2 diabetes is a chronic, progressive disorder. ‘Chronic’ means that it isn’t like the flu. When you develop it you have it for life and ‘progressive’ means the longer you have it the harder it becomes to control. These are the reasons a team approach to diabetes care is so important.

Diagnosis of Diabetes.

Early diagnosis of diabetes is very important. From the age of 40 years, or earlier if there is a strong family history, an annual diabetes check is a good idea. If there are signs or symptoms of diabetes a check should be made immediately. This means a trip to the GP and a referral to a laboratory for an oral glucose tolerance test (OGTT). If this shows glucose intolerance or impaired fasting blood glucose, which are steps on the path towards diabetes, take advantage of one of the programs designed to help. Doing so may not prevent diabetes but it may delay its onset by years, which is always beneficial.

Signs and symptoms of diabetes may include some or all of the following:

- Persistent thirst
- Excessive passing of urine
- Persistent, extreme tiredness
- Weight gain, or weight loss
- Changes in appetite
- Blurred vision
- Itchiness
- Thrush
- Impotence

What Happens after Diagnosis?

If diabetes or pre-diabetes is diagnosed, the care starts immediately. Lifestyle changes are needed which involve getting more exercise and altering the type or amount of food eaten.

Another thing about diabetes is that, because it is a disorder with a strong genetic link, the children of the person diagnosed also have a risk of developing diabetes at some stage in their lives. They should be encouraged to follow the healthy living guidelines. Even if they may not be able to stop the development of diabetes, they may delay it and they will be fit and healthy, which is a tremendous benefit to have when faced with a chronic problem like diabetes.

If a person is newly diagnosed with diabetes the chances are that the diabetes has not been developed for long and is going to be easily controlled. It is recommended that the person:

1. Sees a diabetes educator either at Diabetes TASMANIA or a Diabetes Centre, or in their GP's practice, if an educator, (not practice nurse) is available.
2. Starts an exercise program
3. Follows a diet with limited animal fat, little added sugar (no more non-diet cola drinks!) plenty of fruit, vegetables, nuts, grains and starchy carbohydrates
4. Stops smoking
5. Reduces alcohol intake. The recommended amount is now two standard drinks a day for men and one for women
6. Begins blood glucose monitoring either at home or through three monthly glycated haemoglobin (HbA1c) levels through pathology

A person with newly diagnosed type 2 diabetes may not need medications and will be probably given a three month trial of making lifestyle changes before starting a medication such as Metformin (Diaformin, Diabex).

Someone who has had diabetes for longer may have noticed that it is much harder to keep their blood glucose at the levels it should be.

Whereas previously they managed to stay between 4 – 8.mmol/L with only occasionally higher readings, now they are frequently seeing horrible high readings; the day's blood glucose reading starts at a higher level and goes much higher after eating. Their HbA1c is also heading north and is moving towards 7%, or may have even passed it. They are careful with their diet and are still exercising, but they are not getting the results they used to get - they need their doctor's help.

Tablets to Bring Down Blood Glucose

At this stage medications are needed to help control blood glucose. Metformin is the usual tablet to start off with. Most people manage well with metformin, however, some people cannot tolerate it as it gives them diarrhoea. In this case they will be started on a sulphonylurea such as Diamicron, Amaryl.

If a person is already taking metformin, the dose will be increased. If the person is on the highest dose of metformin, Diamicron, Amaryl or Januvia will be started.

Januvia comes from a different source and works in a different way to the older tablets. It does seem to offer some help in lowering blood glucose levels but although it has been allowed on the Pharmaceutical Benefits Scheme (PBS) and can be prescribed and purchased at a subsidised cost, many endocrinologists are wary about prescribing it yet.

Signs & Symptoms of Hypoglycaemia	Treatment of Hypoglycaemia
Hunger; Shakiness/tremor; Weak knees; Sweating; Feeling 'spacey' or disoriented; Headache; Difficulty in concentrating; May appear pale; May not be able to communicate properly; May have change in personality, either grumpy when normally placid, or placid when normally feisty; **If not treated will lead you:** • **Drowsiness** • **Coma**	Do a blood glucose test if possible to check BGL is less than 3.5 mmol/L. Give sugar or glucose in some easily acceptable form such as: • 6-7 glucose jelly beans; **or** • a small can of coke or other *non*-diet lemonade/cola drink; **or** • small glass of fruit juice; **or** • a drink of tea/coffee containing 3 spoons of sugar. Wait 15 minutes and if symptoms resolving or BGL rising on testing follow up with a slice of bread, a piece of fruit or a couple of biscuits. If no improvement, repeat the above. **If the person becomes drowsy or can't swallow:** • Give Glucagon if possible, or • Call an ambulance, stay with the person, protect them from harm and explain what has happened (it may be necessary to place the person on their side in the 'coma position').

Hypoglycaemia

Diamicron and Amaryl may cause hypoglycaemia (hypo - a low blood glucose level - less than 3.5mmol/L). To prevent this when taking a sulphonylurea:

- Do not to miss meals or delay meals by more than half an hour
- Do not have meals with little carbohydrate (carbohydarates are in bread, pasta, potatoes, beans, rice)
- When vigorous activity is planned, or undertaken, have a piece of fruit before starting if possible and regular sips of fruit juice during the activity
- When drinking alcohol, always eat some carbohydrates
- Check blood glucose levels (BGLs) throughout the activity and afterwards.
- Carry some extra sugar to treat a hypo
- At the first sign of a hypo, test the BGL and treat if BGL is around 4.0mmol/L and treat if symptoms are present

As people become elderly sometimes the tablets and insulin taken to control blood glucose levels last for longer. This can cause problems with an increased number of hypos, especially if the person's appetite or ability to eat is also reduced. If this is happening, the person may appear to undergo a personality change and become excessively grumpy or bad tempered, or may even appear demented. A dose reduction of the tablets or insulin and sufficient regular food is usually enough to correct the problem and bring the original person back.

The 'Progression' of Diabetes Continues

At all stages of diabetes people need to keep in touch with their diabetes team. To protect against heart attack, stroke, kidney disease and vision problems it is vital to keep blood pressure under control.

The risk of a heart attack or stroke is also reduced by keeping blood fats down.

Annual checks by the GP ensure that the desirable targets are maintained and if this can't be done with dietary changes and exercise a cholesterol-lowering tablet will be needed.

Well-controlled blood pressure and blood fats lowers the risk of heart problems and strokes and protects a person's eyes and kidneys.

Every three to six months a person with diabetes should have their HbA1c checked. This provides the average of their BGL during the past 3 months by measuring the glucose which has attached itself to the red blood cells during this time. Unless a person has anaemia or haemochromotosis this will give a reliable average reading as a percentage of glucose.

Annual checks done by GPs for people with diabetes are:

- Lipids (blood fats)
- Kidney function
- Eye check done by optometrist or ophthalmologist
- Foot check done by GP and or a podiatrist
- Blood pressure
- Hba1c, and
- Assessment of diet and activity level

Diabetes is a Progressive Disease

This is an important thing to remember because no matter how well a person looks after it, keeping it under control gets harder as the years pass. The reason is simple! As people age nothing works as well as it did. Small print is impossible to read without glasses; people persist in speaking annoyingly quiet or mumbling; bending over to pick up something is one thing but straightening again is another! So too the pancreas finds it hard to make enough insulin to keep blood glucose under control. The technical term for this is 'Secondary Pancreatic Beta Cell Failure'. Eating less food and exercising more doesn't help because the pancreas doesn't have enough functioning insulin-producing cells. By this stage a person will be on the maximum dose of the glucose-lowering tablets, but it is like flogging a deceased horse – it won't work!

What is needed now is to replace the insulin the person can't make anymore.

Insulin is a very safe medication and thanks to the new injection-giving devices is very easy to give. Needles are tiny, very sharp and well lubricated so injections do not hurt. Usually people with type 2 diabetes will only need one or two injections a day to improve their blood glucose levels and make them feel wonderful, full of life and vigour again. Almost everyone who starts insulin is surprised at how well it makes them feel and how painless and simple giving themselves injections is. Looking back on their feelings when first told they would need injections gives most people a good laugh when they realise how easy it all is!

The Worst of Diabetes.

Unfortunately, for various reasons such as being diagnosed before the best management of diabetes was known, or inability to receive proper medical care, some people reading this article will already have problems associated with having had diabetes for many years.

These problems may include having had a heart attack or stroke, foot or leg ulcers or even an amputation, problems with vision, kidney damage or problems with digestion, constipation, incontinence or difficulties in sexual performance.

Heart attacks and strokes are caused by several factors including persistent high blood pressure and fat deposits on artery walls blocking off the blood flow. High blood pressure (otherwise known as hypertension) puts excessive strain on the heart and brain. It also roughens the inside wall of blood vessels making it easier for fat to stick to the wall, and then blasting off the plaques of fat. Fat floating in the blood stream may lodge itself in a smaller blood vessel, stopping blood flow past that spot and causing the death of the tissue usually provided with blood and oxygen by that artery. If this occurs in the heart, brain or another vital organ it can be devastating.

Hypertension causes tiny blood vessels called capillaries to become fragile and they may bleed. This blood, which is in the wrong place, is very toxic to the surrounding tissue and causes it to die. It is this process which is involved in kidney disease, retinopathy (vision loss) and some forms of stroke.

Damage to nerves happens when the blood flow to them is interrupted or cut off through the process described above. Nerves that don't get oxygen die. While this process is happening a person may feel tingling or even pain, and it may be a relief when this stops. This is a dangerous stage because firstly, the area once covered by the now-dead nerves is numb and can't feel pain when injured, and secondly, nerves control the positioning and movement of tendons, sinews and muscles. When nerves die these structures can't perform their tasks and they allow bones to move from their proper positions in places like the feet. The bones tend to drop to the bottom of the foot where they put pressure on the skin of the foot which might ulcerate. The person can't feel any pain and an infection may be rampant before it is noted. The body's white cells (the natural defence) can't get to the site because of lack of blood vessels to carry them and the end result may be an amputation following a long course of treatments. Furthermore, when nerves die reflexes disappear. This becomes a problem when doing something like driving and needing to do something by reflex, such as moving a foot from the accelerator to the brake in an instant.

Annual Checks and Ideal Results

Blood Glucose Level	4 – 6 mmol/L (before breakfast)
HbA1c (3-monthly average)	Less than 7%
Total Cholesterol (blood fats)	Less than 4.0mmol/L
Low Density Lipids ('The Bad')	Less than 2.5mmol/L
High Density Lipids (The 'Good')	More than 1.0mmol/L
Triglycerides (The 'Ugly')	Less than 1.5mmol/L
Blood Pressure	Less than 130/80 where kidneys are healthy or less than 125/75 if there is a problem
Body Mass Index (measures plumpness)	Less than 25 Mg per square metre is ideal
Urine Albumin Excretion (A kidney test)	Less than 20 micrograms/minute (timed overnight collection) Less than 20 mg/L (spot collection) Less than 3.5 mg/mmol: women Less than 2.5 mg/mmol: men (albumin creatinine ratio
Nicotine consumption	Zero
Alcohol intake	No more than 2 standard drinks per day for men No more than 1 standard drink per day for women
Physical Activity (How much exercise)	At least 30 minutes walking or alternative on 5 or more days every week
Optometrist	Yearly or two yearly eye check and retinal scan (look at the back of the eye. Referred to ophthalmologist (eye doctor) if any problems detected
Podiatrist	Yearly check of circulation and sensation (blood and nerve supply)

Nerves and blood vessels are also damaged by having had too much glucose in the blood for too long. The excess sugar clings to the protein of the blood vessel wall or nerve sheath and turns into a form of alcohol which 'burns' holes in the wall. This causes the blood vessels to bleed into the tissue with the results already described. The protein sheath of nerves is called the myelin sheath, and if this is damaged messages can't pass instantaneously up and down the nerve, so pain isn't felt and reflex movement doesn't occur.

Damage to the myelin sheath is the cause of autonomic neuropathy, symptoms of this include gastric problems like slow stomach emptying, constipation and diarrhoea, incontinence, dizziness when suddenly standing up and sexual problems.

What's to be Done?

While in no way wishing to down-play the severity or difficulties associated with having the complications of diabetes, which can be devastating, some help may be at hand.

Physiotherapy and exercise may help with heart attack and stroke. The Heart Foundation and Stroke Foundation offer advice on these. The Royal Guide Dogs and Low Vision Clinics have occupational therapists who can assess the amount of disability caused by vision loss and help with strategies and aides (no, most people aren't lucky enough to get one of those lovely dogs!). Blindness may be relieved to some degree by ophthalmologists using laser, artificial lenses and medications. The Royal Hobart Hospital has a hyperbaric chamber (also used to treat divers with the 'bends'), and this has had great success in treating persistent leg and foot ulcers, thereby preventing amputation. Vascular surgeons can help restore blood supply to cold legs and feet and podiatrists are experts in looking after foot problem: they can keep people on their feet and help keep their feet on their legs. Should major surgery be needed, artificial limbs

have improved greatly in recent years. Gastric problems can be helped with medications as can some incontinence issues. Gentlemen, everyone knows about Cialis and Viagra, but sorry ladies, we are still waiting for the pharmaceutical companies to acknowledge our needs.

Depression is a problem associated with diabetes. Sometimes it precedes diabetes and is known to cause it, and sometimes it comes after diagnosis. It is hard to remain optimistic at times, particularly in the face of the problems of diabetes.

If a person has depression it is very wise to seek help from their GP, who may prescribe medications and send them to a psychologist. Modern tablets are very effective and talking over problems with a counsellor is often very valuable. They can teach strategies to deal with the negative feelings of diabetes such as sadness, anger, fear and lack of optimism.

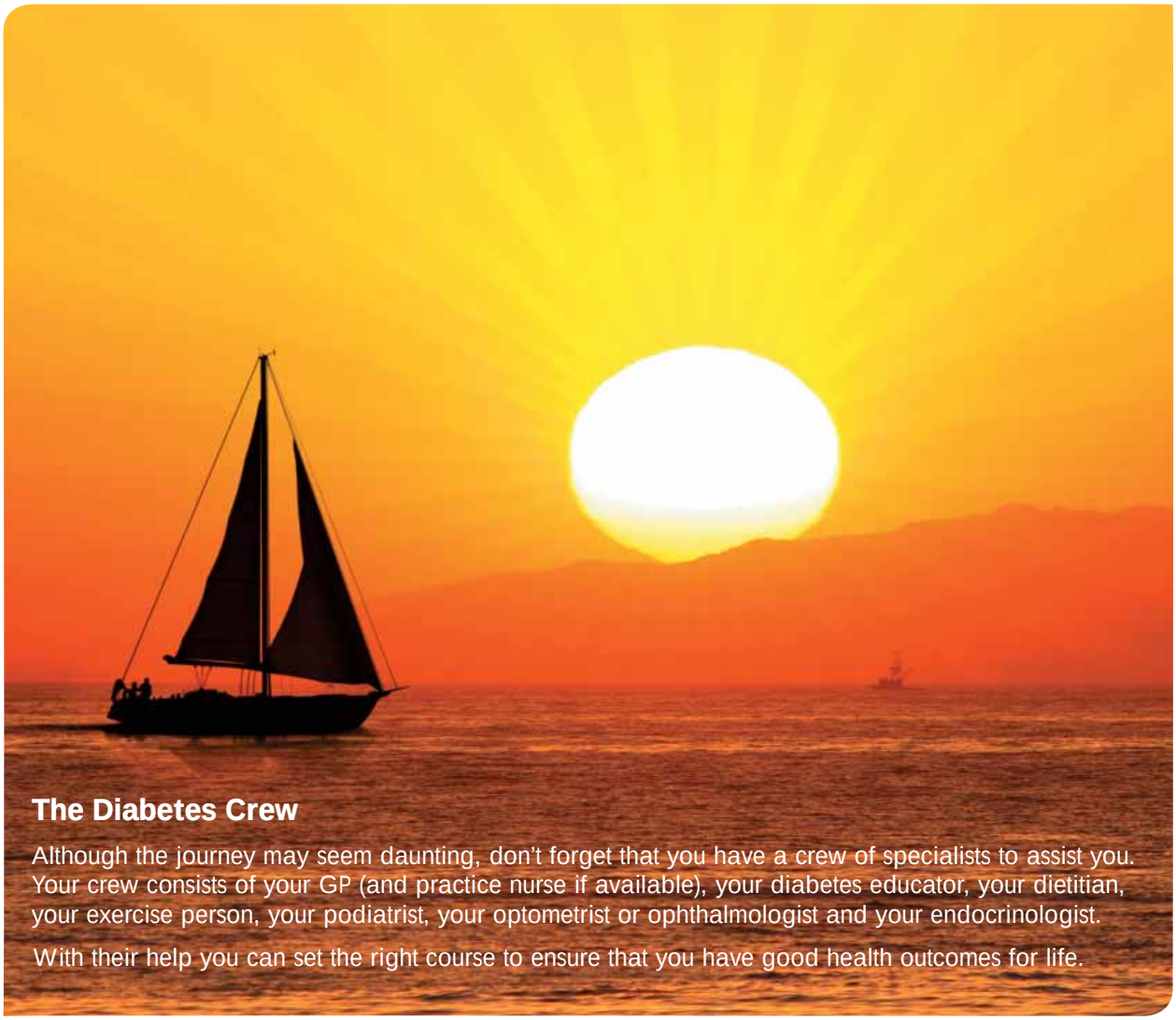
As with other health problems, if the GP provides a Care Plan and referral, consulting a psychologist will cost only the Medicare fee.

When visiting a health professional i.e. a podiatrist or optometrist, it is useful to phone around and ask if there is a person on the staff of that particular practice who has a special interest in helping people with diabetes. A person who has a deep interest in diabetes will put a little bit extra into the care they give.

Everyone, no matter what age or stage of diabetes, will be healthier, happier and better able to cope if they have a few of the necessities of life: a healthy nutritious diet with plenty of variety and rich in veggies, fruit, good cereals, regular, enjoyable activity, no cigarettes, a little alcohol, good friends, someone or something to love and be loved by and something spiritual to believe in to round off a good life.

You are the centre and focus of a group of health professionals who want to help you live well, long, healthily and happily with diabetes. Keep in touch with them and make their lives worthwhile too.

Article prepared by Maggie Lasdauskas, RN CDE Manager Diabetes Education Services, Diabetes TASMANIA.



The Diabetes Crew

Although the journey may seem daunting, don't forget that you have a crew of specialists to assist you. Your crew consists of your GP (and practice nurse if available), your diabetes educator, your dietitian, your exercise person, your podiatrist, your optometrist or ophthalmologist and your endocrinologist.

With their help you can set the right course to ensure that you have good health outcomes for life.