Live Well with Diabetes
Welcome to this special issue dedicated to Live Well with Diabetes. Live Well with Diabetes is an educational initiative of the BC Endocrine Research Foundation that is intended to provide clear up-to-date information on all aspects of diabetes self-management. It is our belief that the better informed an individual with diabetes is then the more likely they are to make the right decisions and be proactive with respect to optimal management of their diabetes.

Live Well with Diabetes is a multimedia educational tool that serves as a comprehensive guide to the understanding and management of Type 2 Diabetes, a condition that affects 7-10% of the adult Canadian population, is associated with a doubling of the risk for heart disease and stroke and is the most common cause of blindness, amputation and kidney failure in our society. Live Well with Diabetes is available on DVD, CD-ROM, videotape and on-line at www.livewellwithdiabetes.com. It is soon to be released through public libraries and drug stores.

Live Well with Diabetes covers Type 2 diabetes definition and diagnosis, management guides, lifestyle change recommendations, medical therapy explanations, information on complications associated with diabetes, blood sugar testing instructions, information links and much more. This complete information source should always be at your fingertips.

Live Well with Diabetes was developed by the BC Endocrine Research Foundation with the assistance of volunteers, donors and its sponsors LifeScan Canada, GSK and Merck Frosst Canada.
**Diabetes: Definition and Diagnosis**

**What is Diabetes?**

Diabetes has several forms. Type 1 diabetes usually occurs in younger people including children and young adults, though it can develop at any age. We will not be discussing this form of diabetes at this time. We will be discussing the most common form which is called Type 2 diabetes. Your genetic make-up determines if you are at risk for this type of diabetes. But even if you carry the genes, you may not get the disease because factors in your lifestyle can make it occur early or later or not at all. For example, if you carry the genes and you become very obese and don’t exercise, then as you get older there is a much higher risk of developing the high blood sugar that is diabetes. The disease probably begins with the body developing insulin resistance. Insulin is the hormone that allows glucose or sugar to enter into your body cells, and sugar is the essential fuel for your body cells. When a person develops insulin resistance, they need more insulin to do the work that a small amount of insulin was able to do before. This gets progressively worse, until the insulin producing cells of your pancreas start to fail and produce less and less insulin. At that point in time your sugar levels rise, not just to abnormal levels after eating food, but even to abnormal levels when you are fasting.

**How is diabetes defined and diagnosed?**

Diabetes is defined by the level of sugar or glucose in your blood. This definition has changed a little in the past few years, but essentially we consider a person to have diabetes when the blood sugar level is higher than 7.0 if you measure it on an empty stomach or before eating (fasting). Normally, if you test your blood sugar level before eating, you should be below 6.1 mmol/L. However, it has been found that even if you are higher than 5.7 mmol/L there may be some abnormality of sugar metabolism, although it may not be diabetes. If you are over 5.7, your doctor should do a test of your blood sugar which should be taken two hours after drinking a 75 gm glucose drink. If the test two hours after drinking the glucose drink is above 11.1 mmol/L, you have diabetes. But there are pre-diabetes states which may indicate a risk of developing diabetes or heart disease, and these can be identified as follows: If the fasting glucose is between 6.1 and 6.9 mmol/L and is the same on a repeat test, you have a form of pre-diabetes called Impaired Fasting Glucose. If your test taken two hours after the 75 gm glucose drink is below 7.8 you are normal. If it is between 7.8 and 11.1, you have Impaired Glucose Tolerance, a pre-diabetic state which you can treat successfully to prevent diabetes. Finally, if your blood sugar is tested at any time of the day whether you have eaten or not, and if you have typical symptoms of diabetes such as excessive thirst and urination, blurred vision or fatigue with excessive thirst, and your blood glucose value is above 11.1, you have diabetes.

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**Do you have Type 2 Diabetes?**

You may be eligible to participate in a research study being conducted at Vancouver Hospital. The **ACCORD** clinical trial is for people who have Type 2 diabetes and are:

- 55 years or older  **OR**
- 40 years or older with a history of heart attack, stroke or other serious blood vessel problems

**ACCORD** stands for **Action to Control Cardiovascular Risk in Diabetes**. This study is looking at ways of reducing the risk of heart attacks, strokes and other serious blood vessel problems in people with Type 2 diabetes. All of the medications used in the study are approved and regularly used in the treatment of diabetes and heart disease. If you are eligible to participate you will receive:

- Counseling & education for healthy lifestyle choices
- Blood sugar, blood pressure and cholesterol medications free of charge
- Blood sugar testing supplies free of charge

For more information, please contact the Research Coordinator at 604-875-5934 or email to dstevens@vanhosp.bc.ca.

**ACCORD Clinical Trial, #200 — 575 West 8th Avenue, Vancouver, BC V5Z 1C6**

For general study information you can view the main trial website at [www.accordtrial.org](http://www.accordtrial.org)
Diabetes Management

If you have been diagnosed with diabetes let's talk about how you can best manage your diabetes to delay or even prevent the complications. We will go over these items more in detail but there are several points that are very important to state right at the beginning. The first of these is, it is extremely important if you smoke to stop smoking. Secondly, eating healthy foods and getting regular physical activity is important. Regular blood sugar testing is essential and you should know whether you are achieving the targets your physician has outlined for you. Before eating a meal your sugar level should typically be between 4 and 7 mmol/L. Two hours after eating, the level should be between 5 and 10 mmol/L. The normal non-diabetic blood sugars are typically between 4 and 6 mmol/L before eating and between 4 and 8 mmol/L two hours after eating. It is important to know your blood pressure and whether you are achieving the normal blood pressure target of less than 130/80. To do all of this, you may have to take medications, if prescribed, on a regular basis. It does not mean necessarily that because you need to take a several medications you are sicker. It only means these medications to prevent yourself from getting sicker. That is the important point. We really want to avoid the long-term complications of diabetes and medications will help you to do it.

Healthy Eating is important for the following reasons. People with diabetes cannot secrete enough insulin which is needed when you eat carbohydrates. If the carbohydrate is in the form of sugar, including fruit sugar, it is rapidly absorbed and needs insulin secreted. When it is in the form of starch or complex carbohydrates such as bread, rice, or pasta, it also demands insulin secretion but at a slower rate. If you eat a well-rounded diet that includes different food types such as meat or fish, vegetables, milk and other dairy products, as well as carbohydrates, you are able to control the blood sugar better than if your meal is just a large quantity of carbohydrates. You might want to know how to count the amount of carbohydrates you are eating, as well as the glycemic index. High glycemic index foods cause your blood sugar levels to rise very quickly, overcoming your ability to secrete insulin, you do want to eat lower glycemic index foods. The nutrition expert in your diabetes team will help you make the right food choices. You should ask your physician to refer you to a diabetes teaching centre. It is also wise to learn to avoid eating large amounts of fatty foods. Those with high cholesterol content should be limited and in particular, avoid fried foods and trans fatty acids found in many processed foods. These will may make heart disease and high blood pressure more likely.

Physical Activity also plays an important role in several different ways. Firstly, we know that doing 30 to 45 minutes of walking or other activity every day, or at least every second day, teaches your muscles how to avoid becoming resistant to insulin action. Since this is a major problem in people with diabetes, regular exercise is even more important than for people who don’t have diabetes. It is also true that doing exercise delays the absorption of carbohydrates, and promotes the burning of the carbohydrates by your muscles. If you are overweight, a remarkable benefit can be achieved by losing 5-10% of your total body weight. Finally, regular activity is also very good to prevent heart disease and high blood pressure. Finding time to be active every day should become a priority for you. Even if you have health problems such as arthritis or diseases that make it hard for you to walk, which is the easiest way to get regular physical activity, you can achieve the same goals by swimming, or by doing resistance exercises even when sitting in a chair by lifting some weights. It has been found that by using a pedometer you can ensure you take 10,000 steps a day and achieve remarkable health.

Medical Therapy As stated already the first step in treating type 2 diabetes is a healthy diet and daily exercise. Often this is sufficient treatment for many years, but when no longer successful you have to consider taking some pills. There are many different types available. You may need to take only one type of pill, but most people will need to take two or more types. You should not worry if you need to take several different pills, as that does not indicate that your diabetes is worse. Rather, it means that you need to take more to prevent the complications that may come. Taking these pills will make the difference between preventing and not preventing these serious complications which include loss of eyesight, kidney damage and nerve damage including lower extremity amputations, loss of sexual function and of most important, heart disease and strokes.

Finally, taking pills often needs to be supplemented or replaced by taking insulin. Taking insulin is far simpler than it used to be. Injections today are nearly painless, and you may not feel the injection any more than a mosquito bite. So there are many ways to treat your diabetes.

Keep in mind, with the diagnosis of diabetes you have a life of learning ahead of you. If it seems overwhelming then remember to take it one step at a time. Change is always difficult; remember to be patient and the many single steps you take will add up to a world of difference. If over time you find you need a change, then find creative ways to mix up your food and activity so that you are still enjoying all aspects of your life.
**Diabetes Complications**

Diabetes is often present for a number of years before it is diagnosed. During this time there is the potential for the progression of complications associated with diabetes. That is why it is so important that you immediately take action once you are diagnosed with diabetes. The best way to avoid or halt the progression of complications is to manage your blood sugars, blood pressure and blood cholesterol to the targets your diabetes doctor outlines for you.

**Heart Disease and Stroke**

The risk of developing coronary heart disease, which is the kind of heart disease that is common in Western Society and the kind that people with diabetes are particularly prone to, is very high. The risk is approximately double in people with diabetes when compared to the general population. A large proportion of diabetics will present some form of atherosclerosis, either in their heart in the form of angina, heart attack or congestive heart failure or in the circulation to the brain leading to stroke, or in the circulation to the periphery leading to abnormalities of blood flow to the legs, the development of aneurisms in the abdomen and abnormalities of the blood flow to the kidneys.

**The Eyes (Retinopathy)**

Approximately one in twenty Canadians have diabetes and more than twice this number have it and just don’t know it. Years ago, a lot of patients used to lose eyesight from diabetes. It still happens but it happens a great deal less than it used to. The primary reason that it does not happen as often is because it is possible to save many patients’ eyesight by using laser treatment. Diabetes affects the blood circulation throughout the body including the small blood vessels everywhere and the eye is no exception. The eye is like a camera with lenses upfront and film in the back. The film that lines the back of the eye and takes pictures of what we see is called the retina. In the retina there are tiny blood vessels, arteries and veins that bring the blood to and from the back of the eye. In diabetics, the blood circulation is not as good as it ought to be and those blood vessels can close off and new blood vessels can grow. The two problems that occur in diabetic eye disease are new blood vessels growing and bleeding and the blood vessels leaking fluid into the center of the eye. Both of these problems can be treated with laser, which can often reduce vision loss by half. If patients are treated early, while they still have pretty good vision, the laser treatment is more effective. Therefore, screening patients on a routine basis, in advance, before they have trouble with their eyesight is critical. Typically this is done once a year. If you are doing well, you should be seen again in one year. If there are problems, then tests can be done to see whether laser treatment will be helpful in keeping vision. Some of the people who take really good care of their diabetes often have wonderful sight for their whole lives and other people who are not as careful often lose significant eyesight.

**The Kidneys (Nephopathy)**

In diabetes there is a very high risk for damage to the kidneys. As a result of high blood sugars and high blood pressure the small blood vessels in the kidney can become damaged. When this happens the filtering ability of the kidney is impaired and it is no longer as good at getting rid of the waste and keeping what is needed. One of the best ways to avoid kidney damage is to manage your blood sugars and blood pressure as well as you can. Your kidney function should also be checked by your diabetes doctor at least once a year. The test is one that measures very small amounts of protein in your urine, and is called microalbumin. The test can be done on a urine specimen taken at any time of the day, or on one taken in the early morning. The results should be less than 2.8 mmol/mg of creatinine in the female, and less than 2.0 in the male. Microalbumin, if present, can be successfully treated by both good blood sugar control and good blood pressure control. The goal level of your blood pressure is less than 130 and less than 80 (130/80 mm Hg).

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Frequently Asked Questions

Is there a cure?
At this point in time there is no cure for diabetes. What we can do is manage diabetes effectively; the good news that there has never been better tools available for this purpose than there is today. There is excellent guidance for diet and physical activity in addition to wide range of medications, when needed, that help to manage the risk factors that must be treated with diabetes; high blood sugars, high blood pressure and high blood fats.

What have I done to cause diabetes?
You might ask yourself why you have diabetes. Have I done something wrong? Well almost always the answer is no. We know that the vast majority of the tendency to diabetes is genetically transmitted. If you are obese, your chances of developing diabetes are much higher than if you are not obese. But by the same token we know that obesity has many genetic causes as well. Rather than blame yourself for where you are at, I think it is better to think of what you can do to control your diabetes and to improve your health better.

Why do I have to test my blood sugars?
Testing blood sugars provides you with valuable information that lets you know whether the diet, exercise and possibly medical therapy are working for you. Ask your diabetes doctor what your blood sugar targets are and do your best to achieve those targets. If changes in diet and physical activity for a period of 8 to 12 weeks doesn’t help the situation, then it may be time to start some form of medical therapy. Good blood sugar control is essential to good diabetes management and therefore you need to test your blood sugars and take medications as prescribed by your doctor.

I feel okay so why should I bother with medications and making changes in my diet and exercise?
Diabetes is a very deceptive disease because most people diagnosed with diabetes have probably had it for a number of years but didn’t know it. The symptoms are not always obvious. The average blood sugar tends to rise gradually and as it rises there is damage occurring throughout the body; to the heart, the eyes, the kidneys, the nerves. This can occur even though you feel okay. That is why it is so important to take action as soon as you are diagnosed with diabetes. Make the changes suggested by your doctor and see a dietician immediately. Take the medications if needed and focus on taking care of yourself. Managing your diabetes is like managing a long-term investment. You must be thinking years ahead and the quality of your future life depends on decisions and actions in the present.

Once I start taking these medications will I have to take them for the rest of my life?
It is very possible that you may be taking many of these medications for the rest of your life but this should not be your focus. These medications are helping you to manage your diabetes and the associated risk factors. Think of these medications as a way to help you manage your wellness and avoid the long-term complications associated with diabetes. What really matters is the quality of life and these medications are often essential to helping you manage your blood sugars, blood pressure and blood fats, the risk factors associated with diabetes.

Once I start insulin am I going to gain weight like friends say?
When diabetes is poorly controlled there is a large amount of glucose being excreted in the urine. When insulin is started and blood sugar control improves much of the blood sugar (calories) that was previously being excreted in the urine is now being effectively absorbed into the body tissues and as a result some people may gain weight. This only happens when excess calories are consumed. When taking insulin you should pay very close attention to your food intake, carbohydrates in particular, as well as physical activity.

I’m getting plenty of physical activity but I can’t seem to lose any weight and don’t know what to do?
Weight loss can be very difficult and is a complex issue. Sometimes the best efforts at balancing energy output with caloric intake result in little or no success with respect to weight loss. Please keep these two important messages in mind. First of all increased muscle tone and mass can mask a reduction in fat tissue and the focus should be on how you feel with respect to energy levels. Always remember that the physical activity is helping you to lower your insulin resistance and improve blood sugar management. Secondly, there are numerous research studies that indicate ‘fat and fit’ represents a far lower risk for heart disease and stroke than someone who is ‘thinner but is less fit’. Although some weight loss is desirable and beneficial, the primary emphasis of a physical activity program should be on improved fitness and a sense of well-being.
Diabetes Healthcare Team

Because your total care is a complicated process, it is important that you take the time to learn as much as possible about diabetes management and be sure to take full advantage of the entire healthcare team that is available to help you manage your diabetes. The whole healthcare team includes:

**Your doctor.** It is important to have a good trusting relationship with your doctor. Your doctor is responsible for gathering all your health information making sure you are well taken care of.

**A specialist,** an endocrinologist or an internist. A diabetes specialist can make certain all aspects of your diabetes are addressed.

**A diabetes nurse educator.** Nurse educators are very gifted at helping you to understand all aspects of your diabetes care and taking the time to explain things clearly.

**A dietitian.** A good diet is critical to an effective diabetes management strategy. Dietitians can make the appropriate recommendations and keep you on track.

There is often a need for a number of special helpers. These include:

**Your pharmacist.** Taking a number of medications can sometimes be confusing. Your pharmacist can help clarify the pills you are taking and help you understand the roles of the different medications.

**A foot care specialist.** To avoid foot and lower limb complications you should see a foot care specialist regularly as well as checking your own feet yourself everyday.

**An ophthalmologist** or an eye doctor. The problems that occur with the eyes associated with diabetes don’t always appear as an immediate impairment of vision. Therefore, it is important to have regular eye check-ups. If there is evidence of eye damage, laser therapy can be used to halt the progression of the damage and preserve your vision.

**A social worker.** You may consider seeing a social worker to help you deal with some of the social problems and perhaps even a psychologist because it is often difficult for you and your family to cope with this disease and it may cause depression.

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**Nerve Damage (Neuropathy)**

In diabetes there can be progressive damage to the peripheral nerves, especially the feet and fingertips as well as the sexual organs. This can occur gradually so that many people are often unaware of the progression. One of the best ways to avoid nerve damage is by maintaining good blood sugar levels and managing blood pressure as well as regular physical activity. Nerve damage to the feet means that lesions or sores on the feet may go unnoticed and thereby become infected. The healing process is also not as rapid as it used to be. This is why you should check your feet everyday, both the soles and in between the toes. Make sure any issues are dealt with.
Diabetes is nothing to be ashamed of. There is no blame. The diagnosis of diabetes is a turning point in our lives and we have the choice to decide the path we will take with it. Let it be a wake-up call to a healthier, energetic life. A life embracing balance, wise food choices and plenty of physical activity is a life well lived.

The management of our diabetes can sometimes seem like an overwhelming task. At times like these it is important to take a pause and think about one thing that we know we can do that works. Maybe something as simple as that morning walk that you know makes such a difference and you got out of the habit of doing. Start doing it again. Find time for that walk in your daily routine. Then add another item to your day. Perhaps one healthy homemade meal each day. Build on these positive steps one at a time, and before you know it you will feel the difference in your body and see the difference in your blood sugars.

Over time diabetes can change just as our bodies change as we get older. Sometimes it is difficult to stick with our diabetes management program as a result of boredom, or the simple fact that what we are doing is no longer working for us. At times like these we need to be creative and seek alternatives. This may mean alternative foods or activities. New or different activities can often provide the spark that helps us to feel alive again and sustain the strength that we need to continue to manage our diabetes just as well as ever. Don’t be afraid to seek out guidance if you need it. Guidance can come from a diabetes nurse educator, a dietician, your doctor, your spouse or a close friend.

Many people with diabetes do not have a significant other in their lives and are missing that support. Joining a support group with regular weekly or monthly meetings or organizing one of your own groups can be a helpful avenue to share thoughts, feelings, recipes and all the little tricks that help you to manage your diabetes. This type of group can be beneficial as there is always some point in our life when we need to talk with someone who understands the struggles of managing diabetes.