

PPUK - Making Glucose Control your Goal



TREATMENT BASICS

Diabetics are characterised as having abnormally high blood glucose levels. The main difference between type 1 and type 2 diabetes is in the treatment: Individuals with type 1 diabetes require treatment with an external source of insulin, and those with type 2 diabetes are typically treated initially with a modification of their diet and exercise habits because exercise can make the body more sensitive to insulin (Devlin 1992). However, some people with type 2 may require medication to help them produce more insulin or make them more sensitive to it. Some with type 2 may even require injections of insulin to control their glucose levels.

The main goal of treating diabetes is to prevent complications of the disease. Many studies have shown that keeping the blood glucose at normal levels can be effective in eliminating the symptoms and slowing or preventing the potentially devastating complications associated with diabetes.

The most common excuse heard is, "I don't have the time to exercise." Typically, this response comes from a person who does not understand how useful exercise can be in treating the condition. It is well known that exercise can improve almost anyone's health. People who have type 1 diabetes can benefit from exercise as well. But for someone with type 2 diabetes, exercise is a major component of treatment and in many cases may prevent the disease.

The addition of physical activity to your life may be the only treatment you need for your diabetes.

The visual system (eyes), renal system (kidneys), cardiovascular system (heart), peripheral vascular system (blood vessels in the extremities), nervous system (nerves), gastrointestinal system (stomach and intestines), and immune system (infection control) are the bodily systems affected by poor diabetes control.

Diabetes and your vision

Diabetes UK is the largest organisation in the UK working for people with diabetes, funding research, campaigning and helping people live with the

condition. They state the following: "Although diabetes is the leading cause of blindness in people of working age in the UK, research has proved you can reduce your chances of developing diabetes complications – such as damage to your eyes – if you: control your blood pressure and glucose levels, keep active, maintain your ideal body weight, and give up smoking."

Diabetes affects the eyes by damaging the retina, which is referred to as retinopathy. The retina is the part of the eye that is responsible for sensing light. Retinal damage can occur in two ways. First, the blood vessels that supply nutrients to the cells of the retina can become damaged as a consequence of high glucose levels in the blood that in turn cause bleeding and the formation of blood clots in them. The blood from these vessels that leaks into the eye can obscure light from reaching the retina, causing blindness. And if the retina cannot receive nutrients and oxygen because of a lack of blood flow in the vessels, the cells will die, causing permanent loss of vision.

Sometimes when small blood vessels in the retina are damaged in this way the body will produce more vessels in this area to try to deliver oxygen to the retinal cells. This can lead to far too many new blood vessels being formed in the retina, which in turn block out light and cause blindness. This condition is called proliferative diabetic retinopathy. The current treatment of this condition involves the use of a special laser to slow or stop new vessel overgrowth.

Blurring of vision can also occur when the blood glucose is high. These symptoms can sometimes be resolved when the blood glucose is brought under control. However, it is also known that high blood glucose levels can lead to nerve damage that can affect the way that your eye moves. This is often a permanent condition. If the nerves to your eye muscles do not work properly, blurring of vision will occur.

Diabetes and your kidneys

The kidneys are organs that filter out unnecessary products from our bloodstream and retain the necessary elements, such as proteins and

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electrolytes (sodium and potassium). However, high glucose levels can lead to an abnormality that allows necessary elements in your blood, such as proteins, to be wasted into the urine. This is referred to as proteiuria, which is a common sign of early kidney failure.

Good glucose control through proper diet, exercise, and medication if needed can prevent diabetic nephropathy (Hostetter 2003).

Kidney disease can happen to anyone but it is much more common in people with diabetes and people with high blood pressure (hypertension). Kidney disease in diabetes, referred to as diabetic nephropathy, develops very slowly, over many years. It is most common in people who have had the condition for over 20 years. About one in four people with diabetes might go on to develop kidney disease, though, as treatments improve, fewer people are affected.

As with many of the other complications of diabetes, kidney disease is caused by damage to small blood vessels. This damage can cause the vessels to become leaky or, in some cases, to stop working, making the kidneys work less efficiently. It is now known that keeping blood glucose levels as near normal as possible (between 4 and 7 mmol/l before meals, and less than 10 mmol/l two hours after food) can greatly reduce the risk of kidney disease developing as well as other diabetes complications. It is also very important to keep blood pressure controlled.

Further damage to kidneys can occur from untreated or under-treated urinary tract infections. Infections of the bladder are often controlled easily with the implementation of antibiotics. If you have diabetes, you are more susceptible to these types of infections and at a greater risk of kidney damage if the infection spreads from the bladder to the kidneys causing them to become infected, too. This type of infection is commonly referred to as pyelonephritis.

Diabetes and your cardiovascular system

A statement from Diabetes UK reads: "People with diabetes are two to four times more likely to develop cardiovascular disease (CVD) than those without the condition."

Without going into unnecessary, long-winded detail, put simply, if you have diabetes, you are at higher risk of having a heart attack or stroke. The good news is that there are things you can do to

keep your heart healthy. Diabetes UK has the following suggestions:

Trash the ash

Quitting smoking is one of the best things you can do. Even smoking less than five cigarettes a day doubles the risk of heart disease.

How low can you go?

Keep your blood cholesterol low (below 5mmol/l if possible). If you don't know your cholesterol level, ask your GP to arrange a test for you.

Get active

Increase activity gradually on a regular basis, until you are enjoying at least 30 minutes of physical activity a day. You'll be surprised what a difference this makes to your diabetes management and how you feel.

Watch the weight

Manage your weight to avoid putting extra pressure on your heart. Talk to your GP or diabetes healthcare team for advice.

Stop the stress

High blood pressure (hypertension) increases the risk of CVD. Avoiding stress, maintaining a healthy weight, being more active and having a healthy, balanced diet will all help towards reducing blood pressure.

Diabetes and your nervous system

In individuals with diabetes, the nervous system can be affected in many ways, causing multiple problems termed neuropathy. These problems can include numbness of sensation, increased pain sensation, decreased muscle control and function, and difficulty with control of other organs such as the bladder and bowel. There can also be significant problems with neurological control of the heart and blood vessels, which can lead to abnormal heart rhythms and significant fluctuations in blood pressure.

Those with diabetes who have decreased sensation can develop problems relating to the inability to sense pressure pain. For instance, if the soles of your feet do not sense pressure well, it will be difficult for you to know whether or not your shoe fits well. Therefore, when there is a specific pressure point on a part of your foot that you cannot feel, it will lead to significant breakdown of the skin (chaffing), causing an ulcer that can become infected. This condition is called peripheral neuropathy; it is believed to be directly caused by the by-products of hyperglycemia.

A decrease in sensation can also lead to a significant breakdown of joints, which in turn can lead to fractures and deformities. Damage to the nerves that control certain body parts can occur, resulting in the dysfunction of the specific areas. This is referred to as autonomic neuropathy. These areas can include organs such as muscles, heart, blood vessels, stomach, intestine, and bladder.

Furthermore, if the nervous system's interaction with the blood vessels is disrupted, this can result in the inability to control your blood pressure. The body's blood pressure normally is lower while lying or sitting than when standing. The nervous system helps increase the blood pressure when we go to the standing position. If your nervous system is impaired from diabetes, you may experience symptoms such as light-headedness, dizziness, or even loss of consciousness when you attempt to go from a lying or sitting position to a standing position. More importantly, normal autonomic nerve function is critical to exercising safely.

GLUCOSE CONTROL

Do all people with diabetes get all of these problems? The simple answer is no. However, you are at a greater risk of having these complications. The more relevant question is whether you can prevent diabetes from causing these problems. The scientific data suggest that with good glucose control, most if not all of these complications can be prevented or minimised. For some, glucose control may be as easy as starting an exercise programme. But some of you may require initiation in an exercise programme, diet modifications, and medications under the close supervision of your health care professional. No matter where you fall in our range of diabetic clients, we can develop an action plan to control your glucose. You'll be amazed by how great you feel after just a few weeks of training. Regular, moderate activity will make the world of difference to you and your health... and we'll guide you every step of the way!

