Sugar in the Blood

Positive Living article • Neil McKellar Stewart • 1 December 2009

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Our bodies turn the sugars and starches from certain foods we eat into glucose. This is transported around the body to help meet our energy requirements using a hormone called insulin. Diabetes [1][Diabetes mellitus] A disorder in which sugars in the diet cannot be metabolised into energy due to a lack of the enzyme insulin. Late-onset diabetes mellitus may be a long-term side effect of some anti-HIV drugs. is caused by too much sugar in the blood. It happens when the system which controls the amount of glucose we produce no longer works properly.

There are three types of diabetes: Type 1, Type 2 and gestational diabetes (which can occur during pregnancy and usually disappears when the babyis born). Type 1 occurs when the pancreas stops producing insulin to meet the body's requirements for glucose. This type of diabetes is more likely to be inherited and have its onset in people under 30. Type 2 diabetes occurs when the pancreas cannot make enough insulin or the body is unable to use it properly (insulin resistance [2]A diabetes-like condition in which, while adequate amounts of insulin are produced by the pancreas, the body does not respond normally to the action of insulin. In the wider community, insulin is related to obesity, while in HIV it may be related to lipodystrophy.).

In Australia, Type 2 diabetes is the fastest growing chronic disease, affecting 7.5% of the population over 25. It ranks as our sixth mostcommon cause of death.
Heart attacks, kidney disease, loss of vision, neuropathies and impaired immune responses can all be consequences of diabetes and reducing your risk of developing it is one of the most important things you can do for your health.

Risk factors for Type 2 diabetes include family history, older age, obesity (particularly a waist circumference of over 90 cm for men or over 80cm for women), unhealthy eating habits, alcohol abuse and a low level of physical activity. Also, in the case of people with HIV, it is a side effect [3]An unwanted effect caused by the administration of drugs. Onset may be sudden or develop over time. of antiretroviral drugs and inflammation associated with HIV infection.

Between 2000 and 2006 the Multicentre AIDS Cohort [4]In epidemiology, a group of individuals with some characteristics in common. A cohort study is a special kind of clinical trial which looks at a treatment or treatment strategy in a cohort of people. Study (MACS) followed a number of American men for four years and found that the rate of new diabetes cases was more than four times higher for those with HIV. In fact, 10% of the positive men on treatment developed diabetes over the period. Their average age was 46 and most of them were white and slightly overweight.

> The increased risk for positive people developing Type 2 diabetes has been shown in at least four other major international studies that also included women. In fact, people with HIV who are on treatment run a similar risk of developing diabetes as obese, sedentary men who have insulin resistance.

Many people on HIV treatment have abnormal levels of lipids in their blood, a general condition called

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dyslipidaemia. When the fat becomes redistributed in the body its called lipodystrophy and a form of this, lipoatrophy, is when fat is lost from the face, buttocks and limbs. Forty to fifty per cent of people on HIV treatment are living with lipodystrophy. For some people, the fat loss and accumulation may not be noticeable. But it may still be interfering with the way you process sugars and fats.

REDUCING YOUR RISK

For those who started treating in recent years, the news is good. If you commenced on the newer drugs between 2003 and 2006, the probability of you developing lipodystrophy is half that of those who started between 2000 and 2002.

The older drugs such as d4T, indinavir and AZT are all associated with lipodystrophy and are not used much anymore. The newer NRTIs including abacavir and tenofovir and the PIs, atazanavir and darunavir, do not seem to interfere with our ability to process fat and sugar. In general, most of the new drugs have much better lipid profiles.

Recent studies all confirm that loosing weight is the most effective way of preventing progression to Type 2 diabetes, even for those who have existing glucose problems. In a US study, weight loss of only 5.6kg over three years was shown to reduce your chance of progressing to diabetes by over 50%.

So, if you're carrying too much weight, lose it. Diabetes is just as much about limiting bad fats as it is about reducing sugar – an often misunderstood fact. So, McDonalds, pizza and fried chips are off the list if you want to reduce your risk of developing the condition.

The Harvard School of Public Health has recently updated the healthy eating pyramid, and it can be downloaded [5] Use it to create a healthy diet.

Start off with whole grains as your source of carbohydrate [6]Any of a number of compounds, including sugars and starches, which are important as sources of energy. Along with fat and protein, one of the main constituents of food. for energy. Oatmeal, barley, wholegrain bread and brown rice all deliver both the outer (bran) and inner (germ) layers along with energy-rich starch. The body can't digest whole grains as quickly as highly processed carbohydrates and so this keeps your blood sugar and insulin levels from rising and falling too quickly. There's also research that says eating a diet rich in whole grains can protect you from heart disease.

If you don't have to watch your weight, you can then add healthy fats including olive, canola, soy, corn, sunflower and peanut oils, polyunsaturated margarines, nuts, seeds, avocados, and fatty fish such as salmon. These healthy fats help improve cholesterol [7]An essential component of cell membranes and nerve fibre insulation, cholesterol is important for the metabolism and transport of fatty acids and the production of hormones and Vitamin D. Cholesterol is manufactured by the liver, and is also present in certain foods. High blood cholesterol levels have been linked to heart disease and may be a side effect of some anti-HIV medications. levels although too much olive oil (and alcohol) can increase triglycerides which is often already a problem if you have HIV.
Have two serves of fruit and five serves of vegetables a day. Research from the European Prospective Investigation of Cancer (EPIC) published last year showed that a diet rich in fruit and vegetables can reduce the incidence of diabetes by 25%. Leafy green vegetables are particularly helpful.

For your source of protein, choose fish first, then skinless poultry, then low fat dairy. Fish is rich in omega-3 fats which provide protection against inflammation and can reduce your risk of heart disease. Fish has also been shown in trials to reduce triglyceride levels by as much as 25%.

> Research in Australia has shown that red meat, if it's lean, has a similar fat content to chicken. It is how we cook these foods that make the difference. So, if you eat meat, choose lean cuts and grill it.

Animal fats (especially butter) and fatty red meats are at the top of the pyramid and should be consumed judiciously.

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There is evidence to suggest an association between your vitamin D status and your insulin sensitivity. Recent research shows that people with HIV are often deficient in vitamin D, which protects you from a number of medical conditions including bone disease, some cancers and kidney problems. So, take a multivitamin supplement with vitamin D in addition toyour diet and get a little
sunshine everyday. Vitamin D can also help with the pain from peripheral neuropathy.

The healthy eating pyramid has similarities to the Mediterranean diet which is rich in vegetables and low in red meat, with skinless poultry and fish replacing beef and lamb. The main source of added fat is 30 to 45 grams of olive oil and a handful of nuts per day (providing you are not overweight).

Research shows that diets of this kind can improve your blood cholesterol and decrease inflammatory processes which are both helpful in reducing your risk of diabetes.

You may have noticed that red wine is also on the pyramid. And if you've read this far you deserve a glass. But just one, mind.

SYMPTOMS OF DIABETES

Symptoms that you may be developing diabetes include:

- passing large amounts if urine, particularly atnight, as your body's way of getting rid of excess sugar
- thirst, excessive drinking in response to the large urine output
- unexplained weight loss
- infections, slow wound healing and itchiness
- blurring of vision, as the high glucose level alters the ability of the eye to focus.>/li>

If you have any of the above symptoms, check with your doctor to see if they could be caused by diabetes.

IF YOU HAVE DIABETES

For those people with HIV who have diabetes or have been told that they are pre-diabetic, the above advice about a healthy diet particularly applies to you. Many people control their diabetes for years with a healthy diet and regular exercise – at least 30 minutes a day, five days a week is recommended. This can include aerobic exercise like walking or swimming or weightlifting, which has been shown to be useful for diabetes.

If you have diabetes it is important to see a diabetes specialist and a dietitian experienced with the condition to help you to understand the best way to manage it. You will learn about the glycaemic index of foods and about how certain high starch foods, such as potatoes, and foods containing sugar should be used sparingly in your diet or used along with low glycaemic foods in each meal.

Unfortunately, some of us who are treatmentexperienced and have lived with HIV for a long time will find that our diabetes progresses despite our best efforts. The inflammatory processes described above are not always able to be reversed no matter how hard we try to live by healthy diet guidelines.

Common medications such Metformin or Gliciazide are prescribed and if taken conscientiously along with a good diet can give you good control of your diabetes and limit its effects on you. Sometimes insulin injections may be required.

Your diabetes doctor is likely to require you to prick your finger twice daily to check your blood sugar control – for most people their target for blood glucose should be 4-6 mmol/L before meals and up to 8 mmol/L after meals. It is also important to attend a diabetic clinic for a blood test to check on your glycosylated haemoglobin (HbA1c), a blood test which shows your average blood control over the preceding 10 to 12 weeks. Your doctor will also look out for signs of any damage that the condition may be having on your feet or eyes, for instance.

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FURTHER READING

- A very useful book to help you to learn how to cook diabetic-friendly meals is Diabetes: Eat and Enjoy by Christine Roberts, Margaret Cox and Jennifer McDonald (New Holland Publishers, 2009). Some of the information about diabetes used in this article was taken from the introduction to this book.
- Also see www.diabetesaustralia.com.au [8] and www.thebody.com/diabetes [9]

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Links:
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[17] http://technorati.com/search/http%3A%2F%2Fnapwa.org.au%2Fpl%2F2009%2F12%2Fsugar-in-the-blood

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