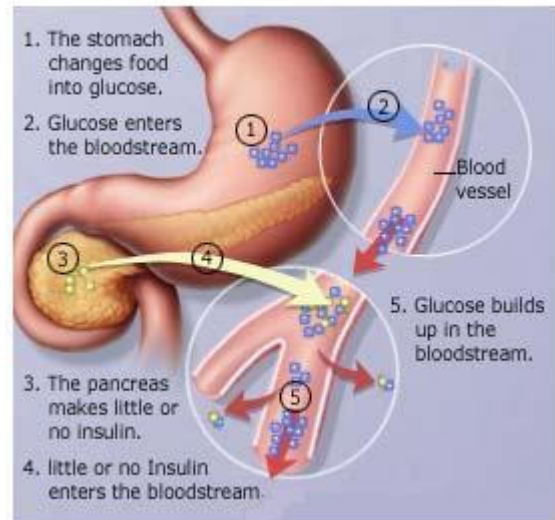


WHAT DO YOU KNOW ABOUT DIABETES?

by John Appleton

With all the media coverage of Avian Flu one might think that is all we have to worry about in terms of global health issues. There is however something even more sinister which is already having a devastating human, social and economic impact. On every health professional's lips today is a word that is shaping government policies on health in almost every developed country. The word is diabetes, a disease that has become one of the most widespread in history, a disease that affects more than 200 million people worldwide and kills one person every 10 seconds. Diabetes is a silent killer that threatens to overwhelm healthcare resources in even the wealthiest countries.



Over the past thirty five years the industrialised world has seen the incidence of diabetes increase fivefold. In the United States alone it is estimated that \$150 billion is spent annually on treating diabetes and related complications.

In New Zealand 105,000 people have been diagnosed with diabetes and this is expected to rise to 145,000 by 2011. Each year this statistic is being added to by 7,500 and in four years the annual increase is forecast to be 11,000. Worse it is estimated that there are 115,000 undiagnosed cases and following up behind them another 300,000 people at risk. To put these figures in perspective bear in mind that the average secondary school has around 1,000 students. Imagine 145 secondary schools lined up side by side. That's how many people in our country will have diabetes by 2011. Clearly we have a massive problem.

Other frightening statistics relate to the side effects of the disease. It is estimated that one third of new cases of end stage kidney disease are due to diabetes. Four out of five diabetic patients will die not from diabetes itself but from cardiovascular disease (heart attack, stroke or peripheral vascular disease). Diabetes is also the leading cause of amputations and one of the leading causes of blindness in the elderly. In up to 50% of cases the patient has serious health complications by the time of diagnosis.

It's not difficult to understand why a huge sum of money has been allocated in the recent budget to address this enormous health issue.

While we have talked about diabetes in general we should understand that it is the the Type 2 form of the disease that we are talking about. There are two types of diabetes. Type 1 is when the pancreas stops producing adequate insulin which is thought to be due to a malfunction in the immune system.

Type 1 diabetics are reliant on insulin injections for life. Type 2 diabetes, which is often referred to as adult onset diabetes or diabetes Mellitus, is by far the most common form of diabetes, affecting around 90-95% of people who are diagnosed. Although some Type 2 diabetics also become insulin dependent, Type 2 diabetes might better be termed **insulin resistant diabetes**.

No longer is the term adult onset appropriate because diabetes is rapidly becoming a disease of the young. Evidence from the U.S. shows that the greatest jump in diabetes has recently occurred among people in their thirties.

So what's gone wrong? While diabetes does tend to run in families and there is a genetic link, make no mistake diabetes is a lifestyle disease. Our genes haven't changed in the past thirty five years but our diet has and it has changed dramatically. What is the problem. So many have tried to lay the blame for obesity and heart disease at the door of fat. But isn't everything we eat now 99% fat free? It would be difficult to pick up a processed food item in the supermarket that doesn't have some reference to this. If our dietary fat has in fact decreased, is there another villain out there that is behind the statistics?

Remember that diabetes used to be known as sugar diabetes and it makes sense to think of it in these terms because this disease is characterized by high blood sugar levels. We know about the soft drink problem (which could easily be ameliorated by substituting the sugar for the wonderful herbal sweetener Stevia) or fruit juices that when heated to preserve them become little more than liquid sugar. We know about the ice cream, the tasty sweet yoghurts, and even the baked beans. Try to find products in the supermarket which are sugar free. Even these products contain artificial sweeteners (which is another story). Sugar is literally pumped in to everything. Why? Because we are addicted to it, we love the taste and that's what keeps us coming back for more.

If that's not enough the when we add into the mix an enormous intake of refined carbohydrates we are heading for trouble. Everything that I have read (and I read lots about this) clearly implicates grains. Our intake of grains particularly refined grains has increased enormously. Just think of how many products you would eat in a day that contain flour or grain products. The bread, biscuits, crackers, cakes, pies, museli bars etc that we love so much are consumed by New Zealanders in vast quantities.

A diet high in refined carbohydrates which break down into sugar is nothing more than a high sugar diet. When we eat carbohydrates we trigger a rapid rise in blood sugar levels. High levels of blood sugar are toxic to the kidneys and other organs so the pancreas pumps out insulin to regulate the blood sugar level by escorting it into cells to be burned for energy. Insulin converts excess blood sugar into glycogen a storage form of sugar which is then transported to the liver and muscles.

Once these areas are filled up the insulin will then convert excess blood sugar to fat. As I have mentioned in an earlier article, insulin is the fat storage hormone. Over time cells can become overwhelmed by so much insulin and become resistant to it in the same way that an alcoholic can tolerate alcohol that would make the average person legless.

This situation is known as **insulin resistance** and the pancreas is forced to make even more insulin to maintain blood sugar at close to normal levels. As insulin resistance increases the pancreas loses its ability to respond and post meal glucose levels start to rise higher which brings about a condition known as impaired glucose intolerance.

Further insulin resistance (which starves cells of glucose) forces the liver to respond by increasing glucose production which then makes fasting blood sugar levels rise and the slippery slope to diabetes looms large. Most people who are diagnosed with diabetes (Type 2) produce plenty of insulin often two to three times the amount that people without diabetes produce. If this continues on the pancreas becomes exhausted and it will no longer be able to produce adequate amounts.

So that's the problem in a large nutshell. Next month we will look into what one can do about diabetes and the good news is that there is a lot one can do. A brief insight though relates to the old favourite Vitamin C.

Did you know that the glucose molecule is very similar to the Vitamin C molecule and both compete for entry to the cell? In a situation where there is high glucose, Vitamin C will be denied access to the cell, a very undesirable situation. Professor John Ely from Washington University has hypothesised that the serious health consequences of prolonged Type 2 diabetes, e.g. blindness, wounds that won't heal, limb amputation, etc., are the result of a lack of vitamin C inside cells. If proven and it wouldn't be difficult or expensive to conduct the research, this could have ENORMOUS implications for the future treatment of diabetes. It would mean that by taking optimum doses of this very important vitamin, the Vitamin C would have a priority 'ticket' for entry to cells thus potentially preventing some of the dire consequences of diabetes. I think this is very exciting and there is no reason why New Zealand could not lead the world in this very important research.

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