

## **Diabetes is a deadly scourge.**

It is the leading cause of **kidney failure, lower limb amputations and blindness**. And it is a major cause of **heart disease and stroke**. And diabetes is an epidemic. Because type 2 diabetes is closely associated with obesity (80% of people with type 2 diabetes are overweight), we have a diabetes epidemic worldwide that is following right behind the obesity epidemic that you have been hearing so much about. In 2010 25.6 million Americans, or 11.3% of the population, over the age of 20 had type 2 diabetes. That's up from 8.3% of the population in the 2005-2008 database, and the prevalence of diabetes in the 20+ age group in this country is predicted to exceed 15% by 2015.

However, it is not type 2 diabetes that I am focusing on today. Instead I will talk about a related condition called pre-diabetes. But first, a bit of biochemistry (my favorite subject). **What is pre-diabetes and how do we develop it?**

**When we become overweight our tissues become insulin resistant.** Initially our pancreas responds by pumping out more insulin to keep our blood sugar levels near normal. It also starts releasing fatty acids into the bloodstream. At this stage our blood sugar levels are pretty well under control, but our blood levels of insulin and fatty acids are higher than normal. We are asymptomatic for the most part, so **many of us never realize that we have a problem.**

And lots of us are pre-diabetic! The National Institute of Health estimates that 35% of US adults in the 20+ age group and 50% of US adults in the 65+ age group have pre-diabetes - and most of them don't even know it.

That is unfortunate because people with pre-diabetes are at increased risk of heart disease, strokes and certain types of cancer. And there is a high probability that those people with pre-diabetes will go on to develop type 2 diabetes a few years down the road. That's because **high levels of both fatty acids and insulin damage the pancreas**. So every year that an individual does nothing to reverse the pre-diabetic condition their pancreas loses more of its capacity to produce insulin. Eventually, the pancreas can no longer produce enough insulin to overcome the insulin resistance, and the individual develops full blown type 2 diabetes.

With 35% of the population already pre-diabetic - and most of them not knowing that they have it, **anything that we can do to prevent pre-diabetes from progressing to type 2 diabetes is big news.**

**That's why today's study (Mitri et al, American Journal of Clinical Nutrition, 94: 486-494, 2011) is so interesting.**

The scientists directing the study enrolled 92 adults with an average age of 57 and a BMI of 32 (anything over 30 is considered obese). **The subjects were given 2,000 IU/day of vitamin D and/or 800 mg/day of calcium in various combinations (placebo, D alone, calcium alone and calcium + D).** They did not assess for pre-diabetes in this group, but given the age and BMI of the group it is fairly safe to assume that most of them had pre-diabetes.

At the end of 16 weeks the group receiving the placebo had a 14% decline in the ability of their pancreas to secrete insulin - about what you would expect for individuals with pre-diabetes. Calcium had no effect on pancreatic function.

**However, the groups receiving 2,000 IU/day of vitamin D had a 26% improvement in the ability of their pancreas to secrete insulin.**

So what are the take home lessons for you?

#1) The most important message that I can give you is that if you are overweight, you are probably already pre-diabetic even if you have not received a formal diagnosis.

You are likely already at significantly increased risk of heart disease, stroke and cancer - and you are likely to develop type 2 diabetes in the not too distant future.

**YOU SHOULD TAKE ACTION NOW!**

#2) The authors of this study were careful to point out that their study did not show that vitamin D alone could reduce the progression of pre-diabetes to type 2 diabetes. That study has yet to be done.

However, there are several published clinical studies showing that lifestyle changes (weight loss, exercise and a healthy diet supplying all of the essential nutrients) can significantly reduce the progression of pre-diabetes to type 2 diabetes.

So if you want to act now to reduce your risk of becoming another statistic, the proven path is clear.

#3) While I consider it unlikely that vitamin D will be a "magic bullet" for preventing type 2 diabetes, this study does highlight yet another potential benefit of making sure that your intake of vitamin D is optimal.

To Your Success!

Dr. Stephen G Chaney