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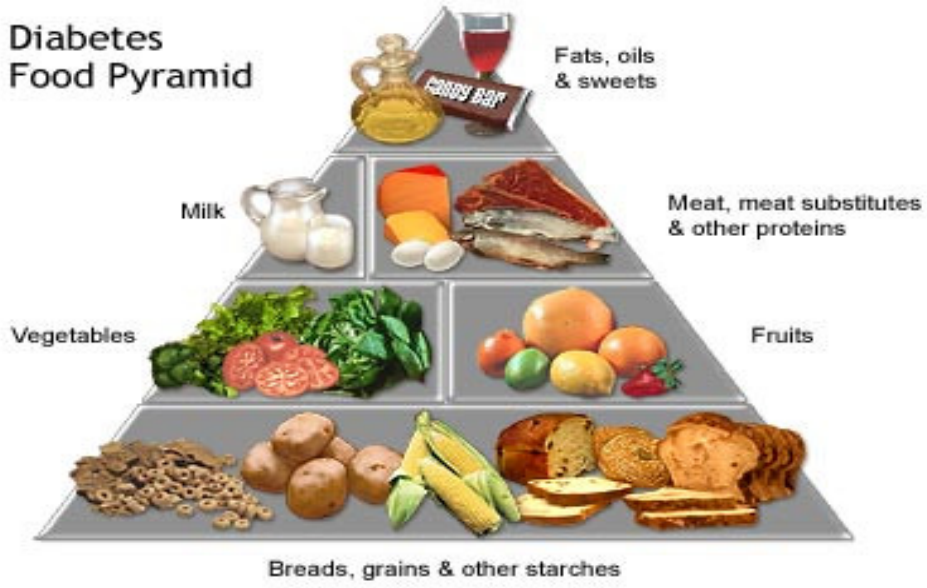
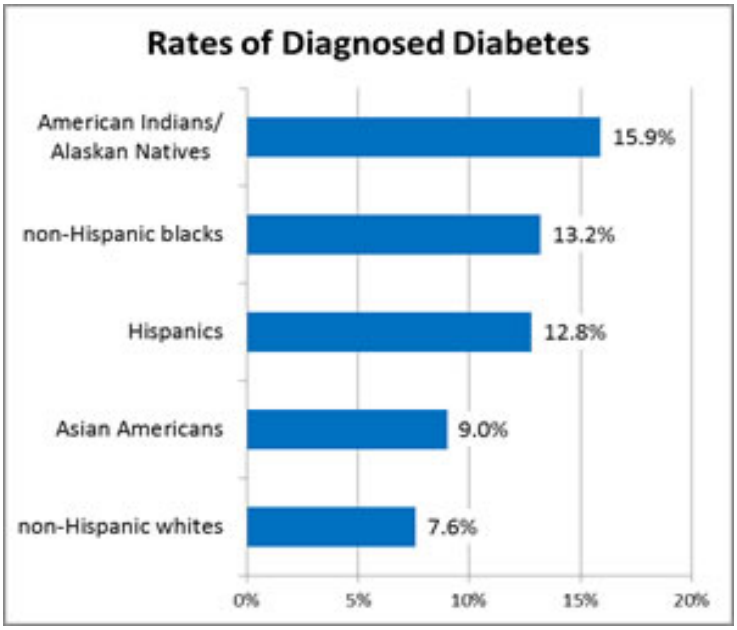
Adv. Biology
November 4, 2016

Type 2 Diabetes: Causes and Cures

Type 2 diabetes, often known as adult-onset or noninsulin-dependent diabetes, is a chronic condition that affects the way the body metabolizes glucose. With type 2 diabetes, the body either resists the effects of insulin — a hormone that regulates the movement of sugar into the cells — or doesn't produce enough insulin to maintain a normal glucose level. Though there is no cure for type 2 diabetes, there is a relationship between body shape, genetics, activity, and race to it and optimizing your health is the best way to avoid contracting this disease.[1] Type 2 diabetes is directly linked to body weight and physical activity. Almost 90% of people living with type 2 diabetes are overweight or have obesity. The connection between weight and this disease is that people who are overweight/obese and are already struggling to produce insulin have added pressure on their bodies with an excessive calorie intake, and properly controlling blood sugar levels becomes very difficult - thus leading to diabetes. However, with a carefully regulated diet that includes whole grains, leafy green vegetables, and fruit, a type 2 diabetes prone individual can avoid getting the disease.[2]



Whether you get type 2 Diabetes or not can also be determined by your race and genetic predisposition. The ethnic groups that are at the highest risk of contracting type 2 diabetes include Native Americans, Hispanics, African-Americans, Asian Americans. About 15.9 percent of Native Americans and Alaska Natives are living with diabetes; 13.2 percent of all non-Hispanic black Americans ages 20 or older have the disease; 12.8 percent of Hispanics are living with type 2 diabetes; and 9 percent of Asian-Americans are affected by this disease.[3]



Family history plays a strong role in whether or not a person will contract type 2 diabetes, although personal lifestyle choices also play a large part. Type 2 diabetes runs in families. In part, this tendency is due to children learning bad habits — eating a poor diet, not exercising — from their parents. But there is also a genetic basis. In general, if a person has type 2 diabetes, the risk of your child getting diabetes is 1 in 7 if you were diagnosed before age 50 and 1 in 13 if you were diagnosed after age 50. Some scientists believe that a child's risk is greater when the parent with type 2 diabetes is the mother. If both parents have type 2 diabetes, the child's risk is about 1 in 2.[4] If a family is part of a high risk minority group, they can always reduce their risks by being screened, aiming for a healthy body weight, eating low fat foods rich in fruits and vegetables, exercising regularly, and addressing mental issues such as depression and anxiety – as those mental health disorders make regulating blood sugar more difficult for those with/at risk for diabetes.[5]

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Diabetes paper

Type 1 Diabetes

How does Type 1 Diabetes work? Type 1 Diabetes is a very common Auto Immune Disease, mainly diagnosed in those under 30. How does one's immune system start attacking the pancreas, which is where all the insulin in the body is made? Typically, it is a virus, and the immune system naturally starts destroying the virus. But, if the virus is close to the pancreas, the immune system may confuse Beta cells (which are the cells that produce insulin) with virus cells, and because the Beta cells are bountiful, the immune system employs a lot of firepower to destroy the Beta cells.

It normally takes around 3 years for your immune system to completely destroy the Beta cells, and at that point your body is completely devoid of insulin, and so your body is unable to regulate blood sugar levels. What happens now? There are many treatments out on the market, but the main one would have to be insulin injections, either daily or when needed, depending on how severe the case is. These insulin injections are a temporary fix, but if the patient wishes, can continue indefinitely. Annually, 40,000 people in the U.S. are diagnosed with T1D, and unfortunately have to live with that for the rest of their lives.

Dealing with T1D includes, pricking your finger up to 6 times a day to check blood sugar levels, injections (either daily or with a pump), and constantly living

fearful of the side effects. Those are kidney failure, blindness, nerve damage, heart attacks and strokes.

All around, T1D is a very serious issue, and many people struggle with this. More people should be aware of the side effects and dangers that come with this, and come alongside people with the disease, and facilitate to those people and help them out.

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11/1/16

Diabetes Treatment Methods

In recent years, the number of people diagnosed with diabetes has grown exponentially. Diabetes is a disease where your blood sugar rises because of the lack of insulin. Insulin is a hormone that helps glucose get into your cells to provide energy. There are two types of diabetes, Type 1 causes your body to kill its own insulin and Type 2 diabetes makes it so that your body cannot use insulin. A cure for diabetes is yet to be found, but there are several ways to treat it.

Patients with Type 1 diabetes are required to take several insulin injections a day via needle and syringe, insulin pen, or insulin pump. They must constantly check their blood sugar level . Along with all this, patients must take extra care with their diet, making sure that they consume carbohydrates throughout the day and exercise regularly. Regular medical checkups where the patient is screened and tested for various diseases are also routine for Type 1 diabetes victims.

Type 2 diabetes patients require different treatment. Insulin injections would be ineffective because Type 2 diabetes does not affect insulin production, the body just does not know how to use insulin. Different medical treatments are required, but the same dietary and exercise habits are still mandatory. Instead of insulin injections, Type 2 diabetes cases are usually prescribed oral medication. Metformin is the primary treatment that doctors offer. Metformin is

usually taken twice a day and works by reducing the amount of glucose released by the liver into the bloodstream and increasing cellular response to insulin.

Diabetes insulin injections, blood sugar tests, and oral medication.

An ideal treatment plan for Type 1 diabetes patients.

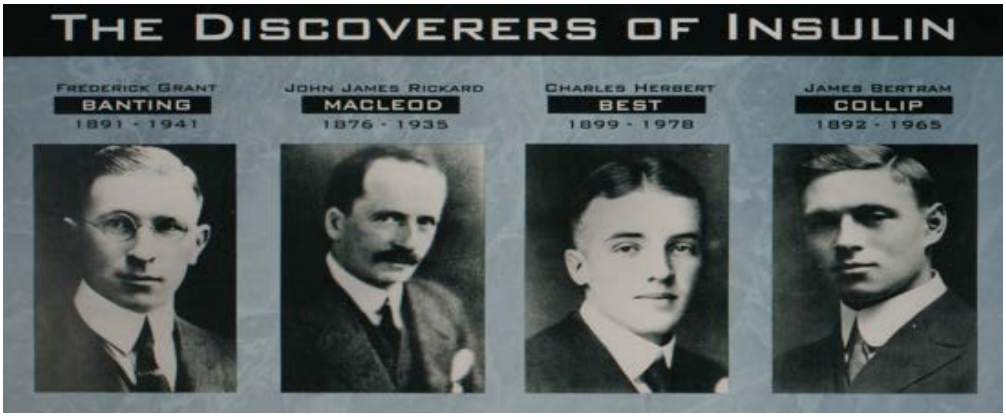
Diabetes: Insulin Development and Administering Insulin

Rachael Ryther

Insulin Development:

Having diabetes causes a lot of problems and is a lot of work now, but 100 years ago when you had it you would just die. The best way to try and deal with it was lowering your carbohydrate intake and that would only increase your life by a few years but it couldn't save you. Some really strict diets that doctors had their patience on were as little at 450 calories a day and sometimes lead death from starvation. In 1889 German researchers, Oskar Minkowski and Joseph von Mering, found that when you remove the pancreas gland from a dog it had the symptoms of diabetes and died shortly after. This lead to the idea that "pancreatic substances" (insulin) was produced in the pancreas. More experiments narrowed it down to the Pancreatic islets. In 1910 Sir Edward Albert Sharpey-Shafer suggested that only one chemical was missing from the pancreas in people with diabetes, so he decided to name it insulin which comes from the Latin word *insula,* which means Island. In 192, young surgeon Frederick Banting and his assistant Charles Best figured out a good way to remove insulin from a dogs pancreas, it looked like a thick brown muck. This brown muck kept a dog with diabetes alive for 70 days until they ran out of it and the dog died. These researchers along with the help of colleagues J.B. Collip and John Macleod, made a more pure and refined Insulin from the pancreas of cattle. In January 1922, a 14 year old boy named Leonard Thompson, who was dying from diabetes, was the first person to receive a shot of insulin and within 24 hours his blood glucose were near normal.

In 1923 Banting and Macleod received the Nobel Prize in Medicine and shared it with



Best and Collip. In 1936 manufacturers developed slower acting insulins. Insuin from cattle and pigs were used for years but had some problems because some people had allergies. In 1978 the first genetically engendered synthetic “human” insulin was developed using E. Coli bacteria. Insulin now comes in many forms, regular insulin like what your body makes and ultra-rapid and ultra-long acting insulin.

Administering Insulin:

People had to use a needle to inject insulin when they had low or high glucose levels. The insulin acted quickly and had a peak effect and it was not easy to regulate.

My great great grandma had to carry around a burner and basically perform a chemistry experiment to see what her glucose levels were in order to inject the right amount of insulin, she

sometimes fainted and had lots of trouble keeping her levels normal. Ultra-long acting insulin is good for at night to help you have more regular glucose levels, and just during the day rather than having spikes of insulin when you eat, you have some insulin all the time. But with that when you take so much insulin you have to eat a set amount of food or you had to stick a needle in again. My cousin when he was 6 had diabetes and they would have to calculate how much insulin he needed for how much he ate, then they would give him the shot, if he did not want to eat it all his parents (or whoever was with him) had to try and get him to eat as close to that amount of food as he could. Having the long acting insulin was good because people like my cousin could get away with only 2 shots a day.

When my cousin got the insulin pump it was amazing because he did not have to have shots anymore and he could decide to have one more piece of pie and just tell the pump to give him so much more insulin.

So even though diabetes is a lot of work and still causes a lot a problems, it is much better than it was 100 years ago because people can now live long good lives even if they have diabetes.

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