

Diabetes

I have had several requests to write an article about diabetes. Diabetes is one of the most costly medical problems facing our society today. There are two main classification of diabetes, Type I and Type II. Type II accounts for 90 percent of all cases and will be the focus of this article.

Some background information: Insulin is a hormone that is made by the pancreas. After a meal, carbohydrates are broken down into glucose, a simple sugar, which is then taken up into the blood. When the pancreas senses the increasing levels of glucose, insulin is excreted into the blood. The insulin then has many actions on the body with the goal of pulling the glucose out of the blood circulation and into muscle, liver and fat cells where it is used and stored.

Diabetes occurs when this system is not functioning correctly. In the beginning stages of the disease, too much insulin is excreted till the muscle and fat cells get used to these high concentrations of insulin—then they just start to ignore the high levels. This means that the level of glucose in the body remains higher for longer periods of time, as the cells that normally take in the glucose ignore the signals coming from the pancreas.

Since the muscle and fat cells are not responding, the pancreas basically kicks it into overgear and puts out more and more insulin to force the muscles and liver to take notice and to soak up more glucose. They then begin to ignore the higher and higher levels, and you can see how the cycle just continues to escalate.

This nasty little cycle just keeps going round and round. Eventually, even the pancreas gives up or burns out. Since muscle and fat cells cannot function without some amount of insulin, the patient must begin to inject themselves with insulin.

This can cause many problems. High levels of glucose in the blood injure many parts of the body. The arteries throughout the body are damaged. Atherosclerosis occurs, which is the clogging of the arteries, which causes heart attacks and strokes. When the smaller arteries in the body are affected by the high levels of glucose, the blood flow is decreased, which is one cause of nerve damage. Eventually, this leads first to the death of the longest nerves in the body, those that supply the hands and feet.

Dead nerves result in a loss of sensation—this means that something as small as a pebble in a shoe will not be felt and will rub an area of the foot until it breaks through the skin. Since the diabetic patient already has poor blood flow, the body is unable to repair this wound fast enough and the wound can become infected. The body cannot clear the infection. To save the patient, the foot or leg must be amputated – which is why diabetes is the leading cause of non-traumatic amputations.

The nerves in the eyes are also damaged and blindness can result. Injured nerves and blood vessels can also lead to fatigue, fungal infections and high blood pressure. Kidneys are also damaged by the high concentrations of glucose, which is the most common factor causing kidney failure and the need for dialysis.

There is a mess of different medications used to treat diabetes. These different drugs are beyond the reach of this article. They function by decreasing the amount of glucose in the blood or by making the muscle and fat cells more sensitive to the insulin that is being produced. Advanced disease stages require insulin injections that mimic the body's own production.

Obesity is the main culprit in causing diabetes. Pot bellies, also known as abdominal or central fat, are hormonally active and cause resistance to insulin. Over 90 percent of patients diagnosed with diabetes are obese. There is also a very strong family correlation—meaning if diabetes runs in your family, you need to be extra vigilant to watch your weight and get regular

Health is not a condition of matter, but of mind

Written by Justin Newman, medical student

exercise.

The best way to prevent diabetes is to watch your weight. This means both eating with moderation and getting regular exercise. The fat that forms around the midsection of the body can lead to the loss of a limb, a heart attack, dialysis that requires having to spend tens of hours per week hooked up to a blood cleaning machine or even simply the loss of feeling in your fingers and toes. So, watch your diet and exercise!

Justin Newman is originally from Holyoke and is attending medical school at the University Of Chicago Pritzker School Of Medicine.

This column is about health related issues with a focus on a rural community. The purpose of this column is to be informative and to comment on interesting medical and health related topics. Any questions or concerns that may arise regarding topics covered by this article should be addressed to your primary care doctor.

Justin can be reached by email at Justin.Tyler.Newman@gmail.com with comments or ideas for topics that you may desire to be addressed in this column. The goal of this column is that you find it not only entertaining and informative but also that it creates a desire to take a life-long interest your health and body.