In West Virginia, 15.3% of the adult population have diabetes.\textsuperscript{1} Also, 35.9% of the adult population have a condition called pre-diabetes.\textsuperscript{1} This is a condition where blood glucose is higher than average and if left untreated can develop into diabetes.\textsuperscript{2} Most importantly, this number continues to rise each year and experts estimate diabetes and pre-diabetes cost West Virginia 2.5 billion dollars each year.\textsuperscript{1}

Diabetes is a disease that affects the pancreas and how the body uses both insulin and glucose.\textsuperscript{2} In West Virginia the most common type of diabetes is type 2 diabetes.\textsuperscript{1} In this type of diabetes the pancreas makes insulin but the body doesn’t use it correctly.\textsuperscript{2} We call this insulin resistance which leads to high amounts of glucose in the blood, also called high blood sugar.\textsuperscript{2}

West Virginia desperately needs a solution to this problem. Currently you can treat diabetes by eating well, exercise, and medicines such as insulin.\textsuperscript{2} Unfortunately these ways don’t seem to be slowing the rise of diabetes in West Virginia.

Nanotechnology is an up an coming field in medicine.\textsuperscript{3} Currently there are robots being made that swim together in a fog and mimic common objects such as clothes, houses, computers, and even cars.\textsuperscript{4} There are already robots designed to inject medicine into infected body cells.\textsuperscript{4,5} Also, the smallest technology known is a motor is so small that 100 million of them could fit into the end of a pin.\textsuperscript{4}

I propose to make a nanorobot to help solve West Virginia’s diabetes problem. My nanorobot is a microscopic robot approximately the size of a red blood cell. These robots would be injected into the body similar to how insulin shots are given. Once in the body, the nanorobots would travel through the blood stream collecting the extra glucose. Once full of glucose, the robots would travel in the blood stream to the kidneys. Here the glucose would be deposited into the urine. Ideally these robots would last six months in the body before being excreted themselves into the urine. This would greatly help patients control, if not cure, their diabetes.
I believe with the help of nanotechnology, we can almost eliminate the problem of diabetes here in West Virginia. By greatly reducing the cost of diabetes in healthcare we could help use that money to improve our state in other ways. I look forward to a future where my friends and family can live a diabetes-free life.
References:


Inside there is a tank to store glucose. Until it is deposited into the urine.

Motor to travel through the blood stream.

Stabilizers

Sensor to detect glucose.

Valve to suck in glucose.

控制系统来控制机器人。