



## SECOND PLACE

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My ten-year-old brother, Dusty, was diagnosed with Type 1 diabetes last April. At first, it really freaked me out. Just the day before, he was the healthiest kid alive. Now he was hospitalized for a couple of days, and in this time period, the nursing and doctor staff taught my mom, dad, Dusty, and even my other brothers and myself basically everything there is to know regarding the disease and how to treat it. And because there is no cure, it was pretty obvious that life for Dusty, and even my family, was about to change dramatically.

Now, my parents wake up at midnight and 3 a.m. every single night to make sure Dusty's blood sugar numbers are stabilized and no emergency glucagon must be whipped out any time soon. Though this is what the doctors recommend, I'm pretty sure my mom spends most nights up each hour, panicking that a perfectly healthy number can soar or dip in only a matter of minutes.

We came home from the hospital that April determined that this nuisance of a disease would not derail Dusty in the slightest. And so far, the impact it has made is relatively small. But the greater burden experienced is that placed on my mom. It should not be expected of her to wake up every night at midnight, significantly altering her sleeping schedule. Therefore, a device must be created that when a Type 1 diabetic's numbers drop or jump, insulin will automatically be given or sugar will be injected into the blood.

Similar devices already exist, but they must be closely monitored, and it can prove even more dangerous in the case of a malfunction. The two separate liquids could be sealed into a pod and "sewn" into the skin. A trigger would be pulled, working in conjunction with the already existing Dexcom.

Dexcom is a form of machinery designed to assess a diabetic's blood sugar. This is yet another flawed piece of technology. It is not accurate the majority of the time and gives people a false idea of what state their immediate health is in. In an ideal world, the Dexcom would be precise and helpful. And when this functional Dexcom would enter a particular range of dangerous numbers established by the patient and medical staff, the pod containing the sugar and insulin would automatically release a specified amount of substance into the body. Obviously, this technology would prove revolutionary to the fight against diabetes. It would serve as an artificial pancreas. The issue though, is perfecting the Dexcom's precision and also finding a legitimate way to trigger the sugar or insulin.

Type 1 diabetics are deficient in a hormone called insulin. In other words, the receptors and cell signals that naturally occur in our bodies simply are not signaled in those of Type 1 diabetics to produce insulin in order to digest sugar. In addition to the sensors that would act symbiotically with this Dexcom, an artificial hormone could be replaced into the body to create a signal for need of insulin.

All of these inventions would redefine the everyday struggles of a type 1 diabetic. No longer would they have to prick their fingertips periodically throughout the day; no longer would parents have to wake throughout the night just to make sure what should be normally occurring is stable. In eliminating both of these burdens and inaccuracies, future youth will live with much more societal fluidity.