

The Potential of an Artificial Pancreas: Improving Care for People with Diabetes
Senator Joe Lieberman
September 27, 2006

Chairman Collins, I would like to take a moment to thank you and your distinguished panel for taking the time to focus your expertise and the nation's attention on the scourge of diabetes and the promise of new treatments for the disease. Every one of us here in this room knows someone with diabetes and we have taken up the fight against the disease and its frightening complications on their behalf.

The facts are compelling. Diabetes is a major risk factor for heart disease and stroke. It is the number one cause of new blindness between the ages of 20-74 and responsible for 60 percent of non traumatic amputations. It is the leading cause of end stage renal disease responsible for over 44 percent of new cases.

But, it's more than the facts. The reality of diabetes in the lives of millions of children, adults, and elderly is equally compelling. Who here knows what it is like to prick your fingers four times a day until they bleed in order to check the body's sugar? Who here knows what it is like to administer insulin to the body four times a day with a needle usually stuck right here in the abdomen? And if you get it wrong and the insulin dose is too low, you feel sluggish. Or if the dose is too high you get the shakes. You may even seize. Who knows what it is like to consciously play the role of a vital organ in the body-- in this case the pancreas? This is an awesome responsibility and it simultaneously amazes me and saddens me that so many Americans must do this day after day, year after year, simply to survive.

But this hearing is as much about prioritization, resolve, and team work as it is about new technologies that will prevent the complications of the chronically high blood sugar levels, which is the problem in diabetes. The Juvenile Diabetes Research Foundation (JDRF) right now is building upon the dollars invested by the National Institute of Diabetes and Digestive and Kidney Diseases' (NIDDK) to bring together people from industry, the basic science community, those affected by diabetes, and other stakeholders to tackle the problem of how to measure body sugar and respond to it with insulin in real time in the form of a small, convenient, you-don't-even-have-to-think-about-it machine. In effect, they are trying to create an artificial pancreas!

Without JDRF's initiatives those in the scientific community and in industry tend to work in silos. In the Congress, it is cubicles. New ideas only go as far as the individual or organization can and want to take them. This works for easy problems. But for complex problems like diabetes and technology to control diabetes this requires simultaneous knowledge of biology, physiology, medicine, math, computer programming, engineering, immunology, pharmacology, endocrinology, and law. Which individual or organization possesses all of this? How do you build a fast dependable car

if you are only an expert in ignition systems? Or how do you get access to a better car if the car companies in your town only sell slow ones?

The answer is getting smart people from across disciplines and sectors to work together to solve important problems. JDRF is doing this. And I propose this in my American Center for Cures legislation-- a \$5 billion proposal introduced by Senator Cochran (R-Miss.) and myself last year. CURES establishes a new center in the NIH to develop new diagnostics, treatments, and even cures to our country's most important diseases as well as diseases poised for research promise. CURES does this by leveraging large amounts of money to encourage research collaboration that tackles diseases like diabetes once and for all. CURES addresses research and developmental barriers such as reluctance by the research community to take risks, information hoarding and industry involvement too late in the research process. It simplifies and funds large clinical trials and strengthens support of small innovative businesses critical to the innovation process.

I am excited and encouraged by what you at NIDDK, JDRF, and our universities are undertaking with families and those affected by diabetes to push innovation even faster. We in Congress are with you. We will help you with legislation like CURES that complements your work. I look forward to hearing your ideas today and promise to work with you in whatever way I can. Thank you.