

# A Day in the Life . . .

## Diabetes: A personal and professional challenge



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*In a four-part blog series, Dr Huffman discusses a typical work day. Patients in this installment represent composite profiles to protect their personal information. No resemblance to particular patients is implied.*

### Part IV: Diabetes past and future

First, I'd like to thank those who've read the postings thus far for their constructive feedback. I've confused some readers with terminology and others with a disconnected story line, and tonight I'd like to address some of those concerns with a short history of what has changed in diabetes care during the past 40 years since I become involved.

When I received my diagnosis of diabetes, there was no available diabetes education. My family doctor put me in the hospital and checked my blood sugar every morning while adjusting insulin doses using urine tests throughout the day. After a week I was sent home with a bottle of insulin to take once daily, a glass syringe, and a bottle of Clinitest tablets to test morning urines for sugar. If there was sugar in my urine, I was to increase the day's insulin dose.

My quest for more information about diabetes never has been adequately satisfied, though it took me to ADA meetings, to medical school, and ultimately into a career in diabetes care. The more you learn about diabetes, it seems, the more there is to know.

Now, fortunately, there are diabetes education programs across the world that provide the education people need to keep their diabetes controlled and free of complications. Chattanooga has excellent programs staffed by dedicated educators who measure their success by the quality of their patients' lives.

Diabetes educators and dietitians are perhaps the greatest innovation in recent diabetes care, and their programs are easier and gentler than medical school.

After using a glass syringe for years, disposable insulin syringes became available. Soon thereafter, urine testing sticks made the urine eyedropper and test tube obsolete. The next decade saw new information on the potential benefits of taking more injections, before meals. And in the early 1980s human insulin became available, freeing all with diabetes from dependence on pork and beef insulins.

Blood glucose testing for home use appeared in the late 1970s. I happily drove to New York to pay \$400 for a monitor the size of a brick which plugged into the wall and required washing the strips with water during testing. This was a revelation, and it made intensive treatment of diabetes possible.

At that time the first insulin pumps hit the market. These were also the size of bricks, and were essentially battery-driven motorized insulin syringes that delivered insulin via a butterfly needle placed in the skin.

Clinical trials of thousands of diabetes patients were being organized in the 1980s to answer the question we all had: Can good blood glucose control prevent diabetes complications? Results which appeared in the early 1990s finally showed that yes, good diabetes control prevents complications!

Many physicians, myself included, had been using the most intensive diabetes treatments in all our patients because its benefits were clearly apparent; people feel better, perform better and live better when they have more normal blood glucose levels. Normalization of blood glucose levels in diabetes is now the standard of care.

The 90s gave us the first rapid-acting and long-acting insulin analogs, products of molecular biology that allow much better control of glucose levels in most people. Insulin pens, developed in the early 80s, came into wide use. Now you could take an insulin shot wherever you may be, without attracting attention or interrupting a conversation.

And insulin pumps became much easier and more comfortable to use, making them the treatment of choice for Type I diabetes in adults and children. Today's pumps are computerized syringes, running on a clock chip and capable of delivering very accurate insulin doses continuously or as meal doses. New pumps let you choose foods you're about to eat, and receive glucose values beamed from glucose monitors, and calculate meal doses automatically.

The first continuous glucose sensors are coming to market, and though they require a subcutaneous cannula, they're nonetheless very useful. We'll see several versions of these in the next year or two.

Oral agents for Type 2 diabetes also have progressed, with new drugs which make people more sensitive to their own insulin. A new class of hormone drugs called GLP1 agonists also reduces appetite and promotes weight loss, which makes diabetes easier to manage.

For 30 years I've been telling people with diabetes to look to the future, because a cure for diabetes is coming. Many people define a cure as making diabetes go away, but I've altered my own definition over the years. We'll see treatments that make diabetes no longer a problem, as we've seen progress these 40 years that has made it less and less of a problem to manage.

What is in store in the near future?

The first inhaled insulins are coming to market for mealtime use.

Oral and patch insulin delivery is in clinical trials.

Medications that restore satiety and reduce food intake will help us battle obesity.

Islet cell transplants are being researched in a variety of forms. I cannot promise an artificial pancreas this year, but furious work is proceeding, and we'll see it soon in some form.

For the present, diabetes treatment remains a cooperative effort.

If you have diabetes, become the head of your own diabetes team. Learn all you can about your own diabetes, both from experts and from observing your own glucose responses in daily situations. Ask questions, and seek satisfactory answers. Don't expect perfection, but strive for the best glucose control you can achieve.

Though diabetes may add a little more complexity to life, don't let it keep you from living long, happy and well.