

One way to fix a problem

What do you do if your A1C is high, your blood sugar log looks pretty good, you know that you aren't cheating on your diet and attempts to increase your insulin dose result in unacceptable numbers of low sugar readings?

This is a common and frustrating situation in the real world of insulin requiring diabetics. Use of a Continuous Blood Glucose Monitoring System (CGMS) may be able to solve the problem. This is a device that is worn for three days and records the blood sugar every few minutes via a sensor that is inserted under the skin at the beginning of the procedure. The sensor remains in place for the full three days. Blood sugar readings are not viewable during the course of the monitoring, but are downloaded at the conclusion of the test. Patient entries during the three days include a few fingerstick blood sugars, meal times and a diary to record symptoms or any other relevant information. At the conclusion of the test, the data is printed out as a graph. The display allows the physician to see the variation in blood sugars throughout the twenty-four hour period in a way that is not matched by any other technique currently available for out patient use. In order to understand how useful this is, compare the information gained by this method with that obtained during conventional monitoring.

Conventional monitoring involves checking your blood sugars at times agreed upon by you and your doctor and then trying to use that information to draw conclusions about how well your insulin doses are working. Almost all diabetics monitor their fasting sugars. Many diabetics test two or three sugars a day, the other two often being pre-lunch and pre-dinner. Now, the information gained from pre-meal sugars is helpful in assessing the dose of long or intermediate acting insulins, such as NPH, Levemir or Lantus. It doesn't help with evaluating the effect of short acting insulins, such as Regular, Humalog, Novolog or Apidra. In order to judge their effect, readings must be taken after a meal, generally one or two hours. Additional times when it may be necessary to test a sugar level, include bedtime and the middle of the night. The observant amongst you will have detected that we are now up to eight blood sugars a day. Not too many diabetics are prepared to do that for anything other than the briefest of periods. No wonder, it's painful and expensive! But if you want to accurately gauge your blood sugar for the full twenty-four hour period, that is the only way to do it. Anything less is a compromise. It

is a compromise that has to be made for quality of life purposes, but it is a fact that fewer sugars are going to provide an incomplete picture.

Some diabetics are on only one type of insulin. More take a combination of a long or intermediate acting insulin once or twice a day, plus a short acting insulin one to three times a day. As you can see from my remarks earlier, correct monitoring of these combinations requires six sugars a day. Usually, this protocol will be followed during dosage adjustments and then the testing requirements will be reduced to three times a day for maintenance purposes. Most of the time this works well. With a few days or weeks of intensive monitoring initially, we can usually arrive at a combination of doses and insulin types that works.

However, once in a while a patient has an A1C that is much higher than expected and the sugars that are being obtained do not reveal the time of day or night where control is being lost. This is where the CGMS has such a valuable role. We get literally hundreds of blood sugar readings over the course of the three days, making it possible to identify virtually every source of poor control at the exact time when it is occurring. It is then just a short step to making appropriate adjustments to the insulin type or dose, in order to correct the problem

Here is one simple example of a patient of mine with a problem that we solved using a CGMS. This gentleman had an A1C of 9%. His pre-meal sugars were looking pretty good, usually under 140. His post-meal readings were few and far between, despite my request for more. When I saw his CGMS printout the reason was obvious. After each meal there was a big spike in his blood sugars exceeding 300, which persisted for between three and four hours. The solution was simple. We instituted a much more aggressive formula for his pre-meal doses of short acting insulin and the problem was quickly solved.

So if you have a “mystery high A1C”, one way to fix the problem is to ask about wearing a Continuous Glucose Monitoring System.

*Dr Philip Nicol is the Director of **The Diabetes Center**, the only medical practice in the region devoted solely to the care of diabetics. Dr Nicol has received recognition from The Diabetes Physician Recognition Program, a joint program of the NCQA and ADA, for the period March 2005 through February 2008, for providing quality care to diabetic patients. The Center offers free, no obligation screening for diabetes and pre-diabetes*

*Monday-Friday. To contact Dr Nicol, or to schedule a free screening, call **843-293-8400**.*