



DAKOTA DIABETES
COALITION

The Dakota Diabetes Coalition is proud to offer a regular column on diabetes and elated concerns every other Friday.



Dr. Johnson is a family practice doctor in Grand Forks with a special interest in diabetes -- and a special knack for writing. As a member of the Dakota Diabetes Coalition, he has generously made himself available to answer questions through our listserv. If you have comments, or questions for Dr. Johnson to address in future columns, please contact gailhand@qwest.net

Visit the Coalition's website!

<http://www.ndhealth.gov/diabetescoalition/>

All deserve respect

Patients are different, so is care

This week's column is devoted to a diabetes case study that illustrates some common diabetes concepts. I'll talk about how to reduce risks, especially those involving the heart. Watch for other case studies in future columns.

Let's meet the patient

A 54-year old white female presents to the clinic with a 12-year history of type 2 diabetes. She originally was treated with lifestyle management, and was started on Glyburide approximately 3 years after her initial diagnosis. She is very active, walking on her step machine 2-3 times weekly for 30-45 minutes each time, and swims 1-2 times weekly for 45 minutes.

She hasn't seen her diabetes educator or dietician in 3 years. She has no exertional chest pain or shortness of breath, and has never smoked. She has known dyslipidemia and hypertension. She has had a normal dilated eye exam within the last year, as well as a normal urine microalbumin.

Sound familiar?

She always checks her fasting blood sugar may check her glucose again "at various times" with her 5-year old meter. She does **not** like testing because she is "tired of poking her fingers" and the process "is too slow." She frequently forgets to code for new strips. She is reporting blood sugars in the "100's", and although she does not have a log book, her memory in her meter is largely consistent with this. Her only complaints are fatigue and occasional stomach upset.

Her present medications:

Glyburide 10 mg BID
Metformin 1000 mg BID
Actos (pioglitazone) 45 mg daily
Lisinopril 10 mg daily
Simvastatin 40 mg daily

Physical exam reveals an obese female weighing 181 pounds, 5'1" height, BMI 34. Blood pressure is 128/78 (<130/80 ideal). Fundi appear normal. Heart, lungs, carotids, thyroid all normal. Abdomen protruberant and benign. Feet show minimal calluses, 10mg filament sensitivity intact, trace ankle edema.

Lab:

A1C = 8.2 (ideal less than 7)
Chemistry panel to include creatinine and hepatic functions entirely normal, except for glucose of 155.

Total cholesterol=194 (ideal less than 200)
Triglycerides=226 (ideal less than 150)
HDL=33 (ideal greater than 50 for females)
LDL=94 (ideal less than 100)

What are the options for glucose (A1C) management to bring this patient to target?

- A) Tell her to quit eating so much before she dies of complications
- B) Tell her to increase her exercise to 1 hour daily
- C) Add Byetta, as this will help with weight loss
- D) Tell her to shape up or you'll "put her on the needle"

Think before you speak!

Although all patients would benefit from regular visits with a dietitian, the message of (A) is probably not the best delivery of this concept. Her exercise level (B) is adequate, and although she could increase the time spent exercising if she chose, this may be difficult to maintain over time. (D) is never an acceptable message to a patient. Byetta (C) is an excellent drug, but its function depends on a pancreas that is

still producing adequate amounts of insulin; 12 years after diagnosis, that is very unlikely. A similar drug, Januvia, is a good choice, but generally has its greatest impact early in the course of diabetes.

In this case, basal insulin was discussed with the patient. Most patients beyond 5 to 7 years past diagnosis have significantly decreased pancreatic (beta cell) insulin production, as this is part of the natural course of type 2 diabetes. I tell all patients with type 2 diabetes that they will end up on insulin, probably not entirely their fault, unless they have a premature or unnatural death. There are exceptions to this, but they are few.

Modern basal insulins such as glargine (Lantus) or insulin detemir (Levemir) would be an excellent choice in a patient with this profile. Both of these insulins come in high-quality pen delivery devices which are easy to instruct, easy to use, and give very accurate delivery of insulin. Starting doses of either of these insulins are typically 10 units morning or evening, **but it is very important to titrate, as patients typically end up on higher doses.**

For most ambulatory patients, titrating to a fasting blood sugar of <110 is typical, unless the patient is experiencing significant hypoglycemia, which is not common with these insulins. Please refer to the prescribing information for more detail in prescribing these products.

Start with pills

For this patient, alterations were made with the oral agents. Actos was discontinued, as this may be the cause of the ankle edema, and would likely be worsened with insulin. Likewise, weight gain may be minimized. Glyburide was decreased to 5 mg BID to lessen the possibility of hypoglycemia and significant weight gain. Metformin was reduced to 500 mg BID, as this could be the cause of the stomach upset, and this dose will likely be efficacious with insulin.

An insulin start is an excellent time for a patient to review the diabetes regimen and get instruction from a diabetes educator and dietician. This was a good time for this patient to look at a new glucose meter as well. Several new meters exist that offer alternate site (palm or forearm) testing, and some newer models do not require coding, a very attractive option for most patients.

This patient returns three months later with an A1C of 7.4, has gained 2 pounds, and has similar elevation of triglycerides and suppression of HDL. She has only had one or two minor hypoglycemic episodes with good recognition and appropriate treatment. At this point, there are some important points to consider: She is noting her blood sugars to be more consistently 90's-150's.

- 1) **Insulin therapy.** One could continue with the present program, and reassess in three months. Persons with A1C's <7.5, however, are usually having more problems with post meal blood glucose elevation (consistently >180) than with fasting or pre-meal. Checking two hours post-meal blood glucose can confirm this. Given this would be the case, most patients should be advanced to multiple daily injections, continuing with the basal insulin (Lantus or Levemir), and starting rapid acting insulin (Humalog, Novolog, or Apidra, all available in pens as well) with meals. One does not need to go immediately to a 4 shot program-adding rapid-acting at the evening meal can be a good transition on the way to a multiple daily injection regimen. Most patients adapt well, as they've built confidence with injections and use of pen devices.
- 2) **Dyslipidemia.** Although some patients will improve triglycerides and HDL with improved diabetes control, that isn't the case here, and should be addressed. Niacin, fibrates (primarily fenofibrate), or fish oils can be good options. Many diabetes patients will require more than one agent to satisfactorily treat their lipid disorder and lessen cardiovascular risk.

Note that not every change was undertaken at a single visit with this patient. They were accomplished over a few visits with support from the diabetes team. As patients build confidence and experience success with their diabetes programs, they lower the risk of complications.

----- [It takes a Team! Case Study #1, Dr. Johnson's Column #16, Feb. 22, 2008](#) -----