Type II diabetes: Tips for managing your older patients

A TWO-PART INTERVIEW WITH NANCY J.V. BOHANNON, MD, BY DAVID B. JACK, MD

In older type II diabetics, complications progress more rapidly than in younger diabetics for any given degree of hyperglycemia. Therefore, it is important to closely monitor blood glucose levels. When their sugars are controlled, older diabetics will have less nocturia and polyuria; fewer infections; better wound healing; a decrease in the rate of progression of cataracts, diabetic retinopathy, and nerve and renal disease; and better control of dyslipidemia. To learn some useful tips for managing older patients with type II diabetes, GERIATRICS reader David B. Jack, MD, interviewed Nancy J. V. Bohannon, MD, for this "Ask the Expert" article.

Bohannon .NJV, Jack DB. Type II diabetes: Tips for managing your older patients. Geriatrics 1996;51(March):28-35.

Mrs. Powell, age 71, with type II diabetes (NIDDM), awaits your visit in the next exam room. While thumbing through the chart, you note that your standard therapy seems to have kept her home blood sugars reasonably low, but there has been a consistent weight gain. There is also an unfavorable lipid profile and a steadily rising BUN. Will you need to start another treatment, or will the current medication be sufficient with modification? How should you switch to or add other agents? Has the pancreas worn out with age and from years of stimulation by classic oral drugs? Should insulin be started? To learn what a diabetes "expert" might recommend for patients such as Mrs. Powell, I interviewed Nancy J.V. Bohannon, MD, at the annual meeting of the American Academy of Family Physicians in Anaheim, CA. This month, in part 1 of this interview, we cover primary care decision-making in the therapeutic approach to the older diabetic. Next month, in part 2, we will discuss how to use the new oral medications for type II diabetes: metformin HCl (Glucophage), acarbose (Precose), and glimepiride HCl (Amaryl).

Q. *For older type II diabetics, how "tight" should control be? What are your target blood sugar levels?*

You can be a little bit more liberal with 70- or 80-year-old patients than with younger ones, because of fear of hypoglycemia occurring in a person with impaired circulation from cerebrovascular or cardiac disease. Even so, I'm still looking for postprandial values of less than 180 mg/dL most of the time. I don't let these patients run around in the 200s. And I still want fasting values under 140. With oral medications, if I could achieve fasting blood sugars of 130 with one pill and 90 with two pills, then I would go for 90 with the two pills. With insulin, I tend to accept a slightly higher reading--in the 100 to 140 range--because there's more variability with the insulin. I wouldn't necessarily aim for 90 with insulin, because I would be afraid that some days it would be down to 55. I would be less worried about hypoglycemia with a target range of 80 to 100 if I were using oral medication.

Q. *You've said the glucotoxicity threshold for the pancreas is about 115 and for nerve tissue about 180.*

Each tissue has its own glucotoxicity threshold. For leukocyte function and for the aldose reductase pathway that has been implicated in the development of some diabetic complications (eg, cataracts and neuropathy), it is 180. For the pancreatic beta cell, its function of appropriate secretion of insulin in response to a rise in blood glucose is impaired when the ambient blood glucose exceeds 115 fig/dL.

Q. *Then pulses in glucose levels must be toxic and all the more reason to smooth out the absorption of the glucose?*

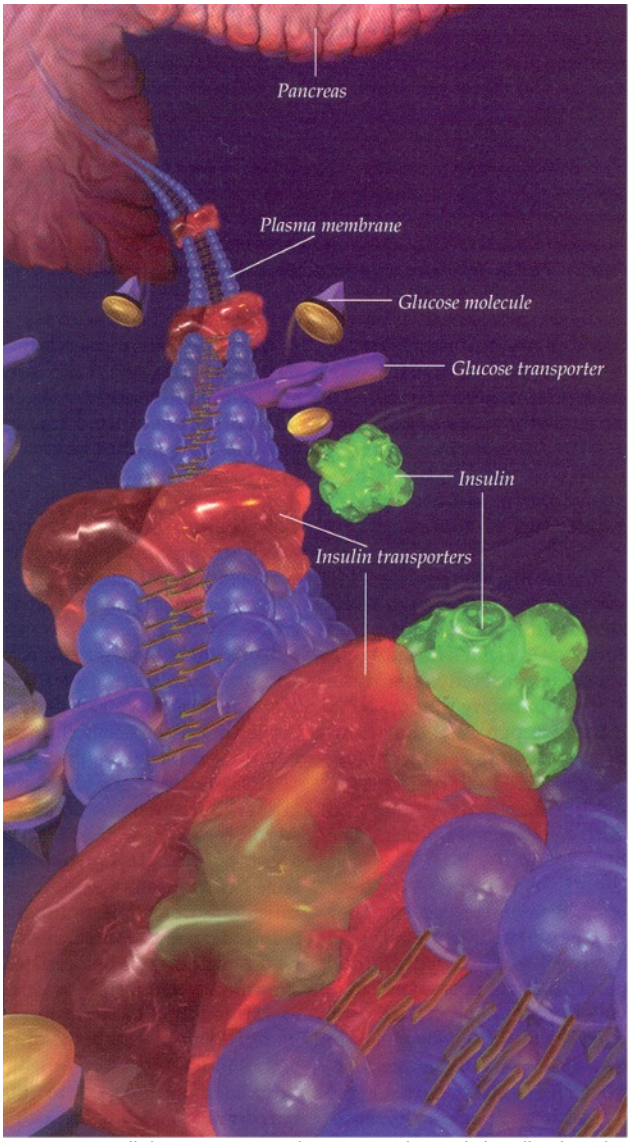
That's right. If glucose levels are exceeding 180 after every meal, you are potentially damaging nerves and impairing leukocyte function. It's better to keep these levels lower.

Q. *What can we really expect from tight control?*

We can expect an improved quality of life, assuming that patients are not getting too overwhelmed with their therapy. In older type II diabetics, the complications progress more rapidly for any given degree of hyperglycemia, probably because of the contribution of other comor-bid risk factors, such as hypertension.

When their sugars are controlled, diabetics will have:

- less nocturia and polyuria
- fewer infections
- better wound healing
- decrease in the rate of progression of cataracts, diabetic retinopathy, and nerve and renal disease
- better control of dyslipidemia (although you might not recognize it because standard laboratory tests don't show a lot of the abnormal lipid metabolism that we know is happening in diabetics), which may lead to decreased risk of cardiovascular disease.



In type II diabetes, appropriate secretion of insulin by the pancreatic beta cell in response to a rise in blood glucose is impaired. In this symbolic representation, glucose and insulin are transported across a plasma membrane. *~Illustration for GERIATRICS by Floyd E. Hosmer and John A. Hosmer*

Q. *For most of our type II patients on insulin, standard therapy is twice-daily combinations of regular plus NPH insulin. I've heard you say we ought to be using regular insulin before dinner and lente before bed.*

NPH insulin has often worn off before the patient wakes up, resulting in a before-breakfast blood sugar elevation that's hard to control. This is especially true if the NPH is given before dinner. NPH usually also peaks higher than lente does. If you keep increasing the evening NPH, trying to get the morning sugar down, you may end up with hypoglycemia during the night.

That is the limiting factor for a lot of patients and physicians; they figure they just have to get used to having a high fasting blood sugar if they want to avoid nocturnal hypoglycemia. But they don't have to do that. They should change to lente insulin at bedtime, which would probably have a lower peak and less chance of hypoglycemia in the middle of the night. In addition, lente insulin lasts longer, so it controls the fasting blood sugar and also

assists in covering the patient's insulin needs at breakfast.

Q. *You recommended using paired a.c. blood sugar measurements. Once patients are stable, I use a lot more postprandial sugar measurements.*

Once they are stable, that's good. I was talking about paired measurements to adjust therapy when patients are not meeting their goals. Conventional therapy is only one or two blood sugars a day. Most doctors have their patients test either before breakfast or be- fore dinner if they don't test both. However, if those blood sugars are OK but the hemoglobin (Hgb) A1c isn't, you need to start testing at other times. Have patients measure before breakfast and before lunch one week, before lunch and before dinner the next week, and before dinner and before bedtime the third week. You may find, for example, that blood sugars are usually 120 to 150 before breakfast, 250 to 300 before lunch, and then back down to 120 to 160 before dinner. Patients are still only testing twice daily, but you are getting useful information about the patterns of their blood sugars and the relationship of those patterns to meals.

Once you find out when the blood sugar is usually high, then you do something to correct that high blood sugar. You might add acarbose with breakfast, or add regular or change to premixed formulations of NPH and regular insulin before breakfast if you were only giving NPH, or increase the regular before breakfast.

In Europe, they have premixed insulin in 50/50, 60/40, 70/30, 80/20 and 90/10 combinations, but all we have in the United States are 50/50 and 70/30. European doctors can't believe how far behind we are in diabetes control. There, most diabetics give insulin injections three or four times a day, and in some countries 70 to 90% of all insulin is delivered via pen injection devices. In the United States, only about 2% of insulin is injected via pen.

However, pen injection devices are available here, and new ones are coming soon. I hope people will start using them. They are much more convenient than a vial and syringe and much easier to use, especially for older people. Patients just dial a dose--click, click, click--insert the needle subcutaneously, and push the plunger on the pen. There's less need for fine motor coordination, and people will be more willing to take more shots. The disposable pens are more expensive than pens with replaceable cartridges but are far easier to handle for your patients with arthritis.

Q. *Is there any use for chromium in impaired glucose tolerance?*

It's really hard for a person to get chromium-deficient, but they can from polyuria if they have wildly uncontrolled diabetes. The renal glucose threshold is more than 200 mg/dL for most adults and higher for the elderly. They would be definitely diabetic, not impaired glucose tolerant, if they were glycosuric enough to lose significant amounts of chromium.

I have nothing against chromium if it is indeed pure chromium, but I do have a lot of problems with patients buying this stuff at health food stores. I worry about what adulterants might be in the pills with the chromium, as occurred with L-tryptophane a few years ago.

Q. *Do you put normotensive diabetics on ACE inhibitors?*

If I can find some excuse to do so. If they have microalbuminuria, or if I run them up and down the stairs--all I need is an increase in their blood pressure above 135/80 mm Hg. Once they have had type II diabetes for a while, I can usually find an excuse to give them an ACE inhibitor.

ACE inhibitors seem to have a unique protective effect on the kidney, decreasing the progression to end-stage renal disease, and I feel most diabetics would benefit by being on them.

Q. *Can you explain to me the increase in congestive heart failure in diabetes?*

There is a myocardiopathy associated with diabetes, so there is a lot of congestive heart failure even in diabetics who have not had MIs.

And the death rate from congestive heart failure is much higher in diabetics than in nondiabetics.

Q. *Is that another reason to be aggressive with ACE inhibitors?*

Right, and calcium channel blockers. There are good theoretical reasons to use these agents, which may decrease the remodeling or whatever is causing the myocardiopathy.

Q. *Many of the medicines traditionally used to treat diabetic neuropathies tend to cause side effects in older patients. What do you recommend?*

First you have to control the diabetes. Second, absolutely no alcohol for the patient with neuropathy, not one drink. No cough syrups or medicines that contain alcohol. Once patients have diabetic neuropathy, they just cannot tolerate any alcohol at all without worsening the neuropathy.

Diabetic neuropathy is typically worse at night. The patient goes to bed, has the numbness and crawling and tingle, and has to get up and walk around. While attempting to control the diabetes, I always start with diphenhydramine HCl (Benadryl, et al), 50 mg at night. If it works, you just keep using it. If that dose of diphenhydramine works at night, but patients are also having symptoms during the day, you can try 25 mg tid, if it doesn't make them too sleepy. Some people can tolerate diphenhydramine during the day, and some people can't.

Q. *My problem with diphenhydramine is side effects of dry mouth and weight gain.*

I haven't had these problems, especially if patients are taking diphenhydramine only at night. I don't try any other antihistamines, because diphenhydramine has classically been used and several of the others do more significantly lead to weight gain.

If the pain is lancinating--a stabbing pain like a hot poker going up their leg--try phenytoin sodium (Dilantin) and titrate to therapeutic blood levels as you would for seizures. If blood levels are subtherapeutic, don't expect to get an effect.

The tricyclics amitriptyline HCl (Elavil, Endep), nortriptyline HCl (Aventyl, Pamelor), and imipramine HCl (Janimine, Tofranil) have been used for years and are often very helpful. If relief is not adequate, I may add fluphenazine HCl (Permitil, Prolixin), 1 mg tid, which usually works but is often not well tolerated. When others don't work or are not tolerated, I sometimes use transdermal clonidine HCl (Catapres-TTS).

The antiarrhythmic agent mexiletine HCl (Mexitil), although not indicated for diabetic neuropathy (as most of these drugs are not), has been found to be useful, especially in patients with stabbing or bumming pain, heat sensations, or formications. Dosage is around 450 mg/day.

I don't like the side effects of carbamazepine, so I don't use it. Gabapentin (Neurontin) is a new oral antiepileptic that has been tried; I would use it only in really bad cases, because it's so new and not indicated for diabetic neuropathy.

I am currently investigating a new formulation of lidocaine that can be applied topically via a patch or a gel. It looks promising for the relief of dysesthesias.

Q. *In medical school, I was taught that carbohydrates were the link to dietary control of diabetes. Then, fats were the big talk. Now we're leaning back towards carbohydrates. I don't know what the best diet information is for my diabetics.*

You are not the only one; there is no consensus. Diet information has to be individualized. Base the patient's diet prescription upon their weight, their blood sugar control, their dyslipidemia, their hypertension, whether or not they are salt-sensitive hypertensive, and whether or not they are carbohydrate-sensitive hypertriglyceridemic.

For example, only about one- third to one-half of diabetic hypertensives are salt-sensitive, so it is silly to give low-salt diets to all hypertensives. Geriatric patients in particular often have difficulties maintaining adequate

nutrition, due to impaired taste perception decreasing the palatability of food. Try them on a low-salt diet, and if they follow it religiously for a month and it doesn't budge their blood pressure, there is no use keeping them on it for the rest of their lives. Give a 1ow-salt diet only to the patients whom it is going to help.

Q. *When would you start limiting protein in regard to nephropathy?*

When patients start showing any significant proteinuria or microalbuminuria, I tell them it is time to give up the thick steaks and high-protein intake. I limit the daily protein intake to 0.8 grams/kg body weight, which is not a severe restriction but is much less than the usual American diet.

I know a lot of clinicians put diabetics down to 0.6 grams/kg body weight when they start spilling grams of protein. But end-stage renal disease--like dyslipidemia--is different in diabetics than in the rest of the population. You put nondiabetics in end-stage renal disease on a 0.6 grams/kg body weight protein diet to prolong their course before dialysis. But diabetics with nephropathy die sooner because of nutrition problems and cachexia if you restrict their protein too much-they do not adequately use the protein they are getting. Diabetics die faster on dialysis than nondiabetics, and malnourished diabetics die even faster on dialysis. So I don't usually restrict protein by more than 0.8 grams/kg body weight.

Q. *Do you have any tips to improve compliance with diet or medication?*

First of all, I don't let my over- weight patients get away with trying "diet" or "pills" (oral agents) forever. It's motivating for them if I say, "Your lipids are horrible; your diabetes is horrible. You need to go on this medicine (or insulin), because I don't want to feel responsible for your premature death. When you lose that weight, I promise we will try to decrease your medicine, to see if you can then keep your sugars and your lipids down on a lower dose or without it."

Checking blood sugars is also very motivational. When they check themselves, they can see that the sugar is better if they exercised the day before or the sugar is worse if they didn't exercise or if they missed their medication.

Finally, I always ask to see the patient's sugar log. You can't improve their diabetes control if all you've got is a high Hgb A1c of 13%, but you have no clue as to when or what their blood sugars were.

My patients and I look at their logs together. I might say, "OK, I see a pattern here. Your noon sugars are always higher than your morning sugars, so we need to give you more regular insulin before breakfast" or whatever is appropriate for their regimen. They know that if they forget their logs, I'll tell them to come back next week with them.

SUGGESTED READING

Bohannon NJV. Management of type II diabetes. Primary Care Reports 1995; 1(9):65- 73.

Bohannon NJV: Lipid metabolism in type II diabetes. Postgrad Med 1992; 92(2):105-13.

Bohannon NJV. Diabetes in the elderly: A unique set of management challenges. Postgrad Med 1988; 84(5):283-95.

Bohannon NJV. Effective use of insulin: A balancing act. Postgrad Med 1994; 95(8):52-67.

Stracke H, Meyer U, Schumacher H, et al. Mexiletine in treatment of painful diabetic neuropathy. Med Klin 1994; 89(3):124-31.