Diabetics Should Lose Weight, Avoid Diet Fads

A consensus panel concludes that weight loss is the only proven treatment for noninsulin-dependent diabetics and describes various diet and exercise fads as being of little use

If ever there were a disease that is caused by life-styles, it is noninsulin-dependent diabetes mellitus (NIDDM). By far the predominant form of diabetes, it is a disease almost exclusively of overweight, sedentary adults. It accounts for 90% of all diabetes in this country and is a leading cause of death as well as the major reason for new cases of blindness, kidney failure, and limb amputation.

Last month, the National Institutes of Health convened a consensus panel to review current data on NIDDM and to recommend ways to prevent and treat the disease. In particular, the panel considered the roles of diet and exercise in NIDDM. During the course of the 3-day meeting, the panel heard and accepted data that contradict many commonly held beliefs about diet and exercise.

For example, it may not be true that exercise increases the metabolic rate for hours to come. And exercise is not necessarily a particularly potent adjunct to a low-calorie diet. People frequently compensate for a bout of exercise by eating more or by moving less for the rest of the day.

The diet picture is just as clouded. The problem, said panel chairman George Cahill of Howard Hughes Medical Institute in Bethesda, Maryland, is that "we have got to be so careful that fads don't get to be dictums before their efficacy is known." For example, researchers at the meeting questioned whether the current fiber fad is supported by good clinical evidence and cast doubt on the utility of using the glycemic index, which shows how different foods affect blood sugar levels, to plan a diabetic diet.

The diet and exercise questions are paramount in NIDDM because it is a disease of obesity. Excess body fat alters glucose metabolism even in persons who are not diabetic. What happens is that, for unknown reasons, obese persons become insulin-resistant. If the obese person is not diabetic, the pancreas compensates by producing more insulin; therefore, blood glucose remains within the normal range. But, in persons with NIDDM, the pancreas does not make more insulin and, as a consequence, cells do not take up glucose, or take up very little. In addition, the liver produces excess glucose, thus exacerbating the problem. The result is high concentrations of blood glucose, or diabetes.

Just as obesity leads to insulin resistance, so weight loss reverses this condition. When persons with NIDDM lose weight, they frequently are no longer diabetic.

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For this reason, said Cahill, "diet is the hallmark" of diabetes therapy. Overweight diabetics should lose weight, and persons who know they have a family history of diabetes should avoid becoming overweight in the first place.

Gerald Reaven of Stanford University cautions that a negative family history by no means indicates that a person is not at risk. "Family history is a joke," he remarks, because as many as half of all persons with NIDDM are undiagnosed. It is easy to ignore diabetes since, in many cases, there are no warning signs and it is perfectly possible that family members had diabetes and did not know it.

Reaven—and the consensus panel—advise all overweight adults to consider themselves at risk for diabetes and to have their blood glucose levels tested. They also note that a subgroup of the obese is particularly at risk. People who have what Per Bjorntorp of the University of Goteborg in Sweden calls "apple-shaped," as opposed to "pear-shaped," bodies are particularly prone to develop NIDDM because abdominal fat, which predominates in the apple-shaped individuals, is more metabolically active and individuals with large deposits of abdominal fat have more free fatty acids in their blood. This condition may lead to increased glucose production by the liver.

Of course, it is one thing to advise people to lose weight and quite another to have them do it. "The long-term effectiveness of any diet therapy is terrible and will remain terrible until we learn why people become obese," Clifton Bogardus of the National Institute of Diabetes and Digestive and Kidney Diseases in Phoenix, Arizona, told the panel.

The panel wrote in its consensus statement, "While acknowledging the poor prognosis for weight maintenance, the panel recommends that most obese patients with NIDDM be maintained on diets moderately restricted in calories." It further suggested behavioral therapy, group support, and nutrition counseling to help patients lose weight and keep it off.

The next question is what sort of foods are best for diabetics. The American Diabetes Association recommends a diet that is high in complex carbohydrates and rich in fiber. But, says Aaron Vinik of the University of Michigan Medical Center, "the dogma is now coming under closer scrutiny and remains a controversial issue." For one, he notes, "these diets are substantially different from the average American diet" and their safety and efficacy are not well established. The existing studies are difficult to compare because they use different kinds of fiber, and some use combinations of soluble and insoluble fibers whose effects, Vinik suggests, "may counteract each other." In addition, researchers frequently change other components of the diet in addition to fiber content, and different researchers use different criteria to assess the effects of high-fiber diets.

Finally, the high-fiber diets may have some adverse consequences. "There is more and more evidence that diabetics are prone to bone thinning," says Vinik. There are some hints that persons with digestive problems—and that includes 80% of all NIDDM patients over age 55—may not absorb calcium and other minerals properly when they eat high-fiber diets.

The consensus panel agreed with Vinik. The results of fiber studies are inconclusive, it said, and the diets may be unpalatable and not even safe for all diabetics. Robert Silverman of the National Institute of Diabetes and Digestive and Kidney Diseases, who chaired the planning committee for the consensus conference, comments, "We're not saying that fiber is bad. We're saying that, frankly, from the data we've seen, we're not impressed."

The panel also looked at the glycemic index as a way of planning diabetic diets. David Jenkins of the University of Toronto and others find that certain foods, including pasta and beans, produce a gradual increase in blood sugar and insulin whereas other

foods, including potatoes, produce a more rapid rise. Proponents of the glycemic index suggest that diabetics emphasize the slow-release foods.

But the panel disagreed. "We are withholding judgment," says Silverman. "A lot of ink has been spent on the glycemic index, and it may turn out to be interesting, once we figure out what the meaning is." The problem is to determine how combinations of foods affect blood sugar as well as how a person's race, sex, age, body weight, and even the time of day he eats the food affect blood sugar responses.

Cahill stresses how much work needs to be done on the glycemic index before it becomes practical. "One of the questions we asked during the conference was, How reproducible is the index in a single individual? No one's done that experiment. They just look at averages across groups. For a given individual, it may be meaningless or it may be very important." For now, Cahill says, his personal opinion is that the glycemic index is "a bucket of fluff."

When it came to the question of exercise, the consensus panel concluded that "the risk-benefit ratio of exercise in NIDDM remains to be defined." But it recommended moderate exercise because of evidence that exercise may help prevent heart disease.

Exercise has been advocated as an aid to weight loss and as a way to normalize blood glucose levels. Both of these claims were disputed by speakers at the conference.

F. Xavier Pi-Sunyer of Columbia University, for example, reported that when obese people entered an exercise program, they moved less for the rest of the day, negating the extra calories they burned exercising. This occurred even when the people exercised enough to burn 25% of their normal daily calories. Afterwards, they would lie down and not move much, Pi-Sunyer said. In addition, he said, "there is no substantial effect of exercise on metabolic rate. This is touted as a great benefit of exercise and it just does not occur." Pi-Sunyer concluded that he is "relatively pessimistic" that the amounts of exercise that are reasonable for diabetics can have much effect on weight loss.

Several of the meeting participants, including Neil Ruderman of Boston University Medical Center, reported that diabetics consistently are less physically fit than nondiabetics as measured by their maximum oxygen consumption. And diabetics, after exercising, have an increased insulin sensitivity. This might indicate that exercise could alleviate diabetes, but Ruderman and others find that the effects of exercise are short-lived, disappearing in as few as 72 hours. So if exercise is to benefit diabetics at all, they must exercise regularly. But, like weight control, regular exercise is easier said than done.

The panel concluded, says Cahill, that "exercise in general should be demystified."

So, in the end, the panel stressed weight loss as the one clearly beneficial treatment for NIDDM and the avoidance of obesity as the one clear way to prevent the disease. But, unfortunately, of all the health advice, weight loss is among the most difficult advice to follow. ■ GINA KOLATA

High-Carb Diets Questioned

The American Diabetes Association and the American Heart Association recommend that diabetics, like the rest of the population, consume no more than 30% of their calories as fat. Most Americans now consume 40% of their calories as fat and, according to the heart association, the only way to consume 30% fat is to substitute vegetable meals for some that now contain meat.

But Gerald Reaven of Stanford University School of Medicine questions whether diabetics and hypertensives, who share many of the same biochemical abnormalities, should reduce their fat calories to less than 40%. For these populations, Reaven argues, very low fat diets can actually increase the risk of heart disease.

Reaven presented his hypothesis at a recent consensus conference at the National Institutes of Health that met to assess the data on the prevention and treatment of diabetes. The panel did not ignore Reaven. It suggested that any diabetic who goes on a high-carbohydrate diet should be tested soon after starting the diet to be sure the diet does not adversely affect the blood lipids. "I think there's a lot to Reaven's argument," says Robert Silverman of the National Institute of Diabetes and Digestive and Kidney Diseases and a member of the planning committee for the consensus meeting. "His data speak for themselves." George Cahill of Howard Hughes Medical Institute, who was chairman of the consensus panel, thought Reaven's comments were "very appropriate. There are fads in nutrition and we [the panel] feel the high carbohydrate one has gone a little too far."

The problem, according to Reaven, is that the low-fat diets that are currently in fashion are also high-carbohydrate diets—calories from fat are replaced by calories from carbohydrates. Reaven says, "anyone who consumes more carbohydrates has to dispose of the load by secreting more insulin." A slim, physically fit person is already very sensitive to insulin and secretes only a small amount in response to carbohydrates. But diabetics—and hypertensives—secrete much more because their tissues are relatively insensitive to insulin. (Reaven and others find that persons with high blood pressure have higher levels of blood glucose and insulin than persons whose blood pressure is normal.) High concentrations of insulin are associated with an increased risk of heart disease.

There is already a threefold variation in insulin sensitivity among normal, apparently healthy individuals, Reaven points out. Researchers studying large populations in Paris, Australia, and Helsinki have shown, in prospective studies of nondiabetic people, that the 20% who secrete the most insulin in response to carbohydrates are at the highest risk of heart disease.

There are two explanations that might account for this association between insulin and heart disease. First, there is a good correlation between hyperinsulinemia and very low density lipoproteins, or VLDL, synthesis by the liver. Insulin, Reaven notes, activates liver enzyme systems that favor VLDL synthesis. High VLDL levels are a risk factor for heart disease.

Second, there is a good correlation between high insulin levels and low levels of high-density lipoproteins, which protect against heart disease. The biochemical reasons for this are unknown, but it is, says Reaven, a consistent finding.

Reaven emphasizes that a high-carbohydrate, low-fat diet may only be risky for diabetics and hypertensives. But he also says that his advice that diabetics and hypertensives get 40% of their calories from fats does not mean that they should consume saturated fats.

But, for now, Reaven's advice to diabetics and hypertensives places nutritionists in a bind. "High protein levels can be bad for the kidneys. High fat is bad for your heart. Now Reaven is saying not to eat high carbohydrates. We have to eat something," says Silverman. Although he thinks Reaven's argument is justified, he says, "sometimes we wish it would go away because nobody knows how to deal with it." ■ G.K.