

PATIENT PROFILE

Paul and Tim Daly

Looking Out for One Another and Taking on Type 2 Diabetes



Paul Daly (left) and Tim Daly (right). Photo by Roberta Daly.

Paul and Tim Daly have always been close. Identical twins from a close-knit family, they served in the Army together, attended the same technology school post-enlistment, and worked together, later, at Tim's video store in Framingham, Massachusetts. As they tell it, having a twin brother was "like being born with a best friend," and looking after one another was a lesson they learned early. "One of our uncles said 'look, you always back up your brother,'" Paul explains. "And that stayed with me. Whether you're with friends or wherever, you always back each other up. It's like the Golden Rule."

Decades later, it's a rule they still follow. Of course, while the rule may once have meant uniting to confront a schoolyard bully, today it more often means confronting diabetes.

In the mid-1990s, Paul's doctor told him he had elevated blood glucose that put him at risk for the

disease. "The mistake I made was ignore them, 'cause I felt good," Paul says ruefully. He thought at the time that "risk for diabetes" meant "I wasn't sick, so I didn't need to worry about it." But about 6 months later, he found he was thirsty all the time. He learned from his doctor he had gone on to develop type 2 diabetes, and he knew he had to tell Tim as soon as possible, to make sure Tim knew "risk for diabetes" was something he *did* have to worry about.

When his doctor told him he was at risk for type 2 diabetes, "the mistake I made was ignore them, 'cause I felt good," Paul says ruefully. When he later developed the disease, he told his twin brother, Tim, as soon as possible, to make sure Tim knew "risk for diabetes" was something he did have to worry about.

After Paul relayed the news of his diagnosis, a family friend told Tim about a brochure she'd seen for a new study that was recruiting participants to see if type 2 diabetes could be prevented or delayed. Tim was struck by the timing, hearing about the study so soon after finding out about Paul's diabetes. "If this isn't a message from God..." he recalls thinking. He wasted no time before calling to set up an appointment with the staff of the just begun Diabetes Prevention Program (DPP). Through blood tests provided by the study, he found out he was in much the same place Paul had been 6 months before: he did not yet have diabetes, but he was dangerously close. The lesson of Paul's experience was not lost

PATIENT PROFILE

on Tim, who readily agreed to enroll, thus becoming one of the DPP's earliest participants.

The Diabetes Prevention Program

The DPP, led by NIDDK with additional support from other NIH Institutes and Centers, the Centers for Disease Control and Prevention, the Indian Health Service, and non-governmental organizations, recruited adult volunteers at 27 clinical centers around the United States. Participants were randomly divided into different treatment groups. The first group, called the lifestyle intervention group, received intensive training in diet, physical activity, and behavior modification. By eating less fat and fewer calories and doing moderate exercise, such as brisk walking, for a total of 150 minutes a week, they aimed to lose 7 percent of their body weight and maintain that loss. This intervention was based on extensive behavioral research that suggested it would be a sustainable approach to modest weight loss for a high proportion of participants. The second group took the generic diabetes drug metformin twice a day. The third, a control group, received placebo pills instead of metformin. The metformin and placebo groups also received information about diet and exercise, but no intensive behavior change counseling. All 3,234 study participants were overweight or obese; and, although they did not have diabetes by the criteria used at the time, their fasting glucose levels were elevated, and they had impaired glucose tolerance (meaning their blood sugar remained elevated longer than normal after drinking water that contained a set quantity of glucose.) Forty-five percent of the participants belonged to racial and ethnic groups at increased risk for developing diabetes.

The study was a tremendous success. In fact, researchers announced the initial findings of the DPP in 2001, a year earlier than scheduled, because the results were so striking. The lifestyle intervention reduced

participants' risk of developing diabetes by 58 percent, and was effective for both men and women, for all race/ethnic groups in the study, and for participants of different ages. Participants taking metformin lowered their risk of developing diabetes by 31 percent.

"I started logging in everything I was eating, the exercise that I was doing," Tim says, and he added more exercise to his week and modified his diet. The attention to detail paid off.

Tim Daly's DPP Experience

Tim was randomly assigned to the DPP lifestyle arm. "I started logging in everything I was eating, the exercise that I was doing," Tim says. "I weighed 200 lbs, so my goal weight was 186." He already exercised about 2 hours per week, playing basketball with friends—exercise Paul had not been getting, which may have contributed to the earlier onset of his diabetes. So Tim only had to add 30 minutes of brisk walking to get to the goal of 150 minutes. The diet portion was a bit more of an adaptation, but "my goal was 42 grams of fat/day. So I was focused on that—not the carbohydrates, just the fat. We'd go in restaurants and I had certain meals I'd picked out—that's what I'm going to have when I go to that restaurant." The attention to detail paid off: within 6 months, he'd reached his goal weight—and he continued to be diabetes-free.

Was it tough? "I didn't feel it was that difficult," Tim recalls. But sometimes his weight began to drift back up, and when that happened, a study coordinator found a powerful way to motivate him. "She said, 'Tim—do you realize I have people in the study and they'll go, "Oh, what's the point? My family has diabetes, I have family history—I'm going to get it. What's the point?'" and she'll go, 'Time out. I have a guy in the study whose twin brother has been

PATIENT PROFILE

diagnosed with diabetes. And so he's been in the study since 1996, and he's not diagnosed as diabetic.” Tim certainly got the message: “Oh, God,” he thought, “I've got to do my best!”

The Diabetes Prevention Program Outcomes Study

At the completion of the DPP, no one knew how long the interventions' benefits would endure, since the results were based on just 3 years of data. Therefore, after a “bridge” period from January to July 2002, when all participants learned the results and were offered a multi-session program explaining how to make the lifestyle changes, the Diabetes Prevention Program Outcomes Study (DPPOS) began, with most of the DPP volunteers taking part. DPPOS participants who received metformin during the DPP continue to receive metformin. The lifestyle intervention has also continued, albeit somewhat less intensively, for participants from the lifestyle arm who agreed to stay in for the DPPOS. In addition, classes encouraging adoption of the lifestyle changes were also made available to DPPOS participants from the metformin and placebo arms, but attendance was optional.

“When my weight goes up, all the numbers go up... all the stuff you want to keep down.”

Through analysis of data collected from participants over an average of 10 years after their initial enrollment in the DPP, researchers were able to conclude in 2010 that the lifestyle intervention reduced the rate of developing type 2 diabetes by 34 percent during this time, compared with placebo. Importantly, study participants who received the lifestyle interventions in the DPP and DPPOS also had fewer cardiovascular risk factors, including

lower blood pressure and triglyceride levels, despite needing fewer drugs to control their heart disease risk. Over the same 10 years, treatment with metformin reduced the rate of developing diabetes by 18 percent compared with placebo. Through DPPOS research we also now know that the lifestyle and metformin interventions were highly cost-effective: by helping keep the participants healthier than they would have been otherwise, the interventions reduced the participants' other (non-study associated) health care costs.

Of exercise, Paul says, “Afterwards, always you have more energy; you just feel better mentally because you worked a little bit toward a goal.” And like Tim, Paul has changed his diet for the better.

So thanks to Tim and the many other former DPP participants who agreed to continue participating in research through the DPPOS, study scientists have learned a great deal about the long-term outcomes of the DPP interventions. And sticking with the program has also had tremendous benefits for Tim personally. “I go in twice a year now, and... historically... they have all the numbers. It's incredible. When my weight goes up, all the numbers go up: blood sugar, cholesterol—all the stuff you want to keep down. It was definitely related to my weight.” Confronting those numbers helped Tim stay on-task, and keep taking good care of himself.

Tim's healthful lifestyle greatly slowed the gradual rise in blood glucose levels most people experience as they age, but did not arrest that rise completely. Thus, as judged by one test, Tim's blood glucose control has recently reached the range considered indicative of diabetes, and by DPPOS protocols, Tim

PATIENT PROFILE

is considered to have developed type 2 diabetes. From Tim's perspective, even though the DPP lifestyle intervention did not permanently prevent diabetes, it did help him remain free of this disease—and free of the challenges of managing it and related health complications—for 17 years after Paul's diagnosis. "With Tim jumping on it as soon as he found out—that made the difference," says Paul. Tim agrees: "It did!"

Further, the study—and the journey that began with Paul's diagnosis—imbued both men with the determination to remain as healthy and active as possible. Tim still exercises avidly. He plays golf with his buddies, and he doesn't use a cart. He and his wife also stay fit and active through a shared love of country line dancing. In addition, he recently started a new fitness program with his wife and one of his daughters, and reached his lowest weight in decades.

Paul, too, recognized the importance of adopting a healthier lifestyle. For fitness, he enjoys bicycling and walking on the beach. Both brothers have become great proponents of exercise. As Paul puts it, "Afterwards, always you have more energy; you just feel better mentally because you worked a little bit toward a goal." And like Tim, Paul has changed his diet for the better, usually opting for fish over red meat, for example. "Everything in moderation," he says. "And there are certain things to stay away from, too." While he acknowledges it can sometimes be challenging to forego certain foods, often he finds that it isn't. "I haven't eaten mayonnaise in like 20 years, now. I like mustard on everything, now, which I didn't before.... I like it better that way."

Leading by Example

The Daly brothers are committed to helping others learn that they, too, can change their lives for the healthier—and happier. They've been interviewed for National Public Radio,¹ and were featured in a segment of the HBO Documentary Series *The Weight of the Nation*.² But just as the story began with brothers, it remains for them about family. Explaining that his mother-in-law also has diabetes, he says he told his daughters, "heads up: this is what you got for genetics." "It's the same for my daughters," says Paul. "My wife has prediabetes [elevated blood glucose or insulin-resistance putting her at-risk for developing type 2 diabetes]; her father was diabetic; and my daughters see what I go through. So they're starting to adjust."

And of the family friend who told him about the DPP Tim says, "Every time I see her, I thank her."

Fortunately, for their families, Tim and Paul lead by example, looking out for each other, taking care of themselves, and making changes to lead longer, healthier lives. "We have to," Tim says reflectively. "You know, we want to enjoy our grandchildren, God willing." And of the family friend who told him about the study Tim says, "Every time I see her, I thank her."

¹ <http://www.npr.org/templates/story/story.php?storyId=122104219>

² <http://theweightofthenation.hbo.com/watch/main-films/Choices>