

Diabetes veterans may show ways to prevent complications

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Over time, diabetes can wreak havoc on the body's eyes, cardiovascular system, kidneys and nerves. A major study by Joslin Diabetes Center researchers, however, has found that some people who have survived diabetes for many decades exhibit remarkably few complications—a discovery that points toward the presence of protective factors that guard against the disease's effects.

The scientists studied 351 participants in the Joslin 50-Year Medalist study, which examines people who have lived with type 1 [diabetes](#) for 50 years or more. Among this population, 43% are free from advanced diabetic eye complications, 87% from kidney disease, 39% from nerve disease and 52% from cardiovascular disease.

The surprising numbers of Medalists without complications "are strong evidence that protective molecular, physiologic or genetic mechanisms, in these fortunate individuals, fight against the toxic effects of high blood sugars over many decades," says Jennifer Sun, M.D., first author on the paper published in *Diabetes Care*.

As a group, the Joslin Medalists are very careful about controlling their blood glucose levels. However, within a reasonable range of glucose control, the study found that freedom from complications does not appear to correlate with how well these unique people controlled the blood sugar levels that go awry in diabetes. This conclusion differs from results shown in every other major recent study of diabetes management.

Clues to this protection may be found in analyses of a family of proteins called advanced glycation end products (AGEs), which are increased by high blood sugar levels. In the study, subjects who exhibited two specific AGEs were more than seven times as likely to have any complication. But this study also demonstrated for the first time that a combination of two other AGEs is associated with protection against eye disease.

Additionally, the researchers found a group of Medalists, followed at Joslin's Beetham Eye Institute, whose diabetic eye complications stabilized after 17 years at a mild stage rather than continuing to worsen as expected. This finding again indicated that protective factors are present in this group.

The Joslin Medalist study has gathered data on more than 600 people and is running a broad series of investigations into what guards so many of them from complications.

Moreover, these diabetes veterans can provide other important lessons, as Dr. Sun points out.

"Insights from the Medalist Study are great motivators for patients who have just been diagnosed with diabetes or are early in the disease, particularly younger kids and adolescents," she says. "We can tell these patients that we encourage them to control their blood sugars and get their recommended diabetes care, because they can live many decades with excellent vision and the chance to avoid other severe complications."

Provided by Joslin Diabetes Center

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