

Dr. Randie Litt...: Hello, I'm Dr. Randie Little, and I'm happy to join you today to discuss various topics of hemoglobin A1c measurement, standardization, and hemoglobin variants.

The importance of hemoglobin A1c standardization comes from two important clinical trials. The diabetes control and complications trial, or DCCT, with Type 1 diabetes was the 10 year NIH trial designed to answer two important questions. Are the complications of diabetes related to glycemic control in Type 1 diabetes? And two, can intensive treatment decrease long term complications?

The outcome of the DCCT was clear. Intensive therapy clearly reduced microvascular complications. Here you can see an example of how the rate of retinopathy progression increased as study A1c increased with time during the study. The United Kingdom Prospective Diabetes Study, or UKPDS was a study of Type 2 diabetes, and also showed lower risk of both micro and macro vascular complications.

Beginning in 1994, the American Diabetes Association began recommending a general goal of less than 7% hemoglobin A1c for all people with diabetes. Other diabetes organizations worldwide followed suit. But the data in 1993, when the DCCT ended, showed that hemoglobin A1c results were far from adequate. Results from a single sample varied from less than 3% to over 7.5%. Here, you can clearly see the improvement in both bias from the target and variability within and between methods since 1993. This has enabled physicians to better treat and diagnose diabetes.