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Simple Clinical Model Predicts Incident Diabetes in Middle-Aged Adults

Obesity, metabolic syndrome traits, and parental diabetes predict the development of type 2 diabetes in middle-aged adults.

"Prediction of chronic conditions like type 2 diabetes mellitus (T2DM) that have a definable onset can help to guide interventions and healthy policy development," Dr. Peter W. F. Wilson, of Emory University School of Medicine, Atlanta, Georgia, and colleagues write. "Prediction rules for T2DM have been developed, but we lack consensus for the most effective approach."

In the current study, the researchers estimated the 7-year risk of T2DM in 3140 middle-aged subjects in the Framingham Offspring Study. The participants had a mean age of 54.0 years. The average body mass index was 27.1, and 12.7% of subjects had impaired glucose tolerance at baseline.

There were a total of 160 cases of new T2DM. Using a number of parameters, the team developed prediction models for T2DM that started simply and progressed to greater levels of complexity.

Specifically, they started with a personal model using characteristics known to each subject (age, sex, body mass index, and parental history of diabetes). They then developed a simple clinical model by adding clinical measurements that included metabolic syndrome traits. Finally, they developed complex clinical models that included the simple clinical model covariates plus 2-hour post-oral glucose tolerance test glucose, fasting insulin, and C-reactive protein levels; the Gutt insulin sensitivity index; or the homeostasis model insulin resistance and the homeostasis model insulin resistance beta-cell indexes.

The personal model variables, with the exception of sex, were significantly predictive of T2DM, the researchers report. Parental history of diabetes and obesity remained significant predictors in the simple clinical model. Other predictors included hypertension, low levels of HDL cholesterol, elevated triglyceride levels, and impaired fasting glucose, but not a large waist circumference.

No further improvement in assessment of risk was found with the complex clinical models over and above the simple clinical model.

"In summary, we found that complex models are not needed to predict T2DM and that information from a typical clinic visit adds to T2DM prediction beyond personal awareness of diabetes risk factors," Dr. Wilson's team concludes. "The simple clinical model we developed should be tested in other population samples to validate our approach, as has been done for prediction of coronary heart disease events."

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