

Simple Models Can Predict Type 2 Diabetes

Using a simplified method of prediction allows physicians to assess patients earlier.

BY LAURA SUAREZ, ASSOCIATE EDITOR

In a clinical setting, the most important predictor of type 2 diabetes is impaired fasting glucose. This and other simple tests, said Peter W.F. Wilson, MD, should be the basis of a categorical variable approach to detect type 2 diabetes.

Speaking at the American Diabetes Association 65th Annual Meeting and Scientific Sessions in San Diego, Dr. Wilson said that a simpler type 2 diabetes prediction model provides adequate balance and efficiency for clinical use. The key components of such a model are impaired fasting glucose, metabolic syndrome traits and parental diabetes history. Dr. Wilson is a professor of medicine at the Medical University of South Carolina.

Using a simplified method of prediction allows physicians to assess patients for type 2 diabetes earlier. The method is a nested regression model that progresses from a personal model of predicting type 2 diabetes to a simple clinical measurement and then to a best clinical model.

PERSONAL INFORMATION MODEL

During the personal model, patients disclose their age, sex, body mass index (BMI) and knowledge of parental diabetes history. "Taking personal information, which people tend to know fairly easily, can be done at an initial visit," he said. At follow-up examinations, simple clinical measurements can detect the presence of metabolic syndrome. Personal characteristics, excluding gender, accurately predicted type 2 diabetes in patients enrolled in the population of Framingham Offspring patients used in this study ($P < .03$).

When necessary, best clinical models including oral glucose tolerance test (OGTT), fasting insulin, or insulin resistance tests may be used to predict type 2 diabetes in the clinical setting. These specialized models, however, are best reserved for clinical trials and research, Dr. Wilson said. "We are focusing on a categorical variable approach. We want to develop a simple prediction tool [for the clinical setting.]"

In all three tiers, history of diabetes in parents and BMI were significant predictors of type 2 diabetes, Dr. Wilson said. Age was not a statistically significant predictor of

FRAMINGHAM OFFSPRING STUDY

OBJECTIVE: Patients were enrolled to study CVD and its risk factors. Incidence, prevalence and risk factors for CVD were also identified, as well as patterns of CVD in families.

BACKGROUND: Offspring of the original Framingham study were enlisted due to the aging population of the initial study. The second cohort started in 1971, and was used to assess new risk factors for CVD.

DESIGN: Patients totaling 5,124 men and women, who at baseline were aged between 5 and 70 years, have received six examinations every 4 to 6 years. The instances of morbidity and mortality are tolled.

TRIALS: Other trials using the Framingham Offspring population include: coronary heart disease, stroke, hypertension, peripheral arterial disease and congestive heart failure.

type 2 diabetes, however. "Now, the simple clinical model is right up there with all the best clinical models. You can not use all tests in a prediction model ... so you have to pick and choose."

Nearly 3,200 nondiabetic patients were studied over a period of 8 years. The average age of patients was 54 years, and 42% were overweight (BMI between 25 and 29.9 kg/m²) and 22% were obese (BMI >30 kg/m²). An OGTT was used at baseline. Patients were evaluated for diabetes at 4 years and endpoint, where fasting glucose was measured. One hundred and sixty patients developed type 2 diabetes, as detected by a fasting glucose ≥ 7 mmol/L. Dr. Wilson cautioned that the population set for this study was entirely white, and all were from suburbs surrounding Boston. ■

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Wilson PWF. Prediction Rule for Incident Type 2 Diabetes in Framingham Offspring. Presented at the ADA 65th Annual Meetings and Scientific Sessions. June 10-14, 2005. San Diego.