

# A Rational Alternative for the Diagnosis of Diabetes Mellitus in High Risk Individuals

S Tavintharan,\**MBBS, MRCP (UK)*, L S W Chew,\*\**MBBS, FRACP*, D M K Heng,\*\**MBBS, MRCP (UK)*

## Abstract

**Introduction:** To facilitate early, accurate diagnosis, tests should be easy, cheap and reproducible. We studied volunteers with an increased risk of developing diabetes mellitus (DM) to see if HbA<sub>1c</sub> levels could replace the oral glucose tolerance test (OGTT) in diagnosing DM. **Materials and Method:** One hundred and eleven individuals were studied, using the standard oral glucose tolerance test, and simultaneous measurement of HbA<sub>1c</sub> levels. Receiver operator characteristic (ROC) analysis was performed to assess the sensitivity and specificity of various HbA<sub>1c</sub> cut-off levels for diagnosing DM. The relationship between fasting plasma glucose (FPG) and DM diagnosis was also investigated. **Results:** The majority of DM and impaired glucose tolerance (IGT) cases were diagnosed on the basis of two-hour OGTT glucose values. If FPG alone had been used, 29% of the study population with DM or IGT would have been missed. HbA<sub>1c</sub> cut-off of 6.2% or 6.3% gives the optimal sensitivity and specificity. In linear regression analysis, FPG was found to be a significant predictor of 2-hour OGTT, but only accounted for 45% of the variability of 2-hour OGTT glucose value. **Conclusions:** Our data support the view that although HbA<sub>1c</sub> alone cannot replace the OGTT in the diagnosis of DM, it can still provide a useful guide to rational, cost-effective screening for diabetes mellitus.

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**Key words:** Diabetes mellitus, Diagnosis, HbA<sub>1c</sub>, Oral glucose tolerance test,

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\* Senior Registrar  
Department of Medicine  
Changi General Hospital

\*\* Senior Consultant  
Department of Medicine  
Alexandra Hospital

\*\* Clinical Epidemiologist  
Clinical Trials and Epidemiology Research Unit  
Ministry of Health, Singapore

Address for Reprints: Dr S Tavintharan, Blk 543 #13-188, Serangoon North Ave 3, Singapore 550543. E-mail address: sdst@cyberway.com.sg