

Cardiovascular journals

OGTT is needed for appropriate classification of glucose regulation in patients with CAD



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Both impaired glucose tolerance and impaired fasting glucose are associated with a subsequent high risk of CVD events. Moreover, newly detected abnormal glucose metabolism is a highly significant independent risk factor for morbidity and mortality after a myocardial infarction (MI).

The EURO Heart Survey (a report from which is summarised to the right) was an ambitious project carried out across 110 centres in 25 different European studies. A total of 4961 people with coronary artery disease (CAD) were recruited. CAD was diagnosed on the basis of an ECG, stress testing or greater than 50% stenosis in a coronary artery on an angiogram. A total of 41% of the participants had experienced a previous MI.

Of immediate interest is the fact that 30.7% of this population were known to have diabetes. A full oral glucose tolerance test (OGTT), was then conducted on the rest of the cohort. Of the potential study population of 3362, only 1867 had a full OGTT. 'Ethical permits to perform an OGTT were not issued in some countries' was cited as the reason behind not performing an OGTT in the remaining 1495. Additionally, the individuals who

were not tested were older and had a greater waist circumference than those who were. Therefore, the results could well have been amplified if the whole population were investigated.

Of the 1867 patients with CAD studied, 49% were acute admissions and the rest elective consultations for CAD. The OGTT was performed within 4 days and up to 2 months after the clinical encounter. Overall, only 47% were found to have normal glucose metabolism. The main glucose abnormalities were diabetes (17%), impaired glucose tolerance (IGT; 32%) and impaired fasting glucose (IFG) alone (5%).

In the above study, 96% of the study population was Caucasian. The prevalence of IGT and undiagnosed diabetes may be even higher in the UK South Asian population.

In practical terms, this survey informs us that 1 in 6 people with CAD will have undiagnosed diabetes. In the overall CAD population, 43% have diabetes, of which only 72% are diagnosed. In view of the potential for aggressive glycaemic control having a beneficial effect on future CVD events, CAD guidelines ought to give urgent consideration to stipulating that most of those with CAD without known diabetes should be considered for an OGTT. People found to have IGT can then be targeted specifically with intensive lifestyle management to reduce progression to diabetes.

DIABETES, LIPIDS AND METABOLISM

OGTT assesses glucometabolic status in CAD

Readability	✓✓✓✓✓
Applicability to practice	✓✓✓✓✓
WOW! factor	✓✓✓✓✓

- 1 Accurate glucometabolic assessment is important for the prevention of CV events in people with coronary artery disease (CAD) and abnormal glucose regulation.
- 2 This study aimed to evaluate different methods of assessing glucose disturbances in 4961 individuals with CAD referred to cardiologists.
- 3 Data on fasting plasma glucose (FPG) and glycaemia 2 hours after a 75g glucose load were available for 1867 of the 3362 individuals without known glucose metabolism dysfunction.
- 4 They were categorised as having IFG (n=87; 5%), IGT (n=591; 32%), diabetes (n=319; 17%) or normal glucose regulation (n=87; 5%).
- 5 The 1997 ADA criteria would have underdiagnosed 39% of these individuals, while the 2004 ADA guidelines would have misclassified 41% (8% over- and 33% underdiagnosed).

HEART

Incidence of diabetes and acute coronary syndromes

Readability	✓✓✓✓✓
Applicability to practice	✓✓✓✓✓
WOW! factor	✓✓✓✓✓

- 1 This was a long-term prospective study comparing symptoms of acute coronary complications between Asians and Caucasians.
- 2 The mean age of the Asian group was 61 years compared with 69 years for the Caucasians.

- 3 Compared with Caucasians, Asians had a higher incidence of diabetes (43% versus 17%) and angina (51% versus 37%), but less myocardial infarction (49% versus 63%); $P < 0.001$ in all comparisons.
- 4 Asians also reported more frequent discomfort over the rear of their upper bodies than Caucasians (46% versus 25%), as well as arm and neck discomfort ($P < 0.001$).
- 5 Asians are therefore at higher risk of diabetes and suffer more intense pain over a greater proportion of their bodies.

Teoh M, Lalondrelle S, Roughton M et al (2007) Acute coronary syndromes and their presentation in Asian and Caucasian patients in Britain. *Heart* 93:183-8

- 6 The oral glucose tolerance test was not administered in 1495 eligible people. The majority of these individuals were female, above average age and had a high waist circumference. They were therefore more likely to have abnormal glucose regulation.
- 7 In total, 44% were misclassified using a model based on easily accessible information including HbA_{1c}, FPG, age and HDL cholesterol levels.
- 8 This suggests that oral glucose tolerance tests are the best approach for assessing glucometabolic status in people with CAD.

Bartnik M, Ryden L, Malmberg K et al (2007) Oral glucose tolerance test is needed for appropriate classification of glucose regulation in patients with coronary artery disease: a report from the Euro Heart Survey on Diabetes and the Heart. *Diabetes, Lipids and Metabolism* 93:72-7

CIRCULATION

Cardiovascular events reduced by higher education levels and higher income

Readability	✓✓✓
Applicability to practice	✓✓✓
WOW! factor	✓✓✓

- The aim of this study was to determine how the risk of cardiovascular disease (CVD) is determined by socioeconomic status.
- CVD risk factors were assessed in 22688 apparently healthy females followed up for 10 years.
- Outcomes were myocardial infarction, ischaemic stroke, coronary revascularisation and death.
- Individuals were categorised into groups according to their salary in US dollars (\leq \$19999, \$20000–29999, \$30000–39999, \$40000–49999, \$50000–99999 or \geq \$100000) and their education (<2 years nursing education, 2 to <4 years nursing education, a bachelor's degree, a master's degree or a doctoral degree).
- Women with a higher level of education or higher income were less likely to have incident CVD events or high median cholesterol, low-density lipoprotein, triglyceride, C-reactive protein, intercellular adhesion molecule-1, fibrinogen and homocysteine levels, and had higher concentrations of high-density lipoproteins ($P < 0.001$ for all).
- The relative hazard of incident CVD events between two sequential categories was 0.79 in age- and race-adjusted analyses. In fully-adjusted analyses, this increased to 0.89. An 11% lower risk per category of education remained significant, suggesting that the protective effect of education was not explained by novel and traditional risk factors.

7 However, these risk factors did seem to explain the relationship between income and CVD events in a similar analysis.

Albert MA, Glynn RJ, Buring J, Ridker PM (2007) Impact of traditional and novel risk factors on the relationship between socioeconomic status and incident cardiovascular events. *Circulation* **114**: 2619–26

AMERICAN HEART JOURNAL

Assessing diabetes in people with acute coronary syndrome

Readability	✓✓✓✓
Applicability to practice	✓✓✓✓
WOW! factor	✓✓✓

- This study assessed the frequency and effect of glycaemic assessment in hospitalised people with ACS.
- Diabetes was reported in 235 (24%) of 968 individuals with ACS, yet HbA_{1c} had only been recorded for 162 (69%) of these, 60% of whom had an

HbA_{1c} of more than 7%.

3 HbA_{1c} assessment was much less likely in people over 70 years old (RR: 0.71; 95% CI: 0.588–0.88) or 60–69 years old (RR: 0.81; 95% CI: 0.64–1.01) than those under 60 years of age ($P = 0.004$).

4 The diabetes regimen was intensified in 42% of people with HbA_{1c} in the range 7–9% and in 69% of those with a value greater than 9%.

5 Diabetes assessment is important to allow individuals with ACS to improve their quality of life.

Green Conaway DL, Enriquez JR, Barberena JE et al (2007) Assessment of and physician response to glycaemic control in diabetic patients presenting with an acute coronary syndrome. *American Heart Journal* **152**: 1022–7

AMERICAN JOURNAL OF CARDIOLOGY

Left ventricular function in diabetic, normotensive adults

Readability	✓✓✓✓
Applicability to practice	✓✓✓
WOW! factor	✓✓✓

- This study assessed the ability of new echocardiographic techniques of integrated backscatter and colour Doppler myocardial imaging to detect myocardial alterations in people with type 1 diabetes.
- The control and diabetes groups each contained 40 individuals.

3 Systolic function was reduced in the group with diabetes, as evidenced by significantly lower peak strain, strain rates and cyclic variation indexes at the septum ($P < 0.0001$, $P < 0.01$ and $P < 0.001$, respectively) and the posterior wall ($P < 0.0001$, $P < 0.0001$ and $P < 0.001$, respectively).

4 Structural, ultrastructural and diastolic functional abnormalities were not detected.

5 These techniques demonstrate left ventricular systolic dysfunction in early type 1 diabetes.

Di Cori A, Di Bello V, Miccoli R et al (2007) Left ventricular function in normotensive young adults with well-controlled type 1 diabetes mellitus. *American Journal of Cardiology* **99**: 84–90

AMERICAN JOURNAL OF CARDIOLOGY

Cardiologists must consider more than biological factors

Readability	✓✓✓✓
Applicability to practice	✓✓✓✓
WOW! factor	✓✓✓✓

- Following numerous studies confirming the elevated risk of cardiovascular disease (CVD) in type 2 diabetes, this paper set out to review, consolidate and offer advice on what the cardiologist can do to improve glycaemic control and CVD risk.

2 The author opines that an atherogenic environment is created and enhanced within the circulation due to the combination of hyperglycaemia, hypertension, diabetic dyslipidaemia and insulin resistance.

3 It is possible that intensive glycaemic control will have a wide range of positive effects on the metabolism and circulation in type 2 diabetes.

4 The author concludes that it is important for cardiologists to fully comprehend and consider not only the complex biological mechanisms of the condition, but also the way social and environmental variables can exacerbate the negative outcomes.

Gotto AM (2007) Cardiologist's role in improving glucose control and global cardiovascular risk in patients with type 2 diabetes mellitus. *American Journal of Cardiology* **99**: 3B–5B

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