

Cardiovascular journals

CIRCULATION

Cardiovascular prevention needed in young patients with diabetes

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

1 The extent of risk of cardiovascular disease in people with diabetes is not known and, consequently, the guidelines for preventative therapy in this population have not been defined.

2 This was a study based in Denmark, that included people with type 1 and type 2 diabetes from nationwide registers; incidence of cardiovascular disease in 71 801 people with diabetes who were receiving treatment with glucose-lowering agents was compared with that of 79 575 people without diabetes who had a history of myocardial infarction.

3 The age-adjusted Cox proportional-hazard ratios for cardiovascular death were similar between groups in men, but slightly higher in women with diabetes; combined hazard ratios were significantly higher in people with diabetes.

4 The results of this study were also confirmed by propensity-score-based matched-pair analyses.

5 The authors conclude that people, regardless of sex or type of diabetes, who are over 30 years of age, and are receiving glucose-lowering therapy for their diabetes are at a comparable risk of cardiovascular disease to people without diabetes who have had myocardial infarction, regardless of sex and diabetes type.

6 People with diabetes who require glucose-lowering therapy should also receive prompt intensive preventative therapy for cardiovascular disease.

Schramm TK, Gislason GH, Køber L et al (2008) Diabetes patients requiring glucose-lowering therapy and nondiabetics with a prior myocardial infarction carry the same cardiovascular risk: a population study of 3.3 million people. *Circulation* **117**: 1945–54

High risk of cardiovascular disease in patients with diabetes who require glucose lowering therapy



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Risk of cardiovascular disease is the same in people with diabetes who require glucose-lowering therapy, and in those without diabetes but with a prior myocardial infarction.

Although diabetes is widely accepted as a condition associated with an increased cardiovascular risk, the risk of cardiovascular disease in young patients is uncertain. It remains unclear when primary prevention for cardiovascular disease should be introduced, particularly in young individuals with diabetes. Current clinical guidelines for cholesterol reduction and anti-platelet therapy in diabetes define an age limit of 40 years, and additional risk factors are required to merit intensive therapy. Owing to the increasing incidence and decreasing age of onset of diabetes, there is a clear need to evaluate the cardiovascular risk in younger people with diabetes.

Schramm et al's study was a population-based one of over 3 million people in Denmark who were aged >30 years and followed-up for 5 years. People with diabetes receiving glucose lowering therapy were compared with people without diabetes with and without prior myocardial infarction. Regardless of age-adjusted cox-proportional hazard ratios for cardiovascular death were 2.42 (95% CI 2.39–2.49) in men with diabetes without a prior myocardial infarction and 2.44 (95% CI 2.35–2.49) in men without diabetes with a prior myocardial infarction, based on people without diabetes or a prior myocardial infarction. In women, results were 2.45 (95% CI 2.38–2.51) and 2.62 (95% CI 2.55–2.69), respectively. For the composite endpoint of myocardial infarction, stroke and cardiovascular death the hazard ratios in men with diabetes only were 2.32 (95% CI 2.27–2.38) and 2.48 (95% CI 2.43–2.54) in

those with prior myocardial infarction only. Results for women were 2.48 (95% CI 2.43–2.54) and 2.71 (95% CI 2.65–2.78), respectively. Risks were similar for both types of diabetes, and adjustment for comorbidity, socio-economic status and prophylactic medical treatment showed similar results and propensity score-based matched pair analyses also supported these observations.

The major finding of this study is that all patients requiring glucose lowering therapy who are over 30 years old are at a particularly high risk of cardiovascular disease, which is comparable to that of people without diabetes with a prior myocardial infarction, and is regardless of diabetes type. Such an observation is at variance with other population based data suggesting a relatively low cardiovascular risk in younger diabetes patients; however, the inclusion of diet-only treatment patients in the latter analysis may explain the observed discrepancies in cardiovascular risk seen between different studies.

The findings of the MRFIT (Stamler et al, 1999) study, which also included patients requiring glucose lowering agents, supported the findings of this study with a high diabetes-related risk of cardiovascular disease in younger patients, for both patients with type 1 and type 2 diabetes. The results of this study imply that all patients over 30 years of age with diabetes requiring glucose lowering medications should revive intensive prevention for cardiovascular disease to secondary prevention targets, regardless of other existing factors such as gender or type of diabetes. Thus, when glucose lowering medications are required in diabetes patients older than 30 years, treatments such as anti-platelet therapy and statins should also be considered.

Stamler J, Stamler R, Neaton JD et al (1999) Low risk-factor profile and long-term cardiovascular and noncardiovascular mortality and life expectancy: findings for 5 large cohorts of young adult and middle-aged men and women. *Journal of the American Medical Association* **282**: 2012–8

EUROPEAN HEART JOURNAL

Higher risk at young age explains why women develop MI later in life than men

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

1 Coronary heart disease (CHD) is a leading cause of death among men and women. Although it is unclear why women develop CHD approximately 10 years after men.

2 This study aimed to investigate the differences in risk factor distributions between women and men in different age groups, in order to ascertain why women develop acute MI later on than men.

3 A total of 27 098 participants from 52 different countries were included from the INTERHEART global case-control study; first episode of acute MI was found to be higher in women than men (average age 65 versus 56 years; $P < 0.0001$).

4 The authors identified 9 modifiable risk factors to be associated with MI in both men and women; of these, hypertension, diabetes, physical activity, and moderate alcohol use were more strongly associated with MI in women than in men.

5 Risk factors including abnormal lipids, current smoking, abdominal obesity, high risk diet, and psychosocial stress factors with MI were associated with a similar risk in both women and men.

6 More than 90% of the population-attributable risk of MI is explained by the nine risk factors identified in this study.

7 The difference in age between men and women during their first MI is mostly explained by the higher risk factor levels during younger age.

Anand SS, Islam S, Rosengren A et al (2008) Risk factors for myocardial infarction in women and men: insights from the INTERHEART study. *European Heart Journal* **29**: 932–40

‘The difference in age between men and women during their first MI is mostly explained by the higher risk factor levels during younger age.’

AMERICAN JOURNAL OF CARDIOLOGY

Heart disease risk factors poorly controlled in patients with CKD

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

1 This study aimed to determine the effect of chronic kidney disease (CKD) on preventative therapy for cardiovascular disease in patients with

stable coronary heart disease.

2 A total of 7884 patients with a history of a coronary heart event were included in this multi-centre study.

3 A lower percentage of patients with CKD achieved good control of blood pressure and glycosylated haemoglobin compared with patients without CKD ($P < 0.001$ for both), with only 11.8% achieving optimum control of all cardiovascular risk factors.

Lahoz C, Mostaza JM, Mantilla MT et al (2008) Achievement of therapeutic goals and utilization of evidence-based cardiovascular therapies in coronary heart disease patients with chronic kidney disease. *American Journal of Cardiology* **101**: 1098–102

JOURNAL OF THE AMERICAN COLLEGE OF CARDIOLOGY

Retinopathy associated with heart failure

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

1 Microvascular disease is associated with heart disease, but whether retinopathy in patients with diabetes can predict heart failure is not known.

2 This population-based study analyzed data from retinal

photographs of 1021 patients with type 2 diabetes and collated them with incidence of heart failure.

3 Of the 125 patients with retinopathy, 106 developed heart failure during this study.

4 After adjustment for other confounding factors such as age, race, gender, duration of diabetes, insulin use, blood pressure and lipid profile, patients with diabetes-related retinopathy were shown to have more than a 2.5-fold higher risk of developing heart failure than those without retinopathy (hazard ratio 2.71; 95% confidence interval 1.46 to 5.05).

Cheung N, Wang JJ, Rogers SL et al (2008) Diabetic retinopathy and risk of heart failure. *Journal of the American College of Cardiology* **51**: 1573–8

AMERICAN JOURNAL OF CARDIOLOGY

Atrial fibrillation incidence higher in patients who develop diabetes

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

1 Both diabetes and hypertension are known as individual risk factors for atrial fibrillation (AF); this study investigated the association between

developing diabetes in patients who already had hypertension and AF.

2 A total of 551 patients developed AF during this study; those with newly developed diabetes were at significantly higher risk of new-onset AF ($P = 0.0031$) compared with patients without diabetes.

3 Incidence of AF was higher in patients with hypertension and newly-developed diabetes; this might explain some of the concomitant high risk of hospitalization for heart failure in these patients.

Aksnes TA, Schmieder RE, Kjeldsen SE et al (2008) Impact of new-onset diabetes mellitus on development of atrial fibrillation and heart failure in high-risk hypertension (from the VALUE Trial). *American Journal of Cardiology* **101**: 634–8

JOURNAL OF THE AMERICAN COLLEGE OF CARDIOLOGY

ED predictive of coronary heart disease

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

1 Although there has been evidence that erectile dysfunction (ED) can indicate a higher risk of coronary heart disease (CHD), no prospective studies have confirmed this association.

2 A cohort of 2306 men with diabetes and no previous evidence of cardiovascular disease were included in this study; participants were analyzed for all diabetes-related complications and assessed for CHD.

3 A total of 26.7% of participants had ED at study entry; CHD was higher in patients with ED, compared with patients without (19.7/1000 person-years, 95% confidence interval [CI] 14.3–25.2 person-years versus 9.5/1000 person-years, 95% CI 7.4–11.7 person-years).

4 Older age, higher frequency of ED and microvascular complications, longer duration of diabetes and higher blood pressure, cholesterol were associated with CHD.

5 After adjustment for age, duration of disease, and use of antihypertensive agents and albuminuria, ED was identified as an independent predictor of CHD (hazard ratio 1.58, 95% CI 1.08–2.30, $P=0.018$).

6 The presence of ED can thus predict new onset of CHD events; consequently, symptoms of ED should be used independently to identify patients at high risk who are in need of comprehensive cardiovascular assessments.

Ma RC, So WY, Yang X et al (2008) Erectile dysfunction predicts coronary heart disease in type 2 diabetes. *Journal of the American College of Cardiology* **51**: 2045–50

CIRCULATION

Possible cardioprotective properties of GLP-1R peptides

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

1 GLP-1R (glucagon-like peptide-1 receptor) mediates the incretin hormone GLP-1(7–36) and both are utilized in diabetes medicine; this study focused on the effects of GLP-1 on cardiovascular tissues.

2 In mouse heart cells, administration of GLP-1 increased glucose uptake, left-ventricular-developed pressure, and coronary flow.

3 GLP-1 expression also resulted in improved functional recovery and cardiomyocyte viability after injury.

4 The cardioprotective properties of GLP-1(7–36) metabolism to GLP-1(9–36) thus warrant further investigation.

Ban K, Noyan-Ashraf MH, Hoefer J et al (2008) Cardioprotective and vasodilatory actions of glucagon-like peptide 1 receptor are mediated through both glucagon-like peptide 1 receptor-dependent and -independent pathways. *Circulation* **117**: 2340–50

CIRCULATION

HDL-cholesterol predictive of CIMT progression

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

1 Atherosclerosis and risk of future cardiovascular events can be evaluated by measurement of carotid intima-media thickness (CIMT) and the pioglitazone has been shown to be the most effective treatment to reduce CIMT-based atherosclerosis.

2 This study investigated individual risk factors affecting

changes in CIMT measurements after pioglitazone treatment.

3 After 24 weeks of treatment, pioglitazone resulted in improved high-density lipoprotein (HDL) cholesterol, as well as other key risk factors for cardiovascular disease; changes in HDL-cholesterol were found to have a significant effect on CIMT measurements.

4 In addition, the authors identified changes in HDL-cholesterol at 24 weeks to be predictive of reduced CIMT progression after 72 weeks, which is in turn indicative of suppression of atherosclerosis.

Davidson M, Meyer PM, Haffner S et al (2008) Increased high-density lipoprotein cholesterol predicts the pioglitazone-mediated reduction of carotid intima-media thickness progression in patients with type 2 diabetes mellitus. *Circulation* **117**: 2123–30

AMERICAN JOURNAL OF CARDIOLOGY

Further evidence supports metabolic syndrome and heart disease association

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

1 This study focused on the effect of metabolic syndrome on atherosclerotic plaques and the resulting association with cardiovascular disease.

2 A total of 77 patients underwent computed tomography of coronary plaques and results of patients with metabolic syndrome were compared to those without.

3 Calcified and noncalcified plaques, as well as number of plaque segments, were significantly higher in patients with metabolic syndrome.

4 Metabolic syndrome was thus identified to be independently associated with presence of atherosclerotic plaques.

Butler J, Mooyaart EA, Dannemann N et al (2008) Relation of the metabolic syndrome to quantity of coronary atherosclerotic plaque. *American Journal of Cardiology* **101**: 1127–30

“Symptoms of ED should be used independently to identify patients at high risk who are in need of comprehensive cardiovascular assessments.”