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Diabetes and prior MI increase risk of total and CHD mortality

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

1 This study compared the impact of diabetes and prior myocardial infarction (MI) on total and CHD mortality in men, and examined the relationship between duration of diabetes and mortality.

2 Data were examined for 51316 men aged 40–75 years in the Health Professionals' Follow-up Study.

3 During 10-year follow-up, 4150 deaths from all causes were recorded, including 1124 from CHD.

4 Compared with men without diabetes or prior MI, the relative risk of fatal CHD was 3.84 for those with diabetes only; 7.88 for those with MI only; and 13.41 for those with diabetes and MI.

5 Thus both diabetes and MI were associated with increased total and CHD mortality, and duration of diabetes was found to be an independent risk factor for total and CHD mortality.

Cho E, Rimm EB, Stampfer MJ et al (2002) The impact of diabetes mellitus and prior myocardial infarction on mortality from all causes and from coronary heart disease in men. *Journal of the American College of Cardiology* 40(5): 954–60

CIRCULATION



Aortic pulse-wave velocity is strong predictor of mortality

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

1 This study sought to determine whether aortic pulse-wave velocity

Aortic pulse-wave velocity as an independent predictor of mortality in people with diabetes



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This study by Cruikshank et al is an impressive achievement and adds to our understanding of the pathophysiology of vascular dysfunction and its relationship to mortality in type 2 diabetic patients of white, South Asian and

AfroCaribbean origin and healthy non-diabetic controls of the same ethnicity.

Cruikshank et al recruited over 500 subjects and measured at baseline (in addition to conventional risk factors for atherosclerosis), aortic pulse-wave velocity using Doppler probes placed on the neck and abdomen. The speed at which the pulse wave travels from the subclavian artery to the abdominal aorta gives an indication of how distensible the aorta is: the faster the time, the less distensible or 'stiffer' the aorta. Overall follow-up was 10.7 years for survivors and 6.9 years for those who died, representing more than 3000 patient-years of follow-up.

In patients with diabetes and a systolic blood pressure (SBP) between 140 and 160 mmHg, 17% had a pulse-wave velocity of >15 m/s, compared with only 2% of controls. Among a number of variables in patients with overt diabetes and impaired glucose tolerance, pulse-wave velocity was an independent predictor of mortality (interestingly pulse-wave velocity displaced SBP from the statistical model). When survival status was superimposed on the plot of pulse-wave velocity against systolic blood pressure, those who died had a higher baseline pulse-wave velocity on average for any level of blood pressure.

The data presented in this paper support a role for the assessment of vascular function in large arteries to predict mortality in patients at risk of vascular disease. It seems likely that pulse-wave velocity provides an integrated index of arterial function, perhaps reflecting the effect of not only traditional risk factors for vascular disease but also more novel pro-atherosclerotic peptides such as cytokines. This finding certainly warrants further study.

(PWV) predicts cardiovascular and all-cause mortality in type 2 diabetes and glucose-tolerance-tested (GTT) multiethnic population samples.

2 In a randomised trial, brachial blood pressures and Doppler-derived aortic PWV were measured in subjects with type 2 diabetes and in GTT non-diabetic controls.

3 Mortality data over 10 years' follow-up were obtained.

4 At any level of systolic blood pressure (SBP), aortic PWV was greater in subjects with diabetes than in controls. Mortality risk doubled in subjects with diabetes and in those with glucose intolerance compared with controls.

5 For all groups combined, age, sex and SBP predicted mortality; the addition of PWV independently

predicted all-cause and cardiovascular mortality but displaced systolic BP.

6 Aortic PWV is thus a powerful independent predictor of mortality in both subjects with diabetes and non-diabetic GTT population samples.

7 PWV is probably more closely related to arterial disease than SBP, and may represent a useful integrated index of vascular status and hence cardiovascular risk.

8 MPWV measurement is simple and relatively inexpensive, and could become a useful clinical method for assessing vascular and general risk of mortality.

Cruikshank K, Riste L, Anderson SG et al (2002) Aortic pulse-wave velocity and its relationship to mortality in diabetes and glucose intolerance. An integrated index of vascular function? *Circulation* 106: 2085–90

‘Scintigraphy abnormality, duration of diabetes and diabetic retinopathy were shown to be independent predictors of cardiac events.’

‘Diabetic patients may have a decreased capacity to remodel the left ventricle after myocardial infarction.’

‘Current data do not provide grounds for recommending antioxidant supplements for the treatment and prevention of CHD.’

DIABETES CARE



Screening may help to reduce risk of cardiac events

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

- In 1993 the Milan Study on Atherosclerosis and Diabetes (MISAD) screened 925 subjects with type 2 diabetes aged 40–65 years for asymptomatic CHD.
- This article reports on cardiac events recorded for 735 of these subjects over a 5-year follow-up period.
- At the start of the study, 638 subjects had normal exercise treadmill test (ETT), 45 had abnormal ETT with normal scintigraphy, and 52 had abnormal ETT and abnormal scintigraphy.
- The 52 subjects with abnormal ETT and scintigraphy had cardiological and diabetological follow-ups.
- The 45 subjects with abnormal ETT had only diabetological follow-up.
- During follow-up, 42 cardiac events occurred: 1 fatal myocardial infarction (MI), 20 non-fatal MIs and 10 cases of angina in the 638 subjects with normal ETT; 1 fatal MI in the 45 subjects with abnormal ETT only; and 1 fatal MI and 9 cases of angina in the 52 subjects with abnormal ETT and scintigraphy.
- All cardiac events were more significantly more frequent in the 52 subjects with abnormal ETT and scintigraphy, but the ratio of major events to minor ones was significantly lower.
- Scintigraphy abnormality, duration of diabetes and diabetic retinopathy were shown to be independent predictors of cardiac events.

Faglia E, Favales F, Calia P et al (2002) Cardiac events in 735 type 2 diabetic patients who underwent screening for unknown asymptomatic coronary heart disease. 5-year follow up report from the Milan Study on Atherosclerosis and Diabetes (MISAD). *Diabetes Care* 25(11): 2032–5

CIRCULATION



Ventricular remodeling after MI

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

- Patients with diabetes are at increased risk of heart failure after myocardial infarction. Diabetes is also associated with cardiac alterations such as left ventricular hypertrophy.
- In this US study, 100 patients with diabetes who had undergone echocardiographic assessment before and after myocardial infarction were reviewed.

3 The incidence and extent of left ventricular enlargement was significantly less in the patients with diabetes.

4 The increased incidence of heart failure after myocardial infarction in diabetic patients is not explained by an increased propensity for left ventricular remodelling.

5 Diabetic patients may have a decreased capacity to remodel the left ventricle after myocardial infarction and therefore develop heart failure at lower ventricular volumes than nondiabetic patients with similar-sized infarcts.

Solomon SD, Sutton MS, Lamas GA et al (2002) Ventricular remodeling does not accompany the development of heart failure in diabetic patients after myocardial infarction. *Circulation* 106: 1251–5

ATHEROSCLEROSIS



Comparison of the efficacy of five statins on lipid parameters

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

- Treatment with statins can reduce the number of cardiovascular events.
- The effects of five different statins were compared in 86 coronary heart disease (CHD) patients in a US-based randomised cross-over trial.

3 All five statins on each dose resulted in significant reductions in total cholesterol and low density lipoprotein cholesterol in the CHD patients compared with placebo.

4 Statins are the most effective agents in modifying the high density lipoprotein subpopulation profile in CHD patients towards the patterns found in healthy individuals.

5 The order of efficacy of statins in increasing high-density lipoprotein was atorvastatin, simvastatin, pravastatin, lovastatin and fluvastatin.

Asztalos BF, Horvath KV, McNamara JR et al (2002) Comparing the effects of five different statins on the HDL subpopulation profiles of coronary heart disease patients. *Atherosclerosis* 164: 361–9

No evidence that antioxidants help prevent CHD

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

- There is evidence of lipoprotein oxidation in atherosclerotic lesions.
- Randomised controlled trials on the use of antioxidant supplements to prevent coronary heart disease were reviewed.
- On the basis of evidence from primary and secondary prevention studies, α -tocopherol and β -carotene do not reduce the incidence of coronary events.



4 Recent studies with antioxidant combinations have also shown no benefit for the use of antioxidants in preventing coronary heart disease.

5 Current data do not provide grounds for recommending antioxidant supplements for the treatment and prevention of coronary heart disease.

Kritharides L, Stocker R (2002) The use of antioxidant supplements in coronary heart disease. *Atherosclerosis* 164: 211–9