Cardiovascular journals

CIRCULATION

Mild elevations in blood glucose contribute to CVD mortality

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

1 Following evidence that diabetes increases the risk of CVD and all-cause mortality, the aim of this study was to investigate whether or not IFG and IGT increase the risk of all-cause and CVD mortality.

2 As part of the Australian Diabetes, Obesity, and Lifestyle Study, 10 428 individuals aged ≥25 years had their glucose tolerance status determined and were followed for a mean of 5.2 years.

3 In this study, IFG was defined as FPG ≥6.1 and <7 mmol/l with a 2-hour plasma glucose ≤ 7.8 mmol/l. IGT was defined as a 2-hour plasma glucose >7.8 and <11.1 mmol/l with FPG <7.0 mmol/l). Normal glucose tolerance was defined as a FPG <6.1 mmol/l and a 2-hour plasma glucose ≤ 7.8 mmol/l.

4 Of the 298 deaths that occurred, 88 were CVD related. Of those who died of CVD-related causes, 65 % had diabetes, IFG or IGT.

5 The all-cause mortality hazard ratios (HRs)were 2.3 for known diabetes and 1.3 for newly diagnosed diabetes. Additionally, the HRs for death with IFG or IGT were 2.6 and 2.5, respectively.

6 After adjusting for age, sex and other CVD risk factors, known diabetes and IFG were identified as independent predictors of CVD mortality; however, IGT was not.

7 The conclusion reached by the authors was that the strong association between glucose metabolism abnormalities and mortality warrants targeted CVD prevention in people with any abnormality of glucose metabolism, and especially diabetes and IGF.

Barr EL, Zimmet PZ, Welborn TA et al (2007) Risk of cardiovascular and all-cause mortality in individuals with diabetes mellitus, impaired fasting glucose, and impaired glucose tolerance: the Australian Diabetes, Obesity, and Lifestyle Study (AusDiab). *Circulation* **116**: 151–7

Aggressive stance needed in the multifactoral management of CVD risk factors in IGT and IGF as well as diabetes

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Many studies over the last two decades have helped develop a clinical consciousness that diabetes, impaired glucose tolerance (IGT) and impaired fasting glucose (IFG) increase the risk of cardiovascular complications. Despite this, there has been a great reluctance to screen for diabetes, IGT or IFG and treat early to prevent CVD events. The Australian Diabetes, Obesity and Lifestyle study (AusDiab) provides 21st century evidence for the generally accepted fact that CVD risk is increased in diabetes, IGT and IFG.

AusDiab is a national, population-based study of 11 247 adults who had baseline observations and biochemistry performed in 1999–2000. Participants were recruited from 42 randomly selected urban and rural clinics from each of the six states and the Northern Territory of Australia. In total, 20 347 eligible people over the age of 24 years completed a household survey. Of these, 55.3 % attended the biochemical and clinical examination. WHO criteria from 1999 were used to categorise the subjects into known diabetes, new diabetes, IGT and IFG. Over the subsequent 5.2 years, individuals had their mortality and morbidity status ascertained from the Australian National Death Index (NDI).

At baseline, the average age of the cohort was 51.4 years, with 45.2 % of them male. Additionally, 32.5 % had hypertension with an average cholesterol level of 5.7 mmol/l. Forty-five per cent were smokers, with 8.1 % having a history of CVD.

Over the 5.2-year follow-up period there were 298 deaths, which equates to 5.5 per 1000 years. Broken down into the glucose abnormalities, mortality was as follows.

- Of the 4.1 % with known diabetes, 11.8 % died.
- Of the 4.2 % with new diabetes, 6.2 % died.
- Of the 12.5 % with IGT, 5.2% died.
- Of the 5.9 % with IFG, 3.9% died.

Only 1.7 % of those without any glucose abnormality died. A third of all deaths were due to CVD with 65 % of all CVD deaths occurring in those with abnormal glucose metabolism at baseline. After adjustment for other CVD risk factors, the most powerful predictors of CVD mortality were diabetes and IFG.

This study highlights the aggressive stance that we should continue to adopt in multi-factorial management of CVD risk factors in diabetes. However, the case is made once again for reopening the debate on screening for new-onset diabetes, IGT and IFG in the general population selected by suitable cost-effective and screening-acceptable protocols. Patients identified as at risk can then be targeted for intensive lifestyle and possible pharmacological intervention.

AMERICAN HEART JOURNAL

Smoking cessation advice inadequate after MI

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

1 This study looked at the prevalence and predictors of inpatient smoking cessation following acute MI.

2 Using a retrospective, cohort analysis of an inpatient population database of individuals with an MI, data from 9 041 individuals from 83 hospitals in Ontario, Canada were used in the analysis.

3 Two-thirds of the inpatients involved reported a history of smoking, with over a third being current smokers.

4 The study found that only 52.1 % of current smokers were given advice on smoking cessation. Individuals who were older or had diabetes were less likely to receive such advise.

5 Smokers who received cessation counselling had a lower mortality risk than those who did not (HR: 0.63).

6 The authors conclude that with only half of MI inpatients receiving stopping smoking advice, mortality in this group could be significantly improved by ensuring this intervention is more readily available.

Van Spall HGC, Chong A, Tu JV (2007) Inpatient smoking-cessation counseling and all-cause mortality in patients with acute myocardial infarction. *American Heart Journal* **154**: 213–20

'Significantly more cases of new onset diabetes were diagnosed in those individuals who were assigned metoprolol than those taking carvedilol: 12.6 % versus 10.3 %, respectively.'

'In men without diabetes who had metabolic syndrome, the CVD event rate was over five times that of men without diabetes or metabolic syndrome.'

AMERICAN JOURNAL OF CARDIOLOGY

Risk interactions elevate CVD events in women with diabetes

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1 The authors studied the rates of CVD events in men and women in Singapore with and without diabetes or metabolic syndrome.

2 The 1992 National Health Survey of Singapore was used to identify the 3 414 individuals aged 18–69 years without CVD who took part in the 10-year study.

3 At baseline, 9.5 % of men and 10.0 % of women had diabetes. Overall, 12.4 % of participants had metabolic syndrome (MetS).

4 In men without diabetes who had MetS, the CVD event rate was over five times that of men without diabetes or MetS (3.0 and 15.9 per 1 000 person-years, respectively). This was a trend also seen in female participants without diabetes (0.9 and 3.7 per 1 000 person-years).

5 Where diabetes was diagnosed, CV event rates in men varied according to the presence of MetS: 21.4 and 22.5 per 1 000 person-years for men with and without MetS, respectively. In women with diabetes, this difference was far more pronounced: 21.5 and 5.3 events per 1 000 person-years in those with and without MetS, respectively.

6 In individuals with diabetes alone, the male sex was more at risk of CVD events (HR: 6.04; 95 % CI: 1.43–25.6); however, where participants had both diabetes and MetS, there was comparable risk for men and women (HR: 0.98; 95 % CI: 0.48–1.99).

7 In their conclusion, the authors describe men as being more susceptible to individual risk factors, while risk factor interactions had a greater impact on the CVD risk of elderly women.

Mak K-H, Ma S, Heng D et al (2007) Impact of sex, metabolic syndrome, and diabetes mellitus on cardiovascular events. *American Journal of Cardiology* **100**: 227–33

STROKE

Stroke risk doubled in newly treated T2D

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1 This study set out to define the risk of stroke in people who had recently begun taking medications for type 2 diabetes.

2 Using the Saskatchewan Health database, 12 272 Canadians with diabetes were identified and included in the study. Mean age was 64 ± 13.6 years and the prevalence of males was 55 %.

3 Over the 5-year follow up, 9.1 % of participants had a stroke. When age-standardised, the incidence of stroke was double that in people with diabetes compared with those without diabetes: 642 and 313 per 100 000 person-years, respectively.

4 The authors argue that with such high rates of stroke within the first 5 years of being initiated onto diabetes medication, aggressive CVD risk management is warranted.

Jeerakathil T, Johnson JA, Simpson SH, Majumbdar SR (2007) Short-term risk for stroke is doubled in persons with newly treated type 2 diabetes compared with persons without diabetes: a population-based cohort study. *Stroke* **38**: 1739–43

HEART

ß blocker selection affects diabetes risk

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✓✓✓✓
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1 This study investigated whether or not the ß blockers metoprolol and carvedilol are associated with different rates of new-onset diabetes.

2 In total, 3029 people with chronic heart failure were recruited to the multinational, multicentre study. Carvedilol was randomly assigned to 1511 individuals to a target dose of 50 mg daily, while 1518 were given metoprolol tartrate to a target dose of 100 mg daily.

3 After 5 years, significantly more cases of new-onset diabetes were diagnosed in those individuals who were assigned metoprolol than those taking carvedilol: 12.6 % versus 10.3 %, respectively (P=0.048).

4 No significant difference was found between the mortality benefits the two agents incurred (carvedilol: RR=0.85, 95 % CI: 0.69–1.06; metoprolol RR=0.82, 95 % CI: 0.71–0.94).

Torp-Pedersen C, Metra M, Charlesworth A et al (2007) Effects of metoprolol and carvedilol on pre-existing and new onset diabetes in patients with chronic heart failure: data from the Carvedilol Or Metoprolol European Trial (COMET) *Heart* **93**:968–73

STROKE

SUs improve outcomes after acute ischaemic stroke

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

1 The hypothesis tested in this study was that individuals with type 2 diabetes taking an SU would have better outcomes following an acute ischaemic stroke.

2 The medical records of 33 individuals with type 2 diabetes admitted to the Charité Hospital, Germany, for acute ischaemic stroke who were taking an SU were examined and compared with a control group of 28 individuals who were not taking an SU.

3 The primary outcome was a decrease in the National Institutes of Health Stroke Scale of ≥4 points from admission to discharge or a discharge score of 0. In total, 36.4 % of those individuals in the treatment group reached this outcome, compared with 7.1 % in the control group (P=0.035).

4 The authors of this small study concluded that SUs may be beneficial to people with diabetes who have experienced an acute ischaemic stroke.

Kunte H, Schmidt S, Eliasziw M et al (2007) Sulfonylureas improve outcome in patients with type 2 diabetes and acute ischemic stroke. *Stroke* **38**: 2526–30

'Individuals with anti-hypertensive treatment did not demonstrate an association between UAER and heart failure incidence.'

'Diabetes represented the CVD risk factor with the greatest impact on medical costs.'

AMERICAN JOURNAL OF CARDIOLOGY

Admission hyperglycaemia and diabetes are two distinct conditions

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

1 This study investigated the effect of diabetes and admission hyperglycaemia, in people with acute myocardial infarction (AMI) in the percutaneous intervention (PCI) era, on short- and long-term mortality.

2 Over a 7-year period, 802 people with AMI received coronary angiography, 90 % of whom underwent primary PCI.

3 Admission hyperglycaemia (glucose ≥11.1 mmol/l) was found in 261 (32.5 %) people and was associated with a higher 30-day mortality rate than those without (8.4 % vs 2.4 %; $P<0.001$). Presence or absence of diabetes did not affect 30-day mortality ($P=0.29$).

4 On the other hand, long-term mortality of 30 days to 3 years was significantly higher in people with diabetes than those without (10 % vs 5.5 %; $P=0.03$), while hyperglycaemia had no significant effect ($P=0.19$).

5 Multivariate analyses also demonstrated that hyperglycaemia was an independent predictor of 30-day mortality (OR: 1.71; 95 % CI: 1.13–2.61; $P=0.01$) while diabetes was not (OR: 0.84; 95 % CI: 0.55–1.27; $P=0.42$).

6 Diabetes was independently associated with 30-day to 3-year mortality (OR: 1.43; 95 % CI: 1.02–1.97; $P=0.04$), while hyperglycaemia was not (OR: 0.98; 95 % CI: 0.70–1.36; $P=0.92$).

7 The authors concluded that in the PCI era, after convalescence with AMI, hyperglycaemia is associated with short-term mortality, while diabetes is associated with long-term mortality. They should therefore be considered as two distinct diseases.

Ishihara M, Kagawa E, Inoue I et al (2007) Impact of admission hyperglycemia and diabetes mellitus on short- and long-term mortality after acute myocardial infarction in the coronary intervention era. *American Journal of Cardiology* **99**: 1674–9

EUROPEAN HEART JOURNAL

Predisposition to CV damage and heart failure with low-grade albuminuria

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

1 In a community-based sample of 1106 70-year-old men, the association between urinary albumin excretion rate (UAER) and heart failure was examined.

2 None of the participants had heart failure at baseline.

3 They were analysed for a median duration of 9 years for UAER with established risk factors for heart failure, such as acute MI, hypertension, diabetes, left ventricular hypertrophy, smoking, BMI and GFR.

4 Risk factors such as high-sensitive C-reactive protein and insulin sensitivity were also monitored.

5 During a median of 9 years of follow up, 98 % of people developed heart failure.

6 Analysis revealed that 1 standard deviation in $_{log}$UAER increased the risk of heart failure in people without anti-hypertensive treatment (HR: 1.49; 95 % CI: 1.13–1.98; $P=0.005$).

7 UAER was a predictor of heart failure independent of diabetes status at baseline, or MI at baseline or follow up.

8 Individuals with anti-hypertensive treatment did not demonstrate an association between UAER and heart failure incidence.

9 In conclusion, low-grade albuminuria appears to be a risk factor for subclinical cardiovascular damage, eventually leading to heart failure.

Ingelsson E, Sundström J, Lind L et al (2007) Low-grade albuminuria and the incidence of heart failure in a community-based cohort of elderly men. *European Heart Journal* **28**: 1739–45

AMERICAN JOURNAL OF HYPERTENSION

Diabetes has greatest impact on medical costs among CVD risk factors

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

1 In order to investigate the extent of risk-factor clustering in people with hypertension, data were collected from the electronic records of the Kaiser Permanente Northwest system that covers Portland, US, and Vancouver, Canada.

2 The sampling included all individuals with hypertension who were free from CVD and were aged ≥35 years (n=57 573). Hypertension was described as systolic BP ≥140 mmHg or diastolic BP ≥90 mmHg on two or more occasions.

3 Stratification of participants was based on the presence of diabetes and hyperlipidaemia and a BMI ≥30 kg/m^2.

4 Fifty-six per cent of participants were found to have one or more of the three risk factors studied. The relative risk of a CV event over 6 years was 2.07 (95 % CI: 1.86–2.30) with diabetes alone and 2.80 (95 % CI: 2.48–3.17) for people with diabetes, hyperlipidaemia and a BMI ≥30 kg/m^2.

5 Average medical costs after 6 years of follow up ranged between US$ 31 721 – 36 825 for individuals with hypertension without diabetes, compared with US$ 50 203–56 489 among those with hypertension plus diabetes. Thus, diabetes represented the CVD risk factor with the greatest impact on medical costs.

6 Cumulative cost of medical care was positively associated with the presence of additional CVD risk factors in individuals already diagnosed with hypertension.

7 The authors suggest that this evidence adds economic weight to the need to target reducing CVD risk factors.

Weycker D, Nichols GA, O'Keeffe-Rosetti M et al (2007) Risk-factor clustering and cardiovascular disease risk in hypertensive patients. *American Journal of Hypertension* **20**: 599–607