

## Cardiovascular journals

### AMERICAN HEART JOURNAL

#### Admission blood glucose predicts diabetes post-AMI

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

**1** A high proportion of people without diabetes admitted with acute myocardial infarction (AMI) have abnormal glucose tolerance. However, little is known about the future risk of type 2 diabetes in these people.

**2** This study examined whether blood glucose levels on admission can determine the risk of developing type 2 diabetes in people presenting with their first AMI.

**3** The study comprised 1239 people without diabetes admitted with their first AMI who survived a minimum of 28 days; the mean follow-up was 4.7 years.

**4** At follow-up, there were 108 cases of incident type 2 diabetes.

**5** Cox regression analysis was performed to determine the relationship between admission blood glucose and incident type 2 diabetes.

**6** People with admission blood glucose levels  $\geq 153$  mg/dL (8.6 mmol/L) had a 2.6-fold increased risk of developing type 2 diabetes, which was significant even after adjusting for type 2 diabetes risk factors ( $P=0.0002$ ).

**7** The authors concluded that admission blood glucose levels in people without diabetes presenting with AMI could be used as an inexpensive screening tool to detect people at high risk of diabetes.

**8** In addition, the ability to identify high-risk people would enable close monitoring of glucose metabolism during follow-up.

Meisinger C, Beck J, Heier M et al (2010) Myocardial infarction and incidence of type 2 diabetes mellitus. Is admission blood glucose an independent predictor for future type 2 diabetes mellitus? *Am Heart J* **159**: 258–63

#### Blood glucose at admission for acute myocardial infarction predicts future diabetes



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**A** number of studies report increasing adverse outcomes in people with type 2 diabetes and myocardial infarction in relation to glucose levels at admission, and similar data has been debated for people admitted with myocardial infarction without diabetes (Stranders et al, 2004; Meisinger et al, 2006).

The study by Meisinger et al (2010; summarised alongside) provides important data on increased blood glucose levels on admission in people without diabetes with first acute myocardial infarction in terms of predictive value for future type 2 diabetes.

Using the KORA myocardial infarction database in Augsburg, Germany, the study examined 1239 people without diabetes aged 25–74 who were admitted to hospital between 1998 and 2003 with a diagnosis of first acute myocardial infarction. Only

those who survived the first 28 days post-admission were followed-up. Subsequent development of incident type 2 diabetes was reported. A total of 108 cases of incident type 2 diabetes were registered during follow-up (mean 4.7 years). Participants with blood glucose values  $>8.5$  mmol/L at admission demonstrated an age- and sex-adjusted risk of 2.76 (95% confidence interval, 1.6–4.75) for incident type 2 diabetes.

Meisinger et al's study has an important message: the blood glucose values of people without diabetes with first acute myocardial infarction give us the ability to identify people who require careful follow-up for incident diabetes post-myocardial infarction.

Meisinger C, Hörmann A, Heier M et al (2006) Admission blood glucose and adverse outcomes in non-diabetic patients with myocardial infarction in the reperfusion era. *Int J Cardiol* **113**: 229–35

Stranders I, Diamant M, van Gelder RE et al (2004) Admission blood glucose level as risk indicator of death after myocardial infarction in patients with and without diabetes mellitus. *Arch Intern Med* **164**: 982–8

### HEART

#### Aldosterone excess relates to IR in HF

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

**1** Aldosterone plays an important role in the aetiology and progression of heart failure (HF).

**2** "Aldosterone escape" occurs in 10–51% of people treated for HF with therapies that should inhibit aldosterone production, resulting in a worse clinical outcome.

**3** This study investigated the association between aldosterone and insulin resistance (IR) in 302 people with HF enrolled in the ALOFT (Aliskiren Observation of Heart Failure Treatment) study, and randomised to the renin inhibitor aliskiren or placebo.

**4** Assessments included plasma aldosterone, 24-hour urinary aldosterone excretion, fasting insulin and homeostasis model assessment of IR; the occurrence of "aldosterone escape" was also identified.

**5** In total, 20% of participants ( $n=37$ ) showed "aldosterone escape" and 34% ( $n=63$ ) had high urinary aldosterone levels, with some overlap between these groups.

**6** At baseline, aldosterone levels positively correlated with fasting plasma insulin ( $P<0.01$ ). People with "aldosterone escape" and with high urinary aldosterone excretion showed higher levels of fasting insulin, thus were most insulin resistant.

**7** The results were concluded to show a positive correlation between aldosterone and IR in HF.

Freel EM, Tsoralis IK, Lewsey JD et al (2009) Aldosterone status associated with insulin resistance in patients with heart failure — data from the ALOFT study. *Heart* **95**: 1920–4

**“Having diabetes significantly increases the risk of adverse heart failure outcomes in people with heart failure and preserved left ventricular function.”**

## AMERICAN JOURNAL OF CARDIOLOGY

### HDL-cholesterol levels not improved by statin therapy

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

- 1 Statins are widely used to target LDL-cholesterol to reduce cardiovascular (CV) risk.
- 2 Some studies recommend additional treatment to target HDL-cholesterol, which may further reduce CV risk.
- 3 This study sought to determine the size of the treatment group that would benefit from 1 year of lipid-modifying therapy to attain LDL-cholesterol goals and normal levels of HDL-cholesterol and triglycerides.
- 4 Using observational data from a large health maintenance organisation, 5158 people were identified who had dyslipidaemia therapy for 1 year and had LDL-cholesterol, HDL-cholesterol and triglycerides measured within 6 months before, and 9–15 months after, initiation of therapy.
- 5 After 1 year of treatment (predominantly statin therapy) LDL-cholesterol goal attainment had improved; the number of people not achieving LDL-cholesterol goals were reduced from 77 to 22%.
- 6 HDL-cholesterol levels were unchanged by treatment.
- 7 After therapy, 29% of high-risk people (with coronary artery disease, diabetes and a 10-year coronary heart disease risk >20%) still had multiple lipid abnormalities.
- 8 It was concluded that about half the people commenced on statin therapy could be candidates for therapy that targets multiple lipid abnormalities.

Nichols GA, Ambegaonkar BM, Sazonov V, Brown JB (2009) Frequency of obtaining National Cholesterol Education Program Adult Treatment Panel III Goals for all major serum lipoproteins after initiation of lipid-altering therapy. *Am J Cardiol* **104**: 1689–94

## AMERICAN HEART JOURNAL

### Obesity reduces QoL in diabetes and CAD

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

- 1 This study examined the extent to which obesity independently affects quality of life (QoL) in people with co-existing obesity, type 2 diabetes and coronary artery disease (CAD).
- 2 In total, 1798 participants in the Bypass Angioplasty Revascularisation

Investigation 2 Diabetes trial completed QoL surveys at baseline; 7% had a low or normal BMI, 31% were overweight, 34% were class I obese and 28% were class II or III obese.

- 3 All QoL surveys showed lower QoL scores in those people with CAD and type 2 diabetes who were obese; use of insulin, smoking and angina also significantly lowered QoL scores.
- 4 The authors concluded that obesity significantly reduced QoL in people with diabetes and CAD.

Hlatky MA, Chung S-C, Escobedo J et al (2010) The effect of obesity on quality of life in patients with diabetes and coronary artery disease. *Am Heart J* **159**: 292–300

## JOURNAL OF THE AMERICAN COLLEGE OF CARDIOLOGY

### Obesity and diabetes are HF risk factors

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

- 1 Heart failure (HF) is a major public health concern, with rising incidence and cost to the NHS. It is therefore important to identify all risk factors for HF, so that preventive strategies can be put in place to reduce morbidity and mortality.
- 2 This report focused on the importance of the increasingly prevalent metabolic risk factors – diabetes, obesity and the metabolic syndrome – with the development of HF.

- 3 Diabetes was found to be an independent risk factor for HF, with the degree of glycaemic control relating to the magnitude of HF risk.

- 4 Obesity was found to be another risk factor for HF, which involves a strong correlation with insulin resistance and inflammatory changes.

- 5 Although the metabolic syndrome itself may not be a risk factor for HF, its component risk factors (obesity, insulin resistance, high blood pressure) confer HF risk.

- 6 The authors concluded that preventive strategies are needed to target all risk factors for HF.

Horwich TB, Fonarow GC (2010) Glucose, obesity, metabolic syndrome and diabetes: relevance to incidence of heart failure. *J Am Coll Cardiol* **55**: 283–93

## AMERICAN JOURNAL OF CARDIOLOGY

### Diabetes increases risk of HF outcomes

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

- 1 Diabetes is a comorbidity that commonly coexists with heart failure (HF) and preserved left ventricular function (LVEF).
- 2 This study examined the impact of diabetes on adverse HF outcomes in 987 people with HF and preserved LVEF; 285 participants had diabetes.

- 3 During the mean follow-up of 37 months, 30.9% of people with diabetes and 19.0% of people without diabetes were admitted for HF or died of HF.

- 4 After adjustment, diabetes was associated with a 68% increased risk of HF hospitalisation or HF death (adjusted hazard ratio, 1.68;  $P < 0.001$ ).

- 5 Having diabetes was found to significantly increase the risk of adverse HF outcomes in people with HF and preserved LVEF.

Aguilar D, Deswal A, Ramasubbu K (2010) Comparison of patients with heart failure and preserved left ventricular ejection fraction among those with versus without diabetes mellitus. *Am J Cardiol* **105**: 373–7