Clinical *DIGEST 1*

Major journals

Metabolic syndrome linked to worse hospital outcomes and higher incidence of severe heart failure

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The problems of the metabolic syndrome and its impact on hospital outcomes were determined in a population-based sample of patients with acute myocardial infarction (see right). The relative influence of each component of the metabolic syndrome was also assessed.

A total of 633 unselected consecutive patients with acute myocardial infarction were categorised according to the metabolic syndrome criteria of the National Cholesterol Education Program Adult Treatment Panel III. Of these 633, 46 % fulfilled the criteria for metabolic syndrome. These people were generally older and predominantly female. In-hospital case fatality appeared to be higher in those with the metabolic syndrome compared with those without. Acute metabolic syndrome was a strong and independent predictor of severe heart failure.

Of the components of the metabolic syndrome, hyperglycaemia was the major determinant of severe heart failure.

In short, the metabolic syndrome appears to have a high prevalence in patients hospitalised with acute myocardial infarction, and appears to be associated with worse hospital outcome and a higher incidence of severe heart failure.

Poor outcomes seen with metabolic syndrome after acute MI

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

1 No previous study had examined the effect of the metabolic syndrome after acute myocardial infarction (MI).

2 A population-based sample (n=633; 290 with the metabolic syndrome) of patients hospitalised with acute MI was followed.

3 Both in-hospital death and severe heart failure (above Killip class II) were associated with the metabolic syndrome.

4 In a multivariate analysis, the link with severe heart failure was found to be independent of other factors.

5 Hyperglycaemia was the component of the metabolic syndrome that was found to most strongly predict severe heart disease (odds ratio, 3.31; 95 % confidence interval, 1.86–5.87; *P*<0.001).

Zeller M, Steg PG, Ravisy J, Laurent Y, Janin-Manificat L, L'Huillier I et al (2005) Prevalence and impact of metabolic syndrome on hospital outcomes in acute myocardial infarction. *Archives of Internal Medicine* **165**(10): 1192–8

Both metformin and lifestyle intervention reduce metabolic syndrome incidence

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

1 A randomised, controlled trial was carried out in the Diabetes Prevention Program to assess the effect on incidence of the metabolic syndrome of metformin (850 mg twice daily) and intensive lifestyle interventions (to give a sustained 7 % loss in weight, including 150 minutes' weekly exercise).

2 Of the 3234 participants, 1711 (53 %) had the metabolic syndrome at baseline, using the criteria of the National Cholesterol Education Program Adult Treatment Panel III.

3 Compared with placebo, incidence decreased 41 % in the lifestyle group (*P*<0.001) and 17 % in the metformin group (*P*=0.03).

Orchard TJ, Temprosa M, Goldberg R, Haffner S, Ratner R, Marcovina S et al (2005) The effect of metformin and intensive lifestyle intervention on the metabolic syndrome: the Diabetes Prevention Program randomized trial. *Annals of Internal Medicine* **142**(8): 611–9

The diabetic lung

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

1 The capillary network in the alveoli is the body's largest microvascular organ, which makes it prone to systemic microangiopathy.

2 Because of the large pulmonary reserves, symptoms develop later than is the case in smaller microvasculature such as the retina or kidney for a comparable level of anatomic destruction; this means that pulmonary impairment in diabetes can be under-recognised.

3 Alveolar diffusion–perfusion indices, which have been used to determine capillary integrity in the alveoli independently of physical fitness, could be adopted as a non-invasive means of assessing the progression of microangiopathy in people with diabetes.

4 There is a need for evaluations of the sensitivity of such indices for this use.

5 This may have relevance for inhaled insulin: the authors recommend a cautious approach to its long-term use until more data are available on pulmonary impairment.

Hsia CCW, Raskin P (2005) The diabetic lung: Relevance of alveolar microangiopathy for the use of inhaled insulin. *American Journal of Medicine* **142**(8): 611–9

LANCET

Rimonabant linked to improvements in CV risk factors

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

1 Cannabinoid-1 receptor (CB_1) blockade is associated with resistance to obesity and dyslipidaemia.

2 The effect of the CB_1 blocker rimonabant on cardiovascular (CV) risk factors was assessed in 1507 people with a body mass index greater than 30 kg/m^2 or greater than 27 kg/m^2 with hypertension or dyslipidaemia.

3 Rimonabant 20 mg/day (in addition to a mild hypocaloric diet) led to significantly greater improvements than placebo in prevalence of the metabolic syndrome as well as insulin resistance, triglyceride levels, HDL-cholesterol levels and waist circumference.

4 Also, treatment with rimonabant was generally well tolerated.

Van Gaal LF, Rissanen AM, Scheen AJ, Ziegler O, Rossner S; RIO-Europe Study Group (2005) Effects of the cannabinoid-1 receptor blocker rimonabant on weight reduction and cardiovascular risk factors in overweight patients: 1-year experience from the RIO-Europe study. *Lancet* **365**(9468): 1389–97

ANNALS OF INTERNAL MEDICINE

Lifestyle intervention more cost-effective than metformin in preventing T2D

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

1 Both metformin treatment and intensive lifestyle interventions have been shown to be effective in the prevention of type 2 diabetes (T2D) in the Diabetes Prevention Program (DPP).

2 This study used a Markov simulation model to estimate disease progression, quality of life and costs in members of the DPP cohort who were at least 25 years old and who had impaired glucose tolerance.

3 Relative to placebo, lifestyle intervention and metformin had societal costs per quality-adjusted life-year of $8800 and $29 900, respectively.

4 And while lifestyle intervention was cost-effective for all age groups, metformin was not deemed to be a good use of resources in people older than 65 years.

5 Financially, lifestyle intervention may be the intervention of choice.

Herman WH, Hoerger TJ, Brandle M, Hicks K, Sorensen S, Zhang P (2005) The cost-effectiveness of lifestyle modification or metformin in preventing type 2 diabetes in adults with impaired glucose tolerance. *Annals of Internal Medicine* **142**(5): 323–32

ANNALS OF INTERNAL MEDICINE

Using new criteria IFG not associated with higher CHD risk

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

1 In 2003, the American Diabetes Association reduced the lower limit for its definition of impaired fasting glucose (IFG) from 6.1 mmol/l to 5.6 mmol/l; this study sought to explore the effect of this.

2 Of 2763 postmenopausal women with coronary heart disease (CHD) followed up for 6.8 years, 218 had IFG using the old definition, while 698 had IFG using the new definition.

3 Hazard ratios for increased risk of any CHD event were 1.37 and 1.09 (95 % confidence intervals, 1.08–1.74 and 0.90–1.34), using the old and new definition, respectively.

4 More simply, only the old definition had prognostic significance.

Kanaya AM, Herrington D, Vittinghoff E, Lin F, Bittner V, Cauley JA et al (2005) Impaired fasting glucose and cardiovascular outcomes in postmenopausal women with coronary artery disease. *Annals of Internal Medicine* **142**(10): 813–20

ARCHIVES OF INTERNAL MEDICINE

Antihypertensive diuretics are non-inferior in terms of renal outcomes

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

1 No study before this one had compared the renal disease outcomes associated with diuretic and non-diuretic antihypertensive therapy.

2 Participants were from the Antihypertensive and Lipid-Lowering Treatment to Prevent Heart Attack Trial (ALLHAT) and were aged 55 or older and had hypertension and at least one other coronary heart disease risk factor (n=33 357).

3 They were randomised to a diuretic (chlorthalidone), an angiotensin-converting enzyme inhibitor (lisinopril) or a calcium-channel blocker (amlodipine) for a mean of 4.9 years.

4 Participants were stratified based on their baseline glomerular filtration rate (GFR; defined as normal or increased, mildly reduced, or moderately to severely reduced).

5 The renal outcomes used were the incidence of end-stage renal disease (ESRD) and a drop in GFR from baseline of 50 % or more.

6 There were no significant differences between diuretic and non-diuretic treatment for either renal outcome across all baseline GFR strata.

7 People who received amlodipine had a higher GFR than those on chlorthalidone after 4 years' follow-up, but ESRD incidence was not affected.

Rahman M, Pressel S, Davis BR, Nwachuku C, Wright JT Jr, Whelton PK et al (2005) Renal outcomes in high-risk hypertensive patients treated with an angiotensin-converting enzyme inhibitor or a calcium channel blocker vs a diuretic: a report from the Antihypertensive and Lipid-Lowering Treatment to Prevent Heart Attack Trial (ALLHAT). *Archives of Internal Medicine* **165**(8): 936–46

> *' Rimonabant 20 mg/day (in addition to a mild hypocaloric diet) led to significantly greater improvements than placebo in prevalence of the metabolic syndrome.'*

> *'Financially, lifestyle intervention may be the intervention of choice.'*