Cardiovascular journals

It's still all about multifactorial intervention

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Premature cardiovascular disease (CVD) is the cause of death in around two-thirds of people with type 2 diabetes. As healthcare professionals, we have a clear steer from the Quality and Outcomes Framework and national guidelines that certain standards of care should be targeted, but individualised to the particular individual. Despite this loud and clear message, 79.2% of people with diabetes are not in control of the three key targets: glycaemic control, blood pressure (BP) and cholesterol levels (Health and Social Care Information Centre, 2013). The National Audit Office estimates that this amounts to 24 000 premature excess deaths per year due to diabetes (Health and Social Care Information Centre, 2013).

In a report, summarised alongside, from the NHANES Group (US National Health and Nutrition Examination Survey 2007 to 2012), data emerged that indicate aggressive control of risk factors can reduce coronary heart disease (CHD) events by around 40%.

A cross-sectional representative sample of the US population with complete risk factor profiling was studied (1209 people with diabetes). The UKPDS (United Kingdom Prospective Diabetes Study) risk engine was used to assess CVD risk as it is still the only CVD risk factor engine with diabetes-specific risk factors, such as duration of diabetes. The authors defined three risk factor control scenarios of varying levels that were statistically analysed by the UKPDS risk engine.

The "all to goal" group controlled for all current smokers becoming non-smokers and setting risk factors to minimum goal levels (HbA_{1c} 53 mmol/mol [<7%]; systolic BP <130 mmHg; HDL-cholesterol >1 mmol/L in men and >1.3 mmol/L in women with LDL-cholesterol approximating <2.6 mmol/L [total cholesterol <4.4 mmol/L]). The "nominal control" group controlled for all current smokers becoming non-smokers and 1% reduction in HbA_{1c}, 10% relative reduction in systolic BP, 10% increase in HDL-cholesterol and a 25% reduction in total cholesterol compared to the minimum goal level. The "aggressive control" group was the third and final group and controlled for all current smokers becoming non-smokers and a 2% (22 mmol/mol) reduction in HbA_{1c}, 20% relative reduction in systolic BP, 20% increase in HDL-cholesterol and a 50% reduction in total cholesterol compared to the minimum goal level.

Following the "all to goal" control scenario would prevent 35% and 45% of CHD events in men and women respectively. The "nominal control" targets would prevent 36% and 38% of CHD events in men and women respectively, and the "aggressive control" targets would prevent 51% and 61% of CHD events in men and women respectively.

Overall, the most important treatable risk factor was the lipid profile. However, the most important risk factor for people with diabetes over the age of 45 years was glycaemic control; early good glycaemic control should remain the goal in diabetes care.

Another interesting finding was that, if people with metabolic syndrome were treated optimally, 81% of their CHD events would be prevented. We may have abandoned the idea of metabolic syndrome too readily in clinical practice, but it would be prudent to accept the presentation of metabolic syndrome as a person with a constellation of important, treatable risk factors for premature death, diabetes and CVD events.

The final message? Not a new one, just a reminder that it is multifactorial intervention that reduces the overall CVD risk in people with diabetes. The results of the Steno-2 study in 2008, which showed that 53% of CVD events could be prevented in a prospective randomised controlled trial of multifactorial interventions (Gaede et al, 2008), continue to echo in 2014. ■

Gaede P, Lund-Andersen H, Parving HH, Pedersen O (2008) Effect of a multifactorial intervention on mortality in type 2 diabetes. *N Engl J Med* **358**: 580–91

Health and Social Care Information Centre (2013) *National Diabetes Audit 2011-2012. Report 2: complications and mortality.* HSCIC, Leeds. Available at: http://bit.ly/1hxppH1 (accessed 27.03.14)

Am J Cardiol

Preventable coronary heart disease events in people with T2D

Readability	✓✓✓✓
Applicability to practice	✓✓✓✓✓
WOW! Factor	✓✓✓✓

1 The authors examined the potential impact of single and composite risk factor control on the prevalence of coronary heart disease (CHD) events in people with T2D.

2 The study population comprised people over the age of 30 years with T2D from the National Health and Nutrition Examination Survey 2007 to 2012. A statistical risk engine was used to assess the preventability of CHD events based on different risk factors.

3 The analysed risk factors included smoking, HbA_{1c}, systolic blood pressure and total and HDL-cholesterol.

4 All those not at predefined goals for these factors were statistically controlled at different degrees of control: "all to goal" (minimum goal levels), "nominal control" and "aggressive control".

5 The number of preventable CHD events was calculated from the difference between the number of events statistically estimated from the control of these risk factors and the current levels of the risk factors.

6 Controlling all risk factors to the minimum goal was estimated to prevent 35% and 45% of CHD events in men and women respectively.

7 Nominal risk factor control was projected to prevent 36% and 38% of CHD events for men and women respectively, and aggressive risk factor control was projected to prevent 51% and 61% of CHD events for men and women respectively.

8 The authors conclude that a multifactorial approach to reducing the risk of CHD events is effective, even if the control of risk factors is not at goal.

Wong ND, Patao C, Malik S, Iloeje U (2014) Preventable coronary heart disease events from control of cardiovascular risk factors in US adults with diabetes. *Am J Cardiol* **113**: 1356–61

Am J Cardiol

Intensive statin therapy at hospital discharge following myocardial infarction

Readability	✓✓✓
Applicability to practice	✓✓✓✓
WOW! Factor	✓✓✓

1 Intensive statin therapy is a key component in avoiding a secondary attack of acute myocardial infarction (AMI). This study from the US investigated the frequency and predictors of intensive statin therapy prescription for people with diabetes at discharge following an AMI.

2 In this study, intensive statin therapy was defined as a treatment expected to lower LDL-cholesterol by >50%.

3 In total, 1300 people with diabetes from the TRIUMPH (Translational Research Investigating Underlying Disparities in Acute Myocardial Infarction Patients' Health Status) study were included in this analysis.

4 The mean age of participants was 61 years (59% were men and 58% were Caucasian). The mean duration of diabetes among the cohort was 12 years.

5 After participants were discharged from hospital following an AMI, 88% were prescribed a statin of any dose, and 22% were prescribed intensive statin therapy.

6 In multivariable models, the independent predictors of intensive statin therapy prescription were ST-elevation AMI, insurance for medication and higher LDL-cholesterol levels. Higher Global Registry of Acute Coronary Events scores were associated with lower rates of intensive statin therapy.

7 Only one in five people with diabetes discharged following an AMI were prescribed intensive statin therapy. This highlights an opportunity to improve quality of care in people with diabetes.

Abdallah MS, Kosiborod M, Tang F et al (2014) Patterns and predictors of intensive statin therapy among patients with diabetes mellitus after acute myocardial infarction. *Am J Cardiol* **113**: 1267–72

Int J Cardiol

Reduction in albumin urinary excretion and cardiovascular events associated

Readability	✓✓✓✓
Applicability to practice	✓✓✓✓✓
WOW! Factor	✓✓✓✓

1 The association between reduced urinary albumin excretion (UAE) and reduced cardiovascular (CV) events is unclear, so the authors conducted a meta-regression analysis of randomised clinical trials to determine whether changes in UAE are associated with changes in CV outcomes and all-cause mortality.

2 Searches of MEDLINE, ISI Web of Science, the Cochrane Database and Scopus were carried out and 32 eligible trials were found. The criteria for eligibility for the meta-regression analysis were: enrolling 200 or more people with diabetes or hypertension or both, reporting UAE at baseline and at end of follow-up and reporting CV events, as well as all-cause mortality.

3 In total, 80 812 participants were enrolled from all the included trials.

4 Meta-regression analysis showed that each 10% reduction of UAE was significantly associated with a 13% reduction of myocardial infarction (P=0.01), 29% reduction of stroke (P=0.013) and 14% reduction of the composite outcome (CV death, myocardial infarction and stroke, [P =0.001]).

5 Reduction in UAE is associated with a reduced risk of myocardial infarction and stroke in people with diabetes or hypertension or both. UAE testing is relatively inexpensive, and it may be a suitable proxy for CV risk and provide a valuable intermediate end-point for CV risk evaluation in clinical practice.

Savarese G, Dei Cas A, Rosano G et al (2014) Reduction of albumin urinary excretion is associated with reduced cardiovascular events in hypertensive and/or diabetic patients. A meta-regression analysis of 32 randomized trials. *Int J Cardiol* **172**: 403–10

Am J Cardiol

Statin therapy and new-onset diabetes

Readability	✓✓✓
Applicability to practice	✓✓✓✓
WOW! Factor	✓✓✓✓

1 Statin therapy is associated with an increased risk of new-onset diabetes (NOD); however, there is little information on the effect of statins on cardiovascular outcomes and NOD in people with prediabetes.

2 The study examined the risk of NOD and the reduction of major adverse cardiovascular events (MACEs) and death after statin use in people with prediabetes.

3 Longitudinal data from 2001 to 2010 from a research database that represents the Taiwanese population were obtained (n=9055).

4 During follow-up (4.1±2.5 years), NOD occurred in 23.5% of non-users of statins (n=5767) and 28.5% of statin users (n=3288).

5 Over the same time, MACEs occurred in 16.7% of non-users of statins and 12.0% of statin users.

6 Statin use was associated with a greater risk of NOD than not using statins (hazard ratio [HR] 1.20; 95% confidence interval [CI], 1.08–1.32) and was associated with a reduced risk of MACEs (HR 0.70; 95% CI, 0.61–0.80).

7 Early and persistent statin use was correlated with the greatest increase in NOD risk, but was offset by the proportionally larger reduction in MACE. The early persistent users also had the lowest rate of hospitalisations and emergency visits.

8 Statin use was associated with a greater risk of NOD in a prediabetes cohort; however, the authors conclude the clinical benefits of reduced cardiovascular outcomes and morbidity outweigh the disadvantages.

Wang KL, Liu CJ, Chao TF et al (2014) Risk of new-onset diabetes mellitus versus reduction in cardiovascular events with statin therapy. *Am J Cardiol* **113**: 631–6

"Only one in five people with diabetes who were discharged following an acute myocardial infarction in the US were prescribed intensive statin therapy."