Diabetes journals

DIABETOLOGIA

Dysglycaemia and high BP increase risk of diabetic complications

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

1 In order to resolve the uncertainty of the interactive and additive effects of glycaemic and blood pressure (BP) control in people with type 2 diabetes the authors analysed both in this population over time.

2 People newly diagnosed with diabetes (n=4320; from the UKPDS) had their systolic BP (SBP) and HbA_{1c} values recorded annually for a median of 10.4 years.

3 Study participants had their SBP and HbA_{1c} levels categorised into distinct bands: for SBP, <130, 130–139, 140–149 or ≥150 mmHg; for HbA_{1c}, <6.0%, 6.0–6.9%, 7.0–7.9% or ≥8.0%.

4 UKPDS-defined composite endpoints were used.

5 The incidence of any diabetes-related endpoint in the subpopulation of the lowest and highest combinations of the above categories was found to be 15 and 82 per 1000 person-years, respectively.

6 A reduction of HbA_{1c} by 1% and SBP by 10 mmHg resulted in a risk reduction of 21% and 11%, respectively.

7 The authors conclude that dysglycaemia and high SBP contribute in an independent and additive manner to the development of diabetes-related complications as defined by the UKPDS.

Stratton IM, Cull CA, Adler AI et al (2006) Additive effects of glycaemia and blood pressure exposure on risk of complications in type 2 diabetes: a prospective observational study (UKPDS 75). *Diabetologia* **49**(8): 1761–9

Hyperglycaemia and hypertension increase risk of developing complications in people with type 2 diabetes

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The aim of this study by Stratton and colleagues (summarised on left) was to assess the interactive effects of glycaemia and systolic blood pressure exposure on the risk of diabetes-related complications over time in people with type 2 diabetes.

The study demonstrated that the risk of developing complications in people with type 2 diabetes is independently and additively related to previous exposure to hyperglycaemia and hypertension. For example those with an HbA_{1c} >8% and mean systolic blood pressure >150 mmHg had an approximately 4-fold increase in coronary heart disease (CHD) risk and a 16-fold increase in microvascular complication risk compared with those with HbA_{1c} <6.0% and mean systolic blood pressure <130 mmHg.

The risk reduction trends seen in the interventional arm of the UK Prospective Diabetes Study (UKPDS) support these observational data (1998), suggesting that optimal risk reduction may be achieved by a combination of blood glucose and blood pressure reduction, a concept in keeping with the benefits of multiple risk factor intervention illustrated in the Steno-2 study (Gaede et al, 2003).

The UKPDS study (1998) was not, however, sufficiently powered to assess the effects of multiple risk factor intervention, but was designed to evaluate single risk factor modification, thus it is impossible to define treatment targets in the context of multiple risk factor intervention. Consequently, the results of studies such as ACCORD (Action to Control Cardiovascular Risk in Diabetes) which address multiple risk factors are eagerly awaited.

The results of this present study are, however, of major clinical interest: since over half of people with type 2 diabetes have an HbA_{1c} >8% and systolic blood pressure >150 mmHg, there is obvious potential for improving both microvascular and macrovascular outcomes. These data also further support the importance of adopting a screening strategy to improve early detection of people with type 2 diabetes, in order to facilitate earlier intensive multiple risk factor intervention hence limiting risk factor exposure, and thus impacting on diabetes-related outcomes.

Gaede P, Vedel P, Larsen N et al (2003) Multifactorial intervention and cardiovascular disease in patients with type 2 diabetes. *New England Journal of Medicine* **48**(5): 383–93

UK Prospective Diabetes Study (UKPDS) Group (1998) Intensive blood-glucose control with sulphonylureas or insulin compared with conventional treatment and risk of complications in patients with type 2 diabetes (UKPDS 33). *Lancet* **352**(9131): 837–53

DIABETES CARE

80 mg atorvastatin better than 10 mg in high-risk population

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

1 This study investigated whether high-dose atorvastatin (80 mg) in people with coronary heart disease (CHD) and diabetes has similar benefits to that of low dose atorvastatin (10 mg) in a population with stable CHD.

2 Participants (n=1501) were randomised to either 10 mg or 80 mg of atorvastatin. Follow-up was for a median of 4.9 years. The primary endpoint was the time to first major cardiovascular (CV) event.

3 One hundred and thirty-five people had a major CV event in the 10 mg group compared with 103 in the 80 mg group (hazard ratio 0.75 [95% confidence interval 0.58–0.97], P=0.026). Significant differences in cerebrovascular events were also observed (P=0.037).

4 The authors conclude that in people with clinically apparent CHD and diabetes 80 mg atorvastatin confers significantly better CV benefits than 10 mg.

Shepherd J, Barter P, Carmena R et al (2006) Effect of lowering LDL cholesterol substantially below currently recommended levels in patients with coronary heart disease and diabetes. *Diabetes Care* **29**(6): 1220–6

'The authors' programme, aimed at increasing physical activity in an urban district, is an effective and low-cost intervention to lower diabetes and cardiovascular-related risk factors; further studies are needed to assess whether it lowers the prevalance of diabetes.'

DIABETES CARE

Low-cost intervention to increase physical activity levels

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

1 This paper presents data from a programme aimed at increasing physical activity in an urban district of Oslo, Norway, that has a high rate of cardiovascular mortality, a high prevalence of diabetes and obesity, and low levels of physical activity.

2 The authors focused on the high, non-Caucasian immigrant population in the district. The control urban district was of a similar socio-economic status.

3 Depending upon people's apparent readiness for change, tailored sets of theory-based activities were implemented in order to promote physical activity.

4 Physical activity levels, body mass index and other diabetes-related risk factors were assessed at baseline and at 3 years using questionnaire and laboratory analysis of self-reported physical activity levels and, for example, blood lipid levels, respectively.

5 Two self-reported questionnaires revealed an increase in physical activity levels of 9.5% and 8.1% (P=0.008 and 0.02, respectively).

6 Significant improvements were also observed in triglyceride levels and systolic blood pressure in the intervention district. In this district men also demonstrated a significant lowering of blood glucose levels (0.35mmol/l, P=0.03).

7 The authors conclude that theirs is an effective and low-cost intervention to lower diabetes and cardiovascular-related risk factors, and that further studies are needed to assess whether it lowers the prevalance of diabetes.

Jenum AK, Anderssen SA, Birkeland KI et al (2006) Promoting physical activity in a low-income multiethnic district: effects of a community intervention study to reduce risk factors for type 2 diabetes and cardiovascular disease: a community intervention reducing inactivity. *Diabetes Care* **29**(7): 1605–12

DIABETES CARE

CV risk factors need to be managed in young people

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

1 This US-based study aimed to ascertain the prevalence of specific cardiovascular (CV) risk factors in young people (aged <20 years) with diabetes. The study populations consisted of 1083 girls and 1013 boys.

2 Of the whole population 21% had at least two CV risk factors; this was 7% in 3–9 year-olds and 25% in 10–19 year-olds, 23% among girls and 19% among boys. The paper further describes prevalence rates by ethnic origin.

3 The authors state that intensive management of CV risk factors need to be followed by this population as they get older in order to prevent or delay CV disease.

Rodriguez BL, Fujimoto WY, Mayer-Davis EJ et al (2006) Prevalence of cardiovascular disease risk factors in U.S. children and adolescents with diabetes: the SEARCH for diabetes in youth study. *Diabetes Care* **29**(8): 1891–6

DIABETES CARE

Female sex associated with increased risk of CVD

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

1 The risk of macrovascular disease and death in women with type 2 diabetes was investigated to see if sex has any influence.

2 Sixty-seven people with type 2 diabetes were followed up in this prospective, prolonged study (46 men and 21 women). None had established cardiovascular disease (CVD) at baseline.

3 The authors found that the female sex was associated with an increased risk of CVD that is independent of other diabetes-related risk factors such as the severity of nephropathy or presence of retinopathy.

Zandbergen AA, Sijbrands EJ, Lamberts SW, Bootsma AH (2006) Normotensive women with type 2 diabetes and microalbuminuria are at high risk for macrovascular disease. *Diabetes Care* **29**(8): 1851–5

DIABETES CARE

Hepatic steatosis does not affect apoB levels but increases risk of atherogenesis

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

1 Associations between the extent of hepatic steatosis and dyslipidaemia in 67 people with type 2 diabetes were investigated. The number and size of lipoprotein particles and circulating apolipoprotein B100 (apoB) were measured.

2 ApoB and LDL-cholesterol levels were nearly the same in people with and without hepatic steatosis. Steatosis positively correlated with HDL-cholesterol and triglyceride levels in the blood.

3 The association between hepatic steatosis and serum triglyceride levels was accounted for by an increase in very low density lipoproteins that were very rich in triglycerides.

4 ApoB levels were not found to be affected by hepatic steatosis in people with type 2 diabetes. Although, steatosis does appear to increase atherogenesis.

Toledo FG, Sniderman AD, Kelley DE (2006) Influence of hepatic steatosis (fatty liver) on severity and composition of dyslipidemia in type 2 diabetes. *Diabetes Care* **29**(8): 1845–50