Diabetes journals

DIABETES CARE

Aspirin use reduces all-cause and CVD mortality in T2D

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

1 Studies have shown the beneficial effects of low-dose aspirin use for the prevention of cardiovascular disease (CVD), yet there is little evidence of similar benefits of regular aspirin use in people with T2D.

2 This study looked at whether regular aspirin use (≥75 mg/day) reduces CVD and all-cause mortality in people with T2D and no history of CVD recruited in the Fremantle Diabetes Study.

3 Study entry was between 1993 and 1996, and follow-up continued until death or the end of June 2007; 1276 people with T2D were recruited with details of aspirin use and CVD status.

4 From this group, 651 (51%) had no history of CVD at baseline (primary prevention group); they were younger, less likely to be male and to be taking aspirin regularly and had shorter diabetes duration than the 625 people with CVD at study entry.

5 Fifty (7.7%) of the primary prevention group were regularly taking aspirin ≥75 mg/day.

6 There were 160 deaths (24.6%) in the primary prevention group during a follow-up of 7537 patient-years; 70 (43.8%) were caused by CVD.

7 Analyses revealed that regular aspirin use was independently associated with a reduction in CVD and all-cause mortality by at least 50%; the protective effect of aspirin was most pronounced in men and in people aged ≥65 years.

8 The authors concluded that regular low-dose aspirin use may reduce all-cause and CVD mortality in people with T2D.

Ong G, Davis TME, Davis WA (2010) Aspirin is associated with reduced cardiovascular and all-cause mortality in type 2 diabetes in a primary prevention setting. *Diabetes Care* **33**: 317–21

Low-dose aspirin reduces CVD in people with type 2 diabetes

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Many guidelines suggest the use of aspirin for the primary prevention of cardiovascular (CV) events in people with diabetes (e.g. NICE, 2006). These recommendations are primarily based on evidence obtained by the extrapolation of data from people without diabetes, or small cohorts of people with diabetes included in larger studies. A recent meta-analysis (De Berardis et al, 2009) suggested no benefit with low-dose aspirin, in the setting of primary prevention, in people with diabetes in terms of overall major CV events when compared with placebo; there has consequently been much debate regarding the role of aspirin in primary prevention of CV disease (CVD) in people with type 2 diabetes.

The objective of the study by Ong et al (2010; summarised alongside) was to determine whether regular aspirin use (≥75 mg/day) was independently associated with CVD and all-cause mortality in community-based people with type 2 diabetes and no history of CVD. Of the people with type 2 diabetes recruited into the longitudinal observational Fremantle Diabetes Study, 651 (51%) with no prior CVD history at entry between 1993 and 1996 were followed until death or study end in June 2007, representing a total of 7537 patient-years (mean 11.6±2.9 years).

Cox proportional hazards modelling was used to determine independent baseline predictors of CVD and all-cause mortality, including regular aspirin use. There were 160 deaths (24.6%) during follow-up, with 70 (43.8%) caused by CVD. In Kaplan–Meier survival analysis, there was no difference in either CVD or all-cause mortality in aspirin users versus non-users (P=0.52 and 0.94, respectively, by log-rank test). After adjustment for significant variables in the most parsimonious Cox models, regular aspirin use at baseline independently predicted reduced CVD and all-cause mortality (hazard ratio 0.30 [95% CI, 0.09–0.95] and 0.53 [0.28–0.98], respectively; P≤0.044). In subgroup analyses, aspirin use was independently associated with reduced all-cause mortality in those aged ≥65 years and in men.

This study, therefore, suggested that low-dose aspirin was associated with outcome benefits from the perspective of primary prevention in people with type 2 diabetes. Such an observation is at variance with intervention and observational data, where no benefit of aspirin for primary prevention in people with type 2 diabetes has been observed (Belch et al, 2008). When assessing the relevance of this study it must be remembered that this is an observational study and the potential influences of changes in therapies on measured outcomes during follow-up could not be fully assessed. Also, the sample size in this study was smaller than in other intervention studies.

In summary, this study further adds to the debate relating to the use of aspirin for primary prevention in people with type 2 diabetes and further intervention studies are required.

Belch J, MacCuish A, Campbell I et al (2008) *BMJ* **337**: a1840
De Berardis G, Sacco M, Strippoli GF et al (2009) *BMJ* **339**: b453
NICE (2006) *Type 2 diabetes: Management of Type 2 Diabetes.* NICE, London

DIABETES CARE

Walnuts improve endothelial function

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

1 This study examined the effects of walnut consumption on endothelial function and cardiovascular biomarkers in 24 people with type 2 diabetes.

2 Compared with a diet without walnuts, eating 56 g of walnuts/day for 8 weeks significantly improved endothelial function.

3 Walnuts also increased fasting serum glucose, lowered serum total and low-density lipoprotein cholesterol, although this did not reach significance.

4 A walnut-enriched diet may help reduce cardiovascular disease risk in people with type 2 diabetes.

Ma Y, Nijike VY, Millet J et al (2010) Effects of walnut consumption on endothelial function in type 2 diabetic subjects. *Diabetes Care* **33**: 227–32

"When pooled, the results for statins were found to have no significant effect on insulin sensitivity in people without diabetes."

DIABETES CARE

DRI monotherapy improves renal and systemic function

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

1 Activation of the renin-angiotensin system (RAS) plays a role in renal complications in people with diabetes.

2 Blockade of the RAS by direct renin inhibitors (DRIs) may provide protective effects from renal hyperfiltration, arterial stiffness and endothelial dysfunction in people with diabetes, thus preventing end-organ injury associated with diabetes.

3 This study examined the effects of the DRI aliskiren on renal and systemic vascular function in five men and five women with uncomplicated type 1 diabetes.

4 Aliskiren 300 mg was administered daily for 30 days during clamped euglycaemia (4–6 mmol/L) and hyperglycaemia (9–11 mmol/L); renal haemodynamic function, endothelial function and endothelial-independent vasodilatation were determined before and after DRI administration.

5 DRI administration for 30 days decreased central and peripheral blood pressures, independent of glycaemic status.

6 DRI monotherapy decreased circulating plasma renin activity from 0.40 to 0.13 ng/mL/h ($P<0.05$) and increased plasma renin from 5.2 to 75.0 ng/L ($P<0.05$); DRI administration had a significant renal vasodilatory effect, regardless of ambient glycaemia.

7 The authors concluded that DRI therapy augmented arterial compliance and endothelial function in people with uncomplicated T1D.

Cherney DZI, Lai V, Scholey JW et al (2010) Effect of direct renin inhibition on renal haemodynamic function, arterial stiffness and endothelial function in humans with uncomplicated type 1 diabetes. *Diabetes Care* **33**: 361–5

DIABETES

Vitamin D deficiency linked to adiposity

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

1 This study examined the relationship between vitamin D deficiency – circulating 25-hydroxyvitamin D (25[OH]D) levels <20 ng/mL – and adiposity and cardiometabolic risk in 3890 people without diabetes.

2 Computed tomography (CT) scans measured subcutaneous adipose tissue (SAT) and visceral adipose tissue (VAT) volumes in 1882 people.

3 Analyses showed that 25(OH)D was inversely associated with winter season, waist circumference and serum insulin.

4 In the CT group, 25(OH)D was inversely related to SAT and VAT; vitamin D deficiency was three-times higher in people with high SAT and VAT.

5 Vitamin D deficiency was found to be associated with insulin resistance and linked with increased adiposity, especially VAT.

Cheng S, Massaro JM, Fox CS et al (2010) Adiposity, cardiometabolic risk and vitamin D status: the Framingham Heart Study. *Diabetes* **59**: 242–8

DIABETES CARE

Diabetes diagnosis using HbA_{1c}≥6.5% identifies less people

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

1 Diagnosis of diabetes using an HbA_{1c} of ≥6.5% (≥48 mmol/mol) was compared with the World Health Organization definition (DM_{WHO}) and with the American Diabetes Association definition (DM_{ADA}) to study diagnostic performance.

2 Follow-up data (n=855) were used to identify 44 people (5.2%) with HbA_{1c} ≥6.5% (≥48 mmol/mol), 132 people (15.4%) with DM_{WHO} and 61 people (7.1%) with DM_{ADA}.

3 The mean, median and interquartile range of HbA_{1c} levels for people defined by DM_{WHO} were 6.3, 5.9 and 5.5–6.6% (45, 41 and 37–49 mmol/mol), and for those identified by DM_{ADA} were 7.0, 6.6 and 6.0–7.1% (53, 49 and 42–54 mmol/mol).

4 The number of people defined as having diabetes by HbA_{1c} ≥6.5% (≥48 mmol/mol) was one-third the number identified by DM_{WHO} and 70% the number identified by DM_{ADA}.

5 HbA_{1c} levels ≥6.5% (≥48 mmol/mol) were found to identify fewer individuals than DM_{WHO} or DM_{ADA}.

Lorenzo C, Haffner SM (2010) Performance characteristics of the new definition of diabetes. *Diabetes Care* **33**: 335–7

DIABETES RESEARCH & CLINICAL PRACTICE

Pooled statins do not affect IS

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

1 Studies have suggested that long-term statin use may be associated with the development of diabetes.

2 A literature search was performed to compare the effects of different statins on insulin sensitivity (IS) in people without diabetes.

3 In total, 16 trials were identified (n=1146), which compared the effects of pravastatin (three trials; n=164), atorvastatin (five trials; n=315), rosuvastatin (five trials, n=419) and simvastatin (five trials, n= 369) with controls in people without diabetes.

4 When pooled, the results for statins were found to have no significant effect on IS in people without diabetes; individually, pravastatin significantly improved IS (P=0.03) and simvastatin significantly worsened IS (P=0.03).

Baker WL, Talati R, White CM, Coleman CI (2010) Differing effect of statins on insulin sensitivity in non-diabetics: a systematic review and meta-analysis. *Diabetes Research and Clinical Practice* **87**: 98–107