Management of type 1 diabetes

A drink a day keeps the microvascular disease away

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The evidence is reasonably clear: moderate consumption of alcohol decreases the risk of cardiovascular disease and possibly the risk of type 2 diabetes in the general population (for example, Koppes et al, 2005). However, we need to be a little careful with this message as most of the evidence is observational. While we have seen associations, this of course does not necessarily imply that one thing causes the other. We also need to be careful about the message that is given because the relationship appears to be U-shaped; a small amount of alcohol is better than no alcohol but larger amounts of alcohol are clearly harmful. There is a rather paternalistic argument that the message cannot be that moderate alcohol is good for you because the population will misinterpret this as being "drink what you like". I would argue that people should be given the information and allowed to work this out for themselves.

Alcohol consumption, as a subject, is frequently discussed with people with type 1 diabetes. The discussion will often focus on whether or not alcohol is recommended for individuals requiring insulin. The answer is: yes, it may be good for you. The paper by Beulens et al adds to our knowledge in this area. Before, we could say that moderate alcohol consumption appears to protect against macrovascular disease. Now, with this paper, we can add that there also appears to be a protective effect against microvascular disease. This is by far the largest study of alcohol consumption in people with type 1 diabetes with a clear message as a result.

The headline is that moderate amounts of alcohol are associated with a reduced risk of retinopathy, neuropathy and macroalbuminuria. Observational studies control as well as they can for possible confounding factors, but the possibility remains that people who drink small amounts of alcohol may simply be leading healthier lifestyles. The authors conclude that the type of alcohol does not matter but that wine appears to be more protective and that spirits may be associated with a worse risk – this may be because of the patterns of alcohol consumption.

Is wine with supper every night more protective than nothing all week then drinking heavily on Friday night? Intuitively the answer is that drinking a lot on one night is bad idea for people with type 1 diabetes. One of the main reasons for this is the risk of hypoglycaemia. The authors have missed an opportunity by not looking in more detail at patterns of alcohol consumption and not recording rates of hypoglycaemia. Hypoglycaemia is probably the hidden cost of drinking alcohol, both because of effects on glucose control and alteration of the symptoms of low blood glucose, but this was not specifically measured or reported.

A reasonable next question is: why does alcohol protect against vascular disease? The paper was not designed to answer this question. One possibility is because of effects on lipid metabolism, but changes in HDL-cholesterol did not appear to have a major effect in this study. Effects on platelet aggregration or inflammation may be important. The authors do not comment on the fact that moderate alcohol use seems to be associated with smaller insulin doses. Perhaps an interaction with the causes or consequences of insulin resistance is the key?

Koppes LL, Dekker JM, Hendriks HF et al (2005) Moderate alcohol consumption lowers the risk of type 2 diabetes: a meta-analysis of prospective observational studies. *Diabetes Care* **28**: 719–25

DIABETOLOGIA

Alcohol reduces the risk of microvascular disease in type 1

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

1 The risk of cardiovascular (CV) disease and type 2 diabetes is reduced in the general population by moderate alcohol consumption of approximately one to three drinks a day; people with diabetes who drink moderately have an approximately 40% lower risk of CV disease than those who do not.

2 This study explored the association between alcohol and the risk of microvascular complications (neuropathy, nephropathy, retinopathy) in 1857 people with type 1 diabetes from the EURODIAB Prospective Complications Study – a follow-up study comprising 3250 people with type 1 diabetes from 16 European countries.

3 Patients were recruited from 31 centres between 1989 and 1991; participants were invited for re-examination 7 years after baseline examination.

4 On follow-up, the study documented 304 cases of proliferative retinopathy, 660 cases of neuropathy and 157 cases of microalbuminuria.

5 A U-shaped relationship was observed between alcohol consumption and risk of proliferative retinopathy, neuropathy and microalbuminuria.

6 The authors conclude that, consistent with findings for macrovascular complications, moderate alcohol consumption decreases the risk of all microvascular complications in people with type 1 diabetes.

Beulens JW, Kruidhof JS, Grobbee DE et al (2008) Alcohol consumption and risk of microvascular complications in type 1 diabetes patients: the EURODIAB Prospective Complications Study. *Diabetologia* **51**: 1631–8

DIABETES CARE

HbA_{1c} variability and the risk of microvascular complications

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

1 This study analysed data from the DCCT (Diabetes Control and Complications Trial) to evaluate the effect of mean blood glucose variability (assessed using HbA_{1c}) on the risk of microvascular complications in people with type 1 diabetes.

2 The DCCT was a 9-year follow-up study comparing the effect of intensive versus conventional blood glucose management on the development of microvascular complications in people with type 1 diabetes; HbA_{1c} values were measured quarterly in the DCCT from 1441 individuals.

3 Mean HbA_{1c} and standard deviation HbA_{1c} variability after glycaemic stabilisation (from 6 months) were compared with the risk of retinopathy and nephropathy, with adjustments for age, sex, disease duration, treatment group and baseline HbA_{1c}.

4 HbA_{1c} variability was greater in the conventionally treated group than those treated intensively.

5 The authors conclude that variability in HbA_{1c} adds to the mean HbA_{1c} value in predicting the risk of development or progression of retinopathy and nephropathy in type 1 diabetes.

Kilpatrick ES, Rigby AS, Atkin SL (2008) A1C variability and the risk of microvascular complications in type 1 diabetes: data from the Diabetes Control and Complications Trial. *Diabetes Care* **31**: 2198–202

NEW ENGLAND JOURNAL OF MEDICINE

Can GAD reverse recent-onset type 1 diabetes?

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

1 An alternative to immunosuppression as a therapy in type 1 diabetes is the use of autoantigens, such as the 65-kD isoform of glutamic acid decarboxylase (GAD), to induce immunological tolerance.

2 This study assessed the ability of alum-formulated GAD (GAD-alum) to reverse recent-onset type 1 diabetes in people aged 10–18 years.

3 Seventy participants were randomised to receive GAD-alum (35 people) or placebo (alum alone, 35 people).

4 Insulin secretion gradually decreased in both groups; the study treatment had no significant effect on change in fasting C-peptide levels after 15 months. Fasting C-peptide levels declined from baseline levels significantly less over 30 months in the GAD-alum group than in the placebo group, as did stimulated secretion.

5 GAD-alum had an effect on slowing the loss of residual beta-cell function up to 30 months after intervention, although it did not change insulin requirement; the authors conclude that this is preliminary proof of concept.

Ludvigsson J, Faresjö M, Hjorth M et al (2008) GAD treatment and insulin secretion in recent-onset type 1 diabetes. *N Engl J Med*. **359**: 1909–20

DIABETES CARE

Bone mineral density in young women with type 1

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

1 People with type 1 diabetes have decreased bone mineral density (BMD).

2 The authors have previously shown that women with type 1 diabetes, aged 13–35 years, have lower BMD than community age-matched non-diabetic control subjects.

3 In this article the authors report 2-year follow-up BMD data in this cohort. BMD was measured using dual energy X-ray absorption at baseline and then 2 years later (63 women with type 1 diabetes, 85 age-matched community controls).

4 After adjusting for age, BMI, and oral contraceptive, women ≥20 years with type 1 diabetes had continued lower BMD after 2 years compared with control subjects.

5 The authors conclude that young women with type 1 diabetes have a lower BMD than controls without diabetes, and that these differences persist over time, particularly in women ≥20 years of age.

Mastrandrea LD, Wactawski-Wende J, Donahue RP et al (2008) Young women with type 1 diabetes have lower bone mineral density that persists over time. *Diabetes Care* **31**: 1729–35