# Long-term survival with type 1 diabetes

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There is a group of individuals who are probably best qualified to be regarded as expert patients. These are people who have lived with diabetes and insulin treatment for many years, and there is always something to be learnt from them.

I remember meeting an elderly couple who had both been using insulin for over 50 years. Between them, they had more than 100 years of experience with insulin therapy. They smiled knowingly when offered the very latest insulin regimen, but politely declined. They had seen fashions come and go in the management of diabetes and were interested to hear that the profession seemed to be focusing back on the importance of dietary education.

Their glucose control, as measured by $HbA_{1c}$, was not particularly good, yet they did not appear to have any of the long-term complications of this condition. The obvious question was – what is the secret? Over the years, a number of papers have addressed this, and the paper by Bain and colleagues is the latest of these.

The obvious starting point is do they have a different kind of diabetes or do they manage the condition in a different way? Participants in this study did appear to have type 1 diabetes with a typical age of onset and clustering of other autoimmune diseases. As far as this and other studies have been able to tell, this group do not have a special form of diabetes. If the protection is not genetic, then which environmental factors appear to be protective?

Although this study identified a number of factors, when these are compared with other published data there are only two clear predictors – absence of hypertension and a low prevalence of obesity. Hypertension was seen in this group more frequently than in other studies, but this is partly because definitions have changed. Having said that, there are no striking features that make this group stand out.

Perhaps the most important message to take back to the clinic is that it is possible to live a long and relatively healthy life with type 1 diabetes.

DIABETES CARE

## Glycaemic control predicts coronary artery calcification

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

1 Coronary artery disease occurs earlier in life and is more often fatal in people with type 1 diabetes.

2 The hypothesis of this study was that progression of coronary artery calcification in patients with type 1 diabetes is due to identifiable risk factors and may be related to glycaemic control.

3 Coronary artery calcification was measured in 109 men and women with type 1 diabetes. Electron beam computed tomography was used to obtain the measurements, which were taken twice over an interval of 2.7 years.

4 Progression of coronary artery calcification was found in 21 patients and was associated with baseline hyperglycaemia ($P=0.02$), adjusted for presence of calcification at baseline ($P=0.01$), duration of diabetes ($P=0.02$), sex ($P=0.09$) and age ($P=0.27$).

5 The most important predictor of progression of coronary artery calcification in this group of young people with type 1 diabetes was suboptimal glycaemic control. Insulin resistance may also play a role in the progression of subclinical coronary artery calcification in type 1 diabetes.

Snell-Bergeon JK, Hokanson JE, Jensen L et al (2003) Progression of coronary artery calcification in type 1 diabetes: the importance of glycaemic control. *Diabetes Care* **26**(10): 2923–27

DIABETIC MEDICINE

## Characteristics of type 1 diabetes of >50 years duration

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

1 Some patients appear to be protected from the long-term complications associated with type 1 diabetes.

2 This study assessed the clinical and biochemical features of 400 patients (54% male) who had had diabetes for 50 years or more.

3 Mean age of the patients was 68.9 years and mean age at onset of diabetes was 13.7 years. Body mass was normal (mean BMI 25), insulin dose was low (mean 0.52 units/kg$^{-2}$), and HDL-cholesterol levels were high (mean 1.84 mmol/l).

4 Mean $HbA_{1c}$ was 7.6% (normal range 3.8–5.0%). No patient had a normal $HbA_{1c}$ at the time of venesection. Twenty-nine per cent of patients were taking antihypertensive drugs, and screening for micro- and macroalbuminuria was positive in 35.7%.

5 Patients with a long duration of type 1 diabetes have relative protection from clinical diabetic nephropathy and large vessel disease.

6 These data are consistent with protection possibly being genetically determined in part via elevated HDL-cholesterol. Thus HDL levels could be used as an early clinical marker of good prognosis in type 1 diabetes.

7 Given the lack of specific interventions in the first 30 years of diabetes in this cohort, it is likely that this state of protection is largely inherited.

Bain SC, Gill GV, Dyer PH et al (2003) Characteristics of type 1 diabetes of over 50 years duration (the Golden Years Cohort). *Diabetic Medicine* **20**(10): 808–11

*'Patients with type 1 diabetes should be screened for retinopathy at 2–3 year intervals, rather than annually, because of the low risk of progression to sight-threatening diabetic retinopathy'*

*'Exposure to dietary gluten before the age of 3 months was five times more likely to increase the risk of development of islet autoantibodies than introduction after the age of 3 months.'*

DIABETIC MEDICINE

## Optimum retinal screening intervals in type 1 diabetes

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

1 Screening for diabetic retinopathy is known to be important for the prevention of visual loss in patients with diabetes. However, there are few data on the incidence of diabetic eye disease in a systematic retinopathy screening programme.

2 Data from 501 patients enrolled in the Liverpool Diabetic Eye Study who had been receiving eye screening for 6 years were examined.

3 For a 95% likelihood of remaining free of sight-threatening diabetic retinopathy, mean screening intervals by baseline status were: no retinopathy 5.7 years; background 1.3 years; and mild preproliferative 0.4 years.

4 Patients with type 1 diabetes should be screened for retinopathy at 2–3 year intervals, rather than annually, because of the low risk of progression to sight-threatening diabetic retinopathy.

Younis N, Broadbent DM, Harding SP, Vora JP (2003) Incidence of sight-threatening retinopathy in type 1 diabetes in a systematic screening programme. *Diabetic Medicine* **20**(9): 758–65

EUROPEAN JOURNAL OF ENDOCRINOLOGY

## Effects of metformin in adolescents

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

1 Metformin has been used successfully to regulate body weight and blood lipid levels in adults.

2 The aim of this study was to assess whether treatment with metformin for 3 months improves metabolic control in adolescents with poorly controlled type 1 diabetes.

3 In this double-blind, randomised controlled trial of 26 adolescents, the effects of treatment with metformin were assessed by monthly $HbA_{1c}$ measurement. Peripheral insulin sensitivity was assessed by a euglycaemic hyperinsulinaemic clamp at baseline and at the end of the study.

4 $HbA_{1c}$ levels in the treatment group decreased significantly, while those in the placebo group were unchanged.

5 Metformin can safely improve metabolic control in adolescents with type 1 diabetes. The effect is associated with an increase in peripheral glucose uptake.

Samblad S, Kroon M, Aman J (2003) Metformin as additional therapy in adolescents with poorly controlled type 1 diabetes: randomised placebo-controlled trial with aspects on insulin sensitivity. *European Journal of Endocrinology* **149**(4): 323–9

JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

## Early dietary habits and type 1 autoantibodies

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

1 The early introduction of cow's milk and a short duration of breastfeeding have previously been associated with an increased risk of type 1 diabetes.

2 This study assessed whether dietary habits in the first year of life modify risk for the development of type 1 diabetes-associated islet autoantibodies in prospectively followed children of parents with type 1 diabetes.

3 Blood samples were obtained from 1610 children across Germany at birth, 9 months, 2, 5 and 8 years.

4 Duration of breastfeeding was not significantly associated with the risk of developing more islet autoantibodies.

5 Food supplementation with gluten-containing foods before the age of 3 months was significantly associated with an increased risk of developing islet autoantibodies.

6 Exposure to dietary gluten before the age of 3 months was five times more likely to increase the risk of development of islet autoantibodies than introduction after the age of 3 months.

7 Families should comply with infant feeding guidelines and not introduce gluten to infants until after the age of 3 months.

Ziegler A-G, Schmid S, Huber D, Hummel M, Bonifacio E (2003) Early infant feeding and risk of developing type 1 diabetes-associated autoantibodies. *Journal of the American Medical Association* **290**(13): 1721–28

DIABETES CARE

## Body mass and prediction of earlier onset of diabetes

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

1 The accelerator hypothesis predicts earlier onset of type 1 diabetes in people who were heavier as children.

2 The aim of this study was to determine the relationship between increased bodyweight and age at diagnosis of type 1 diabetes.

3 In this retrospective analysis of 94 children, BMI standard deviation score (SDS), weight SDS change since birth, and BMI SDS 12 months later were all inversely related to age at presentation.

4 Boys had a higher BMI SDS than girls and developed diabetes at a younger age (6.74 *vs* 8.32 years). This sex difference disappeared when corrected for BMI.

5 Although these data are consistent with the accelerator hypothesis, the theory needs to be tested with weight reduction or insulin-sensitising medication interventions.

Kibirgie M, Metclaf B, Renuka R,Wilkin TJ (2003) Testing the accelerator hypothesis: the relationship between body mass and age at diagnosis of type 1 diabetes. *Diabetes Care* **26**(10): 2865–70