Paediatrics

DIABETES CARE

Lack of treatment for dyslipidaemia and hypertension

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

1 This study examined the type and prevalence rate of cardiovascular risk factors in people with type 1 diabetes up to the age of 26 years, and age and sex distribution.

2 A total of 27 358 people were divided into three groups (prepubertal, pubertal and adult) and analysed for cardiovascular risk factors.

3 Over 50 % of each age group had at least one cardiovascular risk factor; two risk factors were age-dependently found in 6.2–21.7 %; three or four risk factors were age-dependently found in 0.5–4.7 %.

4 Elevated body mass index (BMI), total cholesterol and HbA_{1c} values were most frequent.

5 Low high-density lipoprotein-cholesterol, smoking and hypertension were more frequent in males; high low-density lipoprotein-cholesterol, total cholesterol and BMI were more frequent in females.

6 While 28.6 % of the study population had dyslipidaemia, only 0.4 % were given lipid-lowering treatment, and while 8.1 % of participants had systolic hypertension, only 2.1 % received antihypertensive medication.

7 More people with cardiovascular risk factors were observed with increasing age, and significant sex differences were observed for most risk factors.

8 Only a minority of the study population received lipid-lowering or antihypertensive treatment, despite the high prevalence of risk factors.

Otfried Schwab K, Doerfer J, Hecker W et al (2006) Spectrum and prevalence of atherogenic risk factors in 27,358 children, adolescents, and young adults with type 1 diabetes. *Diabetes Care* **29**: 218–25

Avoiding CVD in young people with diabetes: The need for robust evidence

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The avoidance of microvascular complications is a central aim of the care of children with type 1 diabetes. Yet, there are accumulating data that suggest cardiovascular disease (CVD) risk factors are also prevalent among young people with diabetes and may need active management.

This study by Otfried Schwab et al (summarised left) presents data from a large cohort (over 27 000) of young Germans whose clinical data have been prospectively collected since 1990. Within the cohort as a whole, 69 % of individuals had at least one CVD risk factor, including elevated HbA_{1c}, hypertension, dyslipidaemia, raised body mass index (BMI) and smoking. Risk factors were predictably more prevalent with increasing age although multivariate analysis showed that BMI was most closely related to CVD risk, followed by age and, finally, duration of diabetes. Frightening data emerge that in this high-risk group 10 % of pubertal children and 35 % of young adults smoke.

What is probably the most striking information in clinical terms is that 29 % of individuals had dyslipidaemia yet only 0.4 % were receiving lipid-lowering treatment. Furthermore, 8 % of people had systolic hypertension and 2.5 % had diastolic hypertension, yet only 2 % were on treatment. Why this inactivity? With respect to dyslipidaemia it seems likely that this is due to both lack of evidence of benefit in young people and possibly a lack of clear-cut guidelines for the management of lipid abnormalities in childhood – whether children have diabetes or not. Interestingly, the recent National Institute for Health and Clinical Excellence guidelines for the management of type 1 diabetes in childhood do not even recommend measurement of lipids as part of the annual review.

Could we be doing young people a disservice, especially in light of data suggesting that CVD is the greatest single cause of death in people with type 1 diabetes over the age of 30, with standardised mortality ratios of 11.3 for women aged 20–39 years of age?[1] It is likely that the development of macrovascular problems does have its origins during childhood.

Further data are urgently needed if we are to provide high-quality diabetes care to young people with diabetes so that they can lead long and fulfilling lives. This will include the avoidance of CVD risk factors as well as microvascular complications. Although this will involve large multicentre and probably multinational studies, efforts must be made to provide robust evidence with respect to both risks and benefits.

[1] Laing SP, Swerdlow AJ, Slater SD (1999) et al The British Diabetic Association Cohort Study, II: cause-specific mortality in patients with insulin-treated diabetes mellitus. *Diabetic Medicine* **16**: 466–71

THE JOURNAL OF PEDIATRICS

Stabilising glucose may improve classroom attention

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

1 The study investigated whether the stabilisation of serum glucose using an insulin pump would improve classroom attention in children with type 1 diabetes.

2 Boys (n=4) with type 1 diabetes who had unstable serum glucose were observed in the classroom for 10 days. Serum glucose was stabilised using an insulin pump, and they were observed for another 10 days.

3 Improved on-task and off-task behaviour was observed in all boys, averaging 20 % improvement in on-task behaviour and 34 % in off-task behaviour. However, no changes were detected in laboratory measures or rating scales.

4 There is preliminary evidence that stabilising serum glucose can improve classroom attention. Observation of behaviour detected the effect – the use of observation as a technique for studying the effects of chronic illness on classroom functioning may be important.

Daley KB, Woodrich DL, Hasan K (2006) Classroom attention in children with type 1 diabetes mellitus: the effect of stabilizing serum glucose. *The Journal of Pediatrics* **148**: 201–6

'Periodontal destruction can start early in life in diabetes, and, as children become adolescents, becomes more prominent'

DIABETES CARE

Periodontal destruction begins early in diabetes

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

1 Periodontal disease and dental caries were assessed in children and adolescents aged 6–18 years with diabetes (n=182) and a control group with no diabetes (n=160).

2 Those with diabetes had higher plaque and gingival inflammation levels, and a greater number of teeth with evidence of attachment loss than the control group.

3 Diabetes was a highly significant correlate of periodontitis, particularly in those aged 12–18 years.

4 In the case group, body mass index was significantly correlated with destruction of bone and connective tissue attachment, but mean HbA_{1c} and duration of diabetes were not.

5 Periodontal destruction can start early in life in diabetes, and, as children become adolescents, becomes more prominent.

Lalla E, Cheng B, Lal S et al (2006) Periodontal changes in children and adolescents with diabetes. *Diabetes Care* **29**: 295–9

PEDIATRIC DIABETES

The genetic element of type 1 diabetes

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

1 Genes from the human leukocyte antigen (HLA) complex (IDDM1) are related to the genetic component of type 1 diabetes.

2 Loci from the variable nucleotide tandem repeat (VNTR) region of the insulin (INS) gene (IDDM2) and the cytotoxic T-lymphocyte-associated protein-4 region (CTLA4; IDDM12) have also been implicated.

3 The interaction between these loci through the influence of the age of onset of type 1 diabetes in Caucasian people was investigated.

4 Younger people with HLA-DRB1*0301/DRB1*04 and INS I/I genotypes exhibited increased susceptibility to type 1 diabetes.

5 The interaction of INS I/I and CTLA4 G/G genotypes was more common in older children with type 1 diabetes.

6 Combining the age of onset of type 1 diabetes with specific genotypes could produce a single disease through different underlying causes.

Felner EI, Klitz W, Ham M et al (2006) Genetic interaction among three genomic regions creates distinct contributions to early- and late-onset type 1 diabetes mellitus. *Pediatric Diabetes* **6**: 213–20

DIABETIC MEDICINE

Insulin pumps for minority require few resources

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

1 The objective of this study was to evaluate the cost implication of insulin pump treatment for primary care trusts (PCTs), and to address the scarcity of information that describes the burden of childhood diabetes in primary care.

2 Information from a Yorkshire population register was extracted, which included 1952 people under 15 years of age diagnosed with diabetes from 1990–2003.

3 Incidence rates were assessed for evidence of heterogeneity across PCTs and within Strategic Health Authorities (SHAs).

4 West Yorkshire had lower incidence rates than North-East Yorkshire, but the difference was not significant, and no significant evidence of heterogeneity in incidence rates was observed across PCTs.

5 Of all PCTs, 90 % could expect to diagnose four to seven children each year (which equates to one GP diagnosing one child every 15 years).

6 If 1% of people with diabetes under 15 years old were moved to treatment with an insulin pump, the additional cost would be £400–1300 each year for each PCT.

Feltbower RG, Campbell FM, Bodansky HJ, Stephenson CR, McKinney PA (2006) Insulin pump therapy in childhood diabetes – cost implications for Primary Care Trusts. *Diabetic Medicine* **23**: 86–9

'If 1 % of people with diabetes under 15 years old were moved to treatment with an insulin pump, the additional cost would be £400–1300 each year for each primary care trust'

DIABETES CARE

Explanation for psychoemotional manifestations?

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

1 This prospective comparative study investigated the plasma free fraction of L-tryptophan (FFT) and the intensity-dependent auditory-evoked potentials (IDAEPs) as indicators of changes in brain serotonergic neurotransmission in children with type 1 diabetes.

2 Measures of FFT, bound and total plasma L-tryptophan, neutral amino acids (NAAs), albumin, free fatty acids (FFAs), glucose and HbA_{1c} were taken from children with type 1 diabetes and controls without diabetes, as were records of IDAEPs with four intensities (40 dB, 60 dB, 90 dB and 103 dB).

3 Significantly elevated measures in diabetes were glycaemia, HbA_{1c}, FFAs and NAAs in plasma.

4 The FFT and the FFT-to-total L-tryptophan and FFT-to-NAA ratios were reduced in diabetes.

5 At all intensities, latencies of N1 and P2 increased, and the slope of the amplitude–stimulus intensity function of the IDAEP's N1/P2 component significantly increased.

6 The IDAEP may be an electrophysiological indicator of brain changes of serotonergic neurotransmission in children with type 1 diabetes, which may be related to psychoemotional manifestations such as depression, observed in these children.

Manjarrez G, Leon M, Herrera R, Hernandez-R J (2006) A low brain serotonergic neurotransmission in children with type 1 diabetes detected through the intensity dependence of auditory-evoked potentials. *Diabetes Care* **29**: 73–7