Hypoglycaemia unawareness in young people with type 1 diabetes

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Hypoglycaemia is one of the most feared complications of insulin-treated diabetes. For young people, the threat of an adulthood plagued by micro- or macrovascular complications is but nothing in comparison to the humiliation of a public episode of hypoglycaemia. It is little wonder, then, that glycaemic control is poor in this young people with diabetes.

Nonetheless, a recent review of all age-groups with a low blood glucose levels, serious enough to warrant a 999 call in Yorkshire, found that approximately 10% of ambulance call-outs to hypoglycaemic people with diabetes were aged under 25 years, and over a quarter had an altered warning for hypoglycaemia (Yorkshire Ambulance Service, unpublished observations). Often, though, these episodes are dealt with entirely by ambulance crews and there is no mechanism for informing the specialist team. Indeed, in many areas people with diabetes may be admitted and discharged from the ward or emergency room without the specialist team being aware.

In the article by Ly et al (2009; summarised alongside), a validated questionnaire was used to identify hypoglycaemia awareness status. There was a clear association between loss of warning and risk of severe hypoglycaemia. It is well known that hypoglycaemia begets hypoglycaemia, and individuals with tight glycaemic control are more likely to lose awareness of the condition.

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Prospective assessment of hypoglycaemia awareness status may be applicable to all age groups treated with insulin. Certainly anyone presenting with an episode of severe hypoglycaemia should be thoroughly assessed, as a simple dose adjustment may be insufficient to prevent a recurrence. The good news about identifying people with impaired awareness is that, in many, this defence mechanism can be restored by optimisation of the insulin regimen, frequent glucose monitoring and an education package.

DIABETES RESEARCH & CLINICAL PRACTICE

T1D life-expectancy improves over the past 60 years

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

1 This Romanian-based retrospective study was carried out to examine the survival rate of people with type 1 diabetes over the past 60 years.

2 The authors analysed data from 845 individuals with diabetes who were less than 40 years of age at diagnosis and had been treated with insulin since. These were split into two groups: those aged <18 years, and those aged 18–40 years.

3 Mean age at onset was 30.36±8.04 years, age at death was 51.34±14.37 years, and diabetes duration at death was 20.98±11.62 years. The mean increase in survival with diabetes was 19.3 years for those <18 years of age at diagnosis and 15.9 years for those between 18 and 40 years of age at diagnosis.

4 When investigating cause of death, only those of 18 years of age at diagnosis appeared to have mortality linked to cardiovascular disease. Over the study period, age at death increased by almost 20 years in the younger age group.

Ioacara S, Lichiardopol R, Ionescu-Tirgoviste C et al (2009) Improvements in life expectancy in type 1 diabetes patients in the last six decades. *Diabetes Res Clin Pract* **86**: 146–51

DIABETES CARE

One-third of young people with T1D have hypoglycaemia unawareness

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

1 This Australian study was undertaken to investigate the prevalence of impaired awareness of hypoglycemia in children and adolescents with T1D aged between 19 months and 16 years.

2 Over a 6-month period, the authors enrolled 656 children with T1D in the study who were each provided with a validated questionnaire on hypoglycaemia unawareness, and data collected the previous year were used to determine the prevalence of hyperglycaemia unawareness.

3 The results indicated that 29% of the study population had some form of impaired hypoglycaemia awareness. Severe hypoglycaemia was defined as any event leading to unconsciousness or seizure.

4 Hypoglycaemia unawareness was significantly linked to earlier onset of diabetes ($P<0.001$), younger age ($P<0.001$), and lower mean HbA_{1c} level, both since onset ($P=0.006$) and at their last visit ($P=0.006$; $P=0.001$, respectively).

5 Rates of severe hypoglycaemia were 24.5 episodes per 100 patient years. This rate was higher in individuals with impaired awareness of hypoglycaemia ($P<0.001$).

6 The authors concluded that as almost one-third of children have hypoglycaemia unawareness, screening for impaired awareness should be an important component of routine diabetes care as it may identify those at an increased risk of severe hypoglycaemia.

Ly TT, Gallego PH, Davis EA, Jones TW (2009) Impaired awareness of hypoglycemia in a population-based sample of children and adolescents with type 1 diabetes. *Diabetes Care* **32**:1802–6

"Education both of healthcare professionals and the public is needed to reduce the frequency of diabetic ketoacidosis at onset of type 1 diabetes."

DIABETES CARE

Frequency of DKA at onset of diabetes has not changed in 13 years

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

1 The authors of this European study aimed to analyse the frequency, clinical characteristics and trends associated with the occurrence of diabetic ketoacidosis (DKA) at the onset of type 1 diabetes.

2 A multicentre retrospective study design was used, involving 106 medical institutions in Austria and Gemany and data collected between 1995 and 2007 from 14 664 individuals with type 1 diabetes.

3 DKA was defined by a pH of <7.3; with mild DKA between pH 7.2 and 7.3, moderate DKA between pH 7.1 and 7.2, and severe DKA as pH <7.1.

4 The results show that 21.1% of the study cohort presented with DKA at onset: 9.8% had mild DKA; 5.4% had moderate DKA; and 5.9% had severe DKA. The frequency of DKA was higher among children <5 years of age (26.5%).

5 An analysis of prevalence of DKA across the 13 years that data were available for did not show any significant difference (P>0.163), suggesting that the frequency of DKA has not increased over this time period. There was also no change in severity of DKA presentation.

6 This evidence suggests that education both of healthcare professionals and the public is needed to reduce the frequency of DKA at onset of type 1 diabetes, as this has not been reduced in the last decade.

Neu A, Hofer SE, Karges B et al (2009) Ketoacidosis at diabetes onset is still frequent in children and adolescents: a multicenter analysis of 14,664 patients from 106 institutions. *Diabetes Care* **32**:1647–8

DIABETOLOGIA

Retinopathy universal in long-duration diabetes

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

1 This Danish study investigated the prevalence of retinopathy in individuals with long-duration T1D.

2 Between 1981 and 1982, baseline retinopathy was graded and other risk factors were assessed in 573 individuals with T1D. After 25 years, 308 of the original group were still alive. Of these, 201 were re-examined between 2007 and 2008.

3 At follow-up, the median age was 58.8 years, and median diabetes duration was 43 years. The prevalence of diabetic retinopathy was 97.0%, with 45.8% having non-proliferative retinopathy and 51.2% with proliferative retinopathy.

4 The authors concluded that retinopathy is almost universal in people with long-standing T1D diabetes, and that good glycaemic control and regular screening are crucial to reduce the burden of visual impairment.

Grauslund J, Green A, Sjølie AK (2009) Prevalence and 25 year incidence of proliferative retinopathy among Danish type 1 diabetic patients. *Diabetologia* **52**: 1829–35

DIABETES TECHNOLOGY & THERAPEUTICS

AIR as efficacious as SC insulin delivery

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

1 This randomised study compared the 1-year safety and efficacy of AIR insulin to subcutaneous (SC) insulin in people with diabetes and asthma.

2 Study participants were aged over 18 years, had T1d or T2D and had a history of asthma (defined as a forced expiratory volume in 1s [FEV1] of > 12%). They were randomised to either AIR or SC insulin for 12 months.

3 Change in HbA_{1c} from baseline to end was similar for the AIR and SC insulin groups (–0.063±0.128% and –0.315±0.128%, respectively; P=0.105), and safety profiles were comparable. FEV1 was similar between groups.

4 In individuals with both diabetes and asthma, AIR insulin demonstrated similar efficacy to SC insulin in reducing HbA_{1c}. Additionally, the safety profile of AIR insulin in people with and without asthma is consistent.

Ang E, Lawrence MK, Heilmann CR et al (2009) Safety and efficacy of AIR inhaled insulin compared with subcutaneous insulin in patients having diabetes and asthma: A 12-month, randomized, noninferiority trial. *Diabetes Technol Ther* **11** (Suppl 2): S35–44

DIABETES TECHNOLOGY & THERAPEUTICS

SC insulin more effective than inhaled

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

1 This multicentre study compared the safety and efficacy profiles of insulin lispro and inhaled insulin over a 6-month period.

2 The authors enrolled 500 individuals with T1D who were randomised to morning doses of basal insulin glargine plus either preprandial injectable insulin lispro or preprandial AIR insulin.

3 At study end, insulin lispro reduced HbA_{1c} by 0.27% more than inhaled insulin (P<0.001). Similar percentages of individuals in each group achieved an HbA_{1c} level <7.0% (<53 mmol/mol; P=0.448). However, weight gain was less in the inhaled insulin group.

4 The authors concluded that while insulin lispro reduced HbA_{1c} levels more than inhaled insulin, in the clinical setting other factors, such as weight gain, need to be taken into account.

Comulada AL, Renard E, Nakano M et al (2009) Efficacy and safety of AIR inhaled insulin compared to insulin lispro in patients with type 1 diabetes mellitus in a 6-month, randomized, noninferiority trial. *Diabetes Technol Ther* **11** (Suppl 2): S17–25