

Management of type 1 diabetes



Laws with unintended consequences

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Driving whilst hypoglycaemic is dangerous. No-one disputes that. As with other medical conditions that may impact on safe driving, the onus is on the individual to act responsibly and report the information to the DVLA. With epilepsy, "permitted seizures" include those that occur solely at night. With hypoglycaemia, however, there is no distinction between an episode that occurs during the day and one during the night if third-party involvement is required. This is despite the fact that hypoglycaemia is more common at night, when it has a reduced adrenergic response and thus is more likely to be severe before provoking symptoms (Jones et al, 1998).

Some studies suggest that as many as 20% of people with type 1 diabetes are at risk of falling foul of the 2006 European Third Directive on driving licences, which states that having two or more episodes of severe hypoglycaemia in a 12-month period results in withdrawal of their driving licence.

Whatever the motive of the legislation, the study by Pedersen-Bjergaard and colleagues

(summarised alongside) suggests that the unintended consequence of the law is that people with diabetes are under-reporting incidences of severe hypoglycaemia. Ironically, this may increase their likelihood of further episodes. Hypoglycaemia begets hypoglycaemia, with unrecognised nocturnal episodes reducing daytime awareness.

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Until there is some revision of the law, health professionals need to be aware that their patients may withhold important information about the frequency and severity of hypoglycaemia. Nevertheless, it is our duty to sensitively assess their awareness of hypoglycaemia. With the appropriate interventions, such as change of insulin regimen, frequent blood glucose testing and avoidance of blood glucose levels below 5 mmol/L, the early warning signs of hypoglycaemia may be restored. ■

Jones TW, Porter P, Sherwin RS et al (1998) Decreased epinephrine responses to hypoglycemia during sleep. *N Engl J Med* **338**: 1657–62

Diabetes Care

Impact of EU driving licence legislation on reporting of severe hypoglycaemia

Readability ////

Applicability to practice ////

WOW! Factor ////

1 As in the UK, new EU legislation disqualifying any person with diabetes who had more than one episode of severe hypoglycaemia per year from obtaining or maintaining a driving licence was implemented in Denmark in January 2012.

2 The current authors sought to test the hypothesis that this law would lead to reductions in the reporting of severe hypoglycaemia in the clinical setting by comparing official medical records with anonymous, retrospective reports from 309 people with T1D.

3 In 2012, the reported rate of hypoglycaemia in the clinic fell to a mean of 0.19 events per patient-year, a 55% decrease from the 0.42 events per patient-year in 2011 ($P=0.034$). This was mainly due to a 73% drop in the proportion of people who reported a second hypoglycaemic event (from 5.6% to 1.5%; $P=0.014$).

4 In the 2012 medical records, the rate of hypoglycaemia was 70% lower than in the anonymous questionnaires (0.63 vs 0.19 events per patient-year; $P<0.001$). This difference was mainly due to the proportion of people who reported a second episode (11.4% vs 1.5%).

5 The reduction in reporting in 2012 was unlikely to be a result of a relaxation of glycaemic control; indeed, mean HbA_{1c} reduced in the study group between 2010 and 2012.

6 The authors conclude that severe hypoglycaemia is being under-reported owing to the new laws.

Pedersen-Bjergaard U, Færch L, Allingbjerg ML et al (2014) The influence of new European Union driver's license legislation on reporting of severe hypoglycemia by patients with type 1 diabetes. *Diabetes Care* **38**: 29–33

Diabetic Medicine

Psychosensorial symptoms during hypoglycaemia in adolescents with T1D

Readability ✓✓✓✓
 Applicability to practice ✓✓✓✓
 WOW! Factor ✓✓✓✓

1 Adults and adolescents with T1D have previously been reported to experience pleasurable symptoms such as feeling "high" during episodes of hypoglycaemia; therefore, the authors sought to document these psychosensorial symptoms in adolescents and examine whether they were deemed to be positive or negative.

2 A total of 132 participants aged 12–18 years were recruited and asked to fill in a 68-item questionnaire to assess the prevalence of physical, behavioural, mood and psychosensorial symptoms, and to rate them as good, bad or both (sometimes good, sometimes bad).

3 The most common psychosensorial symptoms were difficulty concentrating (79.9% of participants), lightheadedness (78.4%), confusion (70.1%), feeling "spaced out" (62.8%) and "feeling like you don't care" (60.1%).

4 Overall, symptoms were reported as good or both by one quarter to one third of participants. Psychosensorial symptoms had the best reaction, with 37.2% of participants rating them as good or both.

5 Mood symptoms, such as feeling calm or jolly/silly, were perceived as positive by 36.9% of participants.

6 Given that diabetes education typically focuses on the negative symptoms of hypoglycaemia, the authors conclude that these positive symptoms may be overlooked or even seen as desirable by people with T1D, and that spotting them may improve hypoglycaemia awareness.

Law JR, Yeşiltepe-Mutlu G, Helms S et al (2014) Adolescents with type 1 diabetes mellitus experience psychosensorial symptoms during hypoglycaemia. *Diabet Med* **31**: 1245–51

Diabetic Medicine

DAFNE training: 5-week versus 5-day courses

Readability ✓✓✓✓
 Applicability to practice ✓✓✓✓
 WOW! Factor ✓✓✓✓

1 In this randomised controlled trial conducted in seven UK centres, the authors evaluated a 5-week (1 day per week) Dose Adjustment for Normal Eating (DAFNE) course in comparison with the traditional 5-day course.

2 A total of 213 people with T1D were randomised, of whom 180 completed the study.

3 The 5-week course was equivalent to the 1-week course in terms of glycaemic control, hypoglycaemia risk, quality of life and patient preference after both 6 months and 12 months. A separate study showed that the two formats were similar in terms of costs.

4 This format may improve access to the DAFNE course for people who are in full-time work.

Elliott J, Rankin D, Jacques RM et al (2014) A cluster randomized controlled non-inferiority trial of 5-day Dose Adjustment for Normal Eating (DAFNE) training delivered over 1 week versus 5-day DAFNE training delivered over 5 weeks: the DAFNE 5 × 1-day trial. *Diabet Med* **32**: 391–8

Diabetes Res Clin Pract

Patients' experiences with automated bolus calculators

Readability ✓✓✓✓
 Applicability to practice ✓✓✓✓
 WOW! Factor ✓✓✓✓

1 This was a qualitative study of patients' experiences with using automated bolus calculators conducted in 42 people with T1D.

2 Overall, 86% of participants reported using their devices at the start of the study, and 76% were still using them 6 months thereafter.

3 Bolus calculators were described as useful by the majority of participants, particularly those with perceived poor mathematical skills.

4 However, there were a number of unintended consequences, including over-reliance on the device, leading to deskilling and a reduced likelihood of users reviewing their doses and targets.

5 Use of the automated data storage meant that some users failed to review their blood glucose levels, to the detriment of glycaemic control.

6 The authors thus advise that device users should receive ongoing education and input from their clinicians. Lawton J, Kirkham J, Rankin D et al (2014) Perceptions and experiences of using automated bolus advisors amongst people with type 1 diabetes: a longitudinal qualitative investigation. *Diabetes Res Clin Pract* **106**: 443–50

Diabetes Technol Ther

Metformin in people with T1D

Readability ✓✓✓✓
 Applicability to practice ✓✓✓✓
 WOW! Factor ✓✓✓

1 In this meta-analysis of eight small studies ($n=300$), the efficacy and safety of metformin in conjunction with insulin therapy was assessed in people with T1D.

2 Compared with placebo, metformin had no significant effect on HbA_{1c}, fasting plasma glucose or

triglyceride levels, or on the risk of severe hypoglycaemia and diabetic ketoacidosis.

3 However, it was associated with significant reductions in daily insulin dose, body weight, total cholesterol level and LDL-cholesterol level.

4 In terms of safety, metformin had a higher risk of gastrointestinal side-effects, although only four participants discontinued, and was associated with lower HDL-cholesterol levels.

5 The authors conclude that metformin could be a safe and effective adjunct to insulin therapy in T1D.

Liu C, Wu D, Zheng X et al (2015) Efficacy and safety of metformin for patients with type 1 diabetes mellitus: a meta-analysis. *Diabetes Technol Ther* **17**: 142–8

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