Management of type 1 diabetes

The urgent need to improve alcohol awareness in people with type 1 diabetes

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The British habit of heavy alcohol consumption at the weekend is constantly in the news. Binge drinking is a significant public health issue but, in our society, it is considered normal. It could even be argued that, for some groups, it is a socially acceptable behaviour. Binge drinking is not confined to young people, although peer pressure may be a more important factor in this particular group.

A significant proportion of young people's attendance in Accident and Emergency departments relates to alcohol consumption (Newbury-Birch et al, 2009). For the majority, these are relatively minor problems. For individuals with type 1 diabetes, however, the stakes are higher. Excess alcohol consumption is associated in the short term with an increased risk of hypoglycaemia, ketoacidosis and the more unusual alcoholic ketosis combined with hypoglycaemia. As a single episode of alcohol consumption can potentially contribute to poor glucose control for the next 48 hours, this will contribute to poor long-term glucose control.

With this in mind, the article by Barnard and colleagues (summarised alongside) is timely and helpful. The authors aimed to assess the alcohol awareness of a group of young adults with type 1 diabetes. Young was defined as less than 30 years of age. The study began with an assessment of the knowledge of the alcohol and carbohydrate content of commonly consumed drinks. Predictably, this was very poor. The authors then studied the strategies used to reduce the glycaemic risks associated with

alcohol. These varied from sensible precautions to taking paracetamol.

There is an assumption in the article that this lack of alcohol awareness is a problem confined to young people with diabetes. Although the problem may be more frequent in this group, it could be argued that the consequences of lack of knowledge over many years may be more significant than the short-term risks.

Education and technology are two key pillars of our current management of type 1 diabetes. Alcohol is certainly included within carbohydrate counting education. It would have been interesting to administer the same questions to a group of diabetes clinicians. Clearly, more specific training about the effects of alcohol and the carbohydrate content of commonly consumed drinks is required. We need to use capillary glucose and sensor data to look at the effects of a Friday night on glucose control and talk about how this could be better managed.

One cannot criticise the background work that the authors have put in to preparing this paper. In order to properly research the drinking habits of young people, seven local hostelries are listed in the acknowledgments. The Slug and Lettuce (Gunwharf Quays, Portsmouth) is not often mentioned in the scientific literature. It is gratifying to see that this has now been corrected. ◼

Newbury-Birch D, Walker J, Avery L et al (2009) *Impact of Alcohol Consumption on Young People: A Systematic Review of Published Reviews*. Department for Children, Schools and Families, Nottingham. Available at: http://bit.ly/1JQr11p (accessed 06.05.15)

Alcohol health literacy in young adults with T1D

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

1 In the current study, the authors evaluated alcohol health literacy in young adults (age, 18–30 years) with T1D.

2 A total of 547 people completed an online survey comprising a "quiz" on the alcohol and carbohydrate content of 10 commonly consumed alcoholic drinks, and a series of questions on the effects of alcohol on glycaemic control and strategies used to minimise alcohol-associated risks.

3 Of the 392 people who reported their usual alcohol consumption, 66.7% drank, and 32.9% of women and 22.6% of men had increased-risk drinking behaviours according to the Alcohol Use Disorders Identification Test.

4 Knowledge of the alcohol and carbohydrate content of drinks was poor, with only 14.8% of participants able to identify the alcohol content of five or more of the 10 drinks, and only 0.5% able to identify the carbohydrate content. Furthermore, 18.9% and 26.4% were unable to identify alcohol or carbohydrate content, respectively, in a single drink.

5 Overall, 66.5% of participants reported taking precautions when drinking, 4.6% took no precautions and 28.9% did not answer. The precautions taken were variable and sometimes counterproductive.

6 Overall, 13.9% of respondents reported confusing hypoglycaemia with symptoms of drunkenness. A total of 46 respondents (8.4%) had been hospitalised for ketoacidosis or hypoglycaemia in the past year, and alcohol use was implicated in six of these cases.

Barnard KD, Dyson P, Sinclair JM et al (2014) Alcohol health literacy in young adults with type 1 diabetes and its impact on diabetes management. *Diabet Med* **31**: 1625–30

Diabetes Care

Glycaemic targets in the second and third trimesters of pregnancy in T1D

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

1 There is uncertainty over the optimum glycaemic targets to pursue in the later stages of pregnancy in women with T1D; therefore, these authors prospectively compared pregnancy outcomes with second- and third-trimester HbA$_{1c}$ and blood glucose levels in 725 women with T1D.

2 Compared with an HbA$_{1c}$ of <6.0% (<42 mmol/mol), women with a higher HbA$_{1c}$ at 26 or 34 weeks' gestation had a higher risk of adverse neonatal outcomes, including large-for-gestational-age infants, preterm delivery, pre-eclampsia and need for a neonatal glucose injection.

3 This risk generally increased in line with HbA$_{1c}$ levels, with odds ratios for the composite adverse outcome of 1.6 (P=NS), 3.2, 6.7 and 4.4 at HbA$_{1c}$ ranges of 6.0–6.4%, 6.5–6.9%, 7.0–7.4% and >7.5%, respectively.

4 Therefore, the authors recommend that women should aim for a target HbA$_{1c}$ of <6.5% (<48 mmol/mol), and ideally <6.0% (42 mmol/mol) if this is feasible without hypoglycaemia, in the second and third trimesters of pregnancy.

5 Blood glucose data showed less consistent trends, and it was difficult to recommend a definitive range; however, levels of 6.0–6.9 mmol/L were associated with an increased risk of adverse outcomes, which supports the current target of <6.0 mmol/L recommended by NICE.

6 The authors add that the current NICE recommendation against monitoring HbA$_{1c}$ levels during these stages of pregnancy should be reviewed.

Maresh MJ, Holmes VA, Patterson CC et al (2015) Glycemic targets in the second and third trimester of pregnancy for women with type 1 diabetes. *Diabetes Care* **38**: 34–42

Diabetes Technol Ther

Poor accuracy of SMBG meters

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

1 In this study, the authors assessed the accuracy of self-monitoring of blood glucose (SMBG) meters and its influence on glycaemic control in 9163 children and adolescents with T1D.

2 When measured against laboratory blood glucose levels obtained at the same time, SMBG values were insufficiently accurate to meet 2013 International Organization for Standardization criteria in 13.2–17.8% of measurements depending on glucose levels.

3 Large deviations of SMBG values from true values were associated with either higher HbA$_{1c}$ levels or increased rates of hypoglycaemia.

4 The authors conclude that national and international regulations on SMBG devices need to be tightened.

Boettcher C, Dost A, Wudy SA et al (2015) Accuracy of blood glucose meters for self-monitoring affects glucose control and hypoglycemia rate in children and adolescents with type 1 diabetes. *Diabetes Technol Ther* **17**: 275–82

Endocr Pract

Attempts to counter the dawn phenomenon in T1D

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

1 Increasing early-morning insulin delivery to compensate for the dawn phenomenon – a pre-breakfast rise in blood glucose levels – has become common practice when using insulin pumps to treat T1D.

2 However, in this 8-month observational study, the authors found that this had little effect in the outpatient setting, with the dawn phenomenon still occurring in 42.3% of participants with programmed changes to their insulin delivery (n=20), compared with 47.5% of those with no compensatory programming (n=20; P=NS).

3 Furthermore, hypoglycaemia was twice as common in the programmers than in non-programmers (mean rate, 37.3% vs 17.7%; P=0.001).

4 Thus, compensating for the dawn phenomenon by increasing early-morning insulin delivery was concluded to be ineffective and possibly hazardous.

Bouchonville MF, Jaghab JJ, Duran-Valdez E et al (2014) The effectiveness and risks of programming an insulin pump to counteract the dawn phenomenon in type 1 diabetes. *Endocr Pract* **20**: 1290–6

Diabetes Care

Islet–kidney versus pancreas–kidney transplantation in T1D

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

1 In this study, 94 people who underwent combined pancreas and kidney transplantation were compared with 38 who underwent combined islet cell and kidney transplantation.

2 Over a follow-up of up to 13 years, HbA$_{1c}$ levels fell from 62 mmol/mol (7.8%) to 41 mmol/mol (5.9%) in the pancreas group, and from 64 mmol/mol (8.0%) to 48 mmol/mol (6.5%) in the islet group. There was no difference in the rate of long-term kidney decline.

3 The 5-year insulin independence rate was higher in the pancreas group (73.6% vs 9.3%); however, the rate of reoperation was also higher (41.5% vs 10.5%).

4 The authors conclude that, while islet cell–kidney transplantation is slightly less effective, its low rate of complications and less invasive nature make it a viable option.

Lehmann R, Graziano J, Brockmann J et al (2015) Glycemic control in simultaneous islet–kidney versus pancreas–kidney transplantation in type 1 diabetes: a prospective 13-year follow-up. *Diabetes Care* **38**: 752–9

> **"Compensating for the dawn phenomenon by increasing early-morning insulin delivery was concluded to be ineffective and possibly hazardous."**