

# Do Educational Interventions Improve the Awareness of Drivers Living with Diabetes?

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## INTRODUCTION

- The number of people currently living with diabetes in the UK has reached 2.9 million<sup>1</sup>
- People with poorly controlled diabetes, especially those that suffer hypoglycaemic episodes, have an increased risk of driving accidents<sup>2</sup>
- The law states that if patients are on certain diabetes medications and/or insulin, they must inform the DVLA of this. These requirements are detailed below<sup>3</sup>

Patients diabetes treatment	Group 1 (cars, motorcycles)	Group 2 (heavy goods vehicles)
Diet controlled	No	No
Tablets that pose a risk of hypos (sulphonylureas, glinides)	No	Yes
Tablets that do not carry a risk of hypos	No	Yes
Insulin	Yes	Yes
Non-insulin injections	No	Yes

- Drivers of both Group 1 and 2 vehicles have additional responsibilities surrounding hypoglycaemia awareness, blood glucose monitoring, hypoglycaemia episodes requiring assistance, and, visual standards, which are detailed by the DVLA<sup>3</sup>

## METHODS

- In order to enable comparison with the previous audit<sup>4</sup>, the same 37-point anonymous questionnaire was distributed to 47 drivers (on insulin and/or tablets with a risk of hypoglycaemia) at the diabetes clinic
- This questionnaire focused on awareness of DVLA regulations, notably their response to hypoglycaemic episodes at the wheel

### Sample of Principle Questions Asked to Patients in Clinic

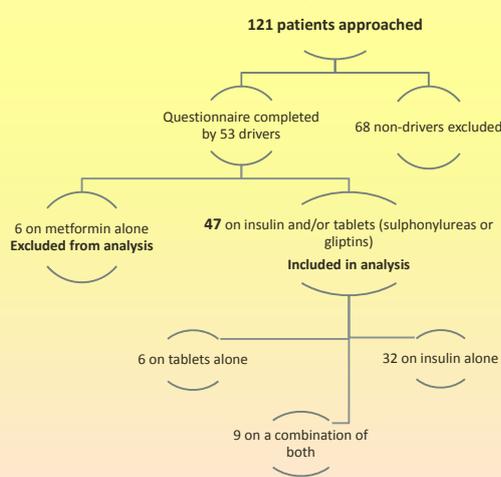
- Have you received information regarding driving regulations and if so where from?
- Do you test your blood sugar before driving?
- What level should your blood glucose be before you drive?
- Do you have a blood glucose meter and carbohydrate source with you in the car?
- How often should you check your blood glucose level on a long journey?
- Where would you stop if you needed to test your blood glucose?
- What actions would you take if you felt hypoglycaemic?
- Do you know the legal consequences of driving under the influence of insulin without due care?

## RESULTS

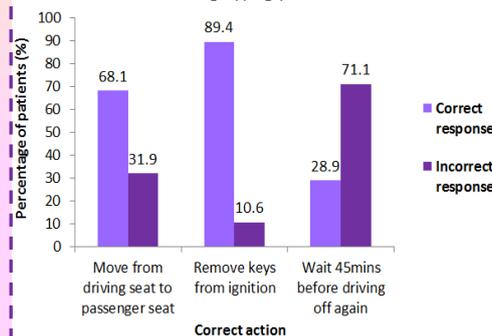
### Demographics

- Males: 32 (68.1%) Females: 15 (31.9%)
- Age range: 31-79 years (median: 56 years)
- Ethnicity: White: 32 (68.1%)
- Employment status: Employed: 23 (48.9%)
- Type 1 diabetes: 12 (25.5%) Type 2 diabetes: 35 (74.5%)
- Range of years of having been driving: 3-55 (median: 29.5)

### Patient Selection



A graph showing whether patients know what actions to take when feeling hypoglycaemic at the wheel



### Results - Patients' responses

- 83% received information regarding their diabetes and the driving regulations
- 68.1% test their blood glucose before driving
- 42.6% patients confessed that they were not always aware when they were becoming hypoglycaemic
- 53.2% patients admitted that they would not always have their blood glucose meter in the car with them
- 28.9% patients identified a blood glucose level of 5mmol/l as the minimum safe level for driving; however, 84.5% quoted a value of 5 or greater
- 31.9% respondents were unaware of the legal consequences of a hypoglycaemic episode at the wheel

### Has patient awareness improved since the previous audit (2011)?

Percentage of patients who .....	2011 audit	2012 audit
... test before driving	53.2%	68.1%
... always have a glucose meter with them in the car	47.9%	46.8%
... would stay in the driving seat once becoming hypoglycaemic	40.3%	31.9%
... would leave the keys in the ignition once becoming hypoglycaemic	10.4%	10.6%
... were unaware of the legal consequences	31.9%	31.9%

Improvements highlighted in blue

## DISCUSSION

- Our results show that although the majority of drivers have received information regarding driving with diabetes, only few understand and follow the specifics
- It is encouraging that there has been some improvement since the previous audit although more can be done
- It is a basic DVLA requirement for a person with diabetes to check their blood glucose before driving. It is worrying that over a quarter of those asked did not check it before setting off, and half did not carry a meter in the car
- Hypoglycaemia is dangerous whilst driving. For this reason it is an absolute license stipulation that that those with diabetes retain their hypoglycaemic awareness. In our study over 40% admitted that they were not always aware when they were becoming hypoglycaemic, this is a major concern for road safety.
- The responses to the question concerning the legal consequences of driving in a hypoglycaemic state showed that approximately a third of those asked did not realise the seriousness of the driving regulations

- Overall the results show that there is still a huge lack of understanding concerning driving regulations amongst drivers with diabetes. This lack of understanding affects their safety at the wheel as well as the safety of other road users and has potential legal consequences.

- We make some recommendations (see bottom box)

### LIMITATIONS OF OUR AUDIT

- Small patient population – 47 patients included
  - This was because most patients approached did not drive
- Language barriers may have made it more difficult for some patients to access information
- When comparing our results to the previous audit, it should be noted that a different set of patients were used
- There may be some social acceptability bias where responders put what they think is the right answer in order to look favourable. The questionnaires were anonymised to minimise this bias.

### DVLA Guidelines for Safe Driving<sup>3</sup>

- Glucose monitoring equipment and a source of carbohydrates must be kept in the car at all times
- Before driving (and, every 2 hours on a long drive), the blood glucose level must be checked and should exceed 5mmol/l before setting off
- If the person experiences a hypoglycaemic episode whilst driving they should:
  - Stop the car in a safe place
  - Remove the keys from the ignition
  - Move to the passenger's seat
  - Treat the hypo and ensure BM>5mmol/l
  - Wait 45 minutes before setting off again

## AIMS

- A 2011 audit demonstrated low understanding of the DVLA regulations amongst patients attending a secondary care diabetes clinic at a large teaching hospital (University Hospital Birmingham)<sup>4</sup>
- Their findings led to the implementation of posters and leaflets in the clinic waiting area and reception as well as a reminder to clinicians and nurses to continue imparting education
- The aim of this re-audit was to ascertain the awareness of driving regulations amongst patients at this clinic following these interventions

### References

- Diabetes UK. Diabetes in the UK April 2012. Key Statistics on Diabetes. [cited 2012 Dec 8] Available from URL: <http://www.diabetes.org.uk/Professionals/Publications-reports-and-resources/Reports-statistics-and-case-studies/Reports/Diabetes-in-the-UK-2012/>
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- Drivers Medical Group. DVLA, Swansea. At a glance Guide to the Current Medical Standards of Fitness to Drive. May 2012. Chapter 3. Diabetes Mellitus
- Dixon RA, Lloyd A, Saeed M. Do we care about the road safety of people living with diabetes? Diabetic Med 2012; 29: 106

### RECOMMENDATIONS

- Increased effort at each consultation to remind patients of driving regulations
- Focused efforts on patients that don't have English as their first language to ensure they understand this information; making information leaflets in other languages available
- Regular correspondence from the DVLA to patients with diabetes
- A reminder of legal consequences, to ensure that patients know the implications of not abiding
- Potentially a course for drivers with diabetes could be introduced, to both give the information and to test their understanding.