

Driving and new technologies for diabetes

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For many, driving a motor vehicle is an intrinsic part of everyday independent living for travel to and from the workplace, as part of work duties, shopping for essential goods etc. Driving involves a complex series of actions involving visual, visuospatial, cognition, memory and motor skills. Medical conditions including diabetes can affect these skills adversely and regulatory authorities have the challenging task of measuring the impact of medical conditions on driving and assessing what risk is societally acceptable, recognising that risk can never be completely eliminated. In the UK, around 40 million currently active driving licences exist and around 600,000 of these drivers have diabetes. Driving licences in the UK (and EU) are stratified into “group 1” (car, motorbike) and “group 2” (> 3.5 tonnes including lorries and buses etc).¹

Diabetes can affect driving in a number of ways. Visual impairment due to retinopathy or cataracts, neuropathy and macrovascular disease, for example, may lead to impaired ability to drive and disqualify the individual from driving temporarily or permanently. Hypoglycaemia is a particular concern since a constant supply of glucose from the circulation is required to fuel brain metabolism and support cognitive function. Experimental hypoglycaemia in driving simulators consistently impairs driving performance.² Because of the hazards and potential consequences, the DVLA consider insulin-treated drivers as a potential high-risk category and, in particular, those with a history of severe hypoglycaemia (events requiring rescue by others) and/or impaired symptomatic recognition of low blood glucose come under closest scrutiny. More than one severe hypoglycaemic event (excluding those occurring during sleep and assuming none occur while behind the wheel of a vehicle) within a 12-month period in a group 1 driver should be self-reported to the DVLA and will result in a licence being revoked. For group 2 drivers the bar is set higher, with a single severe hypoglycaemic event triggering this process.

Self-monitoring of blood glucose to minimise risk of disabling hypoglycaemia is an essential mitigation against risk of disabling

hypoglycaemia behind the wheel. As technology has advanced, this has required consideration of how to incorporate continuous and intermittently scanned glucose monitoring sensors (referred to generically below as “CGM” systems) into the regulatory framework. There are some obvious advantages. The current legislation requires drivers to check blood glucose at least every two hours while driving but glucose levels may change markedly during that period. Sensors with directional arrows and alarms for hypoglycaemia should be advantageous.³

Recognising this, in 2019 (prior to Brexit) a change in EU and then UK legislation now allows group 1 drivers to use CGM to monitor glucose around driving. Importantly, drivers should still ensure access to capillary blood glucose monitoring either as a backup or if their CGM displays values that appear to be incorrect. This change in legislation has been broadly welcomed, particularly now with the likelihood of more and more people living with insulin-treated diabetes gaining access to CGM (including those who will link into insulin pumps to automate insulin delivery).

The obvious question that arises is what about group 2 drivers? Most will also be car drivers and this change has led to genuine confusion for drivers and clinicians alike. Insulin-treated group 2 drivers are able to use and benefit from CGM systems including when car driving but they need to use capillary blood glucose monitoring for group 2 driving. The current group 2 legislation requires drivers also to perform regular capillary blood glucose monitoring even on non-driving days. Post Brexit, the Taskforce on Innovation, Growth and Regulatory Reform (TIGRR) have been charged with identifying opportunities for legislative change and have announced the intention to extend CGM use to group 2 drivers.⁴ Importantly though, it will take time to implement legislative change. In the meantime, it is important that diabetes health care professionals accept the responsibility to ensure that those with group 2 licences who use CGM are aware that dual monitoring is required until new regulation comes into force.

The future will bring more innovation and change. What will happen with automated insulin delivery and perhaps bi-hormonal closed loop systems? Regulations in other “non-diabetes” areas such as neurological conditions are also evolving rapidly. This author’s firm suggestion to all reading this editorial is to access, update and have available the “Fitness to Drive” documentation for reference in clinical scenarios.¹

Conflict of interest ME is the current chair of the Department of Transport’s Honorary Medical Advisory panel on driving and diabetes but is writing here in a personal capacity.

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References

1. Assessing Fitness to Drive. A guide for medical professionals. <https://www.gov.uk/government/publications/assessing-fitness-to-drive-a-guide-for-medical-professionals>
2. Cox DJ, Gonder-Frederick LA, Kovatchev BP, Julian DM, Clarke WL. Progressive hypoglycemia's impact on driving simulation performance. *Diabetes Care* 2000;**23**(2):8. <https://doi.org/10.2337/diacare.23.2.163>
3. Rayman G, Kröger J, Bolinder J. Could FreeStyle LibreTM sensor glucose data support decisions for safe driving? *Diabet Med* 2018;**35**(4):491-4. <https://doi.org/10.1111/dme.13515>
4. Letter from Lord Frost. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1018389/Letter_from_Lord_Frost_to_Sir_Iain_Duncan_Smith_on_the_Taskforce_on_Innovation_Growth_and_Regulatory_Reform.pdf