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Canadian Journal of Diabetes

journal homepage:
www.canadianjournalofdiabetes.com


Perspectives in Practice

Insulin-Treated Diabetes and Driving: Legal Jeopardy and Consequences of Hypoglycemia

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Key Messages

- Insulin-treated individuals, in the event of hypoglycemia while driving, are at increased risk for motor vehicle collisions with possible legal prosecution and potential incarceration if they are found to have taken inadequate precautions to prevent hypoglycemia.
- Health-care providers need to ensure that insulin-treated individuals who drive are educated about precautions they must take regarding hypoglycemia avoidance when driving.
- Legislators need to reevaluate current legal statutes dealing with dangerous driving because current legislation does not suitably address matters surrounding diabetes, hypoglycemia and driving.

ARTICLE INFO

Article history:

Received 18 June 2018

Received in revised form

16 July 2018

Accepted 30 August 2018

Case 1: June 26, 2009

Mr. M lives with type 1 diabetes and has been prone to episodes of hypoglycemia without the usual warning symptoms (a condition of hypoglycemia unawareness). Before he drove, Mr. M tested his blood sugar level. When it registered low, he grabbed a quick snack. However, instead of waiting and confirming that his condition was stable, he got behind the wheel. That decision proved fatal. He made it to the bank to pay some bills but was soon confused and driving erratically. He swerved into a bike lane and struck and killed a cyclist. Soon afterward, he hit a small car carrying newlyweds, killing them both. On December 8, 2011, Mr. M was convicted of 3 counts of dangerous driving causing death. He received a suspended sentence with 3 years' probation and a 10-year driving prohibition and was ordered to do 240 h of community service (1).

Case 2: September 18, 2015

A 42-year-old man with type 1 diabetes and no history of hypoglycemia unawareness checked his blood sugar and found it to be normal at 7.1 mmol/L. A short time later he developed hypoglycemia without warning symptoms, drove through a stop sign and collided with another vehicle, killing its occupant.

April 5, 2018: A jury found the man guilty of “dangerous operation of a motor vehicle causing death,” and on September 18, 2018 he was sentenced to 2 years in penitentiary where he is now incarcerated.

The severity of hypoglycemia is defined clinically by whether an individual can self-treat (termed mild hypoglycemia) or not (severe hypoglycemia) (2). Severe hypoglycemia impairs the ability to drive, but the affected individuals may not be aware that they are driving erratically or even dangerously (3,4). In order to attenuate the risk of collisions, clinical guidelines have been developed for health-care providers and patients, and governments have created laws, rules and regulations. Despite all this, collisions due to hypoglycemia still occur regularly (3,4). Diabetes Canada's 2018 Clinical Practice Guidelines (5) make several recommendations regarding diabetes and driving. Patients are advised to measure their blood

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glucose levels immediately before driving and every 4 h while driving. A key aspect of the recommendations is that if blood glucose levels are less than 4.0 mmol/L, individuals should not start driving until they have ingested 15 g of carbohydrate, waited 40 min, retested their blood glucose level and found it to be at least 5.0 mmol/L. More stringent recommendations are made for individuals with a history of severe hypoglycemia or hypoglycemia unawareness (5). The Diabetes Canada and other recommendations will serve the majority of people well, but only if they are implemented. In the first case described above, there is the question of whether Mr. M ever received specific instructions from his caregivers that he should wait after ingesting a carbohydrate, recheck his blood glucose and ensure that it was at least 5.0 mmol/L before driving. The majority of people living with insulin-treated diabetes are unaware, and have never been made aware, of the driving precautions they should take to avoid hypoglycemia-related collisions (6,7). It is essential that all insulin-treated patients who operate motor vehicles be informed by their health-care team of the risks of hypoglycemia in the context of driving and receive specific instructions about how to minimize these risks (8,9). Additionally, it is our opinion that for patients with hypoglycemia unawareness and those who experience frequent hypoglycemia, real-time continuous glucose monitoring use should be considered mandatory in order to ensure safe driving. Also, in some jurisdictions health-care providers have a duty to report to the appropriate licensing authority those patients who, because of problematic hypoglycemia, are at risk for sustaining a hypoglycemia-related motor vehicle collision.

The medical community needs to educate the courts about the mechanism of onset of hypoglycemia unawareness and the risks and implications of it in the context of dangerous driving offenses. Judges, prosecutors and lawyers need to understand that patients with insulin-treated diabetes are a) likely to be insufficiently aware of the need for hypoglycemia avoidance when operating a motor vehicle and b) in nearly all cases, these patients are highly unlikely, when driving while hypoglycemic, to be aware that they are driving in a manner that is objectively dangerous. Hence, from a legal standpoint, their conduct must be understood to be potentially excused under criminal law because they lack the intent necessary to commit the offense of either dangerous driving or criminal negligence, both of which require people to have subjective awareness of the nature of their acts.

Both patients discussed above were originally charged with criminal negligence causing death. This is defined in section 219 of the Canadian Criminal Code: “Everyone is criminally negligent who, a) in doing anything, or, b) in omitting to do anything that it is his duty to do, shows wanton or reckless disregard for the lives or safety of other persons.” They were both eventually convicted of the lesser charge of Dangerous Operation of a Motor Vehicle Causing Death. Dangerous Operation is defined in section 249 of the Canadian Criminal Code where the person “operates a motor vehicle in a manner that is dangerous to the public, having regard to all the circumstances, including the nature, condition, and use of the place at which the motor vehicle is being operated and the amount of traffic that at the time is or might reasonably be expected to be at that place.” Both Dangerous Driving and Criminal Negligence offenses criminalize conduct that can be objectively described as being knowingly reckless to the point of endangering the public. The distinction between the former and the latter may be considered a question of degree, with Criminal Negligence describing more egregious conduct than Dangerous Driving.

Given these formal definitions in the Criminal Code, it can be posited that if people are living with insulin-treated diabetes, by mere virtue of being treated with insulin (and, hence, being perpetually at risk for hypoglycemia), they may be intrinsically, and always, at risk for being considered to be “operating a motor in a manner that is dangerous to the public” or being “criminally

negligent” in the event that they experience low blood glucose levels with a resultant motor vehicle collision. Nonetheless, for a prosecution to be successful under either provision, a high level of fault must be proven. The accused would have to have been consciously aware of current or impending hypoglycemia yet recklessly failed to take countermeasures or else be shown to have been reckless in failing to adhere to sound medical advice in managing this condition to begin with.

Current Canadian law could be considered ill-equipped to address the situation wherein drivers with hypoglycemia unawareness are involved in a motor vehicle collision when hypoglycemic because, by definition, the individuals could not have been aware of their worsening condition and could not, therefore, be guilty of knowing recklessness. In order for such individuals to be criminally liable, it should be necessary to prove that the individuals were initially reckless or negligent by failing to take the steps they knew were necessary to prevent hypoglycemia before commencing or while driving. We suspect that few individuals living with insulin-treated diabetes have considered these legal realities and their implications. We further suspect that few health-care providers assisting such patients have contemplated these legal considerations and their crucial role as health-care providers in ensuring that their patients are aware of and are adjusting their actions based on these legal imperatives. It is our contention that in all instances wherein a charge of either criminal negligence or dangerous operation of a motor vehicle is being considered for persons with insulin-treated diabetes who have sustained a motor vehicle collision while hypoglycemic, a very high standard must be applied. In particular, before prosecution is considered, all of the following should be applicable:

- The individuals were aware of the need for hypoglycemia avoidance (due to hypoglycemia’s deleterious impact on the ability to drive) while operating a motor vehicle
- The individuals were aware of how to avoid hypoglycemia while operating a motor vehicle
- The individuals, despite being aware of the need for both hypoglycemia avoidance and how to do so, did not follow the recommended measures for hypoglycemia avoidance
- The individuals who did not follow recommended measures were truly reckless in ignoring the given measures and operated a motor vehicle despite having a sufficient level of awareness of the risks being undertaken

Conclusions

A motor vehicle collision resulting in injuries to oneself or others is always unfortunate and, in some cases, a tragedy. Minimizing risks for hypoglycemia in insulin-treated individuals who operate motor vehicles is of paramount importance. Current medical recommendations are insufficient, patient and provider awareness is poor and current legal mechanisms are ill equipped. We hope this article will generate discussion among health-care providers, people living with insulin-treated diabetes and legislators, with the common goal of improving driving safety and avoiding future harm.

Author Disclosures

IB is a physician involved with the care of one of the patients mentioned in this article and was called to testify at his trial; AK was called as an expert witness at the trial of one of the patients mentioned in this article; and GL was called as an expert witness at the trial of one of the patients mentioned in this article.

Author Contributions

All of the authors collaborated in writing this article.

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