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SYMPOSIUM

Driving with Diabetes: Precaution, Not Prohibition, Is the Proper Approach

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Abstract

Safety issues posed by driving with diabetes are primarily related to severe hypoglycemia, yet some public authorities rely on categorical restrictions on drivers with diabetes. This approach is misguided. Regulation of all drivers with diabetes, or all drivers using insulin, ignores the diversity of people with diabetes and fails to focus on the subpopulation posing the greatest risk. Advances in diabetes care technology and understanding of safety consequences of diabetes have expanded techniques available to limit risks of driving with diabetes. New means of insulin administration and blood glucose monitoring offer greater ease of anticipating and preventing hypoglycemia, and thus, limit driving risk for persons with diabetes. So too do less sophisticated steps taken by people with diabetes and the health care professionals they consult. These include adoption and endorsement of safety-sensitive behaviors, such as testing before a drive and periodic testing on longer trips. Overall, and in most individual cases, driving risks for persons with diabetes are less than those routinely tolerated by our society. Examples include freedom to drive in dangerous conditions and lax regulation of drivers in age and medical cohorts with elevated overall rates of driving mishaps. Data linking specific diabetes symptoms or features with driving risk are quite uncertain. Hence, there is much to recommend: a focus on technological advances, human precautions, and identifying individuals with diabetes with a specific history of driving difficulty. By contrast, available evidence does not support unfocused regulation of all or most drivers with diabetes.

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Introduction

America's romance with the automobile—as well as the nation's reliance on motor vehicles to transport goods and passengers across our vast republic—presents important yet manageable challenges for the large share of the driving population who have diabetes.

From time to time, an accident involving a driver with a disability—such as heart disease, stroke, or diabetes—or a driver who has an adverse reaction to medication taken for a disability sets off a call for strict, even draconian, regulation of driving for all those with the condition in question. Such proposed prohibitions invariably ignore facts and factors that favor adoption of better precautions, such as education, training, and medical evaluation, but that do not justify any sort of outright ban.

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Abbreviations: (ADA) American Diabetes Association, (CGM) continuous glucose monitoring

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A central reason for caution, and precaution, but not prohibition, is that people with diabetes and other disabilities are quite diverse. They share some challenges, but each individual experiences their condition, including their diabetes, in a unique way. Indeed, the variety of manifestations of diabetes defies any reasonable effort to impose one-size-fits-all regulatory approaches. This reality is consistent with federal law. The Americans with Disabilities Act of 1990, as amended, 42 U.S.C. §§ 12001, *et seq*., requires individualized consideration of "disability" in making employment decisions; decisions regarding access to public facilities, programs, and benefits; and decisions regarding access to "public accommodations," i.e., private establishments open to the public at large. The Rehabilitation Act of 1973, as amended, 29 U.S.C. §§ 701, *et seq*., requires the same of most state and local agencies and other recipients of federal financial assistance.

Contours of the Issue of Driving with Diabetes

Of nearly 19 million Americans diagnosed with diabetes[1] (in 2010, an estimated 18.8 million Americans were diagnosed with some form of diabetes, of whom approximately 215,000 were under the typical driving age of 18), most either have a driver's license or will seek one at some point in their lives[2] (no data exist to suggest that the incidence of drivers with diabetes differs significantly from that of licensed drivers overall, and "in 2009, 87 percent of the [U.S.] driving-age population (age 16 and over) ha[d] a [driver's] license"[2]). People with diabetes typically have their fitness to drive called into question in connection with the issue of impaired consciousness, usually related to the assumed possibility or the fact of hypoglycemia behind the wheel. For instance, licensing authorities may step in upon learning of a road accident involving a driver who experienced hypoglycemia. Physicians also may report to licensing authorities instances where their patients experience significant hypoglycemia while they are not driving. Indeed, in some states, such reporting is mandatory; in most states, however, physicians have discretion to decide when to make such reports.[3] People with diabetes—whether treated with insulin or not—to varying degrees also may experience "hyperglycemia," or very high blood glucose levels.[3] However, only in very extreme instances does this sort of state materially impair the ability to drive.[3] ("While significant hyperglycemia may impair cognitive, motor, and perceptual functioning, … there is only one report suggesting extreme hyperglycemia can impact driving safety …. Thus, efforts to equate hyperglycemia with driving impairment are currently not scientifically justified."). In addition, drivers with diabetes also may be evaluated in regard to long-term complications of elevated blood glucose levels, in particular, vision limitations related to retinopathy or cataracts or neuropathy of the feet that affect the ability to feel vehicle pedals. Still, most state regulation of driving with diabetes affects persons with type 1 or type 2 diabetes who take insulin.

In the minds of some public officials, employers, and citizens focused on road safety, a diagnosis of diabetes may overshadow important individual differences that largely determine the existence of any elevated risk related to driving with diabetes ("the American Diabetes Association asserts that it is unnecessary and costly to review case information for all drivers with diabetes, and that focus should instead be on those drivers who have experienced a hypoglycemic event that required third-party intervention, as they are deemed to be at greatest risk of crash involvement. The [American Association of Motor Vehicle Administrators] D[river] F[itness] W[orking] G[roup] believes it is important to evaluate and monitor all drivers with diabetes"[4]). Thus some state driver licensing officials favor subjecting all people with diabetes to special scrutiny, even in the absence of a triggering event involving hypoglycemia while driving.[4]

In states where evaluation of drivers with diabetes occurs following reporting of such an incident to licensing authorities, driving privileges may be lost for 3 to 6 months or more.[3] Yet the officials responsible for imposing sanctions, and later lifting them, may consist of administrative staff with little or no expertise in medicine—much less endocrinology. In some, but not all, states, consideration may be given to waivers for compelling mitigating circumstances involving facts indicating a hypoglycemic episode was a one-time event not likely to recur, such as a reaction due to a change in medication, or was not likely to affect driving, such as a reaction that occurred during sleep.[3]

The federal government imposes no specific restrictions for drivers with diabetes who manage their disease with diet, exercise, and/or oral medication.[5] However, the U.S. Department of Transportation restricts licensing of drivers in interstate commerce with insulin-treated diabetes to those who can satisfy the requirements of a strenuous

exemption program.[6] This exemption program is quite recent. Until its adoption, no driver with diabetes treated with insulin could obtain a commercial driver's license. Now over 2500 drivers with insulin-treated diabetes are safely transporting goods on U.S. roadways. Many private firms not operating in interstate commerce, e.g., local moving and bus companies, impose similar restrictions on employee drivers who are treated with insulin and, in some instances, even on those with diabetes who manage their condition without taking insulin.

Most adults with diabetes—whether they use insulin or not, and whether they are type 1 or type 2—drive automobiles their entire lives without a mishap caused by diabetes. Moreover, many of those who use insulin take various precautions, e.g., having readily available an easily ingested source of carbohydrate to compensate if they feel "low" and testing themselves regularly, especially before and during periods when they drive, in order to safely manage their blood glucose levels. This is particularly useful for people with diabetes with greater challenges than others, i.e., people with diabetes who have lesser "hypoglycemic awareness," the reduced inability to anticipate low blood-glucose conditions, or who experience dramatic swings in blood glucose levels.

Advances in medical science, in diabetes care technology, and in understanding the experience of diabetes have all joined to expand the toolbox available to drivers with diabetes to manage the disease in its various forms. It is clearer each year that effective proactive measures may be deployed to limit risks of driving with diabetes to levels well below those posed by—and accepted by—the public regarding many other groups of drivers with disabilities and/or imperfect driving records. These advances range from continuous glucose monitoring (CGM) systems to the expanding availability and use of blood glucose monitors and test strips, which allow drivers with diabetes to store testing equipment in every motor vehicle they use. Such progress leads inexorably away from prohibition—blanket bans and overreaction to minimal risks—and toward precaution, i.e., routines and protocols that allow individuals with diabetes to minimize their driving risks and the nation to benefit from their participation in the mainstream of American society.

American Diabetes Association's Statement on "Diabetes and Driving" and Relative Risks

The American Diabetes Association (ADA), the nation's foremost voluntary organization of diabetes scientists, clinicians, educators, and advocates, in early 2012 issued a comprehensive review of available evidence regarding "diabetes and driving," including recommendations for policies for public officials and best practices to be followed by people with diabetes and those who care for them.[3]

The ADA acknowledged two medical symptoms, in addition to "hypoglycemia indicating an impaired ability to drive," potentially affecting driver safety: "retinopathy or cataract formation impairing the vision needed to operate a motor vehicle, and neuropathy affecting the ability to feel foot pedals."[3] Critically, however, the ADA statement warns, "The incidence of these conditions is not sufficiently extensive to justify restriction of driving privileges for all drivers with diabetes."[3] The ADA Statement declares, "While significant hyperglycemia may impair cognitive, motor, and perceptual functioning … there is only one report suggesting extreme hyperglycemia can impact driving safety … . Thus efforts to equate hyperglycemia with driving impairment are currently not scientifically justified."[3] In short, there is no sound scientific basis for restricting licensure of drivers with diabetes due to concerns that their blood glucose testing results are high, absent independent evidence of driving difficulties or mishaps.

The ADA's reasoning is compelling and should be heeded by public officials as well as leaders of private organizations inclined to reproduce in workplaces and elsewhere restrictions imposed by government on commercial interstate driving.

First, the ADA explains that blanket bans and categorical prohibitions are grossly overinclusive: "Laws that require that all people with diabetes (or all people with insulin-treated diabetes) to be medically evaluated as a condition of licensure are ill advised because they combine people with diabetes into one group rather than identifying those drivers who may be at increased risk due to potential difficulties in avoiding hypoglycemia or the presence of [diabetes-related medical] complications [such as retinopathy or neuropathy]."[3]

Second, the ADA points out that such across-the-board inquiries and conditions on licensure of drivers with diabetes are wasteful and impractical. That is, "The logistics of registering and evaluating millions of people with diabetes who wish to drive presents an enormous administrative and fiscal burden to licensing agencies. States that require drivers to identify diabetes should limit the identification to reports of diabetes-related problems."[3]

Third, the ADA concludes that, not only are "driving mishaps related to diabetes … relatively infrequent for most drivers with diabetes," but, further, such mishaps "occur at a lower rate than mishaps of many other drivers with conditions that affect driving performance and that are tolerated by society."[3]

The best evidence suggests at most a 12–19% increased risk of driving mishaps for people with diabetes as a whole by comparison with the general population. For all persons with type 1 diabetes, some data show a risk of mishaps as much as two times greater than the general population; however, other studies show "no increased risk associated with insulin-treated diabetes."[3,7] By contrast, however, much higher risks are routinely tolerated in the United States without any restriction at all. For instance, in many states, 16-year-old males are permitted to drive even though, as a whole, they have "42 times more collisions than 35- to 45-year-old women."[3] Moreover, "if the heaviest car collides with the lightest car, the driver of the latter is 20 times more likely to be killed than the driver of the former. The most dangerous rural highways are 9.2 times more dangerous than the safest urban highways. Driving at 1:00 A.M. on Sunday is 142 times more dangerous than driving at 11:00 A.M."[3]

The ADA properly concludes, "If society tolerates these conditions, it would be unjustified to restrict the driving privileges of an entire class of individuals who are at much lower risk, such as drivers with diabetes."[3]

To be sure, there are some drivers with diabetes who have higher risks of driving mishaps, in light of their actual behavior and experience. Undertaking focused efforts to identify such individuals rather than restricting access to driving for all members, or large portions of the U.S. driving population with diabetes, is the far wiser course. Yet even such a refined approach would go much farther than our society has deemed necessary for many other groups posing risks at least as great if not far greater. These include persons with unstable coronary heart disease, drivers who are overweight and over age 50 years with a history of coronary heart disease, and drivers with a history of alcohol and/or substance abuse, just to name a few.

Protocols

According to the ADA, "The single most significant factor associated with driving collisions for drivers with diabetes appears to be a recent history of severe hypoglycemia, regardless of the type of diabetes or the treatment used."[3] Studies not only are mixed as to the linkage between insulin use and elevated crash risk, but are also mixed in regard to "awareness of hypoglycemia" and "increased incidence of motor vehicles crashes."[3] Thus, scientific and medical research data simply do not support a categorical approach to restricting driving by people with diabetes.

As a result, the ADA recommends a focus on "concrete evidence of actual risk" regarding specific individuals, rather than decisions solely based on a diabetes diagnosis; a person's type of diabetes; or categories of measures taken to manage diabetes. Specifically, the ADA favors "a short questionnaire … to find those drivers who may require further evaluation," which should ask "whether the driver has, within the past 12 months, lost consciousness due to hypoglycemia, experienced hypoglycemia that required intervention from another person to treat or that interfered with driving, or experienced hypoglycemia that developed without warning."[3]

Also recommended are queries on "loss of visual acuity or peripheral vision," "loss of feeling in the right foot," and "falling asleep during the day," as sleep apnea is "more common among people with type 2 diabetes than in the nondiabetic population."[3]

"Any positive answer should trigger an evaluation to determine whether restrictions on the license or mechanical modifications to the vehicle … are necessary to ensure public safety."[3] The evaluation should include "an assessment

[and recommendation] by the treating physician or another diabetes specialist" of the driver's medical history, and that individual should be "the best source of information concerning the driver's diabetes management and history."[3]

The ADA believes that such assessments by knowledgeable medical professionals, properly conducted, can address circumstances giving rise to a driver's experience of hypoglycemia and can avoid unnecessary restrictions on driving privileges. Thus the evaluating physician "should investigate the reasons for the hypoglycemia and … determine whether it is a function of the driver's treatment regimen or lifestyle" and whether "appropriate clinical interventions" can be implemented to prevent recurrence.[3]

The means at the disposal of health care professionals (and people with diabetes themselves) to investigate and assess the interaction of treatment regimen and lifestyle continue to evolve and improve. Many blood glucose meters are portable and can be as small as a pen or credit card, weighing just a few ounces. Virtually all blood glucose meters now store numerous readings and, in some instances, hundreds of readings stretching over periods of many weeks. Many meters have memories that can record values such as time and date of test results, insulin dosages, 1–4-week blood glucose averages, and even diet and exercise recordings. Often such data can be downloaded to a physician's and/or a diabetes educator's and/or a patient's computer, and be graphed and arrayed for better analysis. Some meters and CGM systems communicate wirelessly to insulin pumps and allow patients to view graphs of their most recent blood glucose and/or CGM readings over varying periods, such as 1, 6 and 24 h.

In short, "A history of hypoglycemia does not mean an individual cannot be safe driver. Rather … an appropriate evaluation should … determine the cause of the low blood glucose, the circumstances of the episode, whether it was an isolated incident, whether adjustment of the insulin regimen may mitigate the risk, and the likelihood of such an incident recurring. It is important that licensing decisions take into account contributory factors … and that licensing agencies do not adopt a 'one strike' approach to licensing people with diabetes."[3]

Some kinds of hypoglycemia, including several noted earlier, plainly do not justify license suspension. These include hypoglycemia experienced during sleep, when there is no risk of a driving mishap, or due to a significant change in medication, which is not likely to recur. Thus state driving restrictions should allow for exceptions or waivers when a driver can demonstrate that hypoglycemia "can be explained and addressed by the treating physician and is not likely to recur."[3]

In the event of a license suspension of a driver with diabetes, there should be an assumption and recognition that changes in treatment and management of diabetes can eliminate the need for restrictions. Thus, suspended drivers with diabetes usually should be eligible for reinstatement of driving privileges within 6 months "upon advice from the treating physician that the driver has made appropriate adjustments and is adhering to a regimen that has resulted in correction of the problems that led to the suspension."[3]

Precautions

Many steps to prevent driving difficulties are especially important for persons with a history of severe hypoglycemia. These include keeping testing equipment and supplies and a source of readily absorbed carbohydrate (such as sugar pills, small bottles of orange juice, or hard candy) in all vehicles used by the driver. They also include self-testing before getting behind the wheel and at regular intervals (such as every hour or so) in the course of a longer trip. Such measures also might include a longer stop when the driver's blood glucose level goes below a personal safety threshold during a trip, e.g., for 30–60 min to ingest carbohydrate and allow their blood glucose level to rise. And when contemplating a long drive, the driver should undertake "prophylactic carbohydrate consumption" if they are starting at a normal (or below normal) blood glucose level.[3]

The advent of new (and affordable) technology also promises better results and fewer mishaps for many people with diabetes, including drivers with a history of hypoglycemia. Such opportunities include CGM, which permits the driver to keep closer track of their blood glucose levels while driving (or whenever it is in use). They also include new blood

glucose meter functions, allowing such devices to act as an alarm clock with multiple settings or to come equipped with a modem or other means to communicate with a computer or smart phone. Research data also suggest that a renewed emphasis on fundamentals of diabetes care, including better patient–physician communication, would help. For example, a "large international study" cited by the ADA indicates that "nearly half of drivers with type 1 diabetes and three-quarters of those with type 2 diabetes had never discussed driving guidelines with their physician."[3] Another study from Scotland showed a further potential shortfall in physician sensitivity to the challenges presented by drivers with diabetes taking precautions to avoid hypoglycemia. That is, only 62% of health care professionals surveyed in the study said "insulin-treated drivers should test their blood glucose before driving."[3]

Conclusion

Drivers with diabetes are as diverse as the population of people with diabetes. Most such individuals have safe driving records and pose no significant risk to themselves, their passengers, or members of the public. Moreover, progress in blood glucose testing and diabetes management technology justify confidence that the chief challenge facing some drivers with diabetes—hypoglycemia—is becoming easier to anticipate and prevent. Data show more can be done by health care professionals to encourage safe driving behavior. They also indicate that efforts to address potential dangers posed by a small numbers of drivers with diabetes should focus on identifying and assisting such individuals. Public officials and employers should encourage education about diabetes and avoid categorical prohibitions.

Disclosures:

The author is a full-time joint employee of the AARP Foundation, a 501(c)(3) organization, and AARP, a 501(c)(4) organization. The author is an unpaid volunteer board, committee, and subcommittee member for the ADA, and an unpaid volunteer board member and officer of National Employment Lawyers Association. The ADA is a 501(c)(3) organization and the National Employment Lawyers Association is a 501(c)(4) organization.

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References:

1. Centers for Disease Control and Prevention. National diabetes fact sheet, 2011. *www.cdc.gov/diabetes/pubs/pdf/ndfs_2011.pdf*.
2. U.S. Department of Transportation; Federal Highway Administration. Our nation's highways: 2011, Publication. *http://www.fhwa.dot.gov/policyinformation/pubs/hf/pl11028/*.
3. American Diabetes Association. Diabetes and driving. Diabetes Care. 2012;35 Suppl 1:S81–6.
4. American Association of Motor Vehicle Administrators. Driver fitness medical guidelines. *http://www.aamva.org/uploadedFiles/MainSite/Content/SolutionsBestPractices/BestPracticesModelLegislation(1)/DriverFitnessMedicalGuidelines_092009.pdf*.
5. 49 C.F.R. § 391.41(b)(3).
6. U.S. Department of Transportation; Federal Motor Carrier Safety Administration. Driver exemption programs. *http://www.fmcsa.dot.gov/rules-regulations/topics/medical/exemptions.htm*.
7. ECRI Meeting, Diabetes and Commercial Motor Vehicle Safety (Federal Motor Carrier Safety Administration), Plymouth, PA, June 2011 Update.