# Driving and Diabetes

Diabetes may affect driving performance due to chronic complications, which may impair sensory or motor function (diabetic eye disease (retinopathy) nerve damage (neuropathy), kidney disease (nephropathy), cardiovascular disease (CVD), peripheral vascular disease and stroke) and because of incidents of hypoglycemia.

As the presence and extent of these factors vary from person to person, the Canadian Diabetes Association maintains the following position on Driving and Licensing:

People with diabetes have the right to be assessed for a license to drive a motor vehicle on an individual basis in accordance with Canadian Diabetes Association guidelines for private and commercial driving.

In assessing the suitability of people with diabetes to drive, medical evaluations are needed to document any complications and to assess blood glucose (BG) control, including the frequency and severity of any hypoglycemic incidents.

## Hypoglycemia

Hypoglycemia means low blood glucose levels. Hypoglycemia can adversely affect driving performance and may contribute to some of the accidents that involve people with diabetes.

The risk of severe hypoglycemia is greatest in people with type 1 diabetes who are using intensive insulin therapy (IIT), especially those with a history of severe hypoglycemia and hypoglycemia unawareness.

The risk is lower in people with type 2 diabetes because they are seldom using intensive insulin regimens, infrequently experience recurrent hypoglycemia and have less risk of developing hypoglycemia unawareness than people with type 1 diabetes.

### Definitions:

Mild Hypoglycemia: When the body signals a blood glucose drop and the individual can self-correct with oral carbohydrates.

Severe Hypoglycemia: Hypoglycemia that requires outside intervention to abort or that produces a loss of consciousness.

Hypoglycemia Unawareness: When the individual no longer recognizes the body's usual signals of low blood glucose (e.g. sweating, increased pulse, rapid breathing, trembling) so the first signs of hypoglycemia will often be confusion or loss of consciousness.

## The following 2008 Guidelines for Diabetes and Private and Commercial Driving provide general recommendations for diabetes and driving as well as specific recommendations for private and commercial drivers:

### All drivers with diabetes

- Fitness of persons with diabetes to drive must be assessed on a case-by-case basis.
- Persons with diabetes should take an active role in assessing their ability to drive by maintaining medical records, accurate BG monitoring logs and a well-calibrated BG meter.
- Drivers should take an active role in obtaining current information concerning avoidance, recognition and appropriate therapeutic intervention for hypoglycemia. Their long term goal should be to maintain optimal diabetes control without the development of hypoglycemia unawareness.
- Drivers should measure their BG level immediately before and at least every 4 hours (more often in cases of hypoglycemia unawareness) during long drives. They should always carry BG monitoring equipment and supplies of rapidly absorbable carbohydrate within easy reach (e.g. attached to the visor).
- Persons should not drive when their BG level is <4.0 mmol/L. They should not begin to drive without prophylactic carbohydrate treatment when their BG level is in the 4.0 to 5.0 mmol/L range.

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- Drivers should stop and treat themselves as soon as hypoglycemia and/or impaired driving is suspected. Persons should not drive until at least 45 to 60 minutes after effective treatment of mild to moderate hypoglycemia (BG level 2.5 to 4.0 mmol/L).
- Drivers with a history of severe hypoglycemia during the past year, hypoglycemia unawareness, recurrent previous hypoglycemic reactions, a recent marked reduction in HbA1c or HbA1c within the normal range should be informed that they are at high risk of experiencing severe hypoglycemia when driving. They should make efforts to minimize the risk, including by measuring BG levels before and periodically during every driving exposure.

### Private and commercial drivers managing type 2 diabetes with diet or oral antihyperglycemic agents

- The annual medical examination of a driver with diabetes should always include an assessment of the severity of any retinopathy, nephropathy and CVD, and a decision on whether or not the severity of any of these complications could increase the risk of an accident.
- Persons with diabetes who are well controlled by diet alone or by a combination of diet and oral antihyperglycemic medications are at minimal risk of a severe hypoglycemic reaction and can usually drive all types of motor vehicles with relative safety provided they remain under regular medical supervision (minimum of 2 clinic visits during the last year).

### Insulin-treated private drivers

- Persons who require insulin to control BG can drive private vehicles if they are under regular medical supervision (minimum of 2 clinic visits during the last year).

### Diabetes and Commercial Driving

Truck drivers with diabetes may be at an increased risk for highway accidents compared to private drivers because, on average, they spend a greater percentage of their time behind the wheel and travel longer distances, and because their job description may require intermittent heavy labor and shift work.

### Initial application for a commercial license

- Questionnaire to be completed by the person with diabetes, with emphasis on the risk (work schedule, insulin regimen, symptoms of hypoglycemia) and occurrence of hypoglycemia (frequency of mild and severe hypoglycemia in last 6 months).
- An internist or endocrinologist, or a family physician trained in diabetes care, must perform an initial complete assessment.
- The applicant must supply evidence of attendance at a diabetes education program.
- The applicant should present medical records for the preceding 24 months and a HbA1c measurement within the past 3 months.
- The applicant should have a full eye examination performed by an ophthalmologist or optometrist.
- The applicant must have a log of BG measurements performed at least twice daily during the last 6 months or since the diagnosis of diabetes if onset occurred within the last 6 months. A downloaded log from a memory equipped BG meter is preferred.

### Exclusion criteria for maintenance of a commercial license

- Hypoglycemia within the previous 6 months of sufficient severity to require corrective intervention by an outsider or producing loss of consciousness even if spontaneous recovery occurred.
- Hypoglycemia appearing in the absence of warning symptoms (hypoglycemia unawareness) unless there is documentation of recovery of warning symptoms at a later date.
- Uncontrolled diabetes:
  (a) HbA1c >12%; or
  (b) >10% of BG levels <4.0 mmol/L.
- A significant change in insulin regimen (i.e. a change in the type of insulin, number of insulin injections or the introduction of insulin). In these circumstances, persons should be assessed frequently by daily or weekly telephone consults or visits with respect to the occurrence of any hypoglycemic episodes, and be permitted to drive provided the variation in BG levels indicates minimal risk.
- Visual impairment. The minimum standard for visual acuity is 20/40 in the better seeing eye (20/50 in Quebec).
- High-risk proliferative retinopathy.
- Peripheral neuropathy or CVD with the potential to affect driving.
- Inadequate record of self-monitoring of blood glucose (SMBG) (i.e. unreliable or absent capillary blood glucose measurements).
- Inadequate knowledge of the causes, symptoms and treatment of hypoglycemic reactions.

### Annual medical recertification of commercial drivers using insulin

All insulin-treated commercial drivers using insulin are required to have an annual medical examination and re-certification. The following should be obtained:

1. medical records for the last 12 months; questionnaire to be completed by the person with diabetes (see recommendation 11);
2. complete physical examination;
3. complete eye examination by an ophthalmologist or optometrist;
4. 1 HbA1c value during the last 3 to 4 months; and
5. log of blood BG measurements during the last 6 months from a memory-equipped BG meter.

### Prevention of hypoglycemia for insulin-treated commercial drivers

- The supplies required to be carried at all times while driving include:
  (a) SMBG equipment; and
  (b) A source of rapidly absorbable carbohydrate within easy reach in the vehicle.
- BG level must be tested within 1 hour before driving and approximately every 4 hours while driving. Driving should be stopped if the BG level falls below 6.0 mmol/L and not resumed until the BG level has risen to >6.0 mmol/L after food ingestion.