SPECIAL REPORT

# Epilepsy and Driving

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## Introduction

*(Frederick Andermann)*

The risk of losing consciousness while driving a motor vehicle and the need to drive a car in today's society are opposing forces at play in determining the fitness and ability of people with epilepsy to drive. We must remember that until some 20 years ago, in Canada and in many other countries people with epilepsy were not allowed to drive. A movement by Canadian neurologists to establish guidelines which would enable people with controlled or remitted epilepsy to drive was headed by the late Dr. Francis McNaughton and by Dr. Guy Courtois. At present, legislation allowing people with controlled epilepsy to drive exists in every province or state of Canada and the United States and in many other countries. The International League Against Epilepsy, the professional society concerned with research, teaching and patient care, has a standing committee devoted to the problems of driving a motor vehicle. The Canadian League Against Epilepsy, the national branch of the International League, has carried the issues raised by driving and by the legislation governing it on the agenda of its annual meetings for the past several years. A committee headed by Dr. Guy Rémillard has compared pertinent laws and rules in different provinces with a view to establishing universally acceptable criteria and guidelines.

The following sections review data available from studies reported in the medical literature, attitudes of epileptic patients in Montreal, legislation in Quebec and the other Canadian provinces as well as the United States, Britain and France, and the medico-legal implications of legislation obliging physicians in several Canadian provinces to report patients with epilepsy to the provincial authorities.

## Review of Literature

*(Guy M. Rémillard and Benjamin G. Zifkin)*

Each of us would be frightened by the prospect of losing consciousness at the wheel, but this is an ever-present possibility for many of our patients. The epileptic driver raises issues of personal and public safety, public policy, individual liberty, and legal liability.

Even with the strictest standards and regular medical follow-up, traffic accidents may still be caused by illness, but studies of accidents in the general population are usually inadequate to answer basic questions about the medically-impaired driver. They often evaluate the incidence of accidents in drivers with organic deficits or some reported chronic illness. Ideal epidemiologic studies of epilepsy and driving would have to be performed over large regions with uniform licensing laws. Such studies would require that the state of health of all applicants for driving permits be determined, and that medical evaluations be performed on all accident victims, including autopsies in fatal cases. Their driving experience would also require evaluation.[1]

Raffle's study of London bus drivers meets all these criteria.[2] He studied all accidents, from the most trivial to the fatal, caused by acute illness in London bus drivers. From 1953 to 1977, 127 incidents linked to sudden illness were ascertained over an estimated driving experience of 7,410,400,000 miles. Loss of consciousness occurred in 59 cases (vasovagal attacks 21 cases, epilepsy 24, undetermined cause 14) leading to damage or injury in 65%. Other vascular events occurred in 51 drivers (myocardial ischemia 34 cases, "hypertension" 5, stroke 4, transient ischemic attack 6, rupture of the aorta 2) and led to damage or injury in 25% of cases. This lower rate seems related to a possibly less sudden loss of motor ability in these cases. Hypoglycemia, vertigo, and other causes were found in 17 drivers. Acute illness led to one accident per 64,000,000 miles in these professional drivers. Thus, even under conditions of thorough and regular medical checks, accidents associated with acute illness, although rare, do continue to occur.

A study of 1605 accidents with only minor damage or injury after which the driver could be questioned, revealed that epilepsy was the commonest cause. A seizure was responsible for 38%, "blackout" 23%, insulin-treated diabetes 17%, cardiac disease 10%, and cerebrovascular disease 8%.[3]

In Sweden, from 1959 to 1963, 41 of 44,255 accidents (0.093%) were due to sudden attacks of all kinds. Epilepsy and myocardial infarction were the commonest causes. Eight were due to sudden death at the wheel. No other individuals were killed.[1] Several studies of accident rates in identified populations with specific, declared conditions such as epilepsy and

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diabetes mellitus, have yielded similar results. Accident rates were approximately twice those of the general population, but the illness studied was responsible for a total of only 0.1-0.2% of accidents.[4-6] Reviewers of this subject generally conclude that epilepsy is responsible for 0.1% to 0.03% of accidents, compared to sudden death which is responsible for about 0.06% of all accidents.[7] It is often not clearly established that a particular accident caused by an epileptic driver is due to a seizure. Gastaut and Zifkin[8] report that seizures occurring while driving are very likely to lead to accidents unless the circumstances are fortunate, and that complex partial seizures without aura are especially dangerous.

It has been proposed that although epilepsy is the most common cause of such accidents, these are less likely to cause serious damage or injury than accidents due to other sudden incapacity. A study conducted between 1959 and 1968 showed that accidents related to epilepsy produced more minor injuries, were less likely to involve another vehicle, and occurred in less densely populated areas than accidents due to other medical causes.[9]

In 1977, the survivors of 2130 British accidents were interviewed. Fatigue, intercurrent illness, stress, and medication effects were considered to be predisposing factors in certain cases.[2] Other studies[10] suggest that attitude, personality, and a sense of responsibility are more important than stable physical disabilities or illness in determining traffic safety; and that epileptic women drivers have fewer accidents than non-epileptic men.[11-12] Considerations such as the condition of the vehicle and the road, the density of traffic, and the kilometres driven must also be weighed. In the United States, the Commission for the Control of Epilepsy and its Consequences has estimated that road accident deaths could be reduced from 48,000 yearly to 20,000 with a strictly respected speed limit of 55 miles/hour (90km/hour), effective enforcement of laws against drunken driving, universal seat belt use, and the use of protective helmets. The 1975 Vienna conference[13] on the epidemiology of road traffic accidents concluded that for private automobiles, the health of the driver is not an important risk factor for serious accidents, which largely involve young drivers in good health. Indeed, the accident rate for drivers aged 20-29, when health is optimal, is 2.5 times that of drivers aged 50-59 years.

Although the contribution of epileptic drivers to the total number of accidents is small, it is clear from several sources that their accident rate is higher. Even if the consequences of these are less severe, it seems justifiable to take the least discriminatory and most effective measures possible to protect the patient and his surroundings. The variability of epilepsy adds to the complexity of this problem. Seizure types and seizure frequency vary from one individual to another. As a general rule,[14] if seizures do not recur in the first three months after treatment has begun, 85% of patients will not have a second seizure within the next 12 months. Of these seizure-free patients, 75% will not have second attack within 3 years. In the remaining patients with recurring seizures, treatment may not have been optimal, and the number of subjects with recurrences might have been reduced with more rational therapy.

Most authors believe that the results of studies do not justify mandatory physician reporting of epileptic drivers to licensing authorities, and that such a policy could increase the number of undiagnosed or poorly-followed patients, and therefore might increase accidents. Thus, many physicians do not obey such regulations. However, when accidents occur they could be prosecuted for failing to do so, especially if damage or injury is severe.

In a personal (GMR) study of 183 consecutive outpatients with epilepsy, half were driving and 51% of these had not reported their epilepsy. To the question of whether physicians should comply with the mandatory reporting regulation, many answered affirmatively: "It's normal to require it...", "It's better that way", "In a way it's good - there must be some kind of control". Others answered: "I wouldn't be able to work", "It depends on the case", "Are you going to report me?", "In a way yes, and in a way no", "Yes, but not in my case", "No for those who are well-controlled", "I don't drive when I don't feel well", "I don't drive very much", "It depends on one's work", "I'm careful", "I only drive in my neighbourhood", "I've never had a seizure while I was driving", "It should be confidential", "Yes, but only for bad cases", "There are drivers who are worse than epileptics".

Many responses were subjective, unclear, or evasive. The fact remains that half of these patients did not declare their epilepsy despite their legal obligation to do so, just as many do not declare it on employment applications: work and the ability to drive are part of all social integration. 61% of males and 34% of females who were driving had not reported it. Men were more reticent probably because of the importance of the car in preserving their image and their employability.

Masland[12] notes that mandatory reporting by physicians emerged in part as a result of the passivity or even negligence of physicians in discharging their obligation to patients to inform them of their legal responsibilities. Moreover, physicians may be ignorant of the law or may interpret it differently. Patients have also been known to claim that their physician has given them permission to drive, although this is legally not possible.[15-16] In the United States, the Commission for the Control of Epilepsy and its Consequences suggested that physicians be required to inform patients in writing of each licensee's obligation to notify the relevant authority. A commission created by Epilepsy International noted in 1982 that mandatory reporting was generally unacceptable.[17] It conceded that exceptional cases of danger to the public might however require this approach. The British Handbook of Medical Ethics suggests that confidentiality be respected except in cases of clear danger where the patient is recalcitrant despite all efforts to obtain his cooperation.[18] The annual report of the Canadian Medical Protective Association for 1985 notes: "All members who think they should report one of their patients to the appropriate authority or who in borderline cases, consider reporting but decide it unnecessary, are reminded about the importance of careful documentation of history, physical findings, or any other facts leading to the decision".[19]

In conclusion, although the ideal epidemiologic study has yet to be performed, it seems clear that acute illness is a relatively uncommon cause of serious private automobile accidents in the general population. Even if accidents related to epilepsy less often involve another vehicle or cause serious injury, epilepsy is nevertheless the most common cause of accidents due to acute incapacity at the wheel. The patient's understandable lack of


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objectivity may require the physician to lay particular emphasis on the importance of self-reporting, explaining the more positive side of this important step. There is a preponderance of informed opinion in the literature that mandatory reporting of the epileptic driver by physicians to licensing authorities is inadvisable and possibly counterproductive. A fundamental question, however, remains unanswered: it is still unknown whether mandatory reporting of epileptic drivers by their physicians diminishes the accident rate among drivers with epilepsy.

## Medicolegal and Ethical Aspects

*(Antonio G. Trottier and Patrice Drouin)*

Shortly after motor vehicles were invented, the possibility of an increased frequency of car accidents in epileptic patients was suspected. In 1906, Thalwitzer published a report concerning two victims of car accidents which were unexplained, except that the drivers had epilepsy.[20] There have been many published epidemiological studies of the (causal ?) relationship between epilepsy and an increased incidence of motor vehicle accidents. This has been critically reviewed in the previous section.

Because of this presumed or established relationship between epilepsy and an increased frequency of motor vehicle accidents, laws and regulations concerning driving and epilepsy have been promulgated by government agencies in most countries, provinces or states.

We will compare the laws and regulations of the Province of Quebec with those of other Canadian provinces, the United States, France and Great Britain. We will then discuss the dilemma facing a physician obliged by law to declare his patient unfit to drive.

### Quebec

In the Province of Quebec, laws are passed by the National Assembly, but the agency responsible for the Highway Safety Code is the Regie de l'Assurance-Automobile (RAAQ, the Public Automobile Insurance Board). It includes both the Registry of Motor Vehicles as in other provinces, and the equivalent of a Public Automobile Insurance Corporation not yet established in other Canadian provinces.

The decree regulating the granting of driver's licenses in Quebec was prepared following the recommendation of several medical specialist associations. The Association of Neurologists had formed an ad hoc committee whose recommendations were then approved in a plenary meeting of the association.

The power to issue driver's licenses rests with the director of the "Division de la Normalisation" (Division of Standards). He is assisted in this task by a Medical Director who is counselled by an advisory committee composed of different medical specialists including a neurologist. This committee is called upon to assess contested cases, those not clearly provided by the decree, or persons whose health problems are difficult to classify.

An updated version of the Highway Safety Code was published in July 1984.[21] The text of the law includes the following as section 163, paragraph 8: "The Regie may, by regulation, prescribe a medical and optometric guide for the issuance of driver's licenses or learner licenses".

Section 523 states: "Notwithstanding section 9 of the Charter of human rights and freedom (Chapter C-12), a physician must report to the Regie the name and address of any patient sixteen years of age or older whom he considers unable on medical grounds to drive a road vehicle. The physician shall make his decision taking into account the guidelines outlined in paragraph 8 of section 163. The obligation provided for in the first paragraph also applies to an optometrist in the exercise of his profession".

There are punitive measures established in cases of noncompliance. It is stipulated in section 161: "Every person required to make a report, give a notice or furnish information to the Regie who refuses or neglects to do so within the prescribed time is guilty of an offense and liable, in addition to costs, to a fine of $100 to $200".

Section 524 adds: "The Regie may, in respect of a person who is the subject of a report contemplated in section 523:

a) suspend or refuse to issue or to renew the person's driver's license or learner's license, or change its condition or

b) require the person to undergo another medical or optometrical examination by such physician or optometrist as the Regie may indicate and produce the report thereof to the Regie without delay".

Section 525 provides protection against legal action for the person, physician or optometrist, who has complied with the contents of section 523, and has made the obligatory declaration that a patient is considered unfit to drive a motor vehicle on medical grounds: "No action in damages may be brought against a physician or an optometrist, for having complied with section 523".

Finally, in section 526, the confidentiality of this obligatory report is protected: "The report contemplated in section 523 is reserved for the information of the Regie, the Comité consultatif médical et optométrique (advisory board) or the officer designated by the Regie to represent it on that committee, and must not be made public; in no case may it be used as evidence in any suit or judicial proceedings, except in the application of section 524".

In order to assist physicians and optometrists in deciding who is unfit to drive on medical grounds, the Régie de l'Assurance Automobile du Québec has established a medical and optometric guide upon the advice of its consultant physicians and that of several different specialist physician groups. The section on neurological impairments which was modified and updated in 1984[22] includes the following:

31. Neurological problems resulting in disturbances of the cognitive functions, of the motor functions, of the equilibrium or coordination, are not compatible with the obtention of a license, unless it can be proven that the person is capable of safely driving a road vehicle corresponding to the class of license applied for.

32. Epilepsy is not compatible with the obtention of a license to drive a bus, minibus, taxi, light vehicle, emergency vehicle or heavy vehicle.

33. Epilepsy, if the seizure occurred less than twelve months previously, is not compatible with the obtention of a license to drive a private vehicle, unless the person:

(1) has suffered seizures only while sleeping or on waking, and provided the first seizure occurred more than twelve months previously (and subsequent attacks occur only at such times);

(2) has suffered only focal epileptic seizures involving a single limb, with no impairment or loss of consciousness, and provided the first focal seizure occurred more than twelve months previously; (Temporal lobe seizure do not fall within this group of exceptions as there is nearly always some alteration of consciousness during these attacks.)



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(3) has suffered one or several convulsive seizures after treatment was discontinued or modified on a physician's recommendation, but had no seizure for at least three months after treatment was reinstated; or;

(4) has suffered one or several convulsive seizures due to exceptional circumstances or an intercurrent disease whose cause is clearly identified (neighbourhood seizures), and which are not likely to recur in a person habitually well controlled, taking the prescribed medication faithfully and provided the last seizure occurred more than three months previously. (These cases are exceptional and are always considered individually. They are most often due to metabolic encephalopathy, the acute phase of stroke, central nervous system infection, drug reaction, and the acute phase of head injury.)

34. Convulsions due to (withdrawal from) toxic substances, alcohol or medication, are not compatible with the obtention of a license, unless the last convulsive seizure occurred more than six months previously. (After this period has elapsed, the permit may be restored on condition that the applicant can demonstrate that he no longer abuses drugs or alcohol.)

35. The license issued to a person who had only one convulsive seizure and whose electroencephalogram, showed no clear evidence of epileptogenic activity must contain the rider that this person must undergo periodical medical evaluations, the frequency of which is to be determined by the Regie.

A first isolated convulsion does not establish a firm diagnosis of epilepsy. If the EEG does not show epileptogenic activity, the patient can still drive, but he must undergo periodic evaluation. However it is implied that the physician must still report this first convulsion, emphasizing the negative result of the EEG. (If no pathology can be shown after an investigation which the treating physician judges to be satisfactory, and including at least an EEG, the permit is not suspended even if it is for heavy vehicles or passenger-carrying vehicles.)

For the other cases, only "epilepsy" is mentioned. The diagnosis is to be made by the physician, according to criteria not mentioned in the medical guide. We can assume that the physician is expected to base his decision on criteria generally accepted by the medical community. Note that no distinction is made between convulsion and absence - the terms used are "epilepsy" and "seizure".

Thus, the patient with a first "bona fide" epileptic seizure cannot drive for 12 months. The same applies to an epileptic patient who has had recurrent seizures. He must provide the Regie with an annual medical report certifying that he has been seizure-free for the preceding 12 months. He or she will not be permitted to drive heavy vehicles exceeding a fully loaded weight of 5500 kg or lighter commercial passenger vehicles, public service vehicles, nor emergency vehicles such as ambulances or fire engines.

### "Cure" or Remission of Epilepsy

Patients treated for epilepsy routinely maintain that they are cured and request permits to drive heavy vehicles, commercial vehicles, or public service vehicles. These applicants have not had seizures for several years and are no longer taking antiepileptic drugs. Some have been treated surgically.

It is always difficult, except in cases of benign epilepsy of childhood, to accept a period of absence of seizures as evidence of definitive "cure", or remission, however long this period may be. Even neurosurgeons specialized in the surgical treatment of epilepsy hesitate to claim complete and definitive cure of their patients.

The RAAQ considers each of these cases individually and may issue such permits if it is convinced that cure is complete and definitive and that such an applicant does not constitute any greater risk of accident than a presumably healthy member of the general population.

### Other Provinces

In the other Canadian provinces, only the laws of New Brunswick and Newfoundland do not mention an obligation or invitation to declare and report patients unable to drive on medical grounds.

In Alberta,[23] Nova Scotia,[24] and Saskatchewan,[25] a physician may report such patients to the Provincial Registrar of Motor Vehicles. Furthermore, specific legal protection is provided for the physicial who has made such a report in good faith. In Manitoba,[26-27] Ontario[28] and Prince Edward Island,[29] there is a legal obligation to report patients considered unable to drive on medical grounds. In addition, the possibility of a jail sentence of up to three months is provided by law for failure to report such cases.

In British Columbia, the statutes impose the obligation for the physician to report to the Superintendent of Motor Vehicles a patient who continues to drive a motor vehicle even after he had been formally informed of the danger of his driving.[30] The statutes do not mention any legal protection for the physician reporting such patients. However, it is probable that a physician acting in good faith would be protected under Common Law.

To determine whether patients are able to drive, physicians are referred to the 1981 revised edition of "To Drive or Not to Drive?", a guide published by the Canadian Medical Association (CMA).[31] Such is the case in Alberta, Manitoba, Nova Scotia, New Brunswick, Newfoundland, and Saskatchewan.

In Ontario, a physician must report a patient having an established medical history of loss of consciousness due to a chronic or recurrent condition. The consulting physicians at the Ministry of Transport then use the CMA Guide to establish a final ruling.

In British Columbia, a guide to determining fitness to drive was published in 1982 under the auspices of the British Columbia Medical Association and distributed by the Ministry of Transport.[32]

### The United States of America

The information on laws and regulations in the different states is derived from a 1978 article by Masland.[12]

We have been unsuccessful in our effort to obtain updated information on the situation in the United States so the information presented here should be interpreted cautiously and the Department of Motor Vehicles of each state must be consulted to obtain valid information.

Masland reports that there is a legal obligation for physicians to report the names of patients suffering from recurrent loss of consciousness to the department of motor vehicles of each of the following 10 states: California, Connecticut, Delaware, Illinois, Indiana, Montana, Nevada, New Jersey, New Mexico and Oregon. In certain states, epilepsy is mentioned specifically.


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### France

In France, regulations pertaining to driving and epilepsy have been reviewed by Beaussart:[33]

Since May 1981, confirmed epilepsy is a formal bar to driving any vehicle. However, the final decision to grant a driving license for light weight vehicles (group 1) takes into account: 1. the advice of a specialist who will judge the "reality" of epilepsy, its clinical form, the treatment followed and the therapeutic results. 2. the "medical elements" confirming that the patient is under regular medical supervision, provided by the patient himself (that is, a written confirmation that he is followed regularly by a physician). However such a patient may not drive heavy vehicles (group 2). In summary, the initiative and the responsibility to provide medical information are left to the driver or applicant for a driving license, and the final decision lies with a medical committee which judges each case on its own merits. Thus the treating physician is not directly involved in this responsibility.

### Great Britain

In Great Britain, the law is similar to that in France regarding the declaration of certain medical conditions.

This is clearly described by Harvey and Hopkins:[34] Prominently printed on each British driving license is the sentence: "You are required by law to inform DVLC (Drivers and Vehicle Licensing Center) Swansea, at once if you have any disability which is or may become likely to affect your fitness as a driver, unless you do not expect it to last for more than three months". The onus is therefore on the license holder who has experienced a seizure to report it. Doctors may be presumed to have a duty to inform their patients of the diagnosis of epilepsy, or at least that the patient has a relevant disability and to remind patients of the need to inform the DVLC, and their insurance company. When the DVLC is notified, it will usually obtain information from the patients's family doctor, and sometimes a report from hospital doctors as well, before deciding on that patient's eligibility to hold a driving license. A small panel of neurologists and neurosurgeons advises the DVLC about general principles, and members of this panel are consulted about specific doubtful cases. The DVLC may recommend revocation of the license, or grant a license for a limited period. A license to drive a private car may be allowed, but not a heavy goods or public service vehicle. If the patient is not satisfied, he has the right to appeal to a magistrate's court".

The 2-year principle applies for epilepsy in Great Britain, that is 2 years free of seizures, and the 3 year principle for seizures continuing to occur only during sleep.[35]

## Ethical Questions

*(Antonio G. Trottier and Patrice Drouin)*

The conflict between the obligation of physicians to report patients who are unable to drive and the strong desire of patients to drive raises ethical and legal considerations. Indeed, the physician may easily be perceived by the patient as a government officer, an agent of the state intruding into his personal life in order to extract information and to deprive him of the confidentiality of his medical record. Carried to an extreme, the physician could be perceived as a government spy. The privileged doctor-patient relationship appears to be breached.

This may lead to a conflict between patient and physician: the patient may withhold information needed for proper medical management, or he may simply avoid consulting a physician and thus go untreated. This could lead to an increased number of untreated epileptic drivers and increased risks of accidents on the road. This would, in turn, defeat the primary purpose of the law, which is to maintain the security of the people on public highways.

### Legal Considerations

On the other hand, if a physician, wishing to preserve the privileged relationship of confidence with his patient, does not comply with the law, he exposes himself to criminal prosecution, and possibly to a civil lawsuit from third parties (for instance, persons injured by the epileptic patient).

Such a lawsuit in the United States is reported by Arrow and Fabing.[36] Closer to home, the Canadian Medical Protective Association in its 84th Annual Report, in 1985, warns its members against such a possibility: "An alleged failure in reporting to the appropriate authorities about a patient judged medically unfit to operate a motor vehicle has resulted recently in legal difficulty for a number of members".[37]

A physician may then ask himself: "Would a court of law consider that I abide by the law if I inform my patient of the laws and regulations concerning epilepsy and driving, and of his obligation to declare his condition, but do not report him to the authorities?"

## Comment and Overview

*(Frederick Andermann)*

Current guidelines and legislation represent considerable progress compared to the previous blanket interdiction of driving for epileptics. The trend has been to shortening of the minimal seizure free interval which is now set at one year in most areas. Perhaps six months would be sufficient; knowledge of the previous seizure frequency and of the type of epileptic process might facilitate future decisions. Patients who have a seizure every year or two often have generalized epilepsy. The use of valproic acid has greatly improved treatment of this form of epilepsy. Hopefully many of the patients who have had only occasional recurrence of major attacks and minor manifestations can now be converted to full control.

Minor epileptic manifestations pose some specific problems. Myoclonus is usually not associated with impairment of awareness and should not prevent a patient from driving. The myoclonic jerks of myoclonic status are more prolonged, with what amounts to a brief tonic phase and are incompatible with driving safely.

Absence has borderlands, with brief bursts of spike and wave where impairment may be noted only on continuous performance tasks. Where clinically noticeable absence occurs driving is unsafe. Some patients improve to the point where only exceptional single absence attacks occur. A decision in such a case may well depend on the circumstances in which some of these very rare events happen. The confusional periods of absence status have to be specifically asked for and represent a formal contraindication to driving.

The patient may in the best of faith not be aware of an interruption or a reduction in the level of consciousness. This is



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commonly the case in patients who have temporal lobe attacks. A reliable witness is absolutely essential under these circumstances and it is hardly possible to make a reasonable decision otherwise. On the other hand there are patients who consistently have temporal lobe auras without any reduction of awareness. One sees this particularly in patients who have had successful surgical treatment for their temporal lobe epilepsy, and occasionally in other patients with temporal lobe seizure as well. Such patients with residual auras, or with auras alone, certainly should be able to drive, especially if their perception is confirmed by observations made by family members. Similarly minor focal motor, somatosensory or other partial simple attacks are not a contraindication to driving.

Patients often, and probably with justification, stress the importance of the warning of an impending attack. It would be important to determine whether people who have a warning every time and who are able to stop their car are able to drive safely, as they often maintain. A habitual warning or aura may often be modified or abolished by changes in medication or surgical treatment. At the moment, patients who have a habitual aura but who then are unresponsive are not able to drive legally. Despite clinical impressions to the contrary, in Quebec at least, Remillard and Zifkin have shown that more than half the men with epilepsy drive without informing the department of transport of their condition.

It would seem reasonable to discuss driving with all epileptic patients and not merely with those who bring it up themselves or who need their annual form completed so that they may obtain a license. Perhaps the most effective means of working through these problems is to draw the family into the decision making process, by asking them to come with the patient for an interview; they can then reach a decision among themselves with full understanding of the legal and insurance requirements. It is clear that even many people who could drive legally elect not to declare their epilepsy. This is probably not just in order to be spared the inconvenience of a yearly medical report, but from a wish to maintain their privacy and from the fear of losing their license if they should have a recurrence. Discussion of the benefits of insurance coverage at this time when confidentiality of medical information is difficult to maintain should help improve compliance with the law.

Drs. Trottier and Drouin discussed surgical cure of epilepsy. More important perhaps is the question of remission in a variety of epileptic disorders. Recurrence rates in generalized epilepsy are estimated at 20 - 80% depending on the type of epilepsy and on the different studies quoted. Clearly however, an 8 - 10 year period of freedom from attacks including several years without antiepileptic medication should be considered a remission and there should be no further need for an annual medical report. Recurrence of seizures during reduction of levels of medication is well provided for by the Quebec legislation and the decision as to whether to reduce or not depends to a large extent on the patients' and the family's preference and on what they stand to gain and lose. They should be informed of the percentage of likelihood of recurrence, insofar as this can be predicted.

A single routine EEG after an initial seizure may well not provide a good electroclinical correlation, and the trend in recent years has been to more intensive investigation after a first attack, particularly when there is no obvious cause. This leads to a greater yield in electroclinical correlations with better understanding of the underlying process. It also improves our ability to assess the prognosis of a patient who has had a single attack, at a time when this is often difficult. An improvement in our understanding of the patient's problem, may thus result from the demonstration of clear epileptogenic abnormalities demonstrated by a searching EEG study. This however could result in loss of permission to drive and may well encourage an "ignorance is bliss" attitude, an approach we have tried to get away from.

Exceptional single seizures are considered by some to represent a diagnostic category apart. One may consider the seizure tendency as a biological continuum ranging from the normal to the very low threshold of the severe epileptic. These exceptional attacks probably indicate a lower than average threshold, probably genetically determined and leading to seizures in response to unusual triggering factors such as prolonged sleep deprivation for instance. There exists an analogy between these exceptional attacks and the neighbourhood seizures which accompany an acute cerebral insult, and this should greatly facilitate the clinical decision as to how such attacks should be managed. The problem in assessing withdrawal seizures is mainly related to the underlying cause, and knowledge of the nature of the patients addiction, as well as considerable information from family and physicians may be required before an equitable decision can be made.

Drs. Trottier and Drouin discussed the thorny problem of reporting patients with epilepsy. This is required by law, certainly in the province of Quebec, and in some other provinces. Several years ago at a meeting of the Quebec Association of Neurologists, the members were polled as to their practice in this regard. Many did not report their epileptic patients, some reported only occasional individuals whom they judged to be dangerous drivers and a few had notified the department of the epilepsy of a number of their patients. Clearly, in practice at least there seems to be great variation in the approaches of neurologists to this problem. A majority of male patients on the other hand, do not declare their epilepsy on their application for a driver's license. Furthermore the law is not very clearly worded and it is not certain whether all persons with epilepsy who are not legally allowed to drive must be reported, or only those who are known to drive illegally. As Drs. Trottier and Drouin pointed out, further clarification from the Supreme Court of Canada should be forthcoming. In the meantime clinicians must be guided by the advice of the Canadian Medical Protective Association.

The opportunity to periodically exchange views and compare experiences in this field would, I am certain, be welcomed by most neurologists and neurosurgeons. The privilege and right to drive is important in our society. How important is best illustrated by the common response of young people who, when asked what they would do if their seizures ceased following surgical treatment, frequently answer "drive".

In future joint planning with the executives of the provincial departments of transport, it should be recognized that in some instances more information than the present forms contain might be valuable. In unclear or in special cases, a narrative report from the neurologist may well facilitate a fair decision.


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On a personal note, I would like to recognize the attitude of the department of transport of the province of Quebec: reasonable, fair, open minded, unbureaucratic, courteous and always disposed as Dr. Drouin put it, "a donner la chance au coureur".

The Canadian League and more specifically the committee on driving chaired by Dr. Remillard, welcome comments and constructive input. This will be helpful in the ongoing assessments of these issues aimed at finding an ideal balance between the privileges and rights of the individual on the one hand, and the protection and safety of society on the other.

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