
Conferences view auto deaths: the 'neglected disease'

By Milan Korcok

Initially, the automobile was designed to serve man, to enhance his ability to get more out of life. Yet, when it comes to slipping behind the wheel, man seems perfectly content to suspend the natural laws of self-preservation.

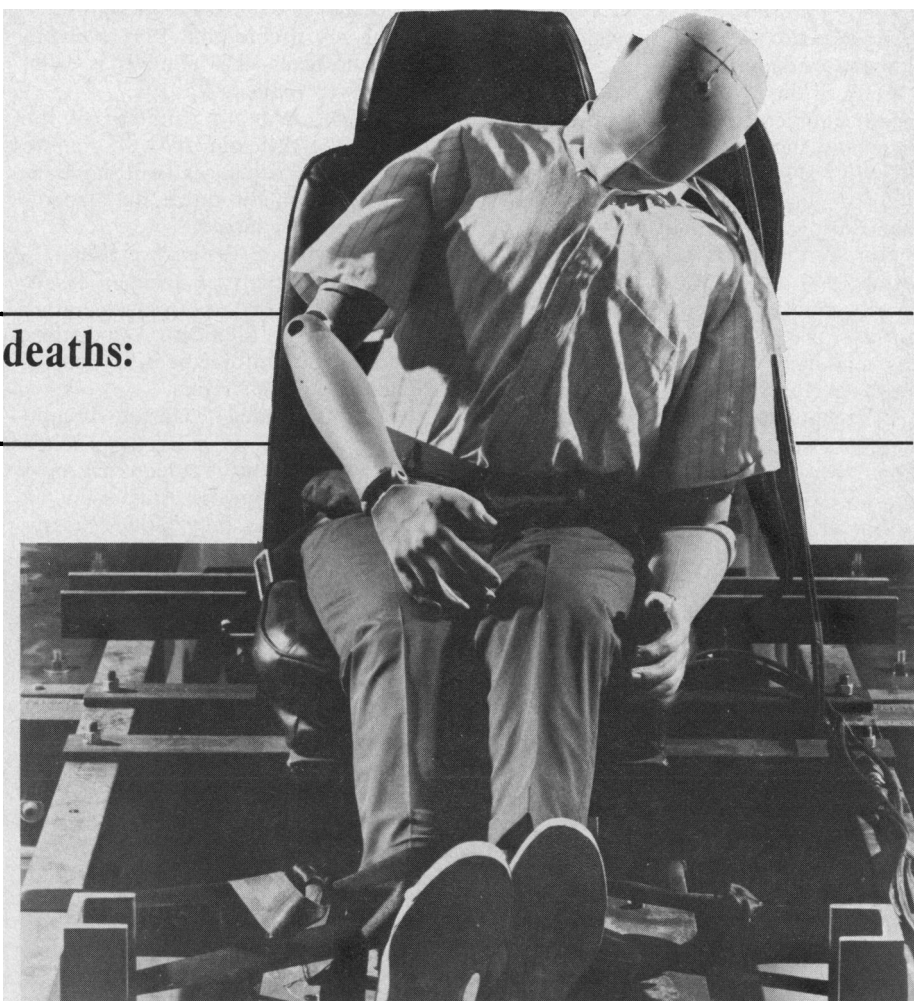
There is a paradox in this situation and it was this paradox that stimulated much discussion, as well as bewilderment, at two international meetings in Toronto in September — the annual meeting of the American Association for Automotive Medicine and the sixth international conference on alcohol, drugs and traffic safety.

Though the conferences were held in different locations — albeit divided only by one massive parking lot — a common concern emerged: despite the development and promotion of various control mechanisms, drivers and passengers continue to die and suffer injury at ever-increasing rates — victims of alcohol and drug misuse, and of the neglect of seat belts and other safety devices.

Though much of this negative response could be attributed to public apathy or to the misguided belief that "it could never happen to me", Dr. William Ghent of Kingston, Ontario, chairman of the CMA's emergency medical services committee, laid into the medical profession for its intransigence and failure to get involved in what has been called the neglected disease of modern society — automobile death.

Speaking as a chairman at the meeting of the AAAM, Dr. Ghent struck out at the medical profession, which he said "has ignored the problem (of traffic safety) as long as I can remember and continues to ignore the problem with studied callousness."

Referring to the recent CMA General Council support for mandatory restraint system legislation for motor vehicles as well as the establishment of mandatory standards for children's auto safety seats, Dr. Ghent emphasized,



Seat belts: they don't save the lives of non-wearers

"Passing resolutions is something the medical profession is good at. Follow-up is more tedious."

Dr. Ghent suggested part of the problem in getting the medical profession to provide some leadership in this field stemmed from the profession's apathy. In evidence of that, Dr. Ghent commented on the "mere handful" of physicians representing provincial and state traffic safety committees who chose to attend the meeting.

"We are not going to make an impact on the medical profession unless we can get outside this room and interest our disinterested brothers."

While Dr. Ghent was exhorting physicians at the AAAM to play a more active role in auto safety programs, Dr. Roger Bonnichsen of the Swedish National Institute for Forensic Chemistry was telling the international conference on alcohol, drugs and traffic safety that physicians could play a critical role in detecting and — in effect — restraining drivers subject to impairment by therapeutic doses of drugs.

People cannot be forbidden from driving because they are ill and require medication, said Dr. Bonnichsen. But they can be warned about the effects of

certain drugs and they should be made to realize that such drugs can make a driver a traffic hazard. This is a role that the medical profession should address actively, he said.

Obviously, very few people are convicted of being unfit to drive as a consequence of drug overdose, said Dr. Bonnichsen, but one must consider the great numbers of people who may undergo some impairment as a consequence of drugs prescribed in therapeutically safe, subtoxic doses.

Stunned

The growing relationship between use of drugs — particularly alcohol — and driving accidents made a stunning impact on the many North American and foreign delegates attending the international conference on traffic safety. Essentially they were looking for some encouragement that existing control measures were working.

They found little encouragement and few solutions.

The best that Brian R. Carr, analyst in the road safety branch of the federal ministry of transport, could tell the conference delegates was that if the intro-

duction of Canada's breathalyzer laws in 1969 did much to reduce alcohol-related traffic fatalities, it was hard to find the evidence.

Only in the year immediately following the implementation of the law was there any significant drop in road fatalities (6.3%), but by 1972 fatalities had shot up again to almost 15% higher than during prebreathalyzer periods.

Coroners' reports revealed that prior to the 1969 laws, 46% of fatally injured drivers showed blood alcohol concentrations of 0.08% or higher. That level has remained virtually unchanged over time, despite the law.

Accidents recorded during the night and on weekends — when drinking would be expected to be more prevalent — showed no significant changes before or after imposition of the 1969 legislation, another sign that drivers paid little heed to the prospect of being detected while driving after drinking.

Looking at provincial trends, Carr reported that three years after imposition of the laws, only Alberta managed to maintain any meaningful reductions in the number of road fatalities.

British experience

Perhaps the most positive data have come from Britain where, following the 1967 Road Safety Act, there were immediate and noticeable reductions in the numbers of road deaths as well as reductions in the drinking levels of drivers. The year following Britain's imposition of breathalyzer laws road fatalities were reduced 14.5% from the previous year. The reduction was 10% the second year and 5.7% the third.

According to British coroners' reports, of all fatally injured drivers tested in the year prior to the breathalyzer laws, 25% recorded blood alcohol concentrations of 0.08% or higher. The following year only 15% recorded BACs of 0.08% or higher.

Both traffic fatality rates and blood alcohol concentrations have continued to climb to prebreathalyzer levels in Britain; however this climb has been much slower than in Canada.

Obviously, Britain's adoption of the Road Safety Act did have far more meaningful consequences than did Canada's efforts to cut down on alcohol-related traffic accidents.

Commenting on Britain's gradual return to prebreathalyzer accident levels, Dr. John J. Havard, undersecretary of the British Medical Association, urged strong reinforcement of means to detect drinking drivers.

He recommended roadside breath-screening devices be refined to allow police to enforce more adequately laws related to BAC levels. At present in Canada police may only request a preliminary roadside screening test to be taken by the driver voluntarily before ordering a breathalyzer test.

Dr. Havard further urged that police be given authority to enter hospitals and clinics in order to make breath screening tests of drivers involved in accidents. He urged police be given the same authority in ordering blood samples in hospitals and clinics.

Dr. Havard recommended courts be given powers to remand drivers for medical examination for sentence and also have discretion to order medical treatment in lieu of imprisonment and fines.

Mountie agrees

As might be expected, Canadian enforcement officials rushed to the aid of anyone advocating tougher detection and enforcement procedures.

Responding to the call for more adequate enforcement RCMP inspector John Hoday made a strong plea for providing police with more adequate roadside screening techniques.

Impaired drivers are not being read-

ily detected because police officers must provide "reasonable and proper grounds" to demand a breathalyzer test of any suspected drinking driver, said Hoday. Without the support of any preliminary screening device, they have to rely on imprecise judgements of symptoms — slurred speech, glassy eyes and flushed face.

Referring to nationally accumulated data, Hoday noted that the average blood alcohol concentration of drivers tested by breathalyzer was 0.170 mg/ml. The legislative limit is 0.08.

"These drivers being encountered are not impaired," said Hoday, "they are intoxicated."

In trying to isolate the components that have eroded the effectiveness of breathalyzer laws, many conference delegates assumed a scepticism about the power of deterrence.

When the British Road Safety Act was established in 1967, the Englishman felt police constables would be stationed on every corner sniffing the breath of every passerby. Of course, this never occurred; it soon became obvious that the level of enforcement preached in propaganda programs was not lived up to in actual situations.

Dr. Robert Borkenstein, of Indiana University, developer of the breathalyzer mechanism, likened the detection and enforcement approaches of most nations to "catching a few fish from the sea of drunken drivers and making horrible examples of them".

Dr. Borkenstein noted that in a typical North American city, only 10% of police resources are allocated to traffic law enforcement. He said that in a typical community of one million people, there would likely be 1000 patrol officers averaging two alcohol-driving arrests per man per year. For approximately every one of these arrests, said Dr. Borkenstein, there are approximately 2000 violations.

Usually when one thinks of driver impairment, alcohol pops up as the major suspect. Recently, polydrug use has been gaining some attention for its effects on the driver — antihistamines, tranquilizers, sedatives and a great battery of prescription drugs have been implicated in traffic mishaps.

But one of the most popular drugs of abuse, tobacco, has remained relatively free of any connection with car accidents — until now.

In an address to the sixth international congress on alcohol, drugs and traffic safety, Dr. Julien A. Waller, professor and chairman of the department of epidemiology and environmental health at the University of Vermont, reported that abnormally high numbers of drivers who are heavy smokers have been showing up in car-crash statistics.

It is known that high carbon-monoxide levels in blood may cause impairment of brain function and it has been shown that heavy smokers, because of breathing impediments, may be less capable of withstanding traffic accidents.

But Dr. Waller also noted that there is some indication that high carbon-monoxide levels on their own might be contributing factors in crashes.

In one preliminary study Dr. Waller has found that persons with blood carbon-monoxide levels exceeding 5% (with no alcohol in their blood) appeared three times more often than would ordinarily have been expected among driver fatalities.

In substantiation of this data Dr. Sidney Kaye, professor of toxicology at the institute of legal medicine, University of Puerto Rico, reported finding high carbon-monoxide levels (5% or more) in 22 of 386 (5.7%) traffic fatalities on the island.

Carbon monoxide blood levels as low as 2% to 4% can worsen myocardial ischemia and decrease exercise tolerance in patients with angina pectoris, said Dr. Kaye, referring to local research studies.

"Since carbon monoxide even in small amounts is suspect in producing hypoxia with acute residual heart damage, what does this mean, if anything, in relation to a higher CO exposure while driving? And since the brain cells are also very sensitive to oxygen deprivation, what does it mean in terms of subtle influence to our central nervous system and driving? What is the effect of alcohol in combination with small amounts of carboxyhemoglobin in relation to the safe operation of a motor vehicle?"

How can the public have any respect for, or fear of, laws "that don't square with reality?" asked Dr. Borkenstein.

In order to help "square up" this relationship, Dr. Borkenstein urged legislators to eliminate the *per se* drinking-driving laws (which make the mere presence of certain alcohol blood concentrations illegal in a driver) and replace these by tacking increased penalties on to any moving traffic violation if the driver has been drinking.

One precedent for this is the sharply increased penalty for robbery with a weapon compared to robbery without a weapon.

In order to make these charges enforceable, a policeman should be given the right to demand a breath-screening test for any violation. At present, a Canadian police officer still requires evidence — independent of the primary infraction — of alcohol impairment before a breath test can be ordered.

Whereas breathalyzer laws in various countries have yielded only inconclusive results, the proponents of mandatory seat belt legislation seem to have much more evidence that their approaches do work.

In a report to the drug and traffic conference Dr. Donald Hossack, consultant surgeon to the coroner in Melbourne, Australia, revealed significant reductions of traffic deaths as a consequence of compulsory seat belt legislation in the state of Victoria (see *CMAJ* 110: 1418, 1974).

Since the introduction of the legislation in 1970, casualty rates decreased from 488 per 100,000 population to 403 per 100,000 by 1973.

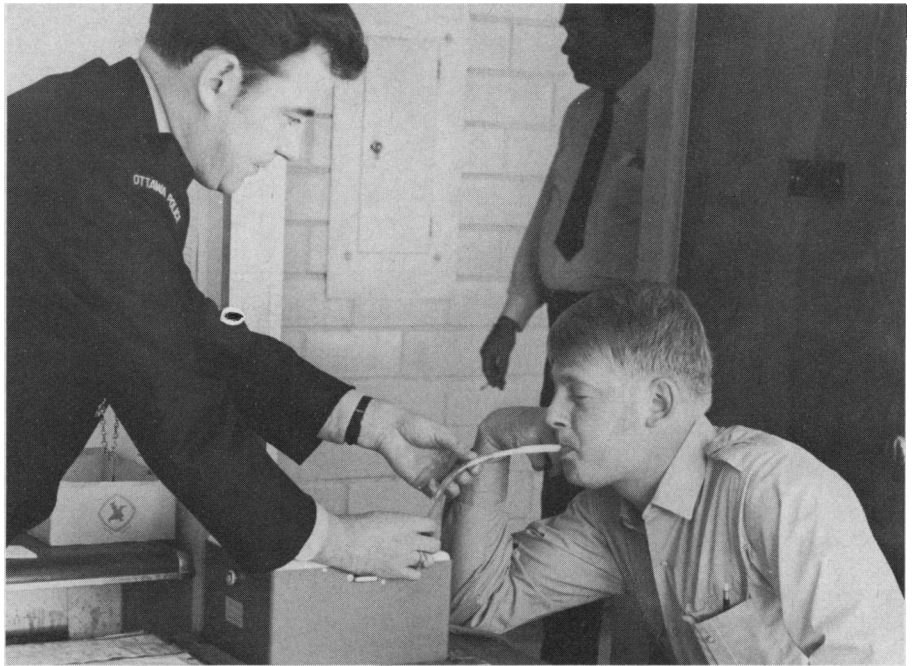
Similarly, the death rate decreased from 31 per 100,000 population in 1970 to 26 per 100,000, said Dr. Hossack.

The seat belt legislation even seemed to have significant impact on drinking driver casualties.

Reporting on before-and-after sets of postmortems on drivers (one set prior to the time the seat belt law was implemented, the other set in 1973) Dr. Hossack noted sharp reductions in drinking levels of drivers killed in accidents.

The earlier set of postmortems showed 60% of the 171 drivers tested had been drinking noticeable levels, and 38% of all tested drivers had alcohol blood concentrations of 0.160% or more. In the second set of postmortems, done from 1972-73, 47% of drivers tested had blood alcohol levels over 0.05%, and 27% had levels higher than 0.150%.

It would be tempting to attribute this improvement in the drinking driver statistics to a media education program directed to alcohol and traffic safety that was run, says Dr. Hossack. But it appears this recorded improvement will



Tony Skinner, breathalyzer technician for the Ottawa Police Force, with help from Constable Paul Taylor, right, demonstrates use of breathalyzer.

have to be attributed to the compulsory seat belt legislation.

Spurred on by such data, the trauma committee of the Royal Australasian College of Surgeons has advised governments to introduce compulsory seat belt legislation and has met with some success.

"The trauma committee has now persuaded the government (Australian) to introduce new legislation so that every victim of a traffic accident over the age of 15, who was admitted to the casualty department of a hospital will have a blood-alcohol estimation," said Dr. Hossack.

Government also has announced its intention to introduce legislation allowing police to stop any car at any time and request a breath-screening, puff-bag test.

At the meeting of the American Association for Automotive Medicine, similar strengthening of restraint system legislation was being proposed.

Donald F. Huelke, professor of anatomy at the University of Michigan medical school, reported a study of more than 4000 detailed, automobile-crash reports in which occupant-to-occupant collisions played prominent roles in increasing death and injury rates.

"Not only are injuries produced by the direct impact of one occupant on another," said Dr. Huelke, "but often such contact forces an occupant into or against some interior car structure."

In the study reported, these occupant-to-occupant collisions caused or aggravated injuries in 22% of crashes where cars carried passengers.

Using the American Medical Association's abbreviated injury scale, Dr. Huelke noted that while the majority of these collisions fell at the lower end of the scale, 13% were classified as severe or fatal.

In one accident, young children were killed when they were crushed against the car's interior by the unrestrained body of an adult. Other cases described rear-seat passengers thrown against the front seat, pushing it forward or actually pitching over the seat and colliding with passengers there.

"The data and cases presented refute the argument that the unrestrained occupant only kills or injures himself. Restraining occupants in their respective seating positions would decrease occupant injuries by this mechanism of body-to-body injuries," said Dr. Huelke.

At the same time Dr. Huelke took a shot at U.S. legislators who are now seeking elimination of the starter-interlock, seat belt system as mandatory equipment in cars.

"The facts are in, and there's absolutely no question that the starter-interlock system increases the wearing of lap/shoulder belts and therefore is reducing serious injuries and fatalities," said Dr. Huelke.

"Opponents of the starter-interlock system say it is inconvenient. This argument borders on absurdity," says Huelke. "We are all inconvenienced every day in many ways which have nothing to do with saving lives, and it would certainly be tragic if year after year preventable highway deaths occurred just because a group of people felt the system was inconvenient." ■