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Expanding the focus of injury control: challenges and opportunities

Abstract

The prevention of impaired driving has been viewed to be the purview of the traffic law system. Although public health and medicine have made occasional forays into the field, the silos of activities have remained distinct. This single issue, single solution approach has had both positive and negative consequences. On the positive side, public education campaigns and other interventions were easy to develop and deliver because the focus was clear and the linkage was direct. On the negative side, once the media attention declined, public and governmental interest waned, positive traffic safety increments also waned. Alcohol, drugs and traffic safety is generally not the priority it was in the 1980s. In an era of diminished resources and shifting priorities many are still following the same ‘dominant paradigm’ of using the traffic law system to prevent and control impaired driving. The challenge is to seize upon opportunities and to piggyback on new priorities and concerns. This paper will focus on three areas where impaired driving and injury control could become an issue: medicine, health care, environment and globalisation. Each has entry points, both for research and for effective injury control, and affords opportunities for further integration with current public and private sector priority issues.

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In 1997, at the International Conference of Alcohol, Drugs and Traffic Safety, the plenary paper of the late Dr Laurence Ross, ‘The rise and fall of drunk driving as a social problem in the USA’, traced the changes in awareness and ‘social interpretation’ of motor vehicle collisions during the 1980s. As Ross (1) stated, the image of traffic collisions changed around 1980, “when a previously minor consideration in the perceived cause of deaths and injuries sprang near complete dominance of the field”. The 1980s were certainly, for many countries, the era of public awakening of traffic safety and injury control through alcohol, drugs and traffic safety issues. This time period also saw many countries introducing traffic safety, in particular, drinking-driving legislation at an unprecedented speed, because impaired driving had become a public agenda item. In fact, during the 1980s it seemed that traffic safety was only equated with drinking-driving behaviour. Indeed, in most countries, in the early 1980s fatally injured drinking drivers did represent about half of all fatally injured drivers, and the good news is that we have seen a worldwide decline in drinking-driving fatalities (2). Thus, if we could speak to eras and public agenda issues, we would have to say the 1980s was the era of drinking-driving prevention.

The 1990s have brought new issues, new social problems and impaired driving has become a back burner issue. A recent American workshop by the Transportation Research Board of the National Research Council (3) sponsored a workshop titled, Combating impaired driving in an era of diminished resources and shifting priorities. The purpose was to identify strategies to rekindle interest in impaired driving. Time has come for those of us in the public sector to take some lessons from the corporate sector on how to survive and thrive in the new millennium.

The business schools literature over the past 20 years has identified the type of corporate visions which doom companies to obsolescence and self-destruction and the visions which allow for expansion. Case histories abound on how corporations who defined themselves narrowly and did not read the shifting needs of society extinguished themselves and corporations which diversified to reflect public interests and trends, survived and thrived. I would suggest the same holds true for social problems such as impaired driving, traffic safety and injury prevention. As Ross (1) and others point out, the era of drinking driving as a social problem has declined as media, public and governmental attention has waned. As long as we see traffic safety and injury prevention only within the context of legislation, enforcement, adjudication and sanctioning, we will be doomed to fail in maintaining it as a priority. There are many entry points in other areas to bring these issues forward. Countries which have issues of injury control embedded in other areas of concern, have more options for potential impact.

What are the three major themes of public concern that seem to have arisen in the past decade, particularly within industrialised countries?
These three themes are:
1. Globalisation;
2. Health care; and
3. The environment.

Each one of these themes could have important implications for injury control, as can injury control have implications for these themes. I would like to briefly address some of the issues surrounding the relationship between injury control and these three themes in order to foster dialogue and to inject some new ideas into current discussions, research, advocacy, and intervention strategies in the field.

**Globalisation**

In the past 20 years, dramatic changes have occurred in the movement toward global economies and free/liberalised markets. Various trade agreements have been increasing international trade, challenging 'unfair' trade practices and pushing to 'harmonise' and co-ordinate regulations, taxation, policies and other public and private enterprises. Could these trade agreements affect injury control policies? Furthermore, could trade agreements ultimately affect injury trends? Fortunately research studies and data on this topic are scarce. A recent paper published in *Contemporary Drug Problems* (4) presents information on the principles underlying international trade agreements, and indicates how these principles could potentially affect injuries. Clearly, time requirements prevent me from presenting this information in detail, however, I will offer some of the key issues of importance to injury control and globalisation.

The intellectual foundation for injury control has come primarily from the work of Haddon who advanced a conceptual framework (the Haddon matrix) to focus on the interactions among the host (the injured), the agent (mode of injury, e.g. motor vehicle, weapons, etc), and the environment (e.g. roadways, policies, etc) within the pre-injury, injury and post-injury phases. Haddon and Baker (5) argued that attention must be paid to all three factors because injury represents a straightforward example of the epidemiologic triad: the host - the person susceptible to injury; the specific agent - mechanism of injury; and the environment. Free and liberalised trade could have impact on all three components of the triad: on the host, for example, by potentially affecting per capita alcohol consumption; on the agent, for example, by potentially affecting motor vehicle safety standards or by increasing availability of weapons; and on the environment, for example, by increasing traffic density and congestion, or by changing health and safety policies, such as alcohol control policies.

The direct and indirect impacts on health and safety that free trade principles can have are: to reduce the sovereignty of countries, to use taxation, regulation and other control mechanisms. The fundamental principle underlying free trade is to increase the consumption of all goods and services. This is at the crux of some of the concerns regarding injury prevention.

Probably no sector is experiencing a greater impact from free trade and globalisation than the transportation sector. The transportation sector is a key infrastructure element necessary for globalisation (6). Three major consequences of free trade agreements relating to the transportation sector have injury implications:

1. Free or liberalised movement of goods, services, capital and (in the case of common markets) labour;
2. Deregulation of the transportation industries; and
3. Standards and legislative harmonisation.

*Free movement*

The increased movement of goods, services and people is evidenced by the rapid growth in the commercial and private transportation, with international traffic increasing at a faster pace than domestic traffic (7,8). This accelerated movement of goods has had a number of consequences, as it has increased traffic volume, increased pressure on countries' expanding infrastructure, and escalated maintenance costs, especially for surface transportation.

Of primary importance is the fact that increased congestion and density of traffic, particularly with differential speeds and weights of vehicles, increases driver risk exposure and leads to increased collisions. This increased 'risk exposure' is augmented by many variables such as Haddon's 'host' variables -- driver condition (e.g. alcohol impaired, fatigued, etc); age, sex and experience of driver; 'agent' variables -- type of roadway, type of vehicle; and 'environment' variables -- time of day, day of week, etc (9,10). A particular concern with increasing international travel is the 'experience of driver' variable of foreign driver risk. As Leviathan (11) states: 'Foreign drivers are considered to be a greater risk than domestic drivers in most countries in the world' (p245). Although very few studies are available, the limited evidence suggests increased crash rates for foreign drivers when compared to domestic drivers (11). Thus, increases in overall traffic volume and congestion, and increased foreign drivers could increase the crash risk for all drivers.

In addition to the increased traffic volume, pressure on commercial carriers for on time delivery over longer distances is increasing. As Bradley (12) writes, the continuing changes to the trucking industry are due to customer pressure as businesses want short cycle times for delivery while supply lines are longer. Added to this increased pressure to deliver on time is the concept of 'just-in-time' (JIT). Heralded by top international executives as the 'next competitive weapon', JIT reduces inventories and warehouses and relies on the direct and timely delivery of inventory from suppliers (13). This system is becoming widely embraced because it relies on virtually no inventory, and thus greatly reduces costs. On the down side, JIT increases the number of deliveries to a plant by 200% (13). The specifications are that as protective trade barriers are dismantled, multinationals will re-allocate their resources to cut down on excess capacity, by further transnational consolidation of manufacturing and distribution processes, and elimination of warehouse facilities (14). For example, with the European trade barriers falling, a number of European companies such as Ciba-Geigy and Volkswagen have been moving towards greater centralisation with integration of operations, and consolidation of manufacturing and distribution, despite the increased transportation costs (15).

This accelerated growth in movement of goods within and across countries has also been stressing other elements of transportation infrastructure. Other 'infrastructure deficits' include lack of adequate roadways, bridges, ports of entry, etc (8).

2. Deregulation

A second potential safety challenge has been deregulation. Deregulation and the increased movement of goods has meant increased competition within the commercial transportation sector. Many of the less competitive carriers have not survived these economic realities (16,17). Given all these increased economic pressures, it would be surprising if vehicular safety were not being compromised.

3. Standards and legislative harmonisation

The third consequence of the free market system which could potentially affect traffic safety is harmonisation. Harmonisation of standards, regulation and legislation is key to freer trade. Great variations exist on standards, regulations and legislation both within and across countries. Numerous international committees are working to increase compatibility of regulations and standards governing the goods and movement of goods among nations, such as the International Standards Organisation (ISO).

A potential safety concern is to what standard will the committees...
harmonise? Free trade agreements are designed to harmonise their measures based on relevant international standards (18). However, often the standards set by international standardising bodies afford lower levels of protection than some existing domestic standards (18). Similarly with legislative standards, Cauzard (19) acknowledges that, “although the idea of risk underlies regulatory measures, the level of the legal [blood alcohol] limit is determined by an arbitrary compromise which involves the state of our knowledge, and the socioeconomic and political context of each country” (p1185). Thus, the issue of harmonisation of standards among countries is one of the ultimate challenges for free trade which has yet to be resolved. Again, the safety impact of increased traffic volume, deregulation and standards harmonisation caused by globalisation remains to be determined. Similar arguments can be made that changes that could compromise the safety of the transportation industry would increase the risk exposure of drivers and potentially increase total crashes. The challenges are, as Haddon was quoted as saying, to make the transportation system safe “for fools and drunk.”

Although there are no data specifically evaluating the impact of free/liberalised trade agreements on traffic safety, since the recession of the early 1990s, total motor vehicle crashes have been generally increasing. There are two issues to consider in any evaluation of the potential impact of free/liberalised trade agreements, total crashes/injuries/fatalities and the rates of total crashes/injuries/fatalities. For example, current evidence suggests that the total number of alcohol-related fatalities may be slowly increasing and the rates may be plateauing. The “world-wide declines” in drinking driving in the 1980s, as evidenced by reductions in rates of alcohol-related crashes and fatalities have not continued into the 1990s (2). Swoerter (2) writes that in the early 1990s, most EU countries, Australia, Canada and US “began to show a slowing in progress or even experienced an increase in the problem” (p1209).

Other transportation sectors, air, rail and shipping, have been experiencing similar increases and pressures related to globalisation. World-wide, air carriers are opening up an array of new markets (20). Shipments by rail have also grown sharply in the past few years. Ocean carriers are introducing larger and faster vessels, and nations’ ports are digging deeper channels and larger terminals, lured by predictions of 8-10% growth in container trades (21). Images of recent commercial transportation disasters signal the health and safety threat that can occur through these modes of transportation. The same pressures of increased competition, deregulation, standard harmonisation that exist for the road transportation sector also affecting the other transportation sectors. Similarly, they may be compromising safety in that sharp increases in volume of international traffic could augment accidents.

On the positive side, it is important to realise that injury control theories speak to increases in injuries related to increased traffic congestion and reduced safety regulations when all else remains equal. There are also globalisation counter-forces operating within the injury control realm. First, within the transportation sector, safety is an important issue. Although historically in the commercial transportation sector, “senior management has been slow to recognise the potentially staggering costs of safety failures” (22), new regulations and legislation, and major national and international disasters have increased the commercial transportation interest in safety (20,22-24).

Second, international developments and improvements to transportation technology (Intelligent Transportation Systems (ITS)) will continue to enhance the safety of vehicles, roadways and other elements of the transportation system. Australia is on the leading edge of ITS. For example the implementation of SCATS, the Sydney Coordinated Adaptive Traffic System, is capable of reading, analysing and responding to traffic situations and operates on a real-time basis, rather than on predicted time levels. The benefits of such a system are expected to include a significantly reduced risk of collisions and the ability to devise a cost efficient maintenance schedule (25). Furthermore, Australia is moving forward to form a comprehensive, nationwide ITS strategy. The challenge, however, was noted by an attendee at last August’s Canberra workshop in ITS who stated, “While I believe it is important for ITS Australia to establish a strategy, it must be in response to a topdown vision, for example, for halving the road toll or reducing the congestion by one half” (26).

Finally, various lobby groups have also evolved. Recently, the Multilateral Agreement on Investment (MAI) was scuttled by an international non-government coalition, representing 560 organisations in 70 countries (27). These organisations, by pooling their information through the use of the Internet, broke “through the wall of secrecy that traditionally surrounds international negotiations, forcing governments to deal with their complaints” (28). Among the specific concerns with MAI were that it gave “foreign investors exclusive standing under a legally binding agreement to attack legitimate regulations designed to protect the environment, and safeguard public health” (27). Given these varied, complex and countervailing forces, it will be important to monitor and evaluate these factors that could be affecting injury trends. Without the research needed to address these issues to understand whether or not globalisation is having a positive, negative or no effect on injuries, little can be said about the impact of globalisation on safety. Clearly globalisation should be an emerging issue of concern for injury prevention.

The health care system and public health

A second major concern of industrialised nations is the sustainability of the health care system. In the past two decades Western countries have experienced large increases in health care expenditure, accounting for between 6% and 14% of a country’s Gross Domestic Product (GDP). Concerns over cost escalation in the past five years have driven virtually every country in the Organisation for Economic Development to launch major reforms of its health care systems (29). In recent years, Ministries of Health have become interested in injury prevention, in no small measure because of the health care costs equated with injuries. For example in Canada, injuries have skyrocketed for second and third place in terms of total health care costs. When these economic burdens data came out, injury prevention began to appear in public health documents. In Australia, it is interesting to note that injury prevention plays a prominent role as one of the nation’s five health priority areas (30). Similarly, states such as NSW are addressing injury prevention as a health department issue (31,32). It is also included as a priority for the youth health plans (e.g. Policy and Planning Division (33)). The inclusion of injury prevention within the realm of public health opens up the possibility of interventions. However, perhaps, not enough has been done to inculcate in the public the extraordinary costs to taxpayers and insurance payers of injuries.

Health care restructuring, the ageing population, advances in medical technologies and pharmaceuticals could have impact on injuries. For example, reducing hospital days of stay and increasing day surgeries have been introduced in the developed world as cost-saving methods. The mobility of health-compromised individuals has not been examined. Although hospital policies are to not allow post-operative patients to drive or go home alone because of risk of falls and motor vehicle crashes, these policies cannot always be enforced. The increased risk of injury of patients recovering alone at home with sporadic homecare services, has not been examined to my knowledge. The de-institutionalisation of developmentally disabled has led to increases in morbidity and mortality, often from injury-related problems.
Similarly independent living, encouraged in the elderly, necessitates independent means of transportation and mobility. Various medical conditions, such as neurodegenerative and musculoskeletal diseases, have been significantly correlated with increased injury risk, a problem that will only increase with an ageing population (34). Even the frail elderly are being encouraged to live at home, with homemaker service provision. As health care dollars are stretched, services become sporadic, thereby necessitating the frail elderly to complete errands themselves and placing them at risk for falls, motor vehicle crashes, etc.

Finally, technological and pharmaceutical advances have similarly de-institutionalised longer-term care patients, such as the seriously mentally ill who are at increased risk of intentional and unintentional injuries in the community. The high level of pharmaceutical use among the public, particularly in the elderly, and the impairing properties of many psychotropic are poorly understood by the public (35–37).

Thus, within the health care and public health sectors are a number of emerging trends that need attention. De-institutionalisation effects, the elderly and the impairing properties of medicinal drugs are important areas of research and intervention. In fact, de Gier (38) estimates that at least 10% of all people injured or killed in road crashes were taking some type of psychotropic medication that may have been a contributory factor, a problem which could be exacerbated with the ageing population and de-institutionalisation.

The environment

A final major international concern is the environment. Pollution, greenhouse gas emissions, climate change, etc, are all on the public agenda. Again, transportation plays a significant role in environmental sustainability. For example a recent publication, called ‘The Road to Sustainable Transportation in Canada’ (39), states that the transport sector contributes about 30% of greenhouse gases from human activity. Furthermore, as the second highest per capita energy consuming nation on earth, Canada is particularly vulnerable to the possible economic impacts of international agreements to reduce fossil energy consumption and greenhouse gas emissions.

Various methods to reduce air pollution and fossil fuel consumption can have an indirect impact on injuries. Smaller, lighter, more fuel efficient motor vehicles have much higher injury rates compared to their gas-guzzling cousins. However, the increased use of public transportation would be a safety feature. Smaller engines and sophisticated emission control systems slow down vehicles which could have a positive or negative impact on injuries. Encouragement of walking and bicycling is environmentally sound and can enhance safety provided proper bicycle paths and walkways are available, although it could increase pedestrian injuries (40). Lobby groups and public agendas which discourage reliance on motor vehicles could have positive injury prevention benefits or deleterious effects, depending on a broad range of issues. However, it is incumbent for injury prevention advocates to realise that within the environmental lobby there are opportunities to work together on both agendas.

One final issue I would like to discuss is the public perception of safety. Above all, I would say that our major challenge for injury prevention is public misinformation. This was brought close to home last year when I was commissioned to conduct an epidemiological study for Chaleurie, the foremost women’s magazine in Canada. The by-line was “Canada’s Safest Cities” (41) and the story was to contain a ranking of Canada’s cities on “safety factors”. What were the issues they said the public was concerned about via-a-via the safety of their cities: first and foremost crime, violent crime and particularly violence against women. Perception was that women were the victims of much stranger-induced violent crime. Perception number two was that large cities are dangerous, crime riddled, and thus unsafe habitats. I asked the editor if she was wedded to explore these stereotypes because the numbers would probably paint a different picture. They were ready to take the leap.

I started with an acceptable concept of safety for them — what puts people at risk for being killed in their communities? What is most likely to injure and cause death in my family and me in my community? Finally what communities have the highest rates of injury-related deaths in Canada? We did nothing fancy. We simply took the ICD-9 codes 800-999 for injury causing deaths, averaged over 1994-1996 for the 24 metropolitan census areas (MCAs) and calculated the unweighted rate. We did not age standardise the data because we hypothesised that we were interested the burden on injury-causing death to a community, overall. The MCAs were then simply ranked from highest to lowest rank.

Then came the surprises for the public. The larger cities ranked safer than smaller cities. Actual crime rates were not related to ranking. The number of police per capita were actually positively related to the crime statistics, and most importantly we shattered myths with the following numbers. In Canada, with a population of 29 million people, 4000 people die from suicides, 3000 from motor vehicle crashes, 2500 from falls and we have less than 500 homicides each year. That said, there are a few consistent patterns all of them explaining common public myths:

1. Death rates — for each death rate category (intentional and unintentional accidental/injury deaths) Males are over-represented at least 2:1. The common myth that women are more likely to be the victim of accidental or intentional deaths is not true. At least two males die for each female in Canada.

2. The true community ‘safety’ issue is motor vehicle accidents. Canadians are six times more likely to die in a car crash than to be murdered. In Canada 1994-96 average = more than 3000 deaths due to motor vehicle crashes compared to less than 500 murders.

3. Under the ‘intentional deaths’ category, Canadians are almost eight times more likely to die at their own hands than to die at someone else’s hands. The Canadian 1994-96 average was almost 3900 suicide compared to less than 500 murders.

4. The only areas where Canadian females outnumber or are close to males in ‘accidental’ deaths are in falls: Females = 1387 vs. males = 1101.

5. Canadian females are eight times more likely to die from falls (1387 died. Average for 1994-96) than to be murdered (166 average 1994-96).

Communities would be much wiser to focus on having bicycle paths, red-light cameras, skateboard parks, workplace safety prevention programs, and suicide prevention programs than to obsess about stranger crime as a major injury-producing threat. Interestingly, the article cited a survey of more than 600 Canadian parents. They were asked to identify the single most worrisome risk to their children. Not one cited suicide.

Furthermore, many from the media had a hard time understanding this fact. The truth is larger cities are more likely to have vibrant downtown cores that are alive with people all the time, had good and well-used public transit systems, better roadway systems and bike paths, more white collar workplaces than smaller cities, and a wider range of prevention and intervention programs, such as suicide prevention programs, did not ring a bell for them. I had to ask them when was the last time they had a front page story of a senior dying from a fall, yet it happened all the time. However, the rate murder was publicised for months so it gave the illusion of rampant crime. Finally, I pointed out that it is easier for society to accept ‘boogeyman’ stranger crime as the cause of injury and death, and to ultimately absolve their responsibility of it. “It’s some crazed killer... not someone like us”: not due to the norms and culture we accept, and not the
policies and laws we have, and are followed. In Canada in 1997, only 12 women were murdered by strangers, while 73 were killed by a current or ex-partner. Similarly, 62 children were killed by a parent and another 49 murders were committed by a son, daughter, sibling or other relative. Obviously to accept the truth means to confront the values and societal norms that could be causative factors.

Furthermore, injuries and motor vehicle accidents are viewed as that—unavoidable accidents, not preventable incidents. Suicides are not discussed. Thus, our society is shrouded with myths about what is killing our families. These myths get in the way of constructive mobilisation by communities to reduce injuries. Yet some still do not get it. One reporter from Calgary, who listened patiently to all the statistics and information, still said at the end, "Ya, but the real safety issue for parents is their children being kidnapped by a stranger." This community will be challenged to improve safety with this view.

In summary, we still have many avenues to explore and many myths to break down if we are to enhance our injury prevention strategies in the 21st Century. What is clear though is that we must be forward thinking, challenging the status quo, and tackling our current cultural norms that ignore the major causes of injury. We also need to expand our approaches. There are many unique entry points, both for research and for effective injury control, which affords opportunities for further integration with current public and private sector priority issues.

References


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