

more acceptable way of developing liver transplantation in a country as vast and diverse as India.

To date, a total of 9 donor deaths have been documented in LDLT worldwide (there are unconfirmed reports of several more including 2 from around 60 LDLT in India), and 3 more donors have undergone liver transplantation following complications related to LDLT.⁷ Since no central reporting agency exists, only an estimate of the total LDLTs carried out worldwide can be given at between 3000 and 4000. With the true denominator unknown, the incidence of catastrophic complications (death or need for liver transplantation) can only be estimated at 0.4%–0.5%. Until a database of health outcomes for all live donors is established and receives mandatory accurate data along with the establishment of standardized surgical approaches and accreditation of centres that perform LDLT, the controversy and uncertainty that have been evoked will prevail.

REFERENCES

- 1 Raia S, Nery JR, Mies S. Liver transplantation from live donors [Letter]. *Lancet* 1989;2:497.
- 2 Lo CM. Complications and long-term outcomes of living liver donors: A survey of 1508 cases in five Asian centres. *Transplantation* 2003;75 (Suppl):S12–S15.
- 3 Ghobrial RM, Busuttill RW. Future of adult living donor liver transplantation. *Liver Transpl* 2003;9 (10 Suppl 2):S73–S79.
- 4 Miller CM. Regulation and oversight of adult living donor liver transplantation. *Liver Transpl* 2003;9 (10 Suppl 2):S69–S72.
- 5 Fan ST, Yong BH, Lo CM, Liu CL, Wong J. Right lobe living donor liver transplantation with or without venovenous bypass. *Br J Surg* 2003;90:48–56.
- 6 Shiffman ML, Brown RS Jr, Olthoff KM, Everson G, Miller C, Siegler M, et al. Living donor liver transplantation: Summary of a conference at the National Institutes of Health. *Liver Transpl* 2002;8:174–88.
- 7 Pomfret EA. Early and late complications in the right lobe adult living donor. *Liver Transpl* 2003;9 (10 Suppl 2):S45–S49.

MICHAEL SILVA
DARIUS F. MIRZA
The Liver Unit
Queen Elizabeth Hospital
University Hospital Birmingham NHS Trust
Edgbaston
Birmingham
UK
Darius.Mirza@uhb.nhs.uk

Road Traffic Deaths and Injuries in India: Time for action

Every day as many as 140 000 people are injured on the world's roads. More than 3000 die and some 15 000 are disabled for life... Current figures are alarming enough. Even more alarming are trends. If they continue, by 2020, the numbers of people killed and disabled every day on the world's roads will have grown by more than 60%, making road traffic injuries a leading contributor to the global burden of disease and injury.

—Dr Lee Jong-wook¹

Once we accept that road traffic injury control is a public health problem and that we have an ethical responsibility to arrange for the safety of individuals, then it follows

that healthcare professionals have to assume responsibility for participating in efforts to control this pandemic. In India, over 80 000 persons die in traffic crashes annually, over 1.2 million are injured seriously and about 300 000 disabled permanently. In India, for individuals more than 4 years of age, more life-years are lost due to traffic crashes than due to cardiovascular diseases or neoplasms.² Road traffic injuries are among the second to sixth leading cause of death in the age group 15–60 years in all countries of the Southeast Asia region. This is why World Health Day 2004 focuses on road traffic injuries and measures to prevent them. The slogan for the day is 'Road Safety Is No Accident'. Road safety does not happen accidentally, but requires deliberate effort by the government and its many partners.

In the past three decades the incidence of traffic crash fatalities and injuries has reduced significantly in the rich, highly motorized countries; on the other hand, the total number of casualties in India has continued to increase for the past 50 years. One cannot attribute this failure to the forms of government, culture or religious practices existing in India or in more than 100 low-income countries. Among these countries, there is great variation in size (populations can vary from less than a million to more than one billion), religions, cultural practices and forms of government. If these factors had a determining influence then there should have been a few countries where road safety policies were successful. The fact that this has not happened means that there must be other reasons why the road safety situation in India is less than desirable.

One reason is that health and technical professionals in India have not taken a scientific approach to this problem. In Australia, Europe and North America, many of the pioneers in road safety research came from the health profession: William Haddon Jr, a public health professional, was the first head of the National Highway Traffic Safety Administration of the USA when it was established in the late 1960s; Dr Gordon Trinca, a surgeon in Melbourne, has been the National Chairman, Road Trauma Committee, Royal Australasian College of Surgeons; in Sweden, Bertil Aldman, MD designed the rear-facing child seat in 1963 and established the injury prevention centre at Chalmers University. There are many others. However, in India, we do not have many surgeons or physicians who have taken up the cause of road safety in a scientific and consistent manner. Some have even gone against the implementation of the compulsory helmet law on frivolous grounds, unlike the official statement issued by the American College of Surgeons which concludes 'the American College of Surgeons supports efforts to enact and sustain universal helmet laws for motorcycle riders'.³

This must change. Considering the enormity of the problem, health professionals in India must get involved in the following ways:¹

- Include road safety in health promotion and disease prevention efforts;
- Systematically collect health-related data on the magnitude, characteristics and consequences of road traffic crashes;
- Support research to increase knowledge about risk factors and the development, implementation, monitoring and evaluation of effective counter measures;
- Promote capacity-building in all areas of road safety and the management of survivors of road traffic crashes;
- Translate effective science-based information into policies and practices that protect vehicle occupants and vulnerable road users;
- Strengthen prehospital and hospital care as well as rehabilitation services for all trauma victims;
- Develop trauma care skills of medical personnel at the primary, district and tertiary healthcare levels;
- Promote the development of policies aiming at greater integration of health and safety concerns into transport policies, and facilitate this by further developing methods and tools to this effect (e.g. for integrated assessments);
- Invest in medical research to improve the care of trauma survivors;
- Advocate for greater attention to road safety in view of the health impact and costs;

For a start, it would be ideal if we acquaint ourselves with some of the facts. Systematic reviews of the scientific literature provide the following insights.⁴

- Educational programmes by themselves are usually insufficient to change overall behaviour: they may increase knowledge, but rarely result in appropriate behaviour change among road users at the societal level.
- A few individuals may change their behaviour, but individuals also behave differently on the same day under different circumstances.
- Driver education may be necessary for beginners to learn the elementary skills required to obtain a driving licence, but compulsory training in schools leads to early licensing. There is no evidence that such schemes result in reductions in crash rates.
- Most attempts at enforcing road traffic legislation do not have any lasting effects, either on road user behaviour or on crash rates, unless the effort is sustained. Stricter penalties (in the form of higher fines or longer prison sentences) do not affect road user behaviour; imposing stricter penalties often reduces the level of enforcement.
- Enforcement of laws against driving under the influence of alcohol, a minimum age for the consumption of alcohol, and sobriety checkpoints are measures that do reduce the incidence of road traffic injuries.
- Placing cameras at intersections reduces red light violations and crashes by 25%–40%.
- Helmet use reduces head and facial injuries in cycle and motorcycle users of all ages involved in all types of crashes, including those with motor vehicles.
- Use of seat-belts and airbags can reduce fatalities among car occupants by over 30%.
- The only effective way to get most motorists to use safety belts is by introducing appropriate legislation. When laws exist, advertising can inform the public about them and their enforcement.
- Rear brake lights mounted high on a vehicle reduce the incidence of rear-end crashes.
- Daytime use of headlights reduces the number of multiparty daytime accidents by about 10%–15% for cars and motorcycles. In urban areas, traffic-calming techniques, roundabouts and pedestrian and cycle facilities provide considerable safety benefits.
- Reduction in average speeds is always accompanied by reduction in road traffic injuries.

A recent Cochrane review of prehospital care technologies also shows that many techniques and practices in vogue such as intravenous fluid administration at the site of crash, use of anti-shock garments, speeding ambulances, use of advanced trauma life support training for ambulance crews, and drug therapy may not be of much use and may even be harmful in some situations.⁵ This poses a very interesting challenge to medical professionals in India as the results go in favour of less expensive systems. This Cochrane review shows us that it may not be necessary to have expensively equipped ambulances to provide quality care. It is up to us now to do further work in this area and determine optimal prehospital care protocols.

In the end, work in India will have to focus on our own specific problems. However, most of the advances have favoured car occupants over the more vulnerable road users—pedestrians, cyclists and motorcyclists. In India, these vulnerable road users constitute over 70%–80% of all road traffic deaths, and car occupants only about 5%. Future road safety work should be redirected to bring the needs of vulnerable road users to centre stage. The patterns of traffic and crashes in India are very different from those in high-income countries. Road and vehicle designs that eliminate the risk of serious injuries to vulnerable road users are not available at present. A much larger group of committed professionals, in every country of the world, needs to be involved in this work for new ideas to emerge. Disabilities and fatalities caused by road traffic injuries can only be eliminated with a change in philosophy.

The medical profession can start with demanding the establishment of a National Road Safety Board and regional data collection centres in hospitals, notification of compulsory helmet laws in all states of India, speed control measures in cities, and then lobby for all that we know works. If we take this seriously, we can end up saving thousands of needless deaths and injuries every year.

REFERENCES

- 1 *Road safety is no accident: A brochure for World Health Day, 7 April 2004*. Geneva:World Health Organization; 2004:1–20.
- 2 Mohan D, Varghese M. *Injuries in South-East Asia Region: Priorities for policy and action*. Delhi:SEARO, World Health Organization; 2002:1–19. SEA/Injuries/A1.
- 3 American College of Surgeons. Statement in support of motorcycle helmet laws [ST–35]. *Bull Am Coll Surg* 2001;86.
- 4 Mohan D. Road traffic injuries—A neglected pandemic. *Bull World Health Organ* 2003;81:684–5.
- 5 Cochrane Injuries Group Reviews and Protocols. <http://www.cochrane-injuries.lshtm.ac.uk/Review%20links.htm#subject>.

DINESH MOHAN

*Henry Ford Professor for Biomechanics and Transportation Safety
Transportation Research and Injury Prevention Programme
Indian Institute of Technology
New Delhi*

The National Medical Journal of India is now covered
in **Current Contents: Clinical Medicine, Science
Citation Index, SciSearch and Research Alert.**

—Editor