



Beyond Our Borders

Injury in the developing world

Charles Mock, *Assistant professor*, Departments of Surgery and Epidemiology, University of Washington School of Medicine, Seattle, WA 98195

and

Visiting senior lecturer in surgery, Kwame Nkrumah University of Science and Technology, Kumasi, Ghana
 cmock@u.washington.edu

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Injury is the commonest cause of death for children and young adults in developed and middle-income countries. In low-income countries, deaths in this age group are most often due to infectious disease, but there is a rising rate of deaths from injury.¹

The Global Burden of Disease Study highlighted the overall toll from injury in the developing world.² The table shows the major causes of death for the 2 main age groups affected by injury.³ Injury-related causes account for 3 of the top 6 killers of older children and 4 of the top 6 killers of young adults. Road traffic accidents alone are second only to AIDS as a killer of young adults. Other major causes include nonintentional or accidental causes (such as drowning, fires and burns, poisoning, falls, and home injuries) and intentional causes (such as violence and suicide). In addition to mortality, disability is often due to injury, especially with the success of the global efforts to control polio. Injury is also a leading contributor to health-related economic losses.

Despite the toll from injury, scarce attention has been paid to the problem. Although a tremendous amount of resources are consumed caring for injured patients at hospitals throughout the developing world, minimal

attention has been directed toward better understanding of injury, prevention efforts, or organized efforts to improve trauma treatment systems. The amount of funding devoted to such efforts is a small percentage of that devoted to other health problems in developing countries.⁴

Part of the reason for such neglect may be that many of the solutions to the problem lay outside the usual domain of health professionals. For example, possible solutions include road engineering and road use legislation. Another reason for the neglect may be a sense of futility. Injuries are conceptualized by much of the public around the world as due to bad luck or to carelessness, with little that can be done to prevent them.

INJURY CONTROL IN DEVELOPED COUNTRIES

Despite this neglect, experience in developed countries shows that much can be done to effectively lower the toll of injury. For example, in the United States, the rate of motor vehicle-related deaths peaked in the early 1930s at 30 deaths per 100,000 each year, at which time it had become the leading killer of young adults. Since that time, it has fallen to less than 20 deaths per 100,000 a year, the

*Major causes of death in developing countries (both low and middle-income) in 1998**

Rank	5-14 yr	Rate†	15-44 yr	Rate†
1	Respiratory infections	19.7	HIV/AIDS	67.0
2	Malaria	19.4	Road traffic injuries‡	21.9
3	Road traffic injuries‡	14.5	Interpersonal violence‡	20.2
4	Drowning‡	14.5	Self-inflicted injuries‡	19.0
5	Diarrheal diseases	12.4	Tuberculosis	17.8
6	War injuries‡	5.3	War injuries‡	15.5

*Source: Krug et al.³

†Rates of death expressed as deaths per 100,000 per year.

‡Injury-related causes.

lowest rate at any time since the early 1920s.⁵ Obviously, much more needs to be done. However, it is helpful to consider the success that has been achieved. In part, this success has been achieved through trial and error in the development of the transportation system. Also, scientific efforts have been devoted to prevent injury and to improve the treatment of injured persons, both in hospitals and in the field, through the development of emergency medical services.

INJURY CONTROL IN DEVELOPING COUNTRIES

Although many of the exact safety and injury treatment technologies may not be transferable to more resource-constrained environments, the overall scientific approach to injury control can be.⁶ Injury control is often misconstrued as merely admonitions to be careful. It is, however, a scientific field like that used to combat any other health problem. It seeks to identify underlying causes and risk factors; to develop prevention strategies to target these risk factors; and then to evaluate the success or failure of these strategies by hard facts.⁷ A similar approach is applicable to organized efforts to improve trauma treatment systems.⁸

Similar scientifically based strategies have so far been applied only minimally in most developing countries. Three injury control activities need to be developed: surveillance, injury prevention, and trauma treatment.

Surveillance

Making informed decisions about how to attack the injury problem relies on accurate and timely information about its incidence and characteristics. All too often, in both developed and developing countries, decisions on how to enact road safety and other injury prevention work have been based on supposition, rather than hard facts. In addition, in many developing countries, the existing information is inaccurate, with only a small fraction of actual injuries ever reaching official records. For example, a study in Kumasi, Ghana, found that less than 10% of pedestrian injuries were being officially recorded.⁹

Prevention

Many mechanisms of injury have been well studied, including road traffic injuries, inju-

ries in the home, drowning, fires, violence, and suicide.¹⁰ A scientific method can be applied to develop and validate effective prevention strategies for all of these. For example, a scientific approach can be applied to road traffic injuries by considering the environment (roadway engineering), the vector (vehicle), and the host (driver). A number of cheap, practical improvements to roadways would make roads safer in the developing world.¹¹

Another contributing factor to road injuries is the poor state of maintenance of the older vehicles that make up most of the vehicle fleet in most developing countries. In a study in Ghana, many commercial drivers indicated that high cost and low availability of spare parts, such as brake components, led them to use locally developed alternatives. They felt that these were not as good as more formally manufactured spare parts, with resulting safety implications. Several also mentioned that they substituted a soap-and-water mixture for brake fluid because of the high cost of the latter.¹² Various policy issues arise from these findings, such as the need to improve safety-related inspections and to find ways to lower the cost of safety-related spare parts, such as by lowering import duties.

Many driver behaviors affect safety, such as inappropriately high speeds and the use of alcohol while driving. Changing such behav-

iors needs to be addressed in a scientific manner, using the techniques of social marketing, not just by slogans and billboards. This has been used for addressing many other health problems in developing countries, such as for encouraging immunization. Alcohol-impaired driving, a major problem in developed countries, needs also to be addressed in developing countries. For example, there is a high rate of drunk driving among commercial drivers in Ghana.¹³

Treating trauma

Prevention should be given priority, but there is much that could be done to lower the rates of injury-related death and disability by low-cost improvements in trauma treatment. This applies to both prehospital and hospital treatment. Throughout the developing world, much has been accomplished in improving the functioning of health services by use of an "essential services approach." This implies defining, refining, and promulgating a baseline set of services that should realistically be available to most persons in a given population. For example, the essential drug list,¹⁴ the Expanded Program on Immunizations, the World Health Organization's Global Tuberculosis Program,¹⁵ and the Safe Motherhood Initiative¹⁶ have all made considerable progress by elucidating what materials and services



A road crash in Pakistan: poor roads, cars, and safety behavior contribute to the high crash rate

Saeed Khan/AFP

should be available at varying levels of the health system in countries of varying economic levels. A similar approach desperately needs to be applied to trauma care.

CAPACITY BUILDING

It is unlikely that simply importing injury control techniques from developed to developing countries will accomplish much because of the differing causes of injury and the different social and economic context in which they occur. Instead, there is a need for local adaptation and even the development of completely new strategies. Local expertise is needed in a variety of disciplines—including medicine, public health, education, law, psychology, the media, and engineering—so that individual countries can undertake their own injury control work.

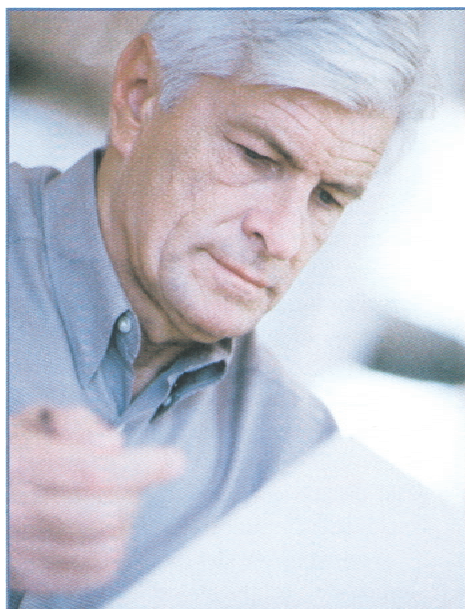
CONCLUSION

Injury has become a major health problem throughout the developing world, but there

has been a disproportionately low policy response to the problem. However, many low cost-solutions could help to lower the burden of suffering from injury. International health organizations should increase their involvement with injury control or, in many cases, begin to address this problem.

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