

## ISCAIP report

# Child and adolescent injury control: what to do when the conference is over

This issue of the journal is timed to come out shortly after the Third International Conference on Injury Prevention and Control. The conference will bring together people from all over the world to talk about their research and programs for the control of injuries. As in the prior two world conferences, child and adolescent injury prevention will be a major theme of the conference. I want to use this as an opportunity to look ahead and think about where we should take the field from here. What should we work on when we get back home? What are the challenges and what are the needs for us to meet our goal of decreasing morbidity and mortality of children and adolescents from trauma?

### Research

The role of research is to keep on expanding the envelope, to move beyond the current boundaries of our prevention programs, and develop new ideas for intervention. The areas that need further research are those causing the greatest morbidity and mortality. Drowning must be high on this list. Beyond safe pool fencing, we know little about how to prevent these events from occurring. We need rigorously conducted studies to determine, for example, whether swimming lessons, personal flotation devices, or other educational programs are effective in decreasing drowning risk. Given the relative low frequency of these events, designs such as case-control or cohort studies in which the outcome is an episode requiring rescue, rather than drowning or near-drowning, are necessary. Other questions that should be asked are whether cardiopulmonary resuscitation training for pool owners is worthwhile and whether educational efforts can be effective in decreasing bathtub drowning.

Burns are another problem in which the morbidity is far under-estimated by the mortality statistics. Most burns in children under the age of 5 are caused by hot food scalds, most commonly tea or coffee; two toddlers were admitted to my institution last night with these burns. While we know how to prevent tap water scalds by lowering water heater settings, we have no idea, other than the often quoted 'parental supervision', of how to prevent these much more common burn injuries. In developing countries, cooking fires are a major source of injury to young children; it would seem that such burns are amenable to relatively lost cost technological innovations to get the cooking fires off the ground. Probably the equivalent risk in developed countries are fires to burn trash and garden debris; I've wondered whether antipollution regulations prohibiting these fires might also be effective in decreasing burn injuries.

Pedestrian injuries are the major road traffic problem for preschool and school aged children. We know much about the epidemiology of these injuries and the risk factors, particularly in the environment, that increase the chance of occurrence. Safe community programs that emphasize traffic calming have been proposed as solutions because educational programs have such modest effects. However, few data are available to judge the effectiveness of these strategies. Given the cost of implementing environmental changes, investigators in the injury field must subject these programs to careful evaluation.

Another area that needs more attention is that of brain injuries, among the most important problems we in the injury control community face. Brain injuries account for three fourths of trauma deaths in most series and cause lifelong disability for numerous children and their families around the world. Safety helmets have proven almost phenomenally successful in preventing head injuries to bicyclists. Is there a way of extending this protection to other activities in which children are engaged and which not infrequently result in serious brain injury? Are there other sporting and recreational activities in which children would benefit from helmet protection?

### Intervention programs

One of the large challenges we face is how to take the information generated by our various research programs and apply it more widely. I believe that this is as much a challenge, and as much needed, as the development of new interventions. My colleague, David Grossman, and I recently calculated that 6600 additional lives (31% of current fatalities) could be saved among children and adolescents in the United States if there were a more universal application of currently available prevention strategies.<sup>1</sup>

Implementation of effective strategies face numerous barriers, however, including financial, political, and educational. These barriers are largest for those children at greatest risk of injury: poor children, minority children, children living in developing countries, children living with less educated parents, and adolescents. For example, in our community we have been very successful in raising the proportion of children wearing bicycle helmets, but rates among adolescents and among minority children are one half those among younger children or adults and among whites. These individuals are hardest to reach with any health education message, including injury prevention. While this argues strongly for the more universal application of passive prevention strategies, the financial and political barriers to implementing these strategies at times appear insurmountable. Intervention programs must specifically target these groups with culturally and developmentally specific messages and programs.

We need to be willing to conduct difficult evaluations of our current prevention programs. These are difficult both because of the political realities involved in subjecting established programs to scrutiny, as well as because such evaluations usually require large scale community evaluations, best done as randomized or quasi-experimental trials. Resources are too scarce for all of us, and must be devoted to those programs that are effective. This calls for lowering the walls between the 'researchers' and the 'program' people and joining forces to insure that we are conducting the best programs possible.

### Treatment

We should not forget about the rest of the injury control picture; prevention is only one phase in a continuum that includes the acute care of injured patients and rehabilitation of those with impairments to minimize disability and

return them as functioning individuals to society. One aspect I think has been most neglected is that of rehabilitation. For children with brain injuries, burns and lower extremity fractures, rehabilitation appears to have much to offer in returning children to school and society. However, many children do not receive intensive rehabilitation treatment. Moreover, few rehabilitation interventions such as physical therapy and occupational therapy have been rigorously evaluated with randomized controlled trials to determine their effect on the natural history of the sequelae of trauma in children and adolescents. We should start by documenting who gets and who does not get rehabilitation services and why, as well as subjecting common interventions which have not been evaluated to rigorous testing.

I believe that, while descriptive epidemiology has and will continue to play an important part in injury control, we need to move beyond this level. We need to conduct

rigorous epidemiological investigations of injury etiology and interventions; use these findings to guide our intervention programs; and insure that all children who do sustain injury are returned to their fullest potential in society. This is our challenge. It's also our opportunity.

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1 Rivara FP, Grossman DC. Prevention of traumatic deaths to children in the United States: how far have we come and where do we need to go? *Pediatrics* 1996 (in press).

### Editorial Board Member: brief biography

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Frederick P Rivara, MD, MPH, is George Adkins Professor of Pediatrics and Adjunct Professor of Epidemiology at the University of Washington and Director of the Harborview Injury Prevention and Research Center. His career has been devoted to the study of the epidemiology and prevention of injuries. Areas of interest have included childhood injuries particularly bicycle and pedestrian injuries,

motor vehicle injuries, alcohol related trauma, and more recently intentional injuries particularly those due to guns. His current interests are continuing to explore methods of injury prevention and the development of effective early childhood interventions for the prevention of greater violence.

The Harborview Injury Prevention and Research Center's most successful injury prevention program has been the promotion of bicycle helmets to prevent head injuries. Their studies demonstrated that helmets can prevent up to 85% of serious head injuries related to bicycling. Using this information, a community-wide initiative was developed for the promotion of bicycle helmets for school age children. This has resulted in an increase in helmet use from 3% to now 60%, and a 70% drop in head injuries related to bicycling. This program has formed the basis for many of the bicycle helmet promotion campaigns across the country.