REPORTS FROM THE FIELD

Community based intervention on adolescent risk taking: using research for community action

Carolyn Coggan, Barbara Disley, Pam Patterson

Abstract

Objectives—To use research on adolescent risk taking behaviour as an impetus for a community to develop locally based injury prevention strategies.

Design—Case study, based on a community action model and formative evaluation. This involved: a community profile on adolescent risk taking behaviour; interviews with service providers; dissemination of research findings to local policy makers; development and implementation of a community action plan to address adolescent risk taking; and assessment of its impact.

Setting—A rural town with a population of 10 195 situated in the North Island of New Zealand.

Subjects—School aged adolescents and the safety policies and practices of community organisations involved with adolescents.

Results—Risk taking behaviours identified by the community profile included: drink-driving, substance abuse, carrying of weapons with intent to harm, and suicidal ideation. Community members identified that risk taking behaviour associated with alcohol in relation to: (1) violence (self directed and assault) and (2) road related injuries should be the focus of their activities. The strategies identified focused on advocacy, education, legal/regulatory change, and environmental modification. Evaluation conducted six months after intervention identified increased community awareness of the adverse effects of adolescent risk taking and some changes in policies and practice related to adolescent safety.

Conclusions—Providing a community with local information that has high relevance for its members may act as a stimulus for the development of injury prevention initiatives. While this case study illustrated that a comprehensive approach focusing on adolescent risk taking behaviour, rather than on isolated injury problems, may be an appropriate way to highlight escalating adolescent injury rates, it also demonstrates the limitations of a short time frame for a community development project.

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Keywords: adolescent; risk taking; community; formative evaluation

Internationally, and in New Zealand, injury is the leading cause of death among adolescents.¹ Adolescence is also often a time when risks are taken. Activities such as not wearing bicycle or motorcycle helmets and seatbelts, drink-driving, substance abuse, unprotected sexual intercourse, physical violence, and self mutilation, all have the potential to affect the health of young people and cause loss, concern, and costs to all levels of society.² Recent reviews have shown that these high risk behaviours may be interrelated.³ It has also been suggested that a comprehensive approach that focuses on adolescent risk taking behaviour in general may provide a more effective injury prevention strategy than approaches targeted on specific injury problems.⁴ Providing local data to a community to increase their awareness of the need to develop strategies to prevent injury has been previously demonstrated.⁵ Very few, however, have focused exclusively on adolescents.

The community action model of research, which provided the framework for this work, is based on a number of assumptions that address both science and practice.⁶ From the perspective of research, studying adolescents in context is good science because these are the contexts in which adolescents live their lives. From the perspective of practice, local data are more applicable to that community and, as such, are more useful to local practitioners and policy makers (including parents who make policies in the home and influence community policies). In the language of social science, local community members often question the "external validity" of research conducted elsewhere.⁷ Furthermore, it has been shown that local residents are more likely to respond to programmes developed by members of their own community often in collaboration with outside researchers.⁸ This report describes the process of using research on adolescent risk taking behaviour to stimulate a community to develop locally based injury prevention strategies.

(1) Adolescent risk taking: a community action programme

This adolescent community action programme (ACAP) was conducted over an 18 month

Injury Prevention
Research Centre,
University of Auckland
C Coggan
P Patterson

Mental Health
Commission of New
Zealand
B Disley

Correspondence to:
Dr Carolyn Coggan, Injury
Prevention Research Centre,
Private Bag 92019,
Auckland, New Zealand.

period between 1994 and 1995. The lead agencies were the Mental Health Foundation of New Zealand (MHF) and the Injury Prevention Research Centre (IPRC) based at the University of Auckland, New Zealand. Funding (equivalent to US\$18 000) was provided by one of the four regional health authorities (North Health).

The criteria used to select a community were the need for the community: (i) to be located in the North Health region; (ii) to have a discrete geographical location; (iii) to have at least one secondary school; and (iv) to have a hospital within its boundaries. Riverdale (pseudonym), a rural town in the North Island of New Zealand, met the above criteria. It has a population of 10 195, with 15–19 year olds comprising 8% of the total population. Of these young people, 25% identify themselves as Maori (indigenous people of New Zealand) and 1% as Pacific Islands people. The remainder are of European descent.

The target audience for the ACAP were service providers and policy makers (including parents) associated with adolescents in Riverdale. All service providers and key policy makers within the education, health, welfare, justice, religious, local government, and recreation sectors participated in varying degrees in the development and implementation of the ACAP. Participation of parents was limited to those who attended the meetings (less than 20% of those eligible). Only a few members of the business community actively participated.

(2) Problem being addressed

The impetus to undertake a demonstration community action project centred on adolescent risk taking was both national statistics, demonstrating that injury is the leading cause of death for adolescents, and growing evidence suggesting that there is a relationship between risk taking behaviours and adverse health outcomes during adolescence.³ However, as has been demonstrated previously, national data are often insufficient to motivate communities to do anything about the problems facing their young people.⁹ To address this, local data were collected and disseminated.

Four local data sources were used: (i) 1989–94 public hospital discharge data relating to motor vehicle crashes, suicide attempts, and assaults; (ii) a risk taking questionnaire completed by all Riverdale students 16 years and over; (iii) 16 focus group discussions held with those who had left school; and (iv) 36 key informant interviews held with service providers.

Riverdale public hospital discharge data indicated that, for selected intentional and unintentional injuries, rates were comparable with the rest of New Zealand. Analysis of the questionnaire confirmed that adolescents in Riverdale were engaging in high levels of risk taking behaviour.

(3) ACAP: development and implementation

The developmental phase of this programme involved: finalising the programme structure;

formalising a relationship with the selected community; selection and training of two local programme coordinators; preparation of the risk taking profile; and dissemination of the findings. The implementation phase began with a community workshop facilitated by members of the two outside agencies. At this workshop, participants identified that risk taking behaviour associated with alcohol should be the focus of their activities. A group was established to implement the following strategies:

(A) ADVOCACY

- To support, on a local level, a ban on alcohol sponsorship of sport.
- To support stricter enforcement of underage drinking laws.
- To promote and encourage organisations providing conflict resolution strategies.
- To promote a wide range of recreational and leisure activities that do not centre on the consumption of alcohol or the taking of drugs.
- To identify, provide information on, and actively promote, referral of “at risk” adolescents to appropriate agencies.

(B) EDUCATION

- Support for the reintroduction of the school curriculum programme “Students Against Drink-Driving”.
- Provide information to adolescents on the impact of alcohol and cannabis, and actively support initiatives to change the culture of their acceptance.
- Provide opportunities for adults to be made aware of the responsibilities they carry as role models, that is their need to better monitor their own drinking and drug use, as well as that of their own adolescent children.
- Provide extensive education for teachers at the local high school relating to the identification and referral of “at risk adolescents”.
- Support the testing of a curriculum based programme “Mental Health Matters” being developed by the MHF.

(C) LEGAL/REGULATORY CHANGE

- Support changes to the law concerning alcohol and sports promotion; in particular, to support an alcohol tax for sports sponsorship similar to that of tobacco.
- Support stricter regulations surrounding the consumption of alcohol on sporting premises.
- Support stricter penalties for those who serve underage drinkers.
- Support regulations to restrict the carrying of weapons by adolescents.

(D) ENVIRONMENTAL MODIFICATION

- The provision of a multipurpose facility for adolescents.
- Support for the employment of a youth community worker.
- Support the employment of a specialist alcohol and drug counsellor.

- Work towards developing stronger networking links so that leisure/recreational resources are more widely used to support initiatives for adolescents.
- Work towards providing more opportunities for the development of stronger networking between health, education, and justice professionals involved with adolescents.

The above strategies involved the local coordinators and members of the representative group working with and coordinating the appropriate agencies and monitoring their progress. The local coordinators were responsible to the representatives from the two outside agencies, and between the regular visits made by these representatives, kept in regular contact with them by phone.

(4) Evaluation

Formative evaluation is a means by which programme activities and progress are assessed. The primary aim of the formative evaluation was to develop strategies that would address adolescent risk taking and promote wellbeing. This was achieved through the provision of information relevant to programme development and implementation, and included: the adaptation of an effective community development model; acknowledging the restrictive nature of the time frame; reinforcing the value of interagency collaboration and the collaboration of community groups with outside agencies; identifying, obtaining, and presenting relevant information in a timely manner, conducting evaluation to assess impact of the ACAP; and highlighting issues that need to be addressed before the commencement of similar programmes in other communities. No attempt to determine effects on injury outcomes was undertaken.

Providing effective ongoing formative evaluation input required maintaining a critical perspective on the programme, while working closely with those involved in planning and implementing it. The fact that the formative evaluator had an independent institutional base assisted in maintaining a critical perspective. In an activity such as the ACAP, where the intervention is in an emerging or development phase, a critical role for formative evaluation is to help community members identify goals and develop strategies for achieving them. The activities undertaken as part of this ACAP emerged largely through the discussion and planning process at community meetings. The role of the evaluator at these meetings was to bring research based substantive knowledge of adolescent risk taking and injury prevention to assist the discussions.

It is difficult to accurately assess the impact of this evaluation on eventual programme outcomes. Assessing changes in adolescent risk taking behaviours and attributing these to the ACAP is problematic. This community action programme was not designed in such a way, and did not operate in a context that would allow clear conclusions to be drawn about its effects. However, evaluation conducted six

months after the community activation workshop indicated that work had progressed to varying degrees on many of the strategies, especially those relating to environmental modification and education. For example, funding was provided for the employment of a specialist drug and alcohol counsellor for adolescents, premises were provided for a youth recreation centre, the curriculum based programme "Mental Health Matters" was tested at the local high school, teachers attended workshops to identify "at risk" adolescents, and the community had an opportunity to attend similar workshops. In addition, it was found that while the Maori community were not well represented in the development of the injury prevention strategies, representatives of this community were actively involved in this implementation.

(5) Lessons learned

Interagency support was an important impetus for the development of this locally based initiative. The comprehensive approach adopted by the MHF and IPRC, involving the community in the development of its own prevention strategies, resulted in the implementation of many initiatives to address risk taking behaviour. A key component was the employment of two community organisers. They acted as catalysts, helping adolescent risk taking issues to have a higher profile, and by encouraging institutions at the local level to take a greater role in injury prevention. The community adolescent health profile, especially the results from the adolescent risk taking survey, was a pivotal mechanism for community activation as well as the support given to the MHF and the IPRC by the local high school.

Unfortunately, the time frame for this project was short. A community development project needs sufficient time for all cultural groups to become involved. Initially, the Maori community were not well represented, but at the evaluation six months after the project Maori support for, and active involvement in, the implementation of injury prevention strategies was evident.

The conduct of this ACAP provided valuable insights into the process of community activation. It illustrated how providing a community with information can act as a stimulus for the development of injury prevention initiatives. It also suggests that using a comprehensive approach focusing on risk taking behaviour rather than on isolated unintentional or intentional injury problems may be an appropriate way to address escalating adolescent injury rates.

For additional information contact Dr Carolyn Coggan at the Injury Prevention Research Centre; phone +64 9 3737999 x 6348; fax +64 9 3737503; e-mail: c.coggan@auckland.ac.nz.

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Children and personal watercraft: injury characteristics and potential countermeasures

Chester S Jones

Every summer, families and children travel to the waterways to participate in recreational activities. One increasingly popular water activity for children is riding on, or operating, personal watercraft (PWC). When these were first produced in the 1970s, they were one seat water vessels with a maximum of 40 horsepower engines. Today, many manufacturers are producing vessels with three seats, horsepower over 120–135, able to reach top speeds of 65–70 miles per hour. Although there are many variations, the most popular is known in America as a Sea-Doo.

These PWCs generally cost \$4000 to \$8000. As one PWC dealer stated, “You would have to spend at least \$35 000 to \$40 000 for a boat to go that fast. Personal watercraft is a cheap way to go fast”.¹ Clearly, PWCs are getting bigger and faster and manufacturers appear to be targeting younger populations through sophisticated media advertisements, splashy designs, and appealing to the inherent “fun” of PWC use.

In response to the possible dangers from their use by people 18 years and under, many states in the US have passed regulations governing their operation. But questions remain: how safe are PWCs? Are these countermeasures enough? Are those under 19 at greater risk for injury as operators or passengers than older users? Another concern is for the safety of other users of the waterways.

Indications are that injuries, disabilities, and fatalities are increasing as the popularity of these boats grows. Injuries from PWC related crashes in the US have more than doubled from 1990–94.² Those to operators under 20 years of age have increased by 50% during the same time (these percentages do not include passengers). The magnitude of this public health problem, and research to prevent PWC related injuries, has not been adequately addressed.^{3–6} This may be due to the relatively recent emergence of the PWC as a popular watercraft or to the lack of detailed information or surveillance of incidents involving PWCs.

This paper describes childhood use and injury risk associated with PWCs in Arkansas, the availability and accuracy of injury data, and

suggests areas for improved surveillance and countermeasures.

Methods

To document the use and describe injuries associated with PWCs, boating accident reports provided by the Arkansas State Game and Fish Commission from 1994 through July 1996 were collected. By state law, all boating accidents involving a fatality or \$100 or more in personal property damage must be reported to the commission. These reports are collected by boating accident investigators certified through the US Coast Guard. Before 1994, the reporting of such accidents was the sole responsibility of the individuals involved and it was likely the data were inconsistent and unreliable. Therefore, researchers did not compile reports collected before this date.

Results

Over a 30 month period, Arkansas waterways recorded 82 wrecks, 57 injuries, and four deaths involving PWC. In most cases the operator was responsible for the event. Operators under the age of 18 were involved in 43% (35) (mean age 14 years), less than 20 hours of experience (69%), and most had no prior boating education class (98%). Most passengers were also under the age of 18 (70%). About half of all reported injuries occurred to those under the age of 19 (48%). The youngest fatality was an 18 year old who drowned after being thrown from a PWC.

Of the 27 injuries to those under 19, four included the head and neck, four involved a lower extremity, and one an upper extremity; the body part was not specified in the remaining 18. Specific types of injury included fractures (19%), lacerations (11%), abrasions (4%), sprain (4%), drowning (4%). Of the injured, 19 (70%) were operators.

The most frequently cited causes for incidents involving operators under 19 were inexperience (50%), inattention (28%), and negligent operation (10%). Alcohol was not noted as a factor in any report. Most events involved collisions between two vessels (77%),

Health Sciences,
University of
Arkansas, 308 HPER
Building, Fayetteville,
AR 72701, USA

Correspondence to:
Dr Jones.

with one out of five between two PWC. A majority occurred between June and July (75%), on weekends (65%), and between 2 pm and 6 pm (57%).

Less than half of the victims under 19 reported they were swimmers (44%), but most stated they were wearing a personal flotation device (94%).

Discussion

This study has several limitations. The reliability of the data is uncertain due to the dependence on the accident investigator to record accurate, detailed information. Information to determine injury type, severity, and etiology is not required on the investigation form and therefore is minimal and inconsistent. Additionally, no data now exist that could provide information on the number of registered PWC in Arkansas. This would assist in determining mortality, incidence, prevalence, and risks.

However, even the limited results indicate clearly that PWC are involved in injury related crashes, and that children and young adults are a priority for prevention. Unfortunately, due to the PWC image as a toy, and the marketing tactics of manufacturers, children may be at higher risk for riding, operating, and therefore, for injury. As PWCs increase in use, size, speed, and there are more children operators, several strategies for prevention of injuries should be considered. Priority areas for possible countermeasures based on the findings of the study, are education, legislation or policy, and manufacturing, engineering, or design modifications.

EDUCATION

A large percentage of events arose from inexperience or inattention. Only one child had received any boating education. In the US, only 16 states require boating education and only 10 require special training for the operation of a PWC.⁷ The PWC is much different in handling, maneuvering, and other characteristics, than other boats. Mandatory PWC education and training programs for beginning operators could increase these skills and an appreciation for the responsibilities included in operating these boats.

LEGISLATION

At present, 43 states have age restrictions limiting PWC operators, but these vary from 10 to 16 years of age.⁷ Another six states require licensure for operation. Other regulations

target speeding, restrictions on areas of PWC use, and boating environment policies. With regard to personal protection devices, most states require their use, but no state currently has laws pertaining to helmets. Due to the risk for head injury, helmets during PWC use should be considered.

MANUFACTURING AND DESIGN

As with any injury intervention, all this may not be enough. Just as with other products that have potential for injury, PWC manufacturers must take responsibility for developing safer vessels. In general, PWC are considered more safe than other outboard motorboats because their inboard propeller driven design decreases the risk for limb injury. But this is only one example of engineering design changes or modifications that could increase safety. Even though a majority of the wrecks on Arkansas waterways were attributed to human error, designing safer PWCs could limit those errors.

Enacting policies that limit age of PWC operation, mandating education and possibly licensure, and manufacturing design changes, are important countermeasures to consider.

These results are a call for injury professionals and researchers to (1) become more aware of PWC injuries in their communities; (2) enact better surveillance systems for characterizing the etiology of these events; (3) advocate for passage of age restrictions, education, and safe boating environment legislation; and, (4) require manufacturers to produce safer vessels by investing in the design of PWC that ensure safety as well as fun. Any interventions that have as their goal reducing injuries from PWC use should be evaluated for their effectiveness to determine the most appropriate strategies.

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REGIONAL REPORTS

Southern Africa (and beyond) report

I am constantly aware that most of my reports selfishly concentrate on happenings in Southern Africa. Occasionally, I am able to glean the odd item on what is happening further north from news reports, what little there is on the internet, or from that outstanding monthly, "BBC Africa". Rather than bore readers with poor excuses for this imbalance, may I rather reconfirm that I would welcome news (in any form whatsoever) related to childhood injury in Africa, and inclusion of which would allow this column to become more representative of the entire continent than it currently is. Those who are kind enough to submit news items will be personally acknowledged.

Having got that off my chest, I am thrilled to report on a fresh and exciting injury prevention campaign that has been hatched in Uganda, thanks to both support and input of local and international agencies. I am extremely grateful to Dr Olive Kobusingye, Director of the Injury Control Centre based at Makerere Medical School in Kampala, for providing me with the following information:

"Representatives from Ethiopia, Kenya, Uganda, Zambia, Zimbabwe, South Africa, and the World Health Organization (WHO) met on December 15-17 in Entebbe, Uganda at the joint WHO/Injury Control Centre Uganda (ICC-U) Working Group Meeting on Injury Prevention and Control in East and Southern Africa. Participants focused on the health sector issues of injury surveillance emergency medical systems, and health professional training in injury epidemiology and trauma care. A set of recommendations was formulated which has the potential to be a milestone for injury prevention in Africa.

The adoption of a standardized minimum data set for hospital based injury surveillance was discussed. A trauma registry form tested and used by the ICC-U will be presented to injury control workers in participating countries for input and development of a common format; it is hoped that this data set will form the core of a common trauma registry system in these countries. The single page trauma registry form includes ICD-9 categories of injury, a severity instrument (the Kampala score), victim and event information, and intentionality. Operate definitions for the registry have been written, and the form has already been tested in Uganda and Ethiopia. The trauma registry form is sufficient for base line injury measurements while at the same time keeping the form short and simple enough for a range of health workers to fill out".

Contact details for ICC-U: Dr Olive Kobusingye, Makerere Medical School, PO Box 7072, Kampala, Uganda (fax: +256 41 530022; e-mail: olive@imul.com).

DAVID BASS

Department of Paediatric Surgery,
Red Cross War Memorial Children's Hospital,
Rondebosch 7700, South Africa

Editor's note: While most Regional Reports have come from regular contributors—our team of Regional Editors—I am always delighted to receive contributions, regular or

otherwise, from others, especially from parts of the world where we do not have Editorial Board members. Please send your contributions to the editor, Barry Pless.

Pedestrian and bicyclist safety in New York City

Pedestrian and bicyclist safety in New York City (NYC) has been in the news lately. Mayor Rudolph Giuliani has raised the ire of NYC residents by increasing the fine for jaywalking from \$2 to \$50, plus making a court appearance mandatory for paying fines for this offence. In addition, the mayor has recently announced that pedestrian barriers which separate pedestrians and vehicles at certain intersections will be kept up "indefinitely". Anyone who has walked or driven the streets of New York know that its pedestrians are among the most aggressive in the world. The scene from the *Midnight Cowboy* in which Dustin Hoffman screams to an incensed driver, "I'm walking here!" exaggerates the attitude of the New York pedestrian, but only a little.

Pedestrian and bicyclist injuries are a serious and sizeable problem in NYC city. There was a 23% increase in the number of pedestrians and bicyclists killed in motor vehicle crashes in NYC last year, from 249 in 1996 to 302 according to preliminary police statistics for 1997, 3700 hospitalizations annually, and an estimated 10 000 pedestrians struck by motor vehicles but not hospitalized. Between 1994 and 1996 pedestrian deaths due to motor vehicles declined slightly from 223 to 213. In this same period motor vehicle occupant deaths decreased more substantially from 207 to 169. Despite the preponderance of pedestrian and bicyclist deaths, a study by Transportation Alternatives, a NYC watchdog group, found that most of the \$400 million of New York State and NYC funds earmarked for transportation safety in the next five years will go to improve the safety of vehicle occupants rather than the safety of pedestrians and bicyclists.

From a public health perspective, enforcement of laws as well as use of physical barriers to separate pedestrians and vehicles are perfectly respectable counter measures against pedestrian injuries. Some of the uproar is because the least lethal players in the urban drama, the pedestrians and bicyclists, feel they are being unfairly and illogically singled out. And, of course, other measures could and should be taken, including enforcement of speed limits, use of speed bumps, creation of walking streets in heavily congested areas, and stricter licensing of taxi drivers. But the public ridicule that has been heaped on the Mayor is a reminder of the critical role played by the social context in which environmental and behavioral interventions are launched.

POLLY E BIJUR

Kennedy Center, Room 920,
Albert Einstein College of Medicine,
1410 Pelham Parkway South,
Bronx, NY 10461, USA

British green papers highlight injury prevention

In February 1998, the British government published two green papers (consultative policy statements) for England and Scotland: *Our Healthier Nation* and *Working Together for a Healthier Scotland*. These outline a strategic approach to public health that build on earlier target setting exercises that have met with limited success.

The green papers are especially noteworthy in that the New Labour administration explicitly recognises the strong association between poverty and poor health and the need to tackle the former (as well as lifestyle and behaviour) in the context of a comprehensive health promotion strategy.

For England, 12 year targets will be set to reduce mortality and morbidity in four priority areas: heart disease and stroke, accidents, cancer, and mental health (suicide). Targets do not feature prominently (although they are not ruled out) in the Scottish paper which, in addition to the above four areas, flags up a number of others, particularly teenage pregnancy and dental health.

The green papers have been broadly welcomed by public health professionals. Disappointment has been expressed however on two main counts. First, no targets have been set to monitor progress towards reducing the widening socioeconomic inequalities in health in the UK. Second, the proposed action seems weak on specific, sustained, and adequately resourced measures designed to make a major impact on the underlying social, environmental, and economic causes of ill health. Moreover, while the poorer health (including injury) record of the Scots is acknowledged, this is not backed up by a commitment to mount a proportionately more vigorous health improvement programme north of the border.

For injury prevention professionals, the statements are a mixed blessing. On the positive side, "accidents" have held their place as priority areas in both England and Scotland. Unfortunately, the writers of the green papers have clung to an outmoded and discredited terminology, have offered virtually no new ideas to address the injury problem, and have proposed targets that are likely to be met in the absence of any further policy initiatives whatsoever. Cynics might argue that therein lies the huge political appeal of the target setting exercise!

DAVID STONE

The PEACH Unit,
Department of Child Health,
Yorkhill Hospital, Glasgow G3 8SJ
Scotland, UK

LETTERS TO THE EDITOR

Safety strategies

EDITOR,—Jan Shield is to be commended for rallying the troops in favour of "active" safety strategies,¹ and most of her arguments in favour of education and enforcement would undoubtedly be valid in a developed country. However I would like to offer two contrasting viewpoints on the subject which are based primarily on personal observations related to the challenges of traffic safety confronting us in a cash strapped, developing country.

Firstly, in support of passive measures is the increasing strain placed on the human and financial resources essential to conceive and sustain education programmes and law enforcement, particularly in developing countries. As such, traffic calming measures are likely to be more effective than nothing—simply because there is no other affordable solution to undisciplined traffic flow on a

particular thoroughfare. Twelve months ago, the community in which I live opted for a system of restricted entry through the suburb to reduce to number of "rat runners" speeding along a particular route during the early morning. At the time the system was put in place, law enforcement of the system was sufficiently regular to be taken for granted, and to ensure an 86% reduction in traffic flow. Then, three months ago, the traffic department underwent severe rationalisation, and overtime for all officers was abolished. Now there is no enforcement of the restricted entry system and the "rat runners" are back in force. In retrospect, a passive measure such as closure of the main access road would obviously have been the better choice. In South Africa, where formal education is limping along on a shoestring budget, and law enforcement (for a multitude of reasons) is virtually non-existent in some areas, the option of passive safety measures must be placed high on any agenda—certainly where traffic safety is concerned.

Against what I have argued above is a word of caution. Just as active measures may fail, so may the too hasty adoption and construction of a passive device which is inappropriate for the identified purpose. Possibly because environmental modification may be the quickest and cheapest solution to an injury hazard—a form of instant gratification—the device too hastily chosen may fail dismally to counter that hazard simply because of a lack of adequate research into the hazard itself, or failure to consult expert opinion before firing up the cement mixer. Again, in South Africa, I notice a growing trend for traffic calming measures to be demanded by community groups, often in response to a spate of casualties in a residential area, or because a particular intersection has been identified as a "black spot". Lay people may go one step further and put pressure on a municipality to construct a specific kind of device, speed humps being particularly popular, although by no means a panacea where the hazard may be compounded by a complexity of factors of which vehicle speed is only one. Also, piecemeal engineering may simply divert a hazard elsewhere so that it becomes the problem of a neighbouring suburb instead.

The most effective passive strategies may simply require forward planning rather than hoping vainly that a "finger in the dyke" approach will plug the gaps later on. Resorting to an ad hoc solution reflects that town planners eschewed safety considerations from the outset and the attitude that condones such blinkered thinking must be discouraged.

There is currently a backlog of over two million subsidised houses in South Africa. These can be constructed either according to an inexpensive generic plan which creates lots of accommodation, and many attendant hazards, or by careful planning that can ensure that safety features are built into the scheme as a whole, for example sufficient recreational space and play areas, shorter streets, restricted access for through traffic, etc. In that effective, enduring passive safety measures do indeed require foresight, research, and careful consideration, these should not be either resorted to, or denigrated as a "cop out", or even worse, as a quick fix.

DAVID BASS

Department of Paediatric Surgery,
Red Cross War Memorial Children's Hospital,
Rondebosch 7700, South Africa
(e-mail: DAVEB@redxch.wcape.gov.za)

1 Shield J. Have we become so accustomed to being passive that we've forgotten how to be active? *Inj Prev* 1997;3:243-4.

Challenge of drowning prevention in low and middle income countries

EDITOR,—We read the editorial on "The challenge of drowning prevention" with great interest.¹ There is no doubt that drowning is a major but under recognised cause of premature loss of life and disability. This has been borne out by the Global Burden of Disease Study which highlights the scale of the problem, by region and by age and sex characteristics.² It is worth examining their findings further.

At a worldwide level, Murray and Lopez estimated that drowning was responsible for about half a million deaths in 1990 and ranked 20th as a leading single cause of mortality, after road traffic accidents (9th), self inflicted injuries (12th), and violence (17th) as the other injury related causes.³ Mortality rates from drowning were highest for children under 5 in China, followed by countries belonging to the "other Asia and islands" region, and sub-Saharan Africa, with the lowest rates in the "established market economies" (EME).⁴ In this age group, the mortality rate ratio between China and the EME was 13:1 in boys and 22:1 in girls.

The large degree of variation between the different regions in the study must belie an even greater variation, both between and within countries, given the different geography and populations. There is great diversity in the circumstances in which drowning occurs in these different areas. Whereas swimming pools, sailing, and water sports may be priority areas in the EME, in low income countries attention must need to be paid to drowning in streams, wells, dams, cisterns, and while fishing.^{1,4} Clearly there are a huge range of different environmental and behavioural circumstances. The obvious intervention to keep the child who cannot swim away from water must have a different interpretation in the different regions. Although swimming pools could be fenced in EME countries, the fencing of waterways would be impractical in countries where this runs into thousands of kilometres. This is not to say that there are no common approaches. As the editorial rightly points out, education about the risks, closer supervision, and training in resuscitation are important first steps which could be applied globally. Researchers also need to study the circumstances under which drowning occurs and the first aid and health care response, within countries and cross nationally. Data on good practice need to be collated so that appropriate interventions which are transferable to other low and middle income countries can be easily identified. Whatever the intervention there is an urgent need to get drowning higher on the agenda for policy makers and researchers.

*The Global Burden of Disease Study used the eight global regions identified by the World Bank for the World Development Report 1993 with similar levels of socioeconomic development, epidemiological homogeneity, and geographical contiguity: the EME, former socialist economies of Europe, India, China, other Asia and islands, sub-Saharan Africa, Latin America and the Caribbean, and the Middle East crescent (which includes North Africa, the Middle East, Pakistan, and the Central Asian republics of the former Soviet Union).

DINESH SETHI
ANTHONY ZWI
Health Policy Unit,

London School of Hygiene and Tropical Medicine,
Keppel Street, London WC1E 7HT, UK

- 1 Pless IB. The challenge of drowning prevention [Editorial]. *Inj Prev* 1997;3:237-9.
- 2 Murray CJL, Lopez AD. *Global health statistics: a compendium of incidence, prevalence, and mortality estimates for over 200 conditions*. Volume II. Cambridge: Harvard University Press, 1996.
- 3 Murray CJL, Lopez AD. Mortality by cause for the eight regions of the world: Global Burden of Disease Study. *Lancet* 1997;349:1269-76.
- 4 Celis A. Home drowning among preschool age Mexican children. *Inj Prev* 1997;3:252-6.

Injuries in less industrialised countries

EDITOR,—I read with interest the report by Mohan published in December.¹ I agree that "Priorities for injury control have to be based on intelligent assessments of official statistics...". This is what prompted me to call attention to the improper use of the word "rate" as presented in the second paragraph, where the author writes "...the rate in India (8.6) is..." in reference to table 1 "Distribution of deaths as a percentage of regional total".

Rates and proportions (expressed as percentages) are different. A rate is the ratio of two different quantities (generally symbolised by the equation a/b) while a proportion is the result of dividing two quantities where the numerator forms part of the denominator (symbolised by the equation a/(a + b)). A proportion multiplied by 100 is a percentage.

Rates and proportions are not synonyms. It seems the author meant to say "percentage" and not "rate". This mistake could confuse those beginning in the field of epidemiology, prompting them to think that "percentage" and "rate" are synonymous: they are not.

ALFREDO CELIS
Public Health Department, CUCS,
University of Guadalajara,
Sierra Mojada #950,
Colonia Independencia, Centro Midico,
44242, Guadalajara,
Jalisco, Mexico

- 1 Mohan D. Injuries in less industrialised countries: what do we know? *Inj Prev* 1997;3:241-2.

BOOK REVIEW

Target Risk: Dealing with the Danger of Death, Disease and Damage in Everyday Decisions. By Gerald J S Wilde. (Pp 234.) Toronto: PDE Publications, 1994. ISBN 0-9699-12404.

In *Target Risk*, Professor Gerald Wilde of Queen's University in Ontario, Canada assembles an impressive body of theory and evidence to support a provocative conclusion: the only effective strategy for achieving substantial and durable reductions in the rate of injury in a population is to increase people's desire to be safe and healthy. Traditional measures of injury prevention—engineering, education, and enforcement—are doomed to failure because they do not alter the "target levels of risk" that govern risk taking behaviors. The process of "risk homeostasis" will ultimately undermine all non-motivational countermeasures, since people will alter behaviors to achieve an equilibrium between the overall amount of risk they perceive and their overall desired level of risk. The key to success, Wilde argues, is "expectationism": promoting people's interest in their future wellbeing in order to motivate adoption of smaller risk targets.

Wilde is not arguing that people enjoy or seek risk of injury. Like behavioral decision analysts and economists, he postulates that people select or accept risk targets in order to achieve other desired ends in life. When safer highways are built, drivers trade some or all of the extra safety for faster travel speeds and more relaxation (and inattention) in driving. When road conditions deteriorate (due to ice or fog), people sense elevation in risk and respond by slowing down and driving with more care. Using variations on this adaptation theme, Wilde challenges the effectiveness of most mainstream injury prevention measures: seat belt laws, antilock brakes, traffic lights, driver training/education, crack-downs on drinking and driving, highway design improvements, motorcycle helmet laws, you name it! Even more provocatively, Wilde hints that any long term progress that might be made in fatal injury could be offset by increases in the risk of fatal diseases (since people's overall risk target is maintained).

Technical specialists will certainly find fault with Professor Wilde's handling of a variety of complex empirical questions. For example, I thought his discussion of the association between the business cycle and injury frequencies was fair and insightful, yet his assessment of the effectiveness of safety belt use laws was highly selective, one sided, and arguably deceptive. Professor Wilde also has a tendency to see risk homeostatic explanations behind all empirical anomalies. Again, on safety belt use laws, Wilde notes that if belts are 50% effective in saving lives, and if belt use rates increased 50 percentage points following laws, why didn't laws cause an immediate 25% decline in occupant fatality counts? (Wilde is correct that few jurisdictions have experienced 25% reductions in fatalities after belt laws.) Aha, Wilde asserts, maybe drivers offset the benefit of the safety belts by taking more risks. Some alternative explanations that Wilde ignores are (a) the most crash prone drivers (for example, drunks and young males) may be least likely to comply with the law, (b) the 50% increase in use is an exaggeration, and even (c) the 50% effectiveness number may be biased upward (we once thought belts might be 60-90% effective).

Yet I would urge specialists to overlook Wilde's handling of detailed technical matters because such focus can cause the reader to shortchange Wilde's overall message. It is a message that the field of injury prevention needs to hear. We spend remarkably little effort on bottom-up approaches to motivating safety (for example, incentives) and inordinate resources on top-down measures aimed at protecting people from their folly (for example, helmet laws and speeding controls). A deeper understanding of the motivational barriers that frustrate injury prevention measures is critical to the advancement of our field. Professor Wilde makes a lasting contribution by shedding some light on this neglected area.

This book has a length of 234 pages. It is comprehensive in topic coverage. The topics are as follows: the concept of homeostasis, compact theory of risk taking, theory of risk homeostasis, deductions and data, intervention by education, remedy by engineering, enforcement action, risk homeostasis in the laboratory, individual differences, and motivating for safety and health.

JOHN D GRAHAM
Harvard School of Public Health,
Boston, USA

PEDNET

One of the strengths of the pedestrian e-mail network, PEDNET, is the diverse background of the participants. Last month, a physicist, Alan Streater (ads4@lehigh.edu), used his analytical skills to examine how major newspapers covered 42 motor vehicle pedestrian deaths. He termed his analysis "quick and dirty" but it provides insight into the quality of coverage.

He categorized the wording in the reports into neutral, slightly biased against the pedestrians (for example, pointing out twice that it was dark or that the pedestrian was not on a crosswalk), or very biased against pedestrians (for example, "darted out", "ran out into traffic", etc). He found the wording was mostly neutral in 26 out of 42 (62%), partially biased in five cases (12%), and clearly biased in 10 cases (24%). In six cases (14%) the report provided additional wording to excuse the driver, such as "it was raining and hard to see". There were no cases in which wording appeared to exonerate the pedestrian in any way.

Alan had a disturbing observation—that newspaper reporters obtain their understanding of the fatality from police reports. He sees the need for a more careful analysis of biased language in newspaper coverage and, perhaps more importantly, police reports. The consequences of this bias may be more than just public perception; this bias may also jeopardize the prosecution of dangerous drivers. He also recommended comparing interregional and international differences in bias. He also reported the coverage of charges filed. A driver was reported to be charged in only one case out of 42 (2%). In all other cases (98%) the police apparently did not even issue a traffic ticket to the driver at the scene of the crash or shortly thereafter. In six cases, the crash was reported to be still under investigation, implying there is still a chance that some of these drivers might be charged later. Two cases were hit and run, and in one case the driver died. This analysis closely matches Amy Lightstone's recent analysis of drivers who kill child pedestrians. She found that 214 out of 237 drivers were not cited (90%).¹ Can something be done to change this obviously dangerous situation?

Again, the diversity of PEDNET participants provides insight into addressing driver behavior. Osias Baptista Neto (techtran@ouro.alcance.com.br) reported that Brazil has reduced casualties dramatically after a change in traffic law at the beginning of the year. The new laws recognize that vehicular homicide may be unintentional but none the less results from risky behavior. Killing another person in a traffic crash results in imprisonment for two to four years, and a suspension or revocation of the driving license. It increases the penalty by half for striking a pedestrian in a crosswalk or on the sidewalk (pavement). He reports that preliminary data show a 70% drop in casualties in the major cities like Sao Paulo, Belo Horizonte, and Curitiba. His report illustrates the benefits of global comparisons of injury control efforts. *Injury Prevention* connects the English speaking world, but extra effort is required to reach beyond the barrier of differing language.

The barrier is especially significant with legal terms and concepts. However difficult to analyze, injury prevention specialists need to

examine international differences in how legal systems treat motor vehicle injuries.

PETER JACOBSEN
PO Box 712433,
Los Angeles,
CA 90071-7433, USA

1 Lightstone AS, Peek-Asa C, Kraus JF. Relationship between driver's record and automobile versus child pedestrian collisions. *Inj Prev* 1997;3:262-6.

Correction

We regret that a production error occurred in the March issue; this resulted in three addresses being omitted. The missing addresses are as follows:

- Charles Larson (Going international: what are the implications? p 4), Pediatrics, Epidemiology and Biostatistics, Montreal Children's Hospital, 2300 Tupper, Montreal, Quebec H3H 1P3, Canada.
- Robert W Platt (ANOVA, *t* tests, and linear regression, p 52), McGill University/Montreal Children's Hospital, 2300 Tupper, Montreal, Quebec H3H 1P3, Canada.
- Chester S Jones (Children and personal watercraft: injury characteristics and potential countermeasures, p 61), Health Sciences, University of Arkansas, 308 HPER Building, Fayetteville, AR 72701, USA.

CALENDAR

18-22 October 1998. Fourth International Symposium: Rural Health And Safety In A Changing World, Delta Bessborough Hotel, Saskatoon, Saskatchewan, Canada. Organized by the Centre for Agricultural Medicine, University of Saskatchewan in cooperation with the Canadian Coalition for Agricultural Safety and Rural Health, Committee on Occupational Health in Agriculture of the International Commission on Occupational Health, and others. This conference seeks to capture the emerging science of health, safety, and sustainability in agriculture and rural life, and to probe beyond these issues to address the thriving and survival issues of the future. In addition to abstracts from scientists, health care workers and others, abstracts are also invited from rural people with views on this topic. *Further details:* Fourth International Symposium: Rural Health and Safety in a Changing World, Centre for Agricultural Medicine, RUH, PO Box 120, Saskatoon, Saskatchewan S7N 0W8, Canada (e-mail: symposium.98@usask.ca, web site: www.usask.ca/medicine/agmedicine/symp98.html).

Notice to authors: a new section Brief reports

All editors would like to publish as many worthy papers as possible, with minimal delay. To facilitate this, in future, the journal will include a section entitled "Brief reports". These will be peer reviewed and when approved, publication will be expedited.

Please note: papers being submitted for this section should not exceed 1500 words.