

up the challenge? Perhaps some of us feel threatened by a change in emphasis, or maybe we don't understand the techniques of educational/behavioural approaches and feel uncomfortable with them. Most of us tend to seek the solutions we are most comfortable and familiar with—thus surgeons recommend surgery, engineers propose design changes, educators advocate teaching, and epidemiologists suggest that more data be collected!

The techniques of education and behaviour modification are certainly different from those of environmental change, and also are practised by different professional groups, many of whom don't speak the language of the other players. It is possible that those who espouse the passive approach might learn a great deal from those who've had to adapt to active approaches to achieve their objectives, and vice versa.

I'd like to suggest that we're in danger of becoming lazy (passive even?) in choosing those interventions that are 'easy' to do and neglecting those we consider too difficult. Of the 'three Es', education remains a key element. Without it enforcement and engineer-

ing approaches cannot be effective. Before any countermeasures are implemented, politicians, injury control professionals, and the community, all need to be educated, influenced, and bullied into supporting change. The key to using active strategies constructively is education—we need to improve the education rather than dismiss it.

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## DISSENT

### From educator to strategic activist for injury control

Elizabeth McLoughlin

The important question is not: are you for or against education to prevent injuries? The essential question is: what most effectively prevents a certain type of injury? My first 10 years working to prevent burns led me to believe that product and environmental modification to reduce the risk of injury was more effective than education about safe behaviors. As a teacher, this was a shift for me. I had started working as director of burn prevention at a pediatric burn unit in 1973, after earning a masters degree in education and teaching for seven years in classrooms from Head Start to adult evening college.

Several articles about our early prevention work highlight some of the lessons I learned. One article published in 1977 detailed a decrease in the number of children burned by sleepwear ignition who were admitted to our unit, coincident with the establishment of the children's flame resistant sleepwear standard.<sup>1</sup> A pair of papers, published in 1982, concluded that a five year, \$1 million public education burn prevention program resulted in some knowledge gains among children participating in classroom activities, but had no measurable effect in reducing burn rates in metropolitan

Boston.<sup>2,3</sup> Another, published in 1985, concluded that county legislation requiring residential smoke detectors resulted in more homes being protected by working detectors, compared with a county without that requirement. Homes built after 1975, when building codes required 'hard-wired' detectors in all new construction, were more likely to have working detectors regardless of county. Personal letters using threat or persuasion that were sent by fire chiefs to home owners failed to have a measurable effect on detector use.<sup>4</sup>

Environmental change is measurably effective in preventing injury. In addition to flame resistant sleepwear, examples include changing vacuum cleaner electrical cords to prevent mouth burns in toddlers,<sup>5</sup> window guards to prevent childhood falls,<sup>6</sup> the packaging of drugs,<sup>7</sup> the design of safer cars,<sup>8</sup> and of safer highways.<sup>9</sup>

The primary reason why we in public health should, whenever possible, focus on making environments rather than behaviors safer is that environmental changes protect whole populations. Safe behaviors must be adopted individual by individual. They must be practised routinely, maintained over a lifetime, and be

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powerful enough to overcome the multiple and complex factors contributing to injury causation. Unfortunately and sadly, experience proves that safe behavior by itself is often not enough.

Education to persuade whole populations of individuals to adopt safe behaviors is a less effective tool for injury control. Education aims to increase knowledge, but one's knowledge does not always determine one's behavior. Even if they were successful in persuading people to behave safely, educational interventions must be constantly repeated, because people forget and populations change. Additionally, educational interventions are least likely to reach and influence highest risk populations, given the developmental characteristics of the very young, the very old and adolescents, and the consequences of poverty and social isolation. Further, such interventions tend to put the burden of change on those with the least resources.

However, education is not the only tool for behavior change. For example, some riders wear motorcycle helmets because they agree with educational messages about their usefulness; other riders do so only because it is an enforced law with large fines attached to non-compliance. Regardless of why the helmet is used, helmets protect riders from brain injury.<sup>10</sup>

Injurious incidents are complex and multifaceted, and so are interventions to prevent them. Recent developments with children and airbags illustrate how several strategies must be employed to prevent specific kinds of injuries. Airbags were developed and installed to protect car occupants in crashes. Airbag performance standards were based on adult body size and relatively high speed crashes. While airbags have saved 1500 lives in the United States through November 1996, they have also deployed in low impact crashes and killed 19 drivers and 31 children as front seat occupants.<sup>11</sup> These include infants in rear-facing car seats, unrestrained children, and adults of small stature. Consequently, federal officials are modifying airbag performance standards, car manufacturers are attaching highly visible warning labels in cars, and police are enforcing restraint laws. At the same time, public/private partnerships are intensifying education campaigns about the use of proper restraints (seat belts and car seats) and placement of infants and small children (always in the back seat). The redesigned airbag will continue to provide protection in crashes, provided that vehicle occupants practice the necessary safe behaviors. However, additional product modifications are needed. For example, building standard anchorages and/or child safety seats into the back seats of cars will increase the likelihood that children are properly restrained. It is beneficial when engineering, regulation, enforcement, and education converge to support a safer environment.

More and more, the merits of injury control interventions are argued in economic terms. What is a life worth, and how expensive is the proposed measure to save that life? If education

is perceived to be cheaper, some people advocate using it to change people rather than using engineering and political capital to change products and environments. Efforts to regulate products and environments tend to draw political and corporate opposition, because they force changes which traditional market forces have not yet demanded. In contrast, education campaigns draw corporate and political support because they appear to cost less, focus on individual liberty and responsibility, and foster good public relations for police or fire departments, corporations, healthcare facilities, or insurance companies. But is this more effective in preventing injuries? The weight of the evidence from the literature suggest not.

An interesting analysis from New Zealand examines the costs and potential effectiveness of school instruction versus traffic calming to prevent childhood pedestrian injuries.<sup>12</sup> Traffic calming strategies include modifications of street surfaces, widths, shoulders, and parking practices. The authors determined that these are potentially more cost effective in protecting children than are school based instruction.

Some types of injury do not lend themselves easily to product and environmental protection. Interpersonal violence is one such problem. However, even here, there are public policy interventions which will reduce risk. Reducing the saturation of neighborhoods by alcohol outlets and advertising,<sup>13</sup> and increasing the cost of alcohol,<sup>14</sup> may reduce alcohol related violence. In the United States, a rational gun control policy which reduces handgun availability would reduce the lethality of interpersonal violence.<sup>15</sup> Taking on powerful industry forces such as the alcohol lobby and the National Rifle Association make these injury control interventions among the most difficult challenges in public health today—but despite the challenges, important advances are being made.

However, reducing the availability of alcohol and guns do not address the root causes of violence, for which there are no single or simple solutions. Interventions require multifaceted public policy and community based approaches, including economic development, improvement in education, jobs, child care, and housing, as well as programs aimed at changing the behavior of violent people. Education to increase public support for these approaches is essential to their implementation.

If strategies to prevent injuries must transcend individual adoption of safe behaviors, what, then, is the role of educators? They are key participants in strategic action for injury control. Their training well equips them to distill and translate academic research findings into user friendly, lay terms, thus providing essential knowledge to policy makers, engineers and city planners, community activists, the media, and voters. They are trained to think and speak clearly 'on their feet' and thus can voice sound public policy recommendations through the popular media of TV, radio, and newspapers. They can debate with corpo-

rate leaders and policy makers about the merits of a proposed policy. They can reach out to those whose lives have been tragically altered by injury, and help them channel their grief into strategic action. They can mentor young professionals who will work to prevent injuries well into the 21st century.

Injury control educators should not focus on the daunting task of trying to convince every individual to behave safely. In fact, they have a far broader charge. They must facilitate the implementation of policies that most effectively create a safer population.

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