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Spheres of Risk: Examining Targeted and
Universal Approaches to Childhood
Injury Prevention

Tanya Morton
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By
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The Munk School of Global Affairs at the University of Toronto seeks to be an internationally recognised leader in interdisciplinary academic research on global issues and to integrate research with teaching and public education. We place special emphasis on the fostering of innovative interdisciplinary knowledge through the exchange of ideas and research among academics as well as the public, private, and voluntary sectors.

We are delighted to present this collection of research papers from the Comparative Program on Health and Society based on work that our fellows undertook during 2009–2010. Founded in the year 2000, the Comparative Program on Health and Society (CPHS) is a vital and growing research institute based at the Munk School of Global Affairs at the University of Toronto. Generously funded by The Lupina Foundation, the CPHS supports innovative, interdisciplinary, comparative research on health, broadly defined through our extensive range of fellowships, which for 2009–2010 included CPHS Junior Doctoral Fellowships, CPHS Senior Doctoral Fellowships, Lupina/OGS Doctoral Fellowships, Post-Doctoral Top-Up Fellowships, and Research Associate Positions. Our program builds on the scholarly strengths of the University of Toronto in the social sciences, humanities, and public health.

As the CPHS moves into its second decade, we have adopted a renewed vision of the social determinants of health which recognizes the complexity and interrelatedness of domestic, transnational, regional, and global factors that may impact on health conditions and access to health-related services within any country, including Canada. We recognize similarly that emerging and entrenched health inequalities may require policy-makers, communities, and researchers to grapple with challenging ethical, human rights, and social justice questions. We have accordingly expanded the thematic focus of the Comparative Program to accommodate research which specifically focuses on these definitional and operational challenges. The research papers you will read in this year’s collection reflect these themes, and demonstrate the variety, complexity, and importance of comparative health research.

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Spheres of Risk: Examining Targeted and Universal Approaches to Childhood Injury Prevention

Tanya Morton

Abstract
One identified high-risk group for injury is children of low socio-economic status. One of the enduring controversies in the prevention field is whether programs should be offered universally to the whole population or target specific “high-risk” groups. The debate on universal versus targeted programs has been ongoing. This paper discusses the implications of universally offered and targeted injury prevention programs. An analysis of the targeted versus universal conundrum suggests that a comprehensive constellation of universal and targeted programs are conducive to addressing the various levels of injury risk to children. However, universal models of prevention have advantages in terms of promoting safety through wide-ranging public policies. Considering the social determinants of health can enhance the identification of injury prevention priorities amongst researchers and health and social service professionals. Given the recent economic context of widening income disparities, injury prevention practitioners and child advocates can learn from existing success stories of universal programs in injury prevention as a way to mute the effects of socio-economic inequality. Future directions for research and practice are discussed.

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INTRODUCTION
The Extent of the Problem
In Canada, injury is the leading cause of death among those 1 to 44 years old (SMARTRISK 2009), and the fifth leading cause of death overall (Statistics Canada 2008). Injury can occur unintentionally, or as the result of a deliberate act of harm. The economic burden of unintentional and intentional injuries combined is estimated at $19.8 billion for Canada as a whole (Health Nexus Santé 2010). Unintentional injuries are the leading cause of death and disability for Canadian children, killing at least 900 children and youth each year (Health Canada 2005), while intentional injuries are the fifth leading cause of death for children age 1-14 (Safe Kids Canada [SKC] 2006a). About 90% of fatal injuries to children are classified as unintentional, meaning that the injury was not meant to harm the victim (SKC 2006b). However, injuries occur according to patterns and can be predicted and prevented. Because the economic and personal burden of death and disability due to injury is staggering, there is a need to identify factors that increase children's risk of injury so that prevention programs may be informed.

Objectives of this Paper
The objectives of this paper are fourfold. First, some of the basic issues and definitions will be presented relating to the influence of socio-economic status and the social determinants of health on injury prevention. Second, the salient themes arising from the targeted versus universal approach to injury prevention will be discussed. An analysis of the targeted versus universal conundrum demonstrates that both types of programs are conducive to a comprehensive mix of injury prevention programs that encompass the complex
circumstances of injury. However, the analysis suggests that universal models of prevention have certain advantages over targeted programs in terms of emphasizing public policy to promote safety. Third, this paper suggests that universal models of prevention can enhance the identification of injury prevention priorities for action amongst researchers and practitioners. Finally, this paper explores some future directions that will help health and social service professionals frame their decisions and actions with regard to planning injury prevention programs. In summary, this paper is designed to examine whether and to what extent the perceived sphere of risk for injury influences the programs and solutions proposed.

Certain portions of the literature must be excluded from the present discussion. This paper will focus on children in the approximate developmental stage from less than a year to six years of age, the years when they are most vulnerable to injuries in their homes. Because young children have limited mobility, their injuries are closely related to their caregivers’ supervisory styles and to their proximate environments (Powell and Tanz 2002). Hence, supervisory and environmental realms will be a focal point of the paper.

**Background**

In North America, deaths caused by injuries declined substantially during the 20th century, largely because of improved housing, heating, advances in medical and surgical care, and the increased use of injury prevention strategies such as smoke alarms and helmets (Cristoffel and Gallagher 2006). Fortunately, the overall injury death rate among children 14 years of age and under in Canada declined by 37% between 1994 and 2003 (SKC 2006a). The success of injury prevention efforts to date has been demonstrated by these improvements and validates the continuing investigation of the antecedents to childhood injury. However, some types of injury, such as pedestrian injuries and poisoning, have been better addressed in comparison to others, such as playground falls (SKC 2006a). Injury remains a serious and preventable problem that does not receive the share of attention and research dollars proportionate to its magnitude (Cohen et al. 2003; SKC 2006b; Sergerie, and Farley 2008). Moreover, there exists a large discrepancy between what is undertaken to prevent injury and what is known about preventing injury, a discrepancy wider than that of any other major health problem (Christoffel and Gallagher 2006; Peden et al. 2008).

**SOCIO-ECONOMIC FACTORS**

**Definition**

SES has been defined as “a hierarchical continuum that takes into account the lifestyles, attitudes, and values that define a person’s position in society” (Birken et al. 2006). Although this definition includes the social dimension of SES, income and wealth are also important SES markers (Cubbin and Smith 2002). Studies across countries have found significant differences in child injury death rates based on socio-economic class, with higher rates of childhood injury among the lower socio-economic groups in comparison to their more well-off counterparts (e.g., Barkin, et al. 2006; Faelker, et al. 2000; Hippisley-Cox, et al. 2002; Lyons et al. 2003). The social class gradient for deaths due to injuries has been found to be far steeper than any other cause of child death (Jarvis, Towner, and Walsh 1995). The source of the additional vulnerability among poor children includes a complex array of behavioural, social, and environmental factors. Socio-economic influences are hypothesized to affect injury through pathways such as the quality of local resources (e.g., goods and services, social capital, residential stability, the built environment). The external causation of injury emphasizes the potential relevance of the physical and social environment, including socio-economic factors, in contributing to injury risk (Cubbin and Smith, 2002). In sum, there is an established relationship between socio-economic conditions and child injury (e.g., O’Campo et al. 2000; Shenassa et al. 2004; Tester et al. 2004) and socio-economic conditions and child health in general (Raphael and Bryant 2006).

**Widening Inequality?**

Studies suggest that the socio-economic inequality in death rates among children has widened in recent years. A likely explanation is an increase in the unequal exposure to injury-promoting environments on the basis of widening income differentials (Edwards et al., 2006; Roberts and Power 1996; Singh and Kogan, 2007). However, Birken et al. (2006) did not replicate the widening socio-economic inequality in injury death rates of young children. Moreover, studies on the relationship between non-fatal injury and social
class have presented results that are less clear-cut than those for fatal injury (e.g., Canadian Institute for Health Information [CIHI] 2010; Dougherty, Pless, and Wilkins 1990; Faelker et al. 2000; Ni, Barnes, and Hardy 2002; Scheidt et al. 1995). Socio-economic gradients have not been observed for every injury outcome and every population (e.g., Canadian Institute for Child Health 1994). One explanation that may help explain these discordant results is that patterns of injury vary by mechanism and severity, the age group affected, and the measure of SES (Lyons et al. 2003, Poulos et al. 2007). The influence of SES factors and their interaction with childhood injury are still not unequivocally known. The variety of measures of SES that exist may explain some of the discrepancies in results that have been observed (Faelker 2000; Mackay et al. 1999). Constructing an accurate measure that captures the myriad dimensions of SES is difficult. The study of the relationship between SES and injury has been complicated by the range of operational definitions of SES across studies, a complication made most apparent during attempts to synthesize the evidence (e.g., Downswell and Towner 2002; Mackay et al. 1999). Moreover, a null result indicating there is no difference between the more and less privileged groups could possibly be due to the effects of already existing interventions (Moller 1997). The difficulties in defining and delimiting SES are but one challenge in the complex process required when profiling communities and subsequently selecting, implementing, and evaluating prevention programs.

Definition of Injury

The definition of injury drives the approach to injury research, including “determining priorities for prevention initiatives, developing indicators for monitoring trends, and comparing results” (Scott 2009, 5). In comparison to other health conditions, injury has unique properties because of its sudden and acute nature, because it is externally caused, and because it must simultaneously be defined by its external causation and the resulting bodily harm (Cubbin and Smith 2002; Scott 2009). A general definition of injury commonly used in the field of injury prevention and control is “any unintentional or intentional damage to the body resulting from acute exposure to thermal, mechanical, electrical, or chemical energy or from the absence of such essentials as heat or oxygen” (National Committee for Injury Prevention and Control 1989, 4). Injury severity is often portrayed as a pyramid with the most severe consequence, death, at the top, then the less serious consequences of hospitalization and emergency room visits arranged downward hierarchically.

Although few papers address intentional and unintentional childhood injury together, this paper aspires to do so. Studies show that child abuse (so-called “intentional” injury) is often misclassified by health professionals as unintentional (Lavelle et al. 1995), and primary care physicians may be reluctant to report suspicious injuries (Flaherty et al. 2008). Moreover, studies have found a similarity of risk factors for both intentional and unintentional injury (Deal et al. 2000; Durkin et al. 1994) and certain programs have been found effective at preventing both types of injury to children (Roberts, Kramer, and Suissa 1996). Importantly, the wide grey area between intentional and unintentional injury suggests that intentional versus unintentional injury could be regarded as a continuum rather than as disparate categories (Cohen et al. 2003). A broader conceptualization of injury prevention to include both intentional and unintentional injuries has necessitated a shift away from a strictly medical model of injury and a focus on the personal, social and cultural conditions, and systems that support or detract from health and well-being (Volpe 2004).

THE IMPETUS FOR PREVENTION OF POOR HEALTH AND SOCIAL OUTCOMES IN CANADA

The conception of the social determinants of health to frame the prevention agenda is recent; for example, the World Health Organization (WHO) Commission on the Social Determinants of Health was introduced in 2005 (WHO 2010). There is a relationship between injury and a number of factors known as the social determinants of health, namely, the societal conditions in which people are born and develop (Health Canada 2003). These conditions include income and social status, social support networks, education, employment and working conditions, social and physical environments, healthy child development, personal health factors and coping skills, and health services. (Health Canada 2003). Although the ways in which these determinants interact with each other and with injury risk require further understanding, the clear relationship between social determinants and injury risk suggests that injury is amenable to a range of policies, such as those promoting prevention at the level of the individual, the community, or the state.
Because appropriate countermeasures to address the range of injury risk factors may be identified at the level of the individual, family, community, or society, designing or selecting an injury prevention intervention is a complicated undertaking. The different layers of risk invoke taxonomies such as the universal or targeted approach, with corresponding levels of intervention, such as the individual caregiver or child versus environmental or legislative changes. Specifically, the taxonomy of prevention denotes that universal preventative interventions refer to addressing the general population that has not been identified as “at-risk” on a universal basis and avoiding the onset of a disorder, whereas selective preventative interventions are targeted to individuals or subgroups of the population at risk of a disorder. There are also tertiary interventions (not a focus in this paper) that offer continuing treatment and rehabilitation of a disorder after it occurs (Meston 1993).

One of the enduring controversies is whether prevention programming should be offered universally to the whole population or instead target specific “high-risk” groups. The debate on universal versus targeted programs has continued for over 30 years (Moller 1997). Although some targeted and some universal programs have been found to be effective, a strong evidence base for either universal or targeted prevention programs is lacking (Volpe 2004, 1). As the debate continues, the implications of the evidence and the resulting policy directions will become clearer. Therefore, case studies in metropolitan areas may provide useful information by examining injury rates by SES. Further understanding of gradients in child injury by SES may be a piece of the puzzle that informs evidence-based programming, policy-making, and future research agendas (Mackay et al. 1999).

THE TARGETED AND THE UNIVERSAL APPROACHES: TOWARDS A SYNTHESIZED VIEW

The Targeted Approach.

The targeted versus universal debate can be informed by the level targeted (e.g., individual or community) and who or what is to be targeted. Given the findings that some groups and regions are at higher risk for injury, there have been numerous calls by researchers for programs targeted to address these risk areas (e.g., Durkin et al. 1994; Macpherson et al. 2005; Ramsey and Ramsey 1998). As indicated by the social determinants of health, environmental conditions such as the built environment may represent a pathway that affects childhood injury, independent of individual characteristics. Studies measuring the relationship between SES and childhood injury commonly use ecological study designs examining SES variation at a group or aggregate level such as the neighbourhood or community. If there is evidence for a “neighbourhood effect” on injury, there is logical justification for targeting neighbourhoods for interventions in addition to individuals (Kendrick et al. 2005). Under the auspices of targeted programming, a variety of programs have been developed to moderate the risk of injury in families or neighbourhoods displaying characteristics of risk (Meston 1993). Examples of programs that are deemed best practices and target at-risk groups and/or neighbourhoods include the Nurse Family Partnership (NFP; Public Health Agency of Canada 2010) and the Nobody’s Perfect Parenting Program (Public Health Agency of Canada 2010). Criteria for agencies to implement the NFP include having a sizable proportion of low-income, and first-time mothers in their communities, while for Nobody’s Perfect the criteria for program entry among families include geographic or social isolation or a lack of material and social resources (Public Health Agency of Canada 2010).

TARGETING INDIVIDUAL SUPERVISION

An examination of demographic risk profiles may illustrate the need for injury prevention programs in certain communities. Thus, many initiatives have attempted to address injuries among young children living in these communities by focusing on caregivers’ child rearing attitudes and behaviours through group or individual instruction. The preventative interventions are focused on the education of individuals, often

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1. “Best Practices” are identified as programs that have been assessed as credible among experts and possess a high-quality evaluation such as one using 1. an experimental or quasi-experimental design; or 2. another appropriate design conducive to assessing outcomes for that particular program, and 3. a method of evaluation that demonstrates the programs’ favourable injury prevention outcomes such as decreases in injury rates or increases in safety knowledge and behaviour that is directly linked to injury. For further information on best practices see http://cbpp-pcpe.phac-aspc.gc.ca/.
mothers, and do not address poverty as a structural factor (Freeman 1992). The extrapolation is often made that “by identifying high-risk populations, the risk is modifiable and that the prevention effort is more efficient” (Pless and Hagel 2005, 184). By targeting high-risk communities, the assumption is that risk can be managed and the prevention program will narrow the injury gap between the high-risk and low-risk groups, thus making society more equitable (Blane 1995).

The source of risk to the child is often regarded as inappropriate caregiving. Thus, mothers are frequently identified as targets for intervention and subjects of research studies, even if the focus is stated as “parents” rather than “mothers” (e.g., Bijur et al. 1992; Gielan et al. 1995). “Active” caregiver strategies that require a through knowledge of developmental milestones and consistent supervision of the child are generally promoted. Given the tendency of researchers and programmers to recommend vigilant “parental” (while actually meaning maternal) supervision as a key safety contingency, Roberts (1996) states that calls among researchers for greater supervision to prevent injury can be interpreted as ideological statements about the position of women in society and abrogation of societal responsibility for child safety. Value judgments about exactly who is supposed to be supervising and responsible for children's safety are inevitable when targeted programs are invoked (Moller 1997).

Expecting parents to independently address the risks of injury may be unrealistic. Qualitative research findings from an underserved community of Scottish tenants suggest that although parents and the community as a whole took initiatives to moderate injury risks to children, their contribution was thwarted in an inherently unsafe setting rife with hazards and a lack of policy initiatives to address these hazards (Roberts et al. 1993; Roberts et al. 1995). Understandably, mothers felt disproportionately unfairly blamed and stressed by the message that constant vigilance is required to prevent childhood injuries (Roberts et al. 1993; Roberts et al. 1995). Although the recommendation to never leave children alone is obviously wise, “it fails to address the context in which childcare, feeding, domestic work, and paid work compete for priority in the majority of households” (Roberts et al. 1993, 451). The lived reality of these tenants demonstrates how the effects of policy may constrain individuals’ choices and unduly imposes additional chaos on their lives.

Lessa (1996) indicates that targeted prevention models are inconsistent with a critical analysis of the effects of poverty. The specific activities and goals of the program are defined and linked to community needs and characteristics. Community risk factors become the focus and overshadow the cultural and economic constraints on the poor (Lessa, 1996; Reading, Haynes, and Shenassa 2005, 166). Prevention models may build a rationale for intervention through progressive analyses, such as examining demographic risk profiles with the intent of narrowing the gap between the more privileged and less privileged groups, but interventions are directed at an individual level. Thus, a weakness of these initiatives is the potential for researchers and policy makers to make incorrect inferences about individuals based on the risk factors of the group(s) they belong to. In this targeted setting, prevention programs individualize poor women's problems (Lessa 1996). This responsibility is congruent with the view that the prevention of disease and disorder is at its core a “moral enterprise” (Peterson and Lupton 1996, xii). Prevention involves directions about how individuals should live, both individually and collectively (Peterson and Lupton 1996).

In spite of the value judgments to negotiate when designing and implementing targeted programs, there is merit in the conclusion that individual behaviour and psychosocial factors do deserve attention (e.g., Morrongiello, Ondejko, and Littlejohn 2004; Morrongiello 2005). In some instances, strategies besides direct supervision are not feasible, for example, when children are immersed in bathtubs and pools (Christoffel and Gallagher 2006). There are instances when prevention policies and programs geared towards disadvantaged caregivers may have success in narrowing health inequities, and many individuals embarking on these programs are undoubtedly well-intentioned. As identified by one of the social determinants of health (i.e., personal health factors and coping skills) whether or not people become injured is related to individual choices. One's feeling of control and mastery over life circumstances influence the path taken amongst the myriad of personal choices available in any given situation, with those living in difficult circumstances being more likely to practise riskier behaviour than the more privileged. Thus, individual behaviours such supervision or safety practices have an influence on child health and well-being, although researchers continue to search for the effects of environmental factors (Beauvais and Jenson 2003).
TARGETING COMMUNITIES

There has been a resurgence of interest in recent years about the influence of the community socio-economic environment on individual health (Cubbin and Smith 2002; Robert 1999). An example of this influence is that financial problems and poor living conditions appear to be a source of distraction for caregivers, with a corresponding decrease in adequate child supervision (Bruckner 2008; Peder et al. 2008). Given that child poverty levels have increased throughout the last three decades, in part because of widening wage differentials, decreases in transfers to low-income Canadians, and insecure work conditions, many children are exposed to widening socio-economic inequality that has been identified as a serious threat to their future quality of life (Boyle and Willms 2002). These socio-economic conditions are directly relevant to the social determinants of health as mentioned previously in this paper. The relationship between injury and SES characteristics calls for policies and interventions in which disadvantaged communities hold local government policy makers and planners accountable and advocate for an equitable distribution of financial and material resources (Cubbin et al. 2000). However, injury prevention interventions with goals of increasing financial or material resources among low-income communities have not been identified in a systematic review on the effectiveness of child injury prevention initiatives (Nuffield Institute of Health 1996). Policies targeting poverty reduction in at-risk areas could reduce childhood injuries in the long term, but the links between policy initiatives and the desired outcome of decreased poverty is indirect and complex (see Howell et al. 1998). Therefore, short- and medium-term measures in addition to poverty reduction efforts are also recommended (Peder et al. 2008).

Although prevention programs to counteract the effects of rising socio-economic inequality continue to be targeted to many disadvantaged communities, with the goals of decreasing the risks of unintentional injuries, child maltreatment, and other poor health and social outcomes (see Boyle and Willms 2002; Christoffel and Gallagher 2006), it appears that these prevention programs only reach a small proportion of children living in disadvantaged circumstances. Due to this problem of program reach, some organizations and researchers propose universal strategies as a way to capture more individuals (e.g., CICH 2001, 77; Deal et al. 2000).

The Universal Approach

Universal approaches invoke standards such as legislation, policy, education, or engineering design changes across a population rather than the selection of high-risk groups for intervention. Universal approaches transfer into policies and programs applied across the board within a given region. With their inclusive approach, universal programs encompass dynamism and change more than targeted programs because they accommodate the fact that individuals and groups move in and out of neighbourhoods and social classes and that neighbourhoods may gentrify, deteriorate, or shift boundaries. Targeted programs have a tendency to view SES and its resultant risk level as a static concept that individuals and/or neighbourhoods possess. Many studies measuring the effect of neighbourhood on injury represent a snapshot in time and cannot capture the ongoing shifting of events and the reciprocal and differential interaction of individuals with their environments that characterizes life (Cubbin et al. 2000; Volpe 2004). A “social determinants of health” framework shows that there are multiple spheres of influence on individuals’ experiences, including SES, individual tendencies, and the physical environment. Researchers and policy makers may avoid creating overly simplistic policies and programs by acknowledging that SES is a multidimensional facet of the social determinants of health, influencing not only injury risk but other determinants such as quality of housing, health services, and educational opportunities (Raphael 2004).

Although residence in a low SES neighbourhood has been associated with childhood injury in many studies, targeting the residents of those neighbourhoods may overlook the substantial proportion of childhood injuries occurring amongst those living in middle- and upper-SES areas (Kendrick and Marsh 2001). By targeting only the most deprived areas, many prevention opportunities will be missed because the social class gradient represents a slope (i.e., a dose-response effect). A recent report by CIHI (2010) exemplifies the social class gradient: injury rates decrease in a step-wise fashion with every increase in income quintile. The existence of this gradient indicates that the difference in injury rates separates groups among income categories on a sliding scale, so that the richest group will have a lower rate of injury than the upper-middle-
class group, who will have a lower rate of injury than the middle-class group, and so on (Kendrick and Marsh 2001; Sergerie and Farley 2001). Because groups other than the most deprived represent a substantial portion of potential injury victims, there is potential in including the whole population in injury prevention initiatives with a universal prevention approach, rather than targeting only the poorest areas.

THE RELEVANCE OF ENVIRONMENTAL PROTECTION TO THE UNIVERSAL APPROACH

The universal prevention approach is commonly associated with environmental protection because it often uses legislation, policy, and/or physical design in addition to possible educational components to improve the safety of the social and environmental surroundings that all members of a society encounter (e.g., improvements to roads and playgrounds, introducing bike lanes, regulating alcohol sales, and gun control). Individuals do not have to purposefully exhibit safety behaviour each time they encounter a potentially injury-producing situation. Thus, individual characteristics and choices lose prominence, while legislation, policy, and engineering design solutions that manipulate the surroundings to promote safety are in the foreground. Also referred to as “passive” protection, environmental strategies provide some automatic protection to the child after implementation and arguably require less overall effort and resources than safety measures that must be enacted each time a hazard is encountered (Deal et al. 2000). An example of a successful universal initiative that displays an environmental protection approach is the Toronto District School Board's assessment of almost 400 schools across the city and subsequent replacement of all unsafe playground equipment in the early 2000s. The result was a drastic reduction in playground injury rates (Hemenway 2009). Clearly, the passive environmental protection approach has some advantages over attempts to address individual behaviour, which is known to be a resource-intensive endeavour (Christoffel and Gallagher 2006; Mackay et al. 1999; Sergerie and Farley 2001, Cubbin, LeClerc, and Smith 2000). Therefore, universal passive protection approaches are generally lauded among researchers (e.g., Christoffel and Gallagher 2006; Kendrick and Marsh 2001; Volpe 2004). However, some argue that targeted programs are also necessary to address health inequalities between the more and less privileged (e.g, Moller 1997).

A SYNTHESIZED VIEW OF TARGETED AND UNIVERSAL PROGRAMS

The use of targeted versus universal interventions cannot be seen as completely polarized. Both foci of injury prevention have appropriate usages (Dowswell and Towner 2002). Some successful programs employ both targeted and universal elements with a multi-pronged effort, such as the Kids Can’t Fly Window Falls Prevention program in Boston. This program has a parent education campaign targeting groups living in at-risk environments (e.g., urban, multiple-story apartments), but universal legislative and design solutions cover the entire city (Public Health Agency of Canada 2010). Rather than single policies and interventions, many researchers recommend a comprehensive blend, with both targeted and universal programs using a balanced approach (Christoffel and Gallagher 2006; Nilsen 2004, Volpe 2004). Measures of classification accuracy (sensitivity, specificity, and positive predicted value) may inform the most advantageous combination of targeted and universal programs in any one community; however, in order to accurately calculate such measures, in-depth information is required about the characteristics of the intervention, the community, and its residents (Kendrick and Marsh 1997; Kendrick and Marsh 2001; Offord et al. 1999). There are additional advantages to acquiring this in-depth information: It is amenable to conducting program evaluations that adequately isolate factors related to program success and cost-effectiveness (Nilsen 2004; Offord et al. 1999).

UNIVERSAL APPROACHES AND PUBLIC POLICY CHANGE

Universal programs may have challenges of program reach different from those of targeted programs. Research suggests that all socio-economic groups and/or risk categories do not access universal injury prevention initiatives equally (e.g., Kendrick and Marsh 2001). For example, there may be an interaction between successful engagement in or compliance with the intervention and exposure to risk of injury. Therefore, universal interventions may be least effective in those at greatest risk (Kendrick and Marsh 1999). Unfortunately, there has been little research to investigate whether and to what extent universal programs work equally among all SES groups (Sergerie and Farley 2001).
Because legislative, cultural, and environmental changes have been found to be among the most effective tools to prevent childhood injury, researchers and practitioners require knowledge regarding legislative and policy change (Deal et al. 2000). Universal strategies have been associated with encouraging the power of citizens to bring about widespread change by shifting societal norms towards safe behaviour. For example, legislation that curtails drunk driving has been associated with the decreased social acceptability of drunk driving, hence enhancing the effectiveness of the legislation (Christoffel and Gallagher 2006, 201). Grassroots special interest groups such as Mothers Against Drunk Drivers helped to spearhead this social revolution (Hemenway 2009). An implication of passive environmental approaches is their spillover to aspects of health and well-being beyond preventing injury (Christoffel and Gallagher 2006, 207; Volpe 2004). For example, the installation of bike lanes may not just promote safety but also encourage physical activity and environmental preservation, with concomitant health benefits. Inversely, legislation that is not directly related to injury prevention can also have spillover effects and therefore present as effective universal programs. An example comes from Boston, where encouraging bottle returns for deposit has decreased the presence of broken glass, thereby reducing the incidence of broken glass lacerations among children (Hemenway 2009). The potential for changing societal norms and addressing broader aspects of health are two themes that stress the importance of thinking broadly about ways of preventing injury with a sense of widespread applicability. Overall, universal programming is conducive to addressing a broad sphere of risk in terms of the physical, economic, and socio-cultural environment.

**ADDRESSING A BROAD SPHERE OF RISK WITH UNIVERSAL PROGRAMMING**

Universal strategies can be more difficult to implement than targeted strategies because the perceived sphere of risk to be addressed lies in social determinants of health such as the economic, social, and political characteristics of society. Thus, powerful vested interests are likely to be challenged and pose difficulties to the implementation of an injury prevention strategy. Political power, competition for resources, and entrenched societal values interact to construct a seemingly immutable policy landscape. However, this landscape must change if injury problems are to be substantially reduced. Significantly changing the existing constellation of policies requires changing society’s basic value premises, which depends on appeals to powerful interests such as dominant groups and majorities of people to realize what benefits changes in policy have for them (Deal et al. 2000). Changing society’s dominant value premises is a complicated undertaking with many potential obstacles. As previously discussed in this paper, targeted approaches to injury prevention may therefore be more feasible to mount because they operate on the simpler premise that individuals are “problems to be managed” (Volpe 2004, 4), i.e., caregivers of children require safety knowledge and skill and must be educated through training, reinforcement, and feedback (Christoffel and Gallagher, 2006). The perceived sphere of risk for targeted programs lies in the deficits of at-risk individuals and communities. Therefore targeted programs are less conducive than universal programs to addressing political and economic influences on individuals’ circumstances and societal responsibility for child safety.

A sense of broader social policy implications is important when implementing prevention programs. The safest communities, such as those in Linkoping and Motala, Sweden, are typically anchored with an extensive public safety infrastructure and stable public institutions (Hemenway 2009; Nilsen 2004). In general, societies that support their vulnerable citizens with a range of protective policies have higher overall health status than those who do not (Coburn 2006). There is a general consensus that the more equally wealth and resources are distributed in a society, the better its average health will be across a range of outcomes (Hertzman and Saddiqui 2009; Wilkinson 1996). For example, countries with high levels of socio-economic inequality have generally been found to have higher overall rates of intentional and unintentional injury than their more equitable counterparts (Wilkinson 1996). Across state, provincial, and national jurisdictions, homicide rates are higher in more socio-economically inequitable areas (Fajnzylber, Lederman, and Loayza 2000; Kaplan et al. 1996; Daly, Wilson, and Vasdev 2001). Markers of community deterioration in the form of crime, violence, hazardous roads, and weakening public infrastructure are associated with the abrogation of citizen commitment to society, with mounting levels of risk for all (Raphael 1999). Sweden, the country with the lowest child injury morality rate in the world, has a societal approach to making child safety a top priority through environmental, legislative, and educational initiatives.
(Hemenway 2009). In sum, they have infused their policy thinking with a social determinants of health perspective that considers the influence of a range of environmental, economic, and social factors on injury. Thus, the occurrence of injuries can be perceived as an outcropping of existing social and economic policies. Given the evidence that child health status is largely determined by the social and economic circumstances of a society, there is justification for an emphasis on universal strategies of injury prevention that encourages public policy change (Christoffel and Gallagher 2006; Deal et al. 2000; Hemengway 2009). These strategies suggest that injury prevention researchers and programers cannot divorce themselves from the policy arena. However, the general public and many health professionals lack basic knowledge about the scope of childhood injuries. Injury prevention professionals will find it challenging to add to their already full educational agendas and discern what additional steps to take to inform the public policy debate about their field.

Injury prevention researchers and practitioners need to understand how to sway the policy process. As a start, they could join coalitions and networks and otherwise encourage citizens to promote widespread improvement in the design and functioning of their communities, and could challenge industries that manufacture unsafe products, or challenge government regulations. They must also select from the broad array of possible behaviours and policies that are related to injury prevention in order to frame their strategies (Kendrick and Marsh 2001). Advocating and lobbying to change policy and legislation requires specific knowledge with respect to alliance building, media “savvyness,” and briefing with lawmakers (Christoffel and Gallagher 2006). Accommodation of various points of view during the change process is time-consuming and requires negotiation skills, but the potential successes are enduring legislative and engineering changes that substantially reduce injury (SKC 2006b). Overall, it is clear that the training and mentorship received among those dealing with injury prevention needs to be broadened.

A SHIFT IN EMPHASIS TO ENHANCE THE IDENTIFICATION OF PRIORITIES

Studying the knowledge base, implementation, and information dissemination techniques of existing success stories in injury prevention may help researchers and practitioners discern their learning priorities. Injury prevention practitioners may do well to access the tacit wisdom and unique skills of program champions who have previously influenced public policy with success stories and best practices in injury prevention, such as those that have effectively entrenched equitable policies and environmental improvements to improve children’s safety.

A “social determinants of health” perspective suggests that in order to substantially address injury rates, injury prevention programs should be approached holistically, with a focus on broader societal and systems levels. The guidance and mentorship of experienced leaders are important to help unify the injury prevention field, which has been known for possessing scattered and uncoordinated prevention efforts, with the concomitant problem of organizations working in silos and competing for resources (Christoffel and Gallagher 2006). Collaborative and interdisciplinary work among various groups would allow injury prevention practitioners to accomplish tasks that strengthen and unite their work beyond the capacity of any single individual or group (Cohen et al. 2003). In the long run, affiliation with organizations such as ministries, special interest groups, and coalitions to promote universal programs could enhance the program reach of prevention initiatives. Mentoring and guidance by established program leaders can help to create learning systems and communities among groups of interested individuals with the common aim of preventing injury (Volpe 2010).

When program champions and leaders in the injury-prevention field support a program, their knowledge and commitment promote program expansion, the procuring of resources, and policy and legislative change. Finding solutions to pressing and complex social and health problems such as injury is not a predictable or lock-step process. However, creative and adaptive leaders can offer neophytes in injury prevention some flexible and innovative heuristics that aid in the successful scaling-up (expansion) of effective program models (Cabaj 2009). According to Volpe (2010, 4), “Programs that become linked with policy and legislative change, that are institutionalized and become embedded in everyday socialization, are examples of successful scaling-up”
CONCLUSION

The chosen target of intervention is largely dependent on the views of who or what the problem is. As seen by the social determinants of health, there are multiple spheres of influence on individuals’ experiences, including SES. What is viewed as the sphere of risk surrounding the child, be it the family, community, or social and economic structures, influences the subsequent target for the preventative intervention. There is an ongoing and long-lasting debate about the merits of targeted versus universal approaches to injury prevention. Both types of programming have their place in a comprehensive mélange of injury prevention initiatives. However, universal approaches are often lauded by researchers for their detraction from individual deficits and their concomitant emphasis on protecting broad segments of the population by impacting the broader environment in which injury occurs. The ability of current injury prevention researchers and practitioners to promote a societal approach to injury prevention influences whether and to what extent injury can be addressed as the leading cause of death to children. Indeed, beginning any injury prevention strategy by focusing on children is potentially fruitful because citizens recognize that children are vulnerable individuals who are often put in injurious situations through no fault of their own. If safety becomes a higher priority at the level of policy, culture, and legislation, injury prevention could become more deeply entrenched in society and have a substantial effect on injury rates.

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