

*Community
Action*

and

Injury

Prevention

1

A Guide to support individuals and their community groups who are taking action to prevent injury.

Injury has been described as "the most under-recognized major health problem facing the world today."¹ Recently it was described as the greatest public health issue of the 1990s.

Injury is occurring in epidemic proportions and the cost of injuries (\$11 billion in 1986) is second only to the cost of cardiovascular diseases (\$16.8 billion in 1986).²

Yet in communities across Ontario it is the personal cost which affects us the most and has moved communities to take action: the elderly parent who is hospitalized after a fall; young people who are killed in a car crash after a party; the child who sustains a bicycle head injury.

It is the knowledge of this personal cost, the alarming statistics which reflect the incidence of injury in Ontario and desire of OPHA to support both community action and injury prevention which motivated us to produce this Community Action and Injury Prevention Guide.

Because we know that many individuals and groups are taking action, we have produced the Guide in a modular format so it can be easily updated. The Community Action Steps are consistent with the guidelines recommended by in the Community Mobilization Manual from the Ontario Ministry of Health. We have made no attempt to be as thorough and therefore recommend its use. This Guide has been deliberately designed to be used in conjunction with current and future injury prevention and community mobilization information.

The guide provides a means to define a common purpose and foster collaboration among individual members of a community and a variety of community organizations and agencies.

The proof of our effort will be in your action.

*Peter R. Elson
Executive Director,
OPHA*

¹ U.S. Academy of Science, 1985.

² Wigle, D.T., Y. Mao, T. Wong and R. Lane, Economic Burden of Illness in Canada, 1986. Health and Welfare Canada 1991; 12(3)(sup).

Format and Layout: Ghislaine Scott, Ghislaine Scott Services, Toronto, Ontario.

Illustrations: Irwin Barrer, Toronto, Ontario.

ISBN 0-929129-34-2

© 1998 Ontario Public Health Association

ACKNOWLEDGEMENTS

The Ontario Public Health Association would like to acknowledge the contribution of the following individuals who candidly and thoroughly reviewed several drafts of this document, and also the many individuals who thoughtfully and willingly contributed their personal stories and comments.

Professor Mary Chipman,
Faculty of Preventive Medicine, University of Toronto

Ms. Nancy Day,
Ontario Public Health Association

Dr. Colin D'Cunha,
Association of Local Official Health Agencies

Mr. Al Erlenbusch,
Emergency Health Services, Ontario Ministry of Health

Ms. Paula Hadden-Jokeil,
Durham Region District Health Council, Central East Area

Ms. Carole Hynds,
Association of District Health Councils of Ontario

Dr. Peter Lane,
Victoria Hospital, London, Ontario

Ms. Margaret Reid,
Home Safe Home Committee, City of Toronto

Ms. Laura Spence,
Hospital For Sick Children

Mr. Reg Warren,
Centre for Health Promotion, University of Toronto

Ms. Yau Yip,
Emergency Health Services, Ontario Ministry of Health

OPHA appreciates the support of the Emergency Health Services Branch, Ministry of Health, in the development of this guide. Particular thanks are extended to Al Erlenbusch and Yau Yip for their personal and technical support.

Project Co-ordinator Judy Radford deserves a special acknowledgement for her tireless dedication to injury prevention in general and to writing this guide in particular. OPHA extends its thanks to Sunnybrook Health Sciences Centre for her secondment to work on this important initiative.

Production credit, richly deserved, goes to Kathleen Orth, OPHA Project Assistant.

The OPHA would also like to acknowledge and extend its thanks to the Health Promotion Branch of the Ontario Ministry of Health, for its assistance and support in this project. This guide has been designed to be used in conjunction with the Community Mobilization Manual, produced by the Ontario Ministry of Health.

TABLE OF CONTENTS

	Page
Introduction	1
Injury Prevention Primer	7
The Action Steps	23
Prevention of Cyclist Injury in the 5 - 15 Year Age Group	45
Prevention of Injuries to Motor Vehicle Occupants	55
Prevention of Falls in the Elderly Population	71
Sources of Resources	79
 Tables:	
Evaluation Questions	39
Publicity Tools	41
Table A - Motor Vehicle Traffic Injury Prevention Strategies	15
Table B - Suicide Prevention Strategies	16
Table C - Falls Prevention Strategies	17
Task Checklist	43
Windows of Opportunities	14

Community Action and Injury Prevention -

*A
n

I
n
t
r
o
d
u
c
t
i
o
n*

COMMUNITY ACTION AND INJURY PREVENTION - AN INTRODUCTION

This guide is intended to assist communities to plan and implement an injury prevention strategy.

Injury has been described as "the most under-recognized major health problem in the world today." However, many individuals and communities are now taking on the challenge to spread the word that *injuries are preventable*, and working to change their frequency and impact on our lives.

Empowering communities to create community solutions is one of the ways to move from challenge to change.

Change cannot happen without leadership. **You** may be that individual or group who wishes to take on the challenge, to start the process of empowering your community to improve the injury problem.

Individual and Community Action

Community action results when the strengths and skills of individuals and groups rise above individual interests, find a common purpose and combine *to focus on a specific issue*.

Injury prevention depends on both individual and community action. As an individual activity, injury prevention is something that we all practice to varying degrees. As a community activity, it is a new and evolving movement. Community action *focused on injury prevention* has the potential:

- o to raise awareness of injury as being predictable and preventable
- to mobilize action that results in reduced incidence of injury and increased protection of community members

The Action Steps

The *Action Steps* are designed to assist your progress in this direction. They will help to expand your expertise in injury prevention and extend your reach, so that you may more effectively approach your community:

- o to rally community support and participation
- o to bring about action, and
- o to enjoy the process at the same time

The five key *Action Steps* are:

- Organize
- Assess
- Plan
- Action
- Review/Renew/Return

These steps are intended to provide direction and yet still allow you the flexibility to adapt and tailor the process to suit the uniqueness of **your** community. Although each step is described separately, you will find in practice that you are often working on more than one step at a time. As well, the process will not be so ordered or exact as it appears on paper. Community action is an evolution.

There is no "one way" to develop community action. Please use what seems right for your community. If you already have a model that works for you, do not abandon it; instead take from this guide what you find helpful.

You may be just beginning or part of an established group. As you read through the steps, you may discover that your group has already completed some of the early steps. If so, enter the process at the place that corresponds to the development of your group.

The description of the *Action Steps* is followed by examples of what some communities have accomplished in their efforts to lower the incidence of injury. These examples represent only the tip of the iceberg of activity that is happening around the province.

What is a community?

Communities are often thought of as neighbourhoods, towns, cities and regions. However, **community** can also be any organization, network or structure where people come together in a shared experience and sense of belonging, such as a school, a worksite, an apartment complex, a club, a religious or cultural group. Often community action initiatives, particularly in injury prevention, start within these smaller communities and grow to include the larger.

Successful Community Action

Some ingredients are common to successful community action. They include attributes of the group, the community resources and the relevance of the issue to the community. Not every element is necessary, but the more that are, the greater the potential for success. As you follow the *Action Steps* and read the community stories, you will recognize these elements in action.

Attributes of the group

- o a champion of the cause
- o a committed working group drawn from a cross-section of community interests
- o a collaborative approach to a shared vision
- o an ability to seize opportunity
- o accountability
- o the willingness to acknowledge and applaud contribution

Community resources

- o support of opinion leaders and those who can "open doors"
- o support and involvement of professional and community services personnel
- o media as a partner for exchanging information and reaching the public
- o external elements that work to group's advantage (timing, political climate, policies)

The relevance of the issue to the community

- o a well defined issue supported by fact
- o a strong relationship among all aspects of goal, objective and activity
- o ability to involve the community-at-large
- o the ability to take stock, to evaluate progress and to change direction if needed

Community Action is a Challenge!

At times, community action can be difficult, slow and frustrating. You will move through a process of group formation that includes some fairly predictable maturation stages such as conflict and even challenge to leadership, as you develop cohesiveness. Despite these growing pains, community action is rewarding, in the planning and in the doing.

As you work your way along the **Action Steps**, you will want to know how you are doing. You can gain confidence in your progress and stay focused on your goal if, at regular intervals, you record your answers to the following questions:

- What have we done so far?
- What has worked well and why?
- What hasn't worked and why?
- What could we do differently?

Other guides

Community mobilization is described in many guides and manuals. The organization of this guide closely follows that of the Community Mobilization Manual.¹ You may want to refer to it for further information and other examples.

Why is injury a concern of communities?

Injury is damage to the body resulting from the sudden release of a destructive energy. The damage can be minor, serious, life-threatening or fatal.

Injury occurs in the course of living our daily lives. As a result, many people, especially youth, are dying prematurely.

¹ Ministry of Health (Ontario), Healthy Lifestyles Promotion Program, Toronto: 1992.

Others are left with life-long disabilities. Many more must live with life-long loss. These people are part of our community. Their misfortune has an impact on life in the community.

Injury does not limit its effect to the injured person alone. The damage spreads beyond, like the ever-expanding rings of a pebble dropped in a pond. It can overtake and change the familiar shapes and patterns of life, family, friends, finances, and future.

How big is the problem?

In **Ontario**, injury is the leading cause of death for people under 44 and the fourth leading cause of death for all age groups.

- o Motor vehicle crashes claim 1100 lives a year or one every 7 hours.
- o Falls are the leading cause of injury and the sixth leading cause of death, in persons over 65, claiming nearly 600 lives a year.
- o Incidents involving bicycles and motor vehicles injured more than 3500 cyclists in 1990. Nearly half of these people were under the age of 16. Twenty-nine cyclists died.

In **Canada**, more than 9000 people per year lose their lives to injury. Many thousands more are injured.

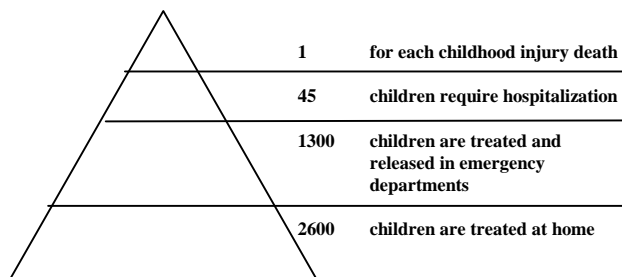


Figure 2: Comparison of Deaths, Hospital Admissions and Emergency Room Visits as a Result of Injuries

As well, the financial implications of these statistics are substantial. In Canada, approximately 13.2 billion dollars are spent each year in the treatment of injuries.

What is injury prevention?

Injury prevention is an *organized effort* to control the *occurrence and consequence* of injury by:

- o preventing or controlling exposure to the risk of injury
- o reducing potential severity and providing prompt treatment when injury does occur
- o reducing the severity of the consequences.

In order to raise public awareness and develop action strategies, injury needs to be acknowledged, identified, examined and addressed. Community action can play a major role in achieving that outcome. Progress in preventing injury will begin when the risk of injury in everyday activity is recognized as being *predictable* and *preventable*.

Why is the community a good place to establish injury prevention activities?

1. Most injuries take place in or near the community, in the course of living our daily lives. As a result, many lives are disrupted. These people are part of our community. Their misfortune has an impact on life in the community.

2. Activity at a community level has an immediate and intimate consequence. Opinions, concerns and behaviours of neighbours, friends, family and fellow

workers affect and shape daily life. Behaviour is subject to analysis, comment, acceptance or rejection.

3. Communities, through various activities and events, can keep an issue visible over an extended period of time.

4. Community ownership of issues and mutual search for workable solutions does effect change.

5. As we experience the uncertainty that accompanies rapid social change, community in the geographical sense is gaining renewed importance. It is seen as an environment where individuals can find the mutual support so necessary to nurturing life. National and international movements to reclaim communities as safe and healthy places are reaffirming the importance of community in the lives of individuals and in the strength of society.

Summary

At first, the development of community action to prevent injury may appear to be a complicated and overwhelming task. Be patient with the process and allow yourselves time to learn and to make mistakes. If so, you will make progress and establish the credibility and confidence necessary to take on further challenges. In the end, your community will become empowered by the knowledge and the belief that *their organized effort is key to changing the injury problem*.

Community, where life experience is shared and supported, becomes the place where injury prevention starts, takes root and grows.

Enjoy your part in this evolution!

² National Safe Kids Campaign, *Leader's Guide*, Washington, D.C.: CNMC Child Ventures, 1991, p. 9.

BIBLIOGRAPHY - INTRODUCTION

Boyce, Will, et al., Centre for Health Promotion, University of Toronto, Principles of Coalition Building, Prepared for the *Building and Maintaining Coalitions Workshop*, Burlington, Ontario: February 26, 1991.

Breen, Mary, Program Evaluation and Planning Handbook, Toronto: Ontario Literacy Coalition, April 1991.

Canadian Children's Safety Network, Revised Discussion Paper from a Discussion Workshop at: A National Conference on Childhood Injury Prevention (November 1991), Revised January 1992. Ottawa: Canadian Association of Paediatric Hospitals, January 1992.

Canadian Council on Social Development, Community-Based Health and Social Services, Conference Report, Improving the Delivery of Community-based Health and Social Services: Proceedings of the Ottawa Conference, November 24-27, 1985, Ottawa: Canadian Council on Social Development, 1986.

Edmonton Social Planning Council in Cooperation with the United Way, Doing It Right! A Needs Assessment Workbook, Edmonton: Edmonton Social Planning Council, 1988.

Ellis, Diana, Gayla Reid and Jan Barnsley, Keeping on Track, An Evaluation Guide for Community Groups, Vancouver: Women's Resource Centre, 1990.

Fisher, John, Money Isn't Everything, A Survival Manual For NonProfit Organizations, Toronto: Institute for NonProfit Organizations, 1977.

Government of Canada, Health and Welfare Canada, *Health Promotion*.

Government of Canada, Health and Welfare Canada, Health Promotion Contribution Program, 7 Steps to Better Health Promotion, Ottawa: Health Promotion Directorate, Health and Welfare Canada, 1987.

Haliburton, Kawartha & Pine Ridge District Health Council, The Do It Right Manual for Injury Prevention Awareness, Peterborough: Haliburton, Kawartha & Pine Ridge District Health Council, October 1992.

Haliburton, Kawartha & Pine Ridge District Health Council, Annual Report 1991/92, Building a Healthy Community for the Future, Peterborough, 1992.

Information and Advisory Services Section of the City of Toronto Housing Department and the Home Safe Home Committee, Your Safe Home Checklist, Your Guide to Safety in Your Home, Toronto: Corporation of the City of Toronto, 1991.

Keck, Jennifer, Henriette Dauphinais and John Lewko, Critical Paths, Organizing on Health Issues in the Community, Toronto: Between the Lines, 1989.

Ministry of Health (B.C.), Healthy Communities, The Process: A Guide for Volunteers, Community Leaders, Elected Officials and Health Professionals Who Want to Build Healthy Communities, Victoria: 1989.

Ministry of Health (Ontario), Action - A Guide for Community Health Promotion Planning, Toronto: 1991.

Ministry of Health (Ontario), Action - Community Mobilization Manual (Introduction, Eating, Alcohol, Tobacco), Toronto: Ministry of Health (Ontario), Healthy Lifestyles Promotion Program, 1992.

Ministry of Health (Ontario), Action - Social Marketing in Health Promotion: A Communications Guide, Toronto: Ministry of Health (Ontario), Healthy Lifestyles Promotion Program, 1992.

Ministry of Health (Ontario), Mandatory Health Programs and Services Guidelines, Guidelines published pursuant to s. 7, Health Protection and Promotion Act, 1983, S.O. 1983, c. 10, Toronto: April 1989.

Ministry of Health (Ontario), Opportunities for Health, Report of the Chief Medical Officer of Health, Toronto: 1992.

Ministry of Health (Ontario), Public Health Branch, Public Health and Epidemiology Report Ontario. (*A monthly publication which publishes statistics and itemizes injuries reported on basis of hospitalization.*)

Ministry of Health (Ontario), Health Promotion Branch, Use of Social Science Theory of Develop Health Promotion Programs, (report prepared by the Centre for Health Promotion), Toronto: January 1993.

Ministry of Health (Ontario) and Premier's Council on Health, Well-being and Social Justice, Ontario Health Survey 1990 Highlights, Toronto: September 1992.

Ministry of Health (Ontario) and Premier's Council on Health Strategy, Ontario Health Survey, Toronto.

Ministry of Treasury and Economics (Ontario), and Ministry of Health (Ontario) 1992 Ontario Budget Supplementary Paper, Managing Health

Care Resources, Toronto: May 1992.
Multiculturalism and Citizenship Canada, Plain Language Clear and Simple, Ottawa: 1991.

National Safe Kids Campaign, Leader's Guide, Washington: CNMC Child Ventures, 1991.

Office of Health Promotion (B.C.), Health Our Choice For Life - A Guide for Communities to Enact Health-Promoting Policies, Victoria: 1991.

Office of Health Promotion (B.C.), Health Our Choice For Life - Examples and Outcomes of Healthy Public Policy, Victoria: 1991.

Office of Health Promotion (B.C.), Health Our Choice For Life - Health Indicator Workbook: A Tool For Healthy Communities (1st ed.), Victoria: 1992.

Premier's Council on Health Strategy, Healthy Public Policy Committee, Nurturing Health, A Framework on the Determinants of Health, Toronto: March 1991.

Royal Life Saving Society Canada, Ontario Branch, Water Smart, Drowning Prevention Planning Guide, Toronto.

Wolff, Thomas, Coalition Building: One Path to Empowered Communities, Worcester, Mass.: University of Massachusetts Medical Centre, 1991.

Young, Alison, Injury Prevention - Getting the Job Done: A Catalogue of Education Materials, Seattle: Harborview Injury Prevention and Research Centre, 1992.

Young, Alison, You Can Do It! A Community Guide For Injury Prevention (Canadian Version), Seattle: Harborview Injury Prevention and Research Center, 1992.

Injury Prevention -

*A
P
R
I
M
E
R*

INJURY PREVENTION - A PRIMER

This section is prepared to give you additional information about some of the ways people are looking at the science of injury and injury prevention.

What is the impact of injury?

Injury is damage to the body that can be minor, serious, life-threatening or fatal. Injury is important to each of us because:

- o we are all at some risk
- o its effects can be permanent
- o lives are shattered, affecting family, work and hope for the future
- o injury causes more deaths than any other disease for people aged 1-44 and is the fourth cause of death across all ages
- o the economic burden of injury is over 13 billion dollars per year in Canada

What are some of the barriers to realizing the impact of injury?

The myth that damage can be easily repaired.

Medical technology has been very successful in developing ways of dealing with the most puzzling and stubborn of problems. As a result there is a general expectation that what's broken or damaged can be easily fixed. Unfortunately, medical technology is as yet unable to reverse the damage when injury occurs to the brain and spinal cord.

Protective devices are not popular.

Protective measures developed for many activities are available, but considered by many to be expensive, inconvenient and unnecessary; a detraction from style and comfort.

Imprecise language.

In theory, accidents are those unexplained and unexpected events that often damage, and may cause injury or death. The popular concept of an accident is an event "not meant to happen" or "without apparent cause." Such events are, by these definitions, impossible to foresee, difficult to prevent, and something over which we have no control. Guided by such belief, it is too easy to be fatalistic, perhaps until personally faced with the consequences of death or injury.

Despite the dictionary definitions and popular misconceptions, these events which we call accidents are *preventable*. Preventing the accident or the event in which damage can occur, is the surest way to prevent injury. Confusion is caused when the description "it was just an accident" is used to suggest that nothing could have been done to change the outcome. Some community groups resolve that problem by concentrating on the word injury and avoiding the word accident altogether.

Analysis and alteration of factors leading up to possible injury are thus *injury prevention* more than *accident prevention*.

When an incident that resulted in injury is examined, the elements of predictability and control, if not preventability, can be isolated. Often, the point at which a prevention measure could have been applied, is so far removed from the outcome, that it gives the appearance of being unpreventable. However, if each incident is explored in its entirety, the component factors can be identified. Once identified, the potential to discover ways to alter these factors becomes a possibility.

Much of the challenge in injury prevention is to personally come to understand, and then convince others, that injury can be controlled. Changing the language by using injury to reflect the outcome, rather than assigning apparent cause by use of the word "accident", is one of the first steps.

Essentials of Injury Control

- I. Determining the cause
- II. Identifying risk factors and potential interactions
- III. Developing programs that control (reduce, modify, manage or avoid) risk
- IV. Evaluating effectiveness

I. DETERMINING THE CAUSE

Causes of injury and death in North America are divided into two broad categories: intentional and unintentional; then a further seven categories:

Motor Vehicles

Falls

Drownings/Near drownings

Fires/Burns

Firearms

Poisonings

All Other Causes

Although this categorization describes the situations in which injury can occur, it does not describe how it occurs.

How does injury happen?

An injury is damage resulting from acute exposure to energy or from the absence of essentials such as heat and oxygen.

The forms of energy are kinetic, thermal, electrical, chemical and radiation energy.

Examples:

kinetic (the energy of motion), as in a car crash, a person falling, an object striking a person.

electrical, as in energy from a downed power line

thermal, as in flame or hot liquids

chemical, as in burns or poisoning.

radiation, as in exposure to unacceptable levels through equipment failure

absence of heat, as in exposure to the elements

absence of oxygen, as in suffocation or drowning

Objects considered essential to the way we live (cars, machinery, and equipment used in the pursuit of recreation and leisure) can become agents of destruction. Behaviour determines how they are used. Design can modify their destructive power. Regulation can limit exposure.

Most incidents that result in exposure to destructive energy are woven into the fabric of everyday life. Intentional injury resulting from violence is the exception.

Ontario Trauma Registry

The recently established Ontario Trauma Registry will provide a clearer picture of injury that results in hospitalization or death in this province. This information will be useful to comprehensive injury prevention programs as they choose target injuries and evaluate the success of their efforts.

II. IDENTIFYING RISK FACTORS AND THEIR INTERACTIONS IN AN INJURY-PRODUCING EVENT

As we begin planning to prevent or control injury, or to intervene in the energy transfer, it is helpful to understand the factors that interact to create the injury situation.

William Haddon, a physician and engineer, used the public health approach to disease to develop a "phase-factor matrix" (referred to as the "Haddon Matrix").

If we isolate different factors and different times in the evolution of an injury, a grid results that allows for a systematic exploration of each part of an injury problem. It also exposes opportunities where research, engineering, education and treatment can play larger and cooperative roles.

Three factors referred to as *host*, *agent* and *environment*, interact over three time phases, pre-event, event, and post event, to result in injury. (See p. 14)

Host: attributes of the person at risk of injury.

Agent: features of that which transfers the energy that causes the damage.

Environment: aspects of the physical, social and economic context.

Techniques used to intervene in the energy transfer are referred to as interventions or countermeasures. The overall plan in which they are used becomes the strategy.

Interventions That Have Potential to Prevent or Control Injury

1. Prevent/avoid exposure to destructive energy.
2. Provide an appropriate environment in which exposure can be managed or minimized.
3. Provide conditions in which further injury can be avoided and treatment can be started.

Application of Interventions Over the Time Phases

The pre-event phase: The period during which the interplay of factors determines whether an injury producing event will take place.

Interventions applied in this phase (primary prevention) prevent or avoid exposure to destructive energy.

Examples: The development of skilled drivers, cycling lanes, well-lit stairs, unimpaired drivers, the non-use of powerful equipment by unskilled persons, a child-proofed home.

The event phase: The time period at the moment of crisis includes all factors that influence the degree of injury that results from the incident.

Interventions effective in this phase (referred to as secondary prevention), need to have been in place prior to the event occurring in order to provide an appropriate environment in which exposure can be managed or minimized.

Examples: bike helmets, properly used occupant restraints, design of an automobile interior as a life-sustaining capsule, shower grab-bars and rounded furniture edges.

The post-event phase: The time period after injury has happened, includes everything that determines whether the severity of the injury's consequences can be reduced.

These tertiary prevention measures provide conditions in which further injury can be avoided and treatment can be started. To be properly effective, they must also have been in place or easily accessed. These interventions include support and services such as first aid, the proximity of rescue equipment, and access to acute care, trauma services, rehabilitation and community reintegration services.

Injury prevention looks for solutions that:

- o will best serve the objective
- o will not rely wholly on individual behaviour change
- o will provide protection when it is not possible for an individual to prevent injury through his or her own behaviour.

A list of specific countermeasures designed to interfere with the energy transfer/injury process was initiated by Haddon and modified by others. Many are practised individually. It is helpful to

look at the entire list for it may stimulate development of new approaches or ideas to extend and enhance what is already being done.

1. Prevent/avoid exposure to destructive energy.

Prevent creation of the hazard: Stop producing poisons, bath tubs, automobiles, bicycles, snowmobiles, boats, scatter rugs.

Separate the hazard from that which is to be protected by time or space: Sidewalks to separate pedestrians and autos, bicycle lanes and paths, road dividers to prevent lane cross-overs by on-coming traffic, divert traffic during school leaving hours.

Separate the hazard from that which is to be protected by a material barrier: Insulate electrical cords, appropriate barriers between sports activities and observers, face shields and gloves.

Modify relevant basic qualities of the hazard: Make crib slats spacings narrower, secure crib mattresses so they do not slip, round corners on furniture, pave all roads and shoulders, install break-away or impact absorbing poles along roadsides, place a chair at an appropriate resting place for elderly persons, use non-slip floor wax.

2. Provide an appropriate environment in which exposure can be managed or minimized.

Reduce the amount of the hazard: Package toxic drugs in smaller, safe amounts, control the speed at which an object can operate, or the distance over which an agent has influence, install guards that limit the exposure to sharp objects.

Prevent the release of a hazard that already exists: Package drugs in child proof containers, make bathtubs less slippery, modify the interior of automobiles to diminish injury on contact, strengthen points of vulnerability, install an automatic shut-off if tap water exceeds temperature limits, remove diving boards from pools of unsafe depth or inadequate space for safe entry.

Modify the release of the hazard by rate and spacial distribution: Seatbelts, airbags, bicycle helmets, the amount of hot water that a tap can deliver.

Make what is to be protected more resistant to damage from the hazard: Improve host's physical condition through appropriate nutrition and exercise programs, provide adaptive equipment to compensate for diminished ability, improve host's ability to anticipate potential harm, train host in self-protective strategies, improve skill levels.

3. Provide conditions in which further injury can be avoided and treatment can be started.

Begin to counter the damage already done by the hazard: Provide emergency medical care, train population in first aid, what to do at the scene of an injury, how to summon emergency response.

Stabilize, repair, and rehabilitate the object of the damage: Provide acute care and rehabilitation facilities.

Alter environment/activities to increase accessibility: Limit consequences of the injury by designing environment and activities to accommodate disability and enhance ability through environmental control designs, easy access to assistance and adaptive equipment.

III. DEVELOPING PROGRAMS THAT CONTROL RISK OF INJURY

We can persuade, require or protect.

Many of the Haddon Countermeasures can be categorized as protection or requirement measures. Persuasion must also be used to ensure that what is available is promoted, accepted and used.

Persuasion involves engaging the active participation of the individual in order to take preventive action.

The techniques employed are the various forms of education, counselling, advertising, training, role-playing etc.

Requirement involves surrender of the individual to specific action or face sanctioned consequences.

The techniques include legislative action, regulation, and enforcement of existing laws.

Protection involves a passive yielding to limited options.

[Techniques include engineering and technology solutions that automatically protect or limit exposure to the forces of destruction.](#)

A combination of the three approaches is often used in one strategy.

Smoke detectors work automatically but people must be persuaded to use and maintain them. In some jurisdictions use of smoke detectors is required or legislated.

People must be persuaded to purchase and wear bicycle helmets, before the

protection they offer can be effective. Procedures are in motion to require their use. However, the protection afforded is only part of the solution. Knowledge and practice of safe riding behaviours must also apply and driver behaviour must allow for a safe sharing of road space.

Occupant restraints (seatbelts and car safety seats) provide automatic protection when used, but people must be persuaded to use them correctly and all the time, even though their use is required. Automatic seatbelts are available in some vehicles.

Even purely passive and automatic solutions require some crossover of strategy. For example, approved lifejackets work automatically if individuals are persuaded to wear them. When it comes to cars, the additional cost and limited availability of the supplemental protection afforded by airbags and anti-lock brakes must be considered when purchasing a car.

[Education is necessary to create the readiness to accept and comply with legislated behaviours and to understand, use or demand technological solutions.](#)

Comprehensive Strategies

A comprehensive strategy that combines all approaches has a better opportunity for success. As example, the steady increase in the use of bicycle helmets has come about because of such a strategy.

education/persuasion efforts by coalitions and individuals, resulting in greater awareness of their protective capacity and increased acceptability of their use as standard equipment among the young.

enforcement/requirement techniques that parents, schools and clubs have employed to ensure that helmets are worn.

design and technology advances that responded to the demand for more comfortable, attractive, protective and less costly helmets.

This increasing momentum, fuelled by widespread education of the public, has resulted in support for a bike helmet law. Community groups can participate directly in the educational approach to injury prevention. They can use the intervention to raise awareness and knowledge by addressing:

- o risk potential
- o persons at risk
- o characteristics of the risk group, particularly age and stage
- o ways in which risk can be reduced, modified, minimized, interfered with or avoided
- o prepare target groups to accept legislated change or increased enforcement
- o prepare target groups to expect greater protection to be required of product and environmental design

Community groups can support and demand legislative and enforcement solutions to problems identified in their community by:

- o advocating for greater enforcement of existing protective mechanisms
- o lobbying for desired change or appropriate attention
- o lobbying for the research capacity to examine cause, risk, protection, or alternatives

(See the charts on preventive strategies by injury category, pp. 15 - 17.)

Community groups can investigate, recommend and support technological solutions and insist on appropriate and proportional research by fuelling the expectation that life-protective environments and products can be researched, designed, produced and made universally available.

Strategies most useful for community action on injury prevention are those that create a growing appetite for change and are "do-able." The "do-ability" depends upon the capacity of the community to recognize injury as a preventable problem and take on the challenge as its own. That ability will depend on the collective, coordinated approach of persons whose commitment and diverse skills will stimulate the community appetite to seek and require desired change.

IV. EVALUATE EFFECTIVENESS

Evaluation or determining the effectiveness of your approach must be built into your activities. The most conclusive results will be seen in a decrease in the incidence of the injury you have targeted. However, these outcomes require time for a pattern to develop, time to properly implement your intervention and expertise in recording and interpreting injury data. In the meantime, continuously evaluate your methods, your resource base and allocation and the response of your community to your efforts. This information will provide the feedback you need to make changes and constitute a process evaluation. This information will be useful in verifying outcome results when the time is appropriate.

Summary

As we have been reminded many times, there is no magic nor a single solution to the problem of preventing injury.

The solution can be thought of as resembling the creation of a diamond.

Considered a most precious gem by many, a diamond is made of carbon, the most common and available element on earth. It is formed under pressure, over time. It is unremarkable until its potential is realized by the skilful attention of a diamond cutter.

Beauty emerges through the planning and shaping of one facet beside another; individual, yet at the same time dependent and enhancing. The overall shape focuses a play of light that reveals and releases the brilliance from within.

So too, injury prevention takes its shape, focuses activity and energy and releases its life-protecting brilliance. This change evolves through the recognition of its potential by your community and by the skilful shaping of a systematic, interdependent, many-faceted design by those who care to make it happen.

PLANNING GUIDE: WINDOWS OF OPPORTUNITY

Interventions occurring in any one of the "windows of opportunity" that follow can influence the outcome. Laying out information you have gathered into a framework for understanding and discussion assists in focusing on what is possible and "do-able" in your community. Through this process, the interplay of potential education, legislation and technology strategies becomes clearer and the most easily "do-able" approach can be identified.

The "Windows of Opportunity" for intervention.

TIME PHASE	PREVENTION EFFORT	HOST	AGENT	ENVIRONMENT
Pre-Event Phase	Primary *modify factors to avoid or prevent exposure to destructive energy.			
Event Phase	Secondary *provide an appropriate environment in which exposure to destructive energy can be managed or minimized.			
Post-Event Phase	Tertiary *provide conditions in which further injury can be avoided and treatment commenced			

As a planning tool, this kind of framework allows you to catalogue what can be changed or enhanced, what will have bearing on outcome, and what is possible with existing resources.

TABLE A
Motor Vehicle Traffic Injury
Prevention Strategies

Education/Persuasion	E	Legislation/Administration	E	Technical/Engineering	E
• Safety Villages - Elementary school	NE	• Increase legal drinking age	Y	• Automatic air bags	Y
• PARTY Program **	NE	• Increase driver licence age	Y	• Automatic seatbelts	Y
• Increase use of public transport	Y	• Mandatory seat restraint	Y	• Improved side impact protection	Y
• HEROES Program - risk-taking behaviours in 14-19 year-olds	Y	• Mandatory helmets - motorcycle - bicycle	NE	• Front crush zone on cars	Y
• School safety programs	Y	• Reflective outline on transports	Y	• Improved helmet design	Y
• Bicycle helmet promotion campaigns	Y	• No right turn on red	Y	• Separate pedestrian walk signal	Y
• R.I.D.E. Programs - drinking & driving awareness	Y	• Administrative licence suspension for impaired driving	Y	• Ignition interlock for impaired drivers	NE
• Students / Mothers Against Drinking & Driving	NE	• Blood alcohol legal limit = 0.05	Y	• Improved child restraint systems	Y
• Seat restraint awareness campaign	Y	• Graded licencing system	NE	• Separate vehicular, pedestrian and bicycle traffic	Y
• Tagged for Life - education program for impaired drivers	Y	• Driver Education	N	• Divided highways	Y
• Bar server intervention programs	NE	• Marked pedestrian crossings	Y		
• Safe ride home programs	NE	• Curfew laws for teens	NE		
		• Bar server laws	NE		

E = Effectiveness: Y = Proven effectiveness; NE = not evaluated; U = effectiveness uncertain; N = not effective.

** PARTY: Prevent Alcohol and Risk-Related Trauma in Youth

1. Priority Themes for Injury Prevention in Ontario, A Report Prepared by the Ontario Public Health Association for the Emergency Health Services Branch, Ontario Ministry of Health, Toronto, March 1992.
Page 58, Table 7, Motor Vehicle Injury Prevention Strategies.

TABLE B

Suicide

Prevention Strategies

Education/Persuasion	E	Legislation/Administration	E	Technical/Engineering	E
<ul style="list-style-type: none"> • Education of caregivers, eg. nurses, teachers, social workers 	NE	<ul style="list-style-type: none"> • Decreased access to means: <ul style="list-style-type: none"> ➤ Firearm control ➤ Carbon monoxide level trigger switches in cars ➤ Bars on high-rise windows ➤ Emergency phones on bridges ➤ Automatic air bags ➤ Limits to prescription amounts 	Y Y Y Y NE	<ul style="list-style-type: none"> • automatic air bags • plastic bullets for target practice 	Y Y
<ul style="list-style-type: none"> • Education of general public about facts & fallacies related to suicide 	NE		Y		
<ul style="list-style-type: none"> • Telehelp/crisis lines 	NE		Y		
<ul style="list-style-type: none"> • Crisis intervention teams in high schools 	NE		NE		
<ul style="list-style-type: none"> • Counselling & support for adults at risk, eg. those who are: alcoholics, unemployed, depressed, bereaved, etc. 	NE	<ul style="list-style-type: none"> • Suicide prevention included in core curriculum for all caregiver professions 	NE		
<ul style="list-style-type: none"> • Increased public awareness of the incidence of suicide 	U	<ul style="list-style-type: none"> • Accurate monitoring of suicides & attempted suicides 	NE		

E = Effectiveness: Y = Proven effectiveness; NE = not evaluated; U = effectiveness uncertain; N = not effective.

1. Priority Themes for Injury Prevention in Ontario, A Report Prepared by the Ontario Public Health Association for the Emergency Health Services Branch, Ontario Ministry of Health, Toronto, March 1992. Page 59, Table 8, Suicide Prevention Strategies.

TABLE C

Falls

Prevention Strategies

Education/Persuasion	E	Legislation/Awareness	E	Technical//Engineering	E
<ul style="list-style-type: none"> • Physical Activity programs • Falls clinics - inter-health professional assessment & follow up • Falls prevention education • Resource database on falls and improving the home environment (S.H.A.R.P.) • Strength & balance improvement • Safe Home visits (VON) • Activity & Education programs With pre-retirement groups • Clearing ice & snow from walks, etc. • Volunteer drivers for elderly in the winter/inclement weather 	<p>Y</p> <p>Y</p> <p>NE</p> <p>NE</p> <p>Y</p> <p>NE</p> <p>NE</p> <p>NE</p> <p>NE</p>	<ul style="list-style-type: none"> • Building codes eg. bars on high-rise windows • Change drug prescribing patterns for the elderly • Mandatory workshop on falls in the elderly for health professionals in long-term care facilities • Drug prescription surveillance system - prevent over-medication, drug interactions 	<p>Y</p> <p>NE</p> <p>NE</p> <p>NE</p>	<ul style="list-style-type: none"> • Improved furniture design • Improved bathroom design for elderly • Improved stairway design - lower stair rise, etc. • Improved footwear design 	<p>NE</p> <p>NE</p> <p>NE</p> <p>NE</p>

E = Effectiveness: Y = Proven effectiveness; NE = not evaluated; U = effectiveness uncertain; N = not effective.

1. Priority Themes for Injury Prevention in Ontario, A Report Prepared by the Ontario Public Health Association for the Emergency Health Services Branch, Ontario Ministry of Health, Toronto, March 1992. Page 60, Table 9, Falls Prevention Strategies.

BIBLIOGRAPHY - INJURY PREVENTION PRIMER

Baraffe, Larry J., Injury Prevention: Can We Meet the Challenge? (Editorial), *Annals of Emergency Medicine*, Vol. 20, No. 9, pp. 1045-1046, September 1991.

Bodiwala, G.G., P.D. Thomas and A. Otubushin, Protective Effect of Rear-Seat Restraints During Car Collisions, *The Lancet*, February 18, 1989, pp. 369-371.

Canada Safety Council, Accident Fatalities, Canada 1989, Ottawa: Statistics Canada, Vital Statistics Division, 1991.

Canadian Injury Prevention Foundation, Outline of Activities, HEROES: A Program for Teenagers, Media Clippings, Letters of Support, Brochure, Toronto: 1992.

Canadian Rehabilitation Council Project, *The S.H.A.R.P. Project Newsletter*.

EDC Injury Prevention Control, Injury Prevention: Meeting the Challenge, *Am. Journal of Preventive Medicine*, Vol. 5, No. 3, New York: Oxford University Press, 1989.

Fortenberry, Jessie and David B. Brown, Problem Identification, Implementation and Evaluation of a Pedestrian Safety Program, *Accid. Anal. & Prev.*, Vol. 14, No. 4, pp. 315-322, 1992.

Gielen, Andrea Carlson, Health Education and Injury Control: Integrating Approaches, *Health Education Quarterly*, Vol. 19(2): 203-218 (Summer 1992).

Harborview Medical Center, The Harborview Injury Prevention and Research Center: Working for Injury Control, Seattle: Harborview Medical Center and University of Washington.

Harlan, Linda C., William Harlan and P. Ellen Parsons, The Economic Impact of Injuries: A Major Source of Medical Costs, *Am. Journal of Public Health*, Vol. 80, No. 4, pp. 453-459.

Hathaway, C. Thomas, Associates Inc., Attitude and Behaviour Change: Evaluation of High School Presentations to Young People on Injury Prevention and High-Risk Activities, 1990-91 Extracted Summary, Vancouver: B.C. Paraplegic Assn. and University Hospital, 1991.

Malek, Marvin, and others, The Cost of Medical Care Injuries to Children, *Annals of Emergency Medicine*, Vol. 20, No. 9, pp. 997-1005, September 1991.

Millar, Adam, and Owen Adams, Accidents in Canada, Ottawa: Statistics Canada, Housing, Family and Social Statistics Division, General Social Survey Analysis Series, February, 1991.

Ministry of Tourism and Recreation (Ontario), Injuries Hurt All Of Us, Toronto: 1991.

Ontario Public Health Association, Priority Themes for Injury Prevention in Ontario, Toronto: OPHA, March 1992.

Rice, Dorothy P. and Ellen J. MacKenzie and Associates, Cost of Injury in the United States, A Report to Congress 1989, San Fransisco, CA: Institute for Health & Aging, University of California and Injury Prevention Center, The Johns Hopkins University, 1989.

Rosenberg, Mark L., Juan G. Rodriguez, and Terrence Chorba, Childhood Injuries: Where We Are, *Pediatrics*, American Academy of Pediatrics, 1990.

Traffic Safety Education Department, Insurance Corporation of B.C., Do It Right For Your Family (1990), Barbara Selwood and Betty Brown, Infant and Child Restraints: A Community Based Approach, pp. 132-138.

Ontario Injury Prevention Resource Centre
Ontario Public Health Association
468 Queen Street East, Suite 202
Toronto, ON M5A 1T7

Tel: (416) 367-3313 / 1-800-267-6817, ext 25

Fax: (416) 367-2844

E-mail: injury@web.net

Website: <http://www.opha.on.ca/oph>