

**INJURY PREVENTION INTERVENTION STRATEGIES AMONG ABORIGINAL
PEOPLES:**

**A SYSTEMATIC REVIEW OF LITERATURE AND PRELIMINARY REPORT OF
ABORIGINAL INJURY PREVENTION PROGRAMS IN BC.**

PRELIMINARY REPORT

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Authors:

Lise Olsen

Dorry Smith

Kate Turcotte

Ian Pike

The British Columbia Injury Research and Prevention Unit (BCIRPU) was established by the Ministry of Health and the Minister's Injury Prevention Advisory Committee in August 1997, and opened its doors in January 1998. It is housed within the Centre for Community Child Health Research (CCCHR) and supported by the Child and Family Research Institute. The Unit's vision is "to be a leader in the production and transfer of injury prevention knowledge and the integration of evidence-based injury prevention practices into the daily lives of those at risk, those who care for them, and those with a mandate for public health and safety in British Columbia".

Authors: *Lise Olsen, Dorry Smith, Kate Turcotte, Ian Pike*

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BC Injury Research and Prevention Unit

L408-4480 Oak Street

Vancouver, BC V6H 3V4

Email: injury@cw.bc.ca

Phone: (604) 875-3776 Fax: (604) 875-3569

Webpage: www.injuryresearch.bc.ca

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1.0 INTRODUCTION

Background and Objectives

Among First Nation populations in Canada, injury is the leading cause of death for those under age 45 years (Health Canada, 2001). Aboriginal people have also shown to be at higher risk of certain types of injuries such as deaths due to motor vehicle collisions and drownings, as well as those due to fire and flames (Health Canada, 2001).

In British Columbia (BC), First Nations People have disproportionately higher injury-mortality rates due to injuries. For the years 1992 to 2002, 25% of deaths among First Nations People in BC were attributable to injuries while for Other Residents, this percentage was 7.1%. The analysis of BC mortality data also showed that 67.2% of injury-related deaths occurred among males. Furthermore, the analysis of data between 1992 and 2002 showed downward trends that were significant across all age groups and, overall, showed a decrease of 55.5% compared with a decrease of 38.9% among Other Residents for the same time period (BCIRPU, 2006). However, despite these decreases, injury rates among First Nations are still higher than those of the general population.

First Nations people suffer a large proportion of premature deaths among young people, which, in Canada, are responsible for over half of all Potential Years of Life Lost (PYLL) (Health Canada, 2001). An analysis of severe trauma among residents of the Calgary Health Region found that Aboriginal Canadians were at higher risk for motor vehicle crashes, assault and traumatic suicide than the non-Aboriginal population (Karmali et al., 2005). Leading causes of death also differ across age groups. For children and youth, the leading causes of injury-related deaths include motor vehicle collisions, suicide and homicide. For adults, the leading causes were unintended poisoning, motor vehicle collisions and suicide. In contrast, seniors suffered mostly from injury-related deaths due to falls, motor vehicle collisions and fire (BCIRPU, 2006).

In a recent report by BCIRPU commissioned by the First Nations and Inuit Health Branch (FNIHB), Pacific Region and the BC Ministry of Health, entitled: *Injuries Among First Nations People within British Columbia (2006)*, the patterns and trends of injury among First Nations people in BC were summarized and the report recommends the development of community-based injury prevention initiatives across BC Health Authorities. As a preliminary step to support the development of interventions, this current review was initiated to examine the published literature regarding the interventions at all levels including public policy, environmental safety, community-based interventions and health service initiatives. This review of published literature is supplemented with an environmental scan of grey-area literature, or unpublished program reports, describing injury prevention initiatives undertaken in Aboriginal communities in BC. The specific objectives of this review were:

- To review and summarize the evidence base from published literature regarding injury prevention among Aboriginal peoples
- To ascertain what injury prevention initiatives aimed at Aboriginal people are currently being offered in British Columbia and which are not represented in the published literature

To meet these objectives, the review was conducted in two parts. The first part of the review consisted of a systematic review to identify and summarize the peer-reviewed published literature on evaluations of injury prevention programs aimed at Aboriginal people. The focus of this review included studies from all countries, but was limited to those published in the English language.

The second component of the review consisted of a search strategy to identify non-peer-reviewed, grey-area literature outlining injury prevention programs focused on Aboriginal people. This review has been focussed initially on programs in British Columbia, but as part of the full review will be expanded to include programs that may exist throughout Canada.

The organization of this report reflects the two components of the review. Sections 2.0 through 4.0 outline the methodology, findings and discussion related to the systematic review of the peer-reviewed published literature. In Section 5.0, the methods for the grey-area program review are outlined and Section 6.0 provides an overview of the preliminary results of this review, as well as the proposed steps for the next phase and completion of the review.

2.0 SYSTEMATIC REVIEW OF PUBLISHED RESEARCH - METHODS

Search strategy:

The search strategy to identify peer-reviewed published literature on interventions to address injury prevention among Aboriginal people included searches of major electronic databases. The following databases were searched for the years indicated:

OVID Medline	1966 to 2006
CINAHL	1987 to 2006
EMBASE	1980 to 2006 week 18
PsychInfo	1887 to 2006
EBM reviews (includes Cochrane, ACP Journal Club, DARE and CCTR)	4 th quarter 2006
Social Science Index.	1974 - 2006

The key words used in the searches reflected a combined search of terms related to accident or injury prevention along with key words related to Aboriginal status. Key words were also specifically tailored to each database.

In addition, hand searching was conducted of the following journals to identify published articles not identified in the electronic database searches:

Injury Prevention	1998 - 2006
Journal of Aboriginal Health	January 2004 – March 2005

Identification of potentially relevant articles:

After conducting the literature searches, the relevant citations were examined to assess whether they fit the study topic and appeared to reflect evaluation of an intervention aimed at reducing injuries among Aboriginal People. Two reviewers assessed all abstracts and full articles were obtained for those abstracts that reviewers identified as potentially relevant. Hard copies of the articles were obtained, and were reviewed in full using the study selection criteria.

Selection criteria:

A list of relevance criteria were developed to assist with the identification of published articles that were found to be suitable for further review. A relevance form was developed (Appendix 1) which included the following elements:

- Study topic: is the research study evaluating a prevention or intervention strategy to prevent injuries among Aboriginal people?
- Study design type: Randomized Control Trial (RCT), non-RCT, cohort, case-control or other?
- Study participants: Involving one or more Aboriginal group
- Study outcomes: Measures include at least one of: injury mortality, morbidity, attitudinal, behavioural or public policy, or measure of environmental change

The selection criteria listed above were used in the review of full research articles to determine the relevance of each study. Reasons for study exclusion were also documented. Two reviewers assessed the relevance of each full article and then met to discuss relevance decisions.

Data extraction and summary:

For those articles deemed relevant by both reviewers, key data elements were extracted from the articles using a data extraction form. The data extraction form (Appendix 3) was developed based on a form by Zaza et al., (2000) and included the following major elements:

- Study design
- Report type
- Injury prevention intervention focus
- Intervention components
- Primary outcome measures
- Description of intervention
- Description of theory
- Components delivered to control groups
- Study location – country
- Type of community
- Study setting – location of intervention
- Methods of outcome measurement
- Time period of study
- Study population – characteristics
- Primary and secondary study results
- Sample size information
- Feasibility issues addressed

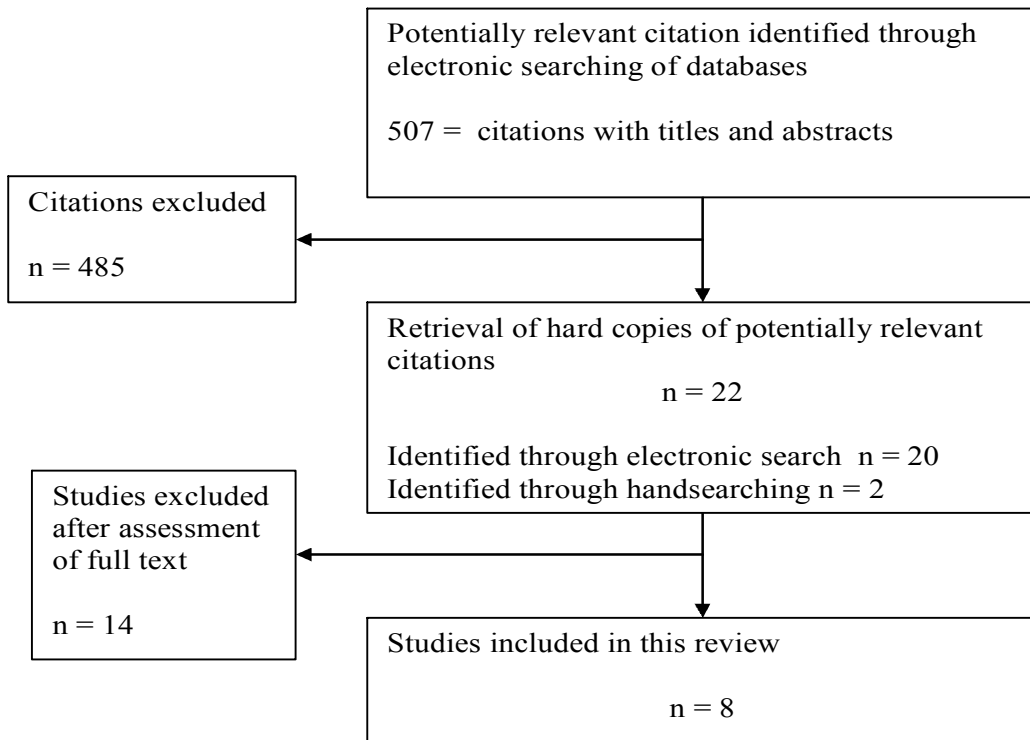
Two reviewers extracted information on each of the major data elements for each of the relevant studies. Comparisons of information extracted were made to ensure consistency. Key data elements from the relevant studies are summarized in table form in Section 3.0.

3.0 SYSTEMATIC REVIEW OF PUBLISHED RESEARCH - FINDINGS

Figure 1 illustrates the steps taken in the study identification and review process and the number of citations or research articles that were reviewed at each step.

A total of 507 citations were identified through the search procedures. Of these, 22 studies were reviewed in full and 8 studies met the relevance criteria for inclusion in the systematic review.

Figure 1. Identification of relevant literature on injury prevention intervention strategies among Aboriginal peoples.



4.0 SYSTEMATIC REVIEW OF PUBLISHED RESEARCH - DISCUSSION

The following discussion summarizes the major study findings that were identified from the 8 studies for which data were extracted. These studies were conducted in the areas of alcohol-related injury, motor vehicle crash injury, community-based injury prevention and suicide/violence-related injury. Major findings related to each area, and the implications of these findings are discussed below.

Alcohol-related Injury Prevention:

There were two studies identified in the review which addressed alcohol-related injuries (Landen et al., 1997; Berman, Hull & May, 2000). Both studies were conducted in Alaska, USA and both evaluated community-level alcohol control measures. The presence of restrictive “dry” community policies were compared to “wet” (non-restrictive) or “damp” (importation for personal use permitted) in terms of injury mortality rates. Landen et al.(1997) reported that the rate ratios of injury deaths for Aboriginal Alaskans was significantly higher for wet versus dry communities in 150 study villages (rate ratio = 1.6, 95% CI, 1.3-2.1). Berman et al. (2000) reported that mortality rates had decreased significantly in dry communities versus wet communities for both homicide and injuries overall. Furthermore, mortality rates were found to have decreased significantly between damp versus dry communities for total injuries, for unintentional injuries and for suicide. All were statistically significant reductions in mortality using Poisson test of difference. Berman et al. (2000) also discussed how community characteristics related to holding a referendum process may also have been involved in these rate reductions.

These two community level studies comparing the effects of different levels of alcohol restriction policies appeared to show that the presence of some level of alcohol restriction was associated with lower levels of mortality. As the authors of these studies point out, other factors may have played a role in the injury differences observed, such as the characteristics or norms of the communities that engaged in a referendum process or that implemented more restrictive options. Therefore, direct causal links between these policies and injury mortality reductions cannot be made. The authors (Berman, Hull & May, 2000) also raised the question of whether injuries to those living in communities with more restrictive policies, might export their injuries to other outside communities. The data analysis in this study, however, found no evidence of this and suggested that the isolated and remote nature of the Alaskan communities may have played a role. The authors did not offer suggestions as to why damp communities may have offered more protection against suicides and unintentional injuries.

In summary, the two studies offer preliminary and limited evidence that some form of community level policy to restrict alcohol may have a protective effect against injury in remote, Aboriginal communities. The applicability of these findings to the Canadian context as it relates to alcohol regulation is not known. Furthermore, the role played by community processes that facilitate the adoption of more restrictive policies is also not known.

Motor Vehicle Crash Injury Prevention:

Two before-after studies were reviewed that assessed the effect of the passage of a 1988 safety belt and child restraint law on injury morbidity among members of the Navajo Nation in the United States (Phelan et al., 2002; CDC, 1992). The Morbidity and Mortality Weekly Report (MMWR) report (CDC, 1992) described how an intervention consisting of: 1) an education campaign, 2) enactment of a safety belt law, 3) a public information campaign and 4) enforcement, among Navajo people, increased safety belt use from 14% to 60% and motor vehicle crash hospitalization rates decreased by 28.5%.

In the study by Phelan et al.(1992), specific injury hospitalization rates among children were reported related to the enactment of this same law in the Navajo Nation. Overall hospitalization rates decreased significantly for all age groups of children 0 through 20 years. In this study, enactment of seat belt and child restraint laws coupled with informational campaigns and enforcement were associated with injury reductions among Navajo Nation children. However, direct causality, as the authors point out, cannot be attributed to the intervention since there were no comparison measures used from other communities. Furthermore, this was a period of time in which seat belt use was increasing and motor vehicle crash injuries were decreasing across the US as a whole. Therefore, the cause of the decrease can not be directly attributed to this intervention, and may be due to the influence of secular trends and lack of comparison group measures. Despite these limitations, these analyses do provide some limited evidence that a strategy of legislative change coupled with education and enforcement components is a feasible strategy that may lead to injury reductions among Aboriginal residents living across a large geographic area. However, the applicability of these findings to Canadian Aboriginal communities is also not clear.

Community-based Injury Prevention:

Three studies were identified in the literature in which researchers evaluated general injury prevention intervention efforts conducted in Aboriginal communities (Brewin & Coggan, 2004; Brewin & Coggan, 2002). Two of these studies were conducted in New Zealand and one in Australia. In the two New Zealand studies, Brewin & Coggan (2002; 2004). conducted intervention efforts in two separate Maori communities and utilized a quasi-experimental, non-randomized approach to evaluate the interventions. In the study with the Turanganui-a-kiwa population (Brewin & Coggan, 2002), the intervention consisted of five components, and outcomes were measured in terms of awareness and behaviours. Significant behavioural improvements were reported which included increased self-reported use of protective equipment for sports.

In the 2004 study by Brewin & Coggan conducted with Maori from the Ngati Porou tribal region, an eight-part intervention approach was described. Significant decreases in injury morbidity over a three year period were reported (2000 per 100,000 populations to 1750 per 100,000, $p < 0.05$). Limitations associated with these two studies include the fact that injury-related decreases were reported for both studies, but these were displayed in graph form only and the specific values and significance levels associated with these changes are not clearly reported. While the use of comparison communities is a strong point of these two studies, the large number of intervention components limits the ability to determine which type of component might be most effective. Furthermore, the transferability of these findings that were obtained in New Zealand to the Canadian context may also be limited.

In the third community based study, by Shannon et al. (2001), a time series analysis was used to assess the effect of a general injury prevention intervention on injuries among members of the Woorabinda tribe in Australia. The intervention components consisted of local capacity-building forums, regional interagency collaboration, community workshops and a traditional dance video on injury themes. Over a two year period, injuries were found, on average, to decrease by 30% per month ($p \leq 0.001$). This study was also strengthened by the use of multiple before and after measures but was limited by the absence of a comparison group.

Across these three studies, the findings do show injury reductions in relation to the implementation of varied types of intervention strategies. Methodological strengths of these studies included the use of either a comparison group or multiple before and after injury measures. The applicability of these findings to Canadian setting may be limited and it is also difficult to draw conclusion about the types of, or combinations of, interventions that were the most effective. Furthermore, other processes which may have been operating at the community level such as the building of community capacity or other types of resources may also have been responsible in part for the changes seen in injuries. Implementation of a community based intervention that takes these considerations into account, and that is conducted in a British Columbia setting, would be a helpful contribution to further study in this area.

Suicide/Violence Related Injury Prevention:

One time-series study was identified which provided data prior to and following the implementation of a community wide effort to counteract a suicide epidemic on a Canadian First Nations Reserve (Fox, Manitowabi & Ward, 1984). The interventions used in this study included alcohol recovery programs, community feasts, youth programs, self-esteem enhancement, and mental health interventions. In the five year period following these interventions, rates of suicide, violent deaths and suicide attempts were reported as having decreased. While some comparisons were made between the rates of injury on the Reserve and those in the wider community, these comparisons were not clearly presented. It is also not possible to point to any one part of the intervention that may have been most important. This study, does however, provide an example of an intervention that was implemented in the Canadian context to address the issue of suicide and that was associated with reductions in both suicides and violent deaths in the community over a five year period.

Table 1.0 Alcohol-Related Injury:

Study	Methods	Participants	Interventions
Landen, 1997 (United States) (15)	Retrospective cohort study: reviewed death certificate data and medical examiner records to compare mortality rates for total injury and alcohol-related injury from 1990 to 1993	Alaskans aged 15 years and older who resided in remote villages of fewer than 1000 persons	The presence of restrictive (“dry community”) versus non-restrictive (“wet community”) alcohol laws in 150 study villages.
Berman, 2000 (United States) (13)	Ecological Study	Residents of 99 Alaskan communities that were predominantly Native Alaskan.	Different forms of community-level alcohol control through a referendum: <ul style="list-style-type: none"> • “Wet” – no restrictions in place. • “Damp” – sale of alcohol prohibited; importation for personal use permitted; sale allowed only at one licensed package store or, for incorporated communities, sale only at a city-operated liquor store. • “Dry” – sale and importation prohibited.

Alcohol-Related Injury Cont’d.

Study	Outcomes	Results
Landen, 1997 (United States)	<ul style="list-style-type: none"> • Injury mortality (1990-1993) 	<p>Injury mortality rate among Native Alaskans:</p> <ul style="list-style-type: none"> • Wet versus dry communities: rate ratio of 1.6 for wet communities (95% confidence intervals [CI], 1.3-2.1) <p>Alcohol-related injury deaths among Native Alaskans:</p> <ul style="list-style-type: none"> • Wet versus dry communities: rate ratio of 2.7 for wet communities (95% confidence intervals [CI], 1.9-3.8)
Berman, 2000 (United States)	<ul style="list-style-type: none"> • Injury mortality (1980-1993) 	<p>Wet versus dry communities:</p> <ul style="list-style-type: none"> • Mortality rate decrease for dry communities of 20.8 per 100,000 for homicide (statistically significant using Poisson test of difference). • Mortality rate decrease for dry communities of 48.1 per 100,000 for total injuries (statistically significant using Poisson test of difference). <p>Wet versus damp communities:</p> <ul style="list-style-type: none"> • Mortality rate decrease for damp communities of 73.6 per 100,000 for unintentional injuries (statistically significant using Poisson test of difference). • Mortality rate decrease for damp communities of 55.5 per 100,000 for suicide (statistically significant using Poisson test of difference). • Mortality rate decrease for damp communities of 127 per 100,000 for total injuries (statistically significant using Poisson test of difference).

Table 2.0 Motor-Vehicle Crash Injury:

Study	Methods	Participants	Interventions	Outcomes	Results
MMWR, 1992 (United States)	Before-after study	Members of the Navajo Nation	<ul style="list-style-type: none"> • Campaign with tribal leaders • Enactment of a primary enforcement safety belt law • Public information campaign about the new law • Enforcement of the new law 	<ul style="list-style-type: none"> • Behavior • Injury morbidity (1988-1991 for seat belt use) • (1988-1990 for MVC hospitalization) 	<p>Safety belt use:</p> <ul style="list-style-type: none"> • Increased from 14% to 60% <p>Motor vehicle crash hospitalization rates:</p> <ul style="list-style-type: none"> • Decreased by 46% among females and 14% among males • Decreased overall by 28.5% <p>Significance levels not reported</p>
Phelan, 2002 (United States)	Before-after study	Children aged 0-19 years from the Navajo Nation discharged from Navajo Area Indian Health Service (IHS) hospitals	<ul style="list-style-type: none"> • 1988 - enactment of primary safety belt laws and a child restraint law • 1990 - enforcement of laws and area-wide campaigns 	<ul style="list-style-type: none"> • Injury morbidity (1983-1995) 	<p>Hospitalization rates for motor vehicle injury per 100,000:</p> <ul style="list-style-type: none"> • Decreased from 62.2 to 28.0 for ages 0-4 years ($p \leq 0.0001$) • Decreased from 55.3 to 26.0 for ages 5-11 years ($p \leq 0.0001$) • Decreased from 139.0 to 68.0 for ages 12-19 years ($p \leq 0.0001$) • Decreased from 81.7 to 41.3 for ages < 20 years ($p \leq 0.0001$)

Table 3.0 Community-based Injury Prevention:

Study	Methods	Participants	Interventions	Outcomes	Results
Brewin, 2002 (New Zealand)	Quasi-experimental, non-randomized trial: to evaluate, using process, impact and outcome measures, the Turanganui-a-kiwa Community Injury Prevention Project.	Within the Turanganui-a-kiwa population, a non-random group of Maori that represent Maori organizations within the community. The basis of selection was through activities held in the local meeting house, teachers and family and local sport coordinators and family at sports days.	<ul style="list-style-type: none"> • Child restraint loan scheme: included a media campaign and training sessions to increase the correct use of child restraints. • Drivewise campaign: promotional materials in liquor stores and random stop points along the road targeting motorists on holidays. • Safer alcohol use in sporting events: promotion of sport injury prevention and safer alcohol use. • Family violence awareness: promotional initiatives on the need to address family violence and distributed throughout the community. • Kaumatua smoke alarm project: installation and maintenance of smoke alarms by the Fire Service. 	<ul style="list-style-type: none"> • Knowledge, attitude and beliefs • Behaviour • Injury morbidity (1996-1999) 	<p>Awareness of injury prevention:</p> <ul style="list-style-type: none"> • Increased from 15% to 39% ($p \leq 0.001$) <p>Respondents attending Community Injury Prevention Project (CIPP) meetings:</p> <ul style="list-style-type: none"> • Increased from 12% to 20% ($p \leq 0.05$) <p>Respondents wearing protective equipment for sports:</p> <ul style="list-style-type: none"> • Increased from 20% to 27% ($p \leq 0.05$)
Brewin, 2004 (New Zealand) (1)	Quasi-experimental, non-randomized trial (for mortality rate data) Before-after study (for survey data)	Maori from the Ngati Porou tribal region	<ul style="list-style-type: none"> • Drivewise campaign to promote road safety. • Driver licensing course for unlicensed drivers. • Kohanga Reo Road Safety Programme: child restraint loan and media campaign to use seatbelts/restraints. • Forums to promote self-esteem and address alcohol and drug misuse among high-risk youth. • Alcohol-reduction at sporting events • Supporting traditional practices. • Domestic violence/child abuse prevention program. • Playground safety audit. 	<ul style="list-style-type: none"> • Knowledge, attitude and beliefs • Behaviour • Injury morbidity (1996-1999) 	<p>Awareness of injury prevention:</p> <ul style="list-style-type: none"> • Increased from 17% to 25% ($p \leq 0.05$) <p>Injury morbidity rates:</p> <ul style="list-style-type: none"> • Decreased from 2000 to 1750 per 100,000 population ($p \leq 0.05$)
Shannon, 2001 (Australia)	Time series analysis	Indigenous Australians in the Woorabinda tribe	<ul style="list-style-type: none"> • Local capacity-building forums • Regional level collaboration to foster inter-agency action on injury • Community workshops and feedback sessions • Traditional dance video on injury themes 	<ul style="list-style-type: none"> • Injury Morbidity (1997-1999) 	<p>Average monthly injuries:</p> <ul style="list-style-type: none"> • Decrease from 96 average monthly injuries to 65 (30%) ($p \leq 0.001$)

Table 4.0 Suicide/Violence-related Injury:

Study	Methods	Participants	Interventions	Outcomes	Results
Fox, 1984 (Canada)	Time series study	Residents of Manitoulin Island Indian Reserve	<ul style="list-style-type: none"> • Alcohol recovery: inclusion of family members in the alcohol group process at Rainbow Lodge. • Community feasts: different presentations of entertainment and tradition with alcohol being prohibited. • Youth programs: enabling youth to provide such things as babysitting or cleaning up within the community. • Self-esteem enhancement among youth: school alcohol counselors provided an educational program of self-esteem enhancement. • Organized mental health intervention strategies 	<ul style="list-style-type: none"> • Injury morbidity • Injury mortality (1971-1974 compared to 1976-1980 for suicide) (1965-1970, 1971-1975 and 1976-1980 for violent deaths) (1975 compared to 1980-1981 for suicide attempts) 	<p>Suicide:</p> <ul style="list-style-type: none"> • The rate in 1971-1974 was 267 per 100,000 population. • The rate in 1976-80 was 26.7 per 100,000 population. <p>Violent deaths:</p> <ul style="list-style-type: none"> • The rate in 1965-1970 was 89 per 100,000 population (n=16). • The rate in 1971-1975 was 253 per 100,000 population (n=38). • The rate in 1976-1980 was 127 per 100,000 population (n=19). <p>Suicide attempts:</p> <ul style="list-style-type: none"> • From 1975 to 1980-1981, the rate decreased from 1170 to 430 per 100,000 population.

Discussion

These published studies provide a limited body of observational studies which have reported some decreases in injuries among Aboriginal people that were associated with the implementation of injury reduction intervention efforts.

There are several studies in this review in which multi-faceted community efforts were undertaken to address injuries in the community. Two studies utilized another community as a comparison group and two studies used before and after measures to compare outcomes. Only one study was conducted in Canada and this study utilized data from the 1970's. It is also not clear from the community efforts, the degree to which effects may have been the result of the specific intervention undertaken or community processes involved to carry out those interventions. Several of the studies did describe some process outcome measures which are important components in evaluation efforts with Aboriginal people. Process outcome measures ascertain the aspects that were program related versus those related to the planning or implementation process itself and the ownership or capacity issues which may have been enhanced as a result.

Four of the studies assessed the effectiveness of regulations on injury reduction among Aboriginal people in the United States. While geographic similarities may exist between British Columbian Aboriginal communities and remote Alaskan communities, the policy environments concerning alcohol restriction in Aboriginal communities may differ considerably. Thus, more efforts are needed to better understand the policy environment in BC and how it might be related to Aboriginal community ownership.

While the studies of the seat belt and car restraint law, campaign and enforcement (Phelan et al., 2002; CDC, 1992) showed some promise in a United States setting, the applicability to the Canadian context is not known. Many BC reserve communities currently do not mandate seat belt use and a first step to better understand this issue would be to gather additional information about the extent to which BC First Nations Reserve communities are currently implementing seat belt and child restraint policies at the band or council level.

Across these three studies, however, there does appear to be a common finding of injury reduction in relation to the implementation of varied types of intervention strategies. Several of the studies did use comparison communities to compare injury rates, however, there were several that relied on before and after measures in one community. The applicability of these findings to a Canadian setting may be limited. It is also difficult to draw conclusions about the types or combinations of interventions that might be most effective, as well as the degree to which other processes at the community level may have played a role in the changes seen.

In conclusion, this review has shown there to be only a small number of published, peer-reviewed research studies available that have evaluated injury prevention intervention strategies in Aboriginal communities. The studies that were identified had limitations in the designs and study methods used including unclear reporting, as well as the results being potentially affected by confounding factors. Furthermore, only one study was found that had been conducted in a Canadian setting. Therefore, the findings from these studies provide inconclusive evidence about the effectiveness of specific injury

prevention strategies; however, they do suggest that comprehensive efforts that target both individual and community level change are necessary to achieve injury reductions. Based on this review, it is suggested that implementation of strategies to reduce injuries among Aboriginal people in BC should include evaluation measures to assess aspects related to both program process and impact. Furthermore, community held control in deciding priority areas and culturally acceptable interventions is a key aspect in efforts aimed at helping to reduce injuries among Aboriginal communities in British Columbia.

5.0 SUMMARY OF RECOMMENDATIONS BASED ON SYSTEMATIC REVIEW

Recommendation 1: Engage in consultation with Aboriginal leaders and key stakeholders to assess the feasibility of conducting an assessment of primary prevention activities related to injury issues in BC Aboriginal communities. This review would include assessment of locally developed and implemented policies as well as activities aimed at enforcement and promotion of adherence to local policies.

Recommendation 2: Continue to build the knowledge base regarding Aboriginal injury prevention program initiatives that are currently underway in BC and potentially in other provinces and facilitate the sharing of this knowledge with community members.

Recommendation 3: Facilitate and support the development of culturally relevant community based injury prevention initiatives in Aboriginal communities. Encourage and support the building of evaluation components into such efforts.

Recommendation 4: Support community-level injury surveillance as part of the BC Aboriginal injury prevention planning in order to identify local priorities for action, as well as the identification of relevant risk-factors and conditions, evaluation of current community prevention programs, and the development of new initiatives.

6.0 PROGRAM REVIEW: INTRODUCTION AND METHODS

The systematic review of literature described in the previous chapters yielded a very small number of studies (n=8) across four injury topic areas. Due to the lack of conclusive evidence available from this body of literature and the lack of published program evaluation information in the Canadian context, the decision was made to conduct a review of programs currently in place among Aboriginal groups in British Columbia that address injury prevention issues. The remainder of this report outlines the results obtained to date regarding the program review, as well as a strategy to continue and finalize this review during 2007/2008.

The objectives for this program review include the following:

- To determine what injury prevention initiatives focussed on Aboriginal people currently underway in British Columbia
- To develop and implement a strategy to enable those involved with these BC injury programs to share information about their program efforts and results

The methodology to conduct this review includes a comprehensive grey-area literature search strategy, as well as contact with key informants working in the area of First Nations injury prevention and health in BC. The focus of this search strategy is primarily British Columbia, and a secondary focus will be on programs being conducted in other provinces. The decision to include programs in other provinces will be dependent on the results obtained from the BC focussed review.

Search Strategy:

The search strategy for this phase includes the following sources of information:

Canadian Collaborating Centres for Injury Prevention and Control (CCCIPC) websites
Government Websites at the provincial and federal level (Health and First Nations)

- BC Ministry of Aboriginal Relations & Reconciliation
- BC Ministry of Health
- BC Health Authorities
- FNIHB, PHAC, Health Canada

Aboriginal and First Nations Non-governmental Organizations:

- National (NAHO, AFN, NIICHRO)
- Provincial (FNESS)

Research Organizations (Federal and Provincial)

- CIHR, Institute for Aboriginal Health/ACADRE
- MSFHR networks

Web-based search on Google and Google Scholar

UBC Library catalogue search

Theses/Dissertations

Journal Hand Searching: Journal of Aboriginal Health

Conference Proceedings:

- BCIRPU Provincial Conference, March 2006
- Canadian Injury Prevention and Safety Promotion Conference, 2005

- University of Victoria, Aboriginal Health Research Conference, 2006
- Contact with Key Experts in Aboriginal Health and Injury Prevention
- Researchers
 - Government representatives
 - Health authorities and community contacts

Selection Criteria:

A set of selection criteria were formulated to guide the search process and the identification of potentially eligible programs to include in this review. These selection criteria included the following:

Program Focus: Program addresses an injury prevention strategy using a population health approach. Initiatives should be operating now or have been completed within the past two years. The program may address injury prevention as the sole focus or as one component of a larger health program. Injury topics include both unintentional and intentional injury prevention areas.

Participants: The program focus should be primarily on First Nations or Aboriginal Peoples living in BC. The program can also be aimed at the general population, but have an Aboriginal focus as a major subcomponent. All ages will be included.

Location: The primary focus of the review is limited to British Columbia. This may be expanded to include other provinces in the next stage of the review.

Evaluation: The review will only include programs in which process, impact or outcome measures have been included as part of evaluation activities. Evaluation activities may include those that have already been completed, are currently underway or documented in an evaluation plan.

Exclusions: Programs that focus exclusively on individually-oriented services, such as the provision of counselling or treatment will not be included in the review.

Data Collection Methods and Tools:

The steps involved to collect information about the programs available in BC include conducting the searches, identifying potentially eligible programs, determining eligibility of those programs, and inviting program personnel to submit program information and details using a web-based data collection tool. This tool will be placed on the BC Injury Research and Prevention Unit website and program personnel will be able to access and complete data collection via this web-based survey tool. Following this data collection, summary information about programs in BC will be presented on the BCIRPU website.

7.0 PROGRAM REVIEW: PRELIMINARY RESULTS

As of March 30, 2007, the majority of the searches have been completed and a preliminary list has been identified of programs in BC which we will invite to complete a program summary. The following outline lists the search results to date.

Table 5.0 Program Review – Preliminary Search Results.

Information Source	Results	Potentially Relevant BC Programs
CCCIPC	Potential program identified in other provinces	0
Conferences	BC Conference – 10 presentations reviewed UVic Aboriginal Health Research Conference – to be reviewed. National Conference on Injury Prevention and Control, 2005. – to be reviewed	4
B.C Health Authorities and Health Councils	VCH – 30 funded programs fro 2006/07 VIHA - Inter Tribal Health Authority Okanagan Nation Alliance (Kelowna)	3 1 1
Federal government websites	FNIHB Health Canada PHAC	3 1
Non-governmental websites –	NAHO website – 3 major papers reviewed Information Centre on Aboriginal Health 51 Research Projects reviewed 594 Health Prevention Projects – still to be reviewed.	2
Research Organizations	CIHR – 5 researchers identified - follow-up required. SSHRC – to be reviewed MSFHR – to be reviewed Worksafe BC ACADRE BC – 128 records of research publications reviewed UVic Aboriginal Health Research Group (23 records)	1 0 0
Web-based searching	100 records reviewed from each of Google & Google Scholar.	2
UBC Library catalogue/ Thesis portal	Yielded 12 books and reports and 2 theses that were potentially relevant.	Review in process
Journal Searching	Journal of Aboriginal Health (NAHO website) yielded 13 articles.	0
Contacts with key experts	Interviews conducted with 5 experts with involvement in Aboriginal injury prevention programs.	7

Table 6.0 Program Review: Preliminary List of Eligible BC Programs

Project Number	Name	Topic
1	Aboriginal Occupant Restraint Toolkit (ICBC & Health Canada)	Motor vehicle restraint
2	FNIHB/ BC Grants for Car seat loaner program	Motor vehicle restraint
3	Survey on Injury Prevention in First Nations Communities in BC	General
4	BC Aboriginal Injury Prevention Steering Group	General
5	Brighter Futures Initiatives	General
6	Shuswap Injury Surveillance Project	Injury Surveillance
7	Aboriginal Suicide Critical Incident Response Team (Inter Tribal Health Authority)	Suicide prevention
8	Okanagan Nation Alliance	Suicide prevention
9	Tla' Amin Community Health Services (VCH/Aboriginal Health Initiative Program)	Youth injury reduction
10	Kiwassa Neighbourhood House – Warriors Against Violence Society (VCH/Aboriginal Health Initiative Program)	Family violence prevention
11	Kiwassa Neighbourhood House – Men's Cultural Awareness (VCH/Aboriginal Health Initiative Program)	Family violence prevention
12	Wisdom of the Fire (BC) FNESS	Fire prevention
13	Aboriginal Falls Prevention Workshops (Interior Health)	Falls Prevention
14	Worksafe BC : Working Safe in Aboriginal Communities	Workplace injury
15	FNIHB – Life Skills visual aid	Cultural history tool
16	FNIHB – Squamish Nation	Cultural pride program

To date, 16 injury prevention related programs that are underway in BC have been identified. These initiatives have addressed injury prevention activities that are related to occupant restraints, suicide prevention, surveillance, youth injuries, family violence, falls, workplace injuries, general injury reductions and cultural pride and history programs. Key contacts from these programs will be invited to participate in the program review and to complete summaries of their projects for inclusion in this review.

Additional Steps for Program Review:

The first step to complete this program review will be to complete outstanding searches including the summary of programs listed on the NAHO website. Additional key researcher and community informants will also be contacted and interviewed in this next phase. Once the full list of potential programs to be included in the review has been

identified, an invitation letter will be sent to the appropriate contact person for each program, inviting them to participate in the project and asking their permission to be contacted by email or telephone for further follow-up. This step will be completed following approval of this data collection process from UBC Behavioural Research Ethics Board. For those programs that meet the inclusion criteria, the contact person will be invited to complete an on-line survey to summarize key program characteristics. A draft version of this survey tool has been developed (Appendix 5). An on-line survey program will be utilized to administer this survey on the BCIRPU website. This tool will be pilot-tested with the first five respondents and modifications to the data collection methods will be made, as necessary, following the pilot testing.

Once the data has been collected using the online survey tool, the key characteristics from each of the projects will be collated and summarized in a way to facilitate access to those who are searching for information about BC Aboriginal injury prevention programs. Final approval from community members will be sought prior to the posting of the program summaries. This information will be accessible via the BCIRPU website and will provide a useful resource for those who are planning programs in their own communities or who are assessing the current range of activities that are taking place in BC communities. The final product for the program review will consist of an on-line summary of programs ongoing in BC, and key contact information for these programs. A mechanism will also be made available for programs identified in the future to be added to the program review on an ongoing basis.

8.0 CONCLUSION

This program review summary has outlined the search strategies that are in place, preliminary results of the searches to date as well as the plans for finalizing the searches and conducting the program review data collection. These additional activities will take place during the 2007-2008 year and will culminate in a final report as well as an online summary of BC injury prevention efforts that are taking place in BC Aboriginal communities. The web-based summary of BC programs will be a helpful resource for community-based program planners working in Aboriginal communities with networking and developing ideas and strategies for new programming efforts.

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**APPENDIX 1
Relevance Form**

**Systematic Review of Published, Peer-Reviewed Literature
Injury Prevention among Aboriginal Peoples in BC**

Date: _____ **Reviewer Initials:** _____

Potential Relevance Reference Number _____

Authors _____ **Year** _____

Relevance Criteria	YES	NO	Other/Comment
1. Study Topic – a research study evaluating a prevention* or intervention strategy** to prevent injuries among Aboriginal peoples			
2. Is this study an RCT, cohort or case control study? (if other type of study design is used, indicate type in “other”).			
3. Study participants involve at least one or more of the following: Aboriginal peoples, First Nations, Inuit, Métis or the general population with data presented separately for Aboriginal peoples.			
4. Study Outcomes: Study reports at least one of the following outcome measures: (circle which) <ul style="list-style-type: none"> • injury rates • injury frequency • injury severity • change in behaviour • change in attitude • change in knowledge • change in public policy • change in environmental factor • change in surrogate measure 			
Include?			
If no, Reason(s) for exclusion			
Unsure – need to discuss			
Final Decision after discussion			
If there is disagreement between reviewers, what is the final decision – Include study?			

* Injury prevention refers to intentional or unintentional injuries, but does not include strategies to reduce chronic health issues, substance abuse or FAS.

** Intervention strategy may include an educational, environmental or policy related change aimed at groups of people in a community, clinical, or school settings. Interventions aimed at treating or counseling individuals are not included.

APPENDIX 2
Reviewer Agreement Form
 Summary Sheet for Potentially Relevant articles 1 -20

Article PR number	Reviewer 1		Reviewer 2		Final Decision
	Yes	No	Yes	No	
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

APPENDIX 3
Data Extraction Form

Study Number _____
Reviewer _____
Year _____
Citation _____

1. Study Design

- RCT
- Non-randomized trial (with one or more comparison group)
- Prospective cohort study
- Retrospective cohort study
- Case control study
- Time series study
- Before-after study
- Cross-sectional study
- Non-comparative study
- Other: specify: _____

2. Report Type

- Published article/peer-reviewed
- Technical report
- Unpublished dissertation/thesis
- Abstract/presentation
- Book/book chapter

3. Injury Prevention Focus of Intervention

- Motor vehicle collisions
- Unintentional poisoning
- Substance-use related injury
- Suicide/Attempted suicide
- Fall prevention
- Violence/Homicide/Assault
- Sport-related injury

- Work-related injury
- Burns or fire-related injury
- Safety in the home
- Other _____

4. Intervention Components

- Provision of information only /education
- Behavioural (provision of skills or materials to change behaviour)
- Environmental (change physical environment)
- Environmental (change social environment)
- Legislative (regulate risk factor, legislate behaviour, enforcement)
- Health system change (change access, improve delivery)

5. Primary Outcome measures

- Knowledge, Attitude, Beliefs _____
- Behaviour _____
- Other intermediate outcome _____
- Injury morbidity _____
- Injury mortality _____
- Surrogate measure (traffic citations) _____

6. Description of Intervention(s)

What: _____

How: _____

Who: _____

Where: _____

Other: _____

7. Was theory described? Yes No

If yes, describe: _____

8. What was delivered to the comparison or control groups?

9. Study Location:

- Canada
- United States
- Australia
- Other: Specify _____

10. Study Population

- Urban
- Suburban
- Rural/Remote
- Mixed
- Reserve

11. Study Setting

- Hospital or clinic
- Community based organization
- School
- Workplace
- Religious Institution
- Home
- Community-wide
- Other: Specify _____

12. How were outcome variables measured?

- Observation
- Interview
- Self-administered questionnaire
- Record Review
 - Hospital Records
 - Govt Statistical Records
- Other: _____

13. Time period over which outcomes were measured? _____

14. Study population (eligibility criteria) Describe:

15. Study population demographics:

	Group	Group	Group	Group
Age				
Sex (% male/female)				
Aboriginal Specify type				
SES				

16. Primary Study Results

Outcome Measures	Effect size reported by authors						P values, and CI
	Pre-post measures		Studies with multiple measures over time				
	Pre	Post	Time 1	Time 2	Time 3	Time 4	
1 Intervention Group							
Comparison Group							
2 Intervention Group							
Comparison Group							
3 Intervention Group							
Comparison Group							
4 Intervention Group							
Comparison Group							

17. Sample Size

What was the sample size in the intervention group(s)? _____

What was the sample size in the comparison group(s)? _____

Was the sample size adequate? _____

Were power calculations provided? _____

18. Secondary results:

19. Feasibility and other key issues:

Were any of the following issues addressed?

- Costs
- Potential harms
- Other benefits
- Implementation
- Barriers to implementation
- Community acceptance or involvement
- Use of coalitions or community involvement to develop, implement, or evaluate
- Ethical constraints
- Other: _____

20. Other important information:

Adapted from: Zaza et al., (2000). Data collection instrument and procedure for systematic reviews in the Guide to Community Preventive Services. *American Journal of Preventive Medicine*, 18(1S), 44-74.

APPENDIX 4
Eligibility Assessment Form
Non-published program descriptions

Date:

Reviewer:

Name of Program: _____

Is the program currently running? Yes No

If no: when did it run? _____

If no: why did it stop? _____

Program Topic

Program to prevent injuries among Aboriginal peoples Yes No

Sole focus of program

Injury prevention part of larger program

Study Participants

Program involves

Aboriginal peoples Yes No

First Nations Yes No

Inuit Yes No

Metis Yes No

General population with priority on Aboriginal Peoples Yes No

Program Evaluation

Process evaluation measures available Yes No

Outcome measures available Yes No

Geographic Location

Within Canada Yes No

Other country _____ Yes No

Final Decision

Include (meets at least one criterion in each category)

Exclude: reason _____

Unsure: reason _____

Final Decision

Include

Exclude

APPENDIX 5
Aboriginal Injury Prevention Program Data Collection Tool
DRAFT

Thank you very much for agreeing to complete this summary form about your injury prevention program. This will take approximately 15 minutes to complete. General information about your program will be included in a report by the BC Injury Research and Prevention Unit on injury prevention programs in BC that have been developed for Aboriginal people. A summary of program information will also be posted on the BCIRPU website. We appreciate your assistance with compiling this information as it will provide valuable information for others developing injury prevention initiatives in their communities.

Name of Program: _____

Initiative Start Date _____ (dd/mm/yy)

Initiative End Date _____ (dd/mm/yy)

If still running, is there a projected end date for the program? _____ (dd/mm/yy)

Key contact for initiative:

Name: _____

Address

Phone/Fax: _____

Email: _____

Website: _____

Briefly list the goals and objectives of your injury prevention program:

What is the focus area of your injury prevention program? (check all that apply)

- Motor vehicle collisions
- Unintentional poisoning
- Substance use-related injuries
- Suicide/Attempted suicide or self-harm
- Fall prevention
- Violence/Homicide/Assault
- Sport-related injuries
- Work-related injuries
- Burns or fire-related injuries
- Safety in the home
- Other: _____

Which of the following objectives does your program include?

- Raising awareness of injury prevention issues in the community through education
- Changing behaviours/skills training to reduce injuries
- Changing policies or protocols
- Increasing enforcement of existing laws or policies
- Training or educating health and/or other professional workers
- Modifying the physical environment
- Community mobilization or empowerment

Additional comments: _____

Briefly describe the main activities that are included in your program:

Does your initiative involve the development or implementation of policies for injury prevention?

Yes No

If yes, at what level is the policy change aimed? (check one or more)

Local Regional Provincial

Which of the following do your program activities aim to reach?

Parents of young children
Children – elementary school age
Adolescents – High school age
Young adults
Young pregnant women
Workers
Elders
General community
Persons with mental health difficulties
Persons with substance use problems
Other specific groups: _____

Have you created any educational resources or products as a result of your injury prevention initiative?

Brochures or Booklets
Protocols/guidelines
Videos
Risk screening tools or checklists
Promotional packages (e.g. media material)
Training materials/manuals
Public presentation materials
Other types of resources: _____

In what kinds of location(s) do the program activities mainly take place?

First Nations Friendship Centre
Community or Recreation Centre
Health Care Facility
School
Other: _____

Does this program target community members living:

On reserve only
Off reserve
Both

Who are the main people involved in the planning and/or delivery of this program?

(Check all that apply)

- Community workers
- Community volunteers
- Nurses
- Doctors
- Researchers
- Others: _____

How often do program activities take place?

- Weekly or more
- Monthly
- Yearly
- One time event

In your estimate, how many people have been reached by your program activities over the last year? _____

What have been the main results of this program to date?

Has there been any **process** evaluation of this program? (For example, which activities were implemented, how the program was delivered or received, what worked and why?)

Yes No

If yes, what process evaluation methods were used?

- Program enrolment records
- Participant surveys
- Focus groups or interviews
- Activity logs or minutes of meetings
- Other methods: _____

Has there been any **outcome** evaluation of this program? (For example, what were the results of the program? Did the program achieve what you expected it to achieve?)

Yes No

If yes, what outcome evaluation methods were used?

Before and after measures of risk factors
Before and after measures of injuries
Cost-benefit analysis
Intervention and control group comparisons
Other: _____

How have you shared what you have learned or produced from this initiative?

Newsletters
Local media coverage
Workshops/conferences
Publications/guides
Health/Wellness events
Internet/Websites
Not Yet
Other: _____

There are many issues that can affect the success of injury prevention initiatives. Have any of the following factors enabled or facilitated the success of your program or acted as barriers to success? (Check all that apply).

	Enabling factor	Barrier
Conducting staff training		
Obtaining access to outside expertise		
Recruiting and retaining volunteers		
Securing community buy-in		
Securing management support		
Locating a physical space		
Competing with other health priorities		
Having a local champion		
Obtaining adequate funding		
Hiring adequate staff		

What have been the sources of funding for your initiative? (Check all that apply).

Health Authority
Provincial Ministry (If so, which Ministry _____)5
Health Canada
First Nations and Inuit Health
NGO (e.g. Arthritis Society)
Research Organization
Community fund-raising
Other: _____

What is the yearly range of committed funding for this initiative?

- < \$10,000
- \$10,000 – \$50,000
- \$ 50, 000 – \$100,000
- \$ More than \$100, 000

Is funding available to continue your initiative when current support expires?

- Yes
- No

Do you have plans in place to continue this initiative beyond the present projected end date?

- Yes
- No

Are you involved in any of the following types of activities to seek continued or additional funding?

- Funding campaign
- Grant writing
- Lobbying government
- Media campaign
- Cost recovery
- Workshops and conferences
- Sale of materials
- Not applicable

What, if any, do you see as the next steps in developing , modifying or sustaining this program? _____

Additional comments:

Thank you for your time. Your feedback will be very valuable in assisting others who are planning injury prevention initiatives in their communities. If you have any questions or other comments, please call Lise Olsen at BCIRPU at 604-875-2345 ext 6708