



Injury in the Northwest Territories

A Summary Report

September 2004

Preface

Injury in the Northwest Territories: A Summary Report is a condensed version of a more detailed report on injury in the NWT compiled by the Department of Health and Social Services. The larger statistical report, *Injury in the Northwest Territories: A Descriptive Report*, offers more in-depth analysis of major types of injury along with detailed data tables. Interested individuals can obtain copies of the detailed statistical report by contacting the Department of Health and Social Services.

Executive Summary

Before public health problems – including injuries – can be addressed, it is important to know how big the problem is, where it is, and who it affects. Using information generated from routinely available data sources, the main aim of this report is to highlight the magnitude of injury as a public health problem within the Northwest Territories and to describe the pattern of injury occurrence.

This summary report provides a first look at the extent and nature of injuries in the Northwest Territories. Injuries are compared to other causes of death and hospitalization. Mortality and hospitalization rates for unintentional and intentional injuries are compared with Canadian rates. The profile also presents trends in intentional and unintentional injury rates over time.

Injuries arise from a wide range of external causes or mechanisms. The next section of the report highlights the leading causes of injury death and hospitalization. While there are many similarities in the leading causes of death and hospitalization between the sexes, age groups, ethnic groups and communities of residence, there are also some differences.

Unintentional and intentional injury mortality and hospitalization rates are then presented according to age, gender, ethnicity and community type, thereby providing an indication of some of the groups in the territory who are most at risk of death or hospitalization due to injury.

The final section of the report uses several available sources to examine a number of risk factors for injury and outlines some of the general elements found in effective injury prevention initiatives. Taken as a whole, the data contained in this report draws an initial profile of injuries in the NWT. Below is a list of key findings found throughout the report.


Key Findings

Magnitude of the Problem

- Between 1990 and 1999, injuries accounted for 23% of all deaths among NWT residents, about the same proportion as deaths due to cancer and deaths due to cardiovascular diseases such as heart attacks and strokes.
- Injury was the leading cause of premature death, accounting for 30% of all deaths among residents less than 74 years of age, followed by cancer at 24%. More NWT residents between one and 44 years of age died as a result of injury than from all other causes combined.
- When hospitalizations due to pregnancy and childbirth are excluded, injury was the third leading reason for all hospitalizations among NWT residents between fiscal years 1995/96 and 1999/2000. It was the second leading cause of hospitalization for those between one and 44 years of age.

“The public is also largely unaware of the preventable nature of many injuries. The very definition of the term ‘accident,’ the most common reference to injurious events, evokes a feeling of chance, misfortune, and helplessness. We urge that the word ‘accident’ be avoided in discussing injury control. Instead, the focus should be on incidents and injuries - and their preventability.”

Kraus J.F., Peek-Asa C., Vimalachandra D. (1998). “Injury Control: The Public Health Approach.” In R.B Wallace (Eds.), *Maxcy-Rosenau-Last: Public Health & Preventive Medicine*. Stamford: Appleton & Lange. (p. 1291).

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- After differences in the age distribution of the two populations were taken into account, NWT residents were 2.3 times more likely to die because of an injury than were Canadians as a whole.
 - The injury hospitalization rate for NWT residents was 2.2 times higher than the age-standardized Canadian rate.

Trend in Injury Rates

- While there appeared to be a slight decline in the overall injury mortality rate in the NWT during most of the 1990s, the decrease was not statistically significant.
- There was no significant change in the hospitalization rate for all injuries between fiscal years 1995/96 and 1999/2000.

Leading Causes of Injury

- The term “injury” encompasses many types of injuries (e.g. head injuries, fractures, burns), any of which arise from a wide range of external causes or mechanisms. Suicide was the leading cause of injury mortality in the NWT, accounting for 24% of deaths.
- Motor vehicle traffic crashes involving automobiles, trucks and motorcycles known or assumed to be traveling on public roads or highways accounted for 17% of all injury-related deaths.
- Injuries associated with other means of transportation including snowmobiles, other off-road motor vehicles not in traffic, and aircraft accounted for 6% of deaths.
- Combining other transportation and motor vehicle traffic crashes means that vehicle-related incidents accounted for 22% of all injury deaths in the NWT during the study period.
- Drowning was another important cause of injury mortality, accounting for 11% of deaths.
- Unintentional falls were the main cause of injury-related hospitalization, accounting for 28% of all cases.
- Self-inflicted injury was the second leading cause of injury-related hospitalization (13%) followed closely by injuries sustained from interpersonal violence (12%).
- Motor vehicle traffic crashes accounted for 8% of injury-related hospitalizations and crashes of off-road vehicles such as snowmobiles and all-terrain vehicles accounted for another 5%.

At-Risk Groups

- Injuries in the NWT tend to cluster among different groups of people determined by age, sex, ethnicity and community of residence.

- In general, over half of injury deaths and hospitalizations occur among individuals between 15 and 44 years of age. However, injuries remain a significant cause of death throughout life.
- Seniors had the highest injury-related mortality and hospitalization rates. The high rate is due to the number of deaths and hospitalizations relative to the small number of people in this age category. Moreover, when injuries do occur in this group, their consequences and potential complications are often more severe
- Children less than 15 years of age had the lowest risk of injury death or hospitalization. The risk of injury death and hospitalization jumped dramatically for youth and young adults. Youth and young adults between 15 and 24 years of age had the second highest injury mortality rate and the third highest injury-related hospitalization rate.
- Males accounted for 78% of all injury deaths and 60% of all injury-related hospitalizations. The injury mortality rate for males was over three times higher than the rate for females. And men were 1.4 times more likely than women to be hospitalized due to an injury.
- The injury mortality and hospitalization rates among Inuit and Dene were over two times higher than the rates for other NWT residents.
- Individuals living in one of the smaller communities in the NWT or in one of the regional centres of Hay River, Fort Smith or Inuvik were more likely to die or be hospitalized due to an injury than were residents of Yellowknife.

Risk Factors

- Some groups have greater risk of injury due to more frequent exposure to certain environments, equipment, or activities. For example, males and residents of smaller communities are more likely to operate a boat or snowmobile, either because of traditional lifestyles or recreation. Their greater exposure explains in part their higher rates of injury from boat and snowmobile-related activities. However, a number of personal, behavioural and environmental risk factors may also be at play.
- Intoxication is perhaps one of the most important behavioural risk factors for injury in the NWT. A review of Northwest Territories Coroners' Reports for the years 1999 to 2001 found that alcohol was a contributing factor in 44% of all unintentional injury deaths and 39% of all suicides investigated. A recent survey found that regular heavy drinking, a pattern that tends to put people at higher risk of injury, was more prevalent among males and among residents of smaller communities.
- The benefits of seatbelt use in reducing the severity of injury resulting from a motor vehicle traffic crash is well established. However, results from the 1999 Safety and Injury Survey show that 62% of NWT residents 15 years of

“Instead of considering injuries as acts of God or unexpected random events without apparent cause, modern epidemiologic concepts of injury control emphasize that injuries result from exposures to specific hazards and affect certain high risk groups more than others.”

Barss P. et. al. (1998). *Injury Prevention: An International Perspective Epidemiology, Surveillance, and Policy*. New York: Oxford University Press. (p.12).



age and older said they always use a seatbelt when riding in a car or truck. This proportion dropped to 51% for residents of the smaller communities in the territory.

- Failure to wear a personal flotation device (PFD) while in a boat is one of the most significant risk factors for drowning. According to the 1999 Safety and Injury Survey, only 53% of residents of the smaller communities in the NWT indicated they always wore a PFD when in a boat.
- Injury risk factors not only include more immediate personal health practices such as heavy alcohol consumption, but also include more indirect or underlying determinants such as socio-economic status, quality of the physical environment, education levels and self-esteem, all of which impact on a person's life experience and personal choices, and eventually on their risk of injury. Results from the 2001 Census show that residents who live in smaller NWT communities tend to have lower incomes, lower levels of education and experience more unemployment than residents of larger centres.

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Introduction

Injury is one of the most serious public health issues affecting residents of the Northwest Territories. About one quarter of all deaths between 1990 and 1999 were due to injuries. It was the leading cause of death among NWT residents between the ages of one and 44 - a time of life when individuals are usually healthy. When hospitalizations due to pregnancy and childbirth are excluded, injuries were the third leading cause of all hospitalizations among NWT residents between 1995 and 1999.

A serious injury affects everyone who is involved in the injured person's life. With a fatal injury, family, friends and other members of the community feel the loss. Families not only endure sorrow, they may also have to deal with the loss of income from a primary caregiver. Serious non-fatal injuries sometimes result in long-term or permanent disability, chronic pain and a change in lifestyle. If family members are called upon to care for the injured person, this can result in stress, time away from work, possible loss of income and additional expenses.

The community and society at large is also impacted by injuries. A community loses the contributions a person makes to its economic, social, political and cultural life. Moreover, society in general must bear the financial costs of injuries. For the fiscal year 2001, injuries were estimated to have cost the NWT health care system \$7.5 million. This estimate includes costs associated with hospital and physician care, nursing care in community health centres and the transportation of injured patients to receive medical attention. It does not include costs for medications, long-term care and home care.

Contrary to popular belief, injuries are not the result of random chance over which individuals and communities have little or no control. Rather, injuries are both predictable and preventable. "While the exact moment of any injury event may not be predictable, injuries generally result from combinations of adverse environmental conditions, equipment, behaviour and personal risk factors, any or all of which can be changed."¹ Since most injuries can be prevented it is important that we examine ways to reduce the risk of injury and support healthy choices. The intent of this report is to make a small contribution to a better understanding of the nature and some of the causes of injuries in the Northwest Territories.

Scope of the Report

There are many ways the data can be presented and many comparisons that can be made. This report is not meant to be exhaustive in the analysis of the data, but rather aims to provide a first look at the extent and nature of injuries

- *Most injuries are preventable;*
- *Injury, including unintentional and intentional, is a significant public health problem whose impact is underrated;*
- *The economic burden of injury is both immediate and substantial.*

Federal/Provincial/Territorial Subcommittee on Injury Prevention and Control. (2001).



in the Northwest Territories. To provide some indication of the extent to which injuries are a public health problem in the territory, injuries are compared to other causes of death and hospitalization. Moreover, mortality and hospitalization rates for unintentional and intentional injuries are compared with Canadian rates.

Injury mortality and hospitalization rates are presented according to age, gender, ethnicity and community type.^a This analysis provides an indication of some of the groups in the territory who are most at risk of death or hospitalization due to injury. The leading causes of injury death and hospitalization are also presented for each of these groups.

Along with knowing what type of injury affects whom, it is also important to know what factors put people at risk for different types of injury. The web of risk factors that contributes to injuries is often complex and, in most cases, involves the community in which the person lives. Studies that take into account the interaction of social, cultural and environmental factors and the impact these population variables have on individual behaviour are the best means to understand injury risk and etiology. These types of studies are beyond the scope of this report. However, using data from one cross-sectional survey of NWT residents and findings from coroners' investigations and a report from the Department of Transportation on motor vehicle traffic crashes, this report does highlight possible risk factors for a number of injury types. While more research is needed in this area, it is hoped that this limited analysis of behavioural risk factors will shed some light on why some NWT residents are at greater risk of injury.

It is hoped there is sufficient descriptive data in this report to contribute to a more complete understanding of injuries as a public health issue in the Northwest Territories. *Injuries in the Northwest Territories: A Summary Report* is not a strategy document. Rather, it is an information resource that should prove useful to policy makers, community leaders and members of the general public interested in injuries. Health care providers, program planners and other individuals interested in a more detailed description of injuries in the NWT and implication for injury prevention should consult the full report *Injuries in the Northwest Territories: A Descriptive Report*.

What is an Injury?

An injury results from the exchange of energy with human tissue outside of human tolerance. The energy can be one of many forms including: mechanical (e.g., motor vehicle collision), thermal (e.g., burn), chemical (e.g., poisonings),

^a Ethnicity is categorized into the following three groups: Dene, Inuit and Non-Aboriginal/Metis. Community type refers to the place of residence at the time of death or hospitalization and includes the following three groups: Yellowknife, "Regional Centres" (Hay River, Fort Smith and Inuvik), and "Smaller Communities" (the remaining communities in the territory).

electrical (e.g., electrocution), and radiation (e.g., radiation sickness from excessive exposure). Injury may also result from the absence of necessary elements such as oxygen or heat.² For example, drowning results from a lack of oxygen and frostbite from the lack of heat.

In general, injuries can be divided into two major groups based on the intent of the person(s) involved. Unintentional injuries, as the name implies, refers to those instances when the harmful event occurs independent of human volition. The term does not imply that the event was not preventable or anticipatory. Rather, unintentional injuries are often due to behaviours or circumstances that increase the risk of an incident leading to injury. For example, drunk driving is a major risk factor for injuries due to motor vehicle traffic crashes.³ Intentional injuries describe those situations when harm is intended, either to self – suicide or self-inflicted injury – or to others, in the case of assaults, abuse or homicide. Sometimes it is difficult to determine the intent of an injury. Another category, undetermined intent, is used where intent cannot be established.

Although the events leading to intentional and unintentional injuries differ, the mechanisms of injury and the injuries themselves are typically similar. Ingesting a toxic substance produces the same outcome even though the spectrum of behaviour leading up to the injury can range from completely unintentional to overtly suicidal. In addition, some of the most effective preventive strategies involve changes to the environment that can be applied regardless of intent.⁴ For example, storing medicines and firearms in a secure location will not only reduce the likelihood of children unintentionally injuring themselves, but also decrease suicides among distraught teenagers.

Between 1990 and 1999, 68% of injury deaths in the NWT were unintentional and 31% were intentional - suicide accounted for 24% and homicide 7%. In 1% of the cases the intention was not determined. Meanwhile, between the fiscal years 1995/96 and 1999/2000, 73% of all injury hospitalizations were unintentional, 25% were intentional – self-inflicted (13%) and assaults (12%) – and 2% were of undetermined intent.

Injuries in Relation to Other Health Problems

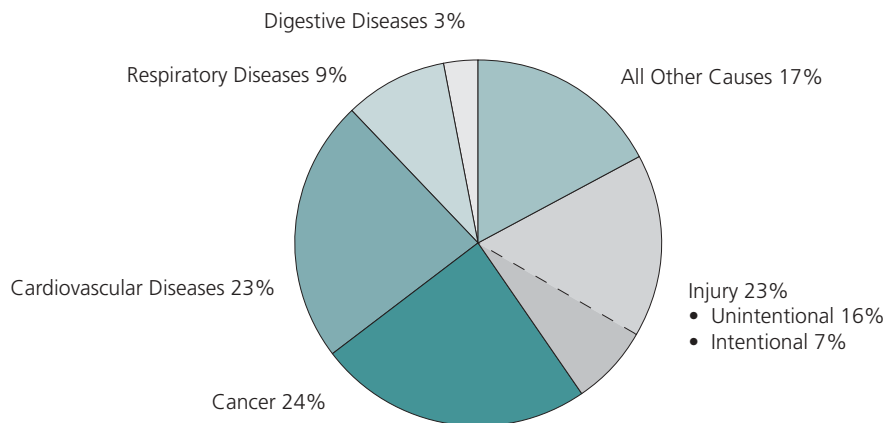
Measuring the overall magnitude of injury as a public health problem is important in order to outline a basis for resource allocation and develop suitable intervention strategies. While many NWT residents might consider cancer, heart disease and infectious disease more serious threats to their health and wellbeing, injuries are one of the leading causes of both deaths and disability in the territory. Between 1990 and 1999, injuries accounted for 23%

Injury Scenario # 1

A 23 year old male was driving a snowmobile late at night after drinking heavily at a party. The snowmobile did not have an operational headlight. The individual was not wearing a helmet. Traveling at high speed, his machine hit a rock and he was thrown clear. The impact resulted in a dislocated shoulder and concussion serious enough to cause loss of consciousness. Wearing inappropriate clothing for the -30 degree temperature, the person died of hypothermia.

of all deaths among NWT residents (331 individuals), about the same number as deaths due to cardiovascular diseases such as heart failure and stroke (23%), and cancer (24%). Sixteen percent of all deaths were due to unintentional injuries while intentional injuries accounted for 7% of all deaths between 1990 and 1999.

Figure 1
Leading Causes of Death, NWT, 1990-1999

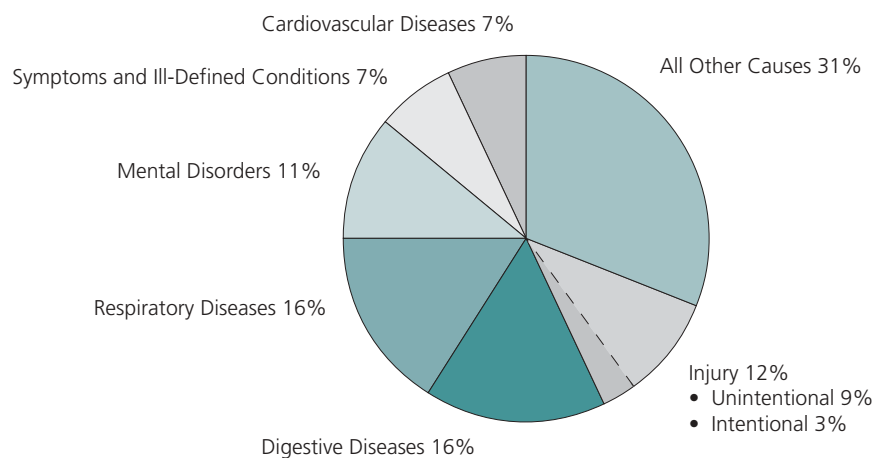


Source: NWT Vital Statistics

Further breakdown of the leading causes of death by age provides additional information on the burden of injury. Unlike cancer, heart disease and stroke, injury is more likely to affect the young. Between 1990 and 1999, the average age of injury death was 37.8 years, compared to an average age of 63.4 for all other causes ($p < 0.05$). Injury was the leading cause of death among NWT residents between the ages of one and 44 – a time of life when individuals are usually healthy. Because a relatively large number of deaths result from injuries and these deaths are occurring at a younger age in comparison to other conditions, injuries are the leading cause of premature mortality in the NWT.

When hospitalizations due to pregnancy and childbirth are excluded, injuries were the main reason for 12% of all hospitalizations among NWT residents between fiscal years 1995/96 and 1999/2000, making it the third leading cause. Diseases of the respiratory system such as pneumonia, asthma and acute bronchitis; along with diseases of the digestive system including dental caries, diseases of the oral cavity, gastroenteritis and colitis were the two leading causes of hospitalizations. Unintentional injuries accounted for 9% and intentional injuries accounted for 3% of all hospitalizations during this period of time.

Figure 2
 Leading Causes of Hospitalizations, NWT 1995/96-1999/2000
 (except pregnancy related) (n=22,395)



Source: CIHI, Discharge Abstract Database

Between 1995 and 1999, the average age of those hospitalized due to injury was 33.6 years compared to an average of 37.7 years for all other causes - excluding pregnancy-related conditions ($p < 0.05$). It was the second leading reason for hospitalizations among residents one to 44 years of age.^b

Comparisons with Canada

The magnitude of the injury problem can also be seen when the NWT is compared to Canada as a whole, where injuries were the cause of 6% of all deaths in 1996, compared to 23% in the NWT. The differences between the two are further highlighted when injury mortality rates and hospitalization rates are compared.

After differences in the age distribution of the two populations were taken into account, NWT residents were 2.3 times more likely to die because of an injury than Canadians as a whole.^c The difference between the two populations was even greater for unintentional injury deaths. The NWT rate was 2.7 times higher than the Canadian age-standardized rate. Meanwhile NWT residents were 1.8 times more likely to die due to an intentional injury than Canadians as a whole.

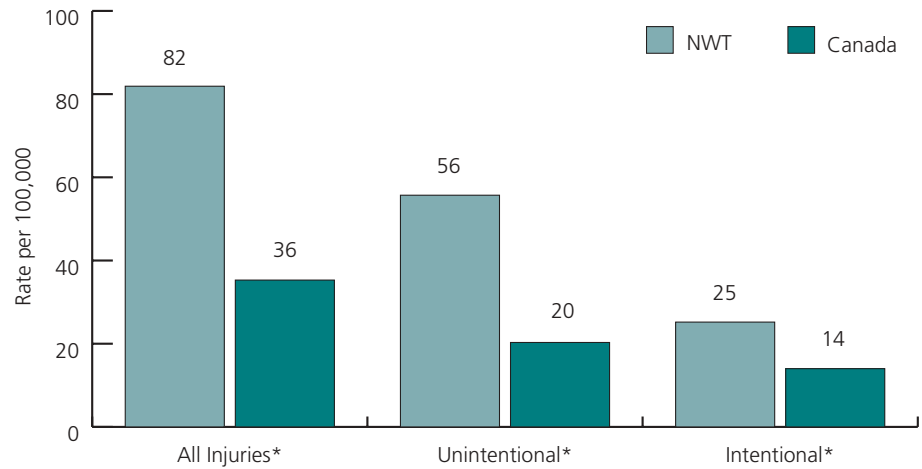
^b If hospitalizations due to dental caries were also excluded from the total, injury was the leading cause of hospitalizations for NWT residents between one and forty-four years of age between 1995 and 1999.

^c Since people in different age groups differ with respect to their risk of dying due to injury, any differences in crude rates between populations may be due to differences in their age structures rather than differences in the risk of injury. To remove this effect and still provide one summary measure for the total population, it is necessary to control for differences in age distribution of the two populations. An age-standardized rate is a common measure used to make fairer comparisons between different populations. In this study, the 1996 Canadian rates were adjusted using the NWT 1990-1999 population age distribution as the standard. National mortality rates tend to vary little from year to year over a short period as a result the 1996 Canadian rates were used for comparison purposes.

Unintentional injuries such as motor vehicle crashes and drowning made up 17% of all deaths in the NWT, compared to 4% in Canada. Meanwhile, intentional injuries accounted for 7% of all NWT deaths, compared to 2% in Canada.



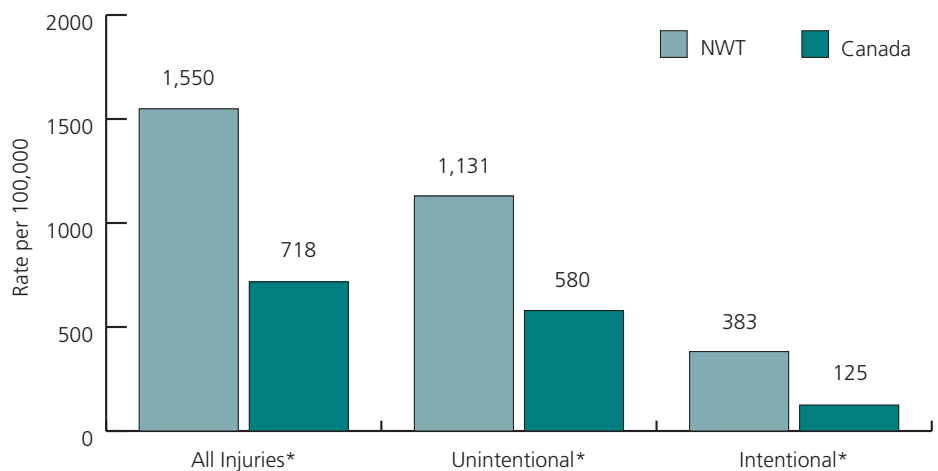
Figure 3
Injury Mortality Rates by Intent, NWT (1990-1999)
and Canada Age-standardized (1996)



* Significant difference between NWT and Canada ($p < 0.05$)
Sources: NWT Vital Statistics & Statistics Canada

The average annual hospital separation rate for NWT residents for fiscal years 1995/96 to 1999/2000 was 2.2 times higher than the 1996 Canadian age-standardized rate. Meanwhile, the NWT unintentional injury rate for this period was two times the 1996 Canadian age-standardized rate. The differences between the NWT and Canada were greater for intentional injuries. The NWT rate was 3.1 times higher than the Canadian age-standardized rate. These differences were observed across all age groups.

Figure 4
Injury Hospitalization Rates by Intent, NWT (1995/96-1999/2000)
and Canada Age-standardized (1996/97)



* Significant difference between NWT and Canada ($p < 0.05$)
Sources: CIHI Discharge Abstract Database & Health Canada

Summary

Injury was one of the leading causes of death and hospitalization among NWT residents. One of the most concerning characteristics of injury is that it tends to affect younger people. Between 1990 and 1999, it was the leading cause of death among residents less than 74 years of age. In fact, more NWT residents between one and 44 years of age died as a result of injury than from all other causes combined. When hospitalizations due to pregnancy and childbirth are excluded, injury was the second leading cause of hospitalization for those between one and 44 years of age. The magnitude of the injury problem can also be seen when the NWT is compared to the rest of Canada. After differences in the age distribution of the two populations were taken into account, NWT residents were 2.3 times more likely to die because of an injury than were Canadians as a whole. The injury hospitalization rate for NWT residents was 2.2 times higher than the age-standardized Canadian rate.

The NWT hospitalization rate due to self-inflicted injury was 2.2 times higher than the Canadian age-standardized rate.

After controlling for differences in the age distributions of the NWT and Canada, the hospitalization rate due to interpersonal violence (assaults) in the NWT was 5.2 times higher than the 1996 Canadian age-standardized rate.

Trends in Injury Rates

Mortality

If rates based on a small number of cases within a small population fluctuate dramatically from year to year, it is difficult to observe possible trends over the period of study. Recognizing this limitation, Figure 5 provides mortality rates based on three-year rolling averages. The calculation of rolling averages is a method sometimes used to reduce variability when the number of observations for any particular time period is small. The rates were also age standardized to control for potential changes in the age distribution of the Northwest Territories' population over the ten-year period.

A gradual decline in the overall injury mortality rate was observed during most of the 1990s, from an annual average rate of 95 per 100,000 person-years for the period 1992-1994 to an annual average rate of 69 per 100,000 person-years for the period 1997-1999. However, the decrease was not statistically significant.

There was also no significant overall trend for unintentional injury deaths during the 1990s. The rates increased from an annual average of 55 per 100,000 for the period 1990-92 to 67 per 100,000 person-years in 1992-94 and decreased again to 42 per 100,000 in 1997-99. Neither the rise nor decline was statistically significant.

Meanwhile, mortality rates for intentional injuries declined during the early 1990s from an annual average of 31 per 100,000 person-years in 1990-93 to 15 per 100,000 person-years in 1994-96, but rose again to 27 per 100,000 by 1997-99.^d In this case, both the downward trend during the early 1990s and the upward trend during the later part of the 1990s were statistically significant ($p < 0.05$).

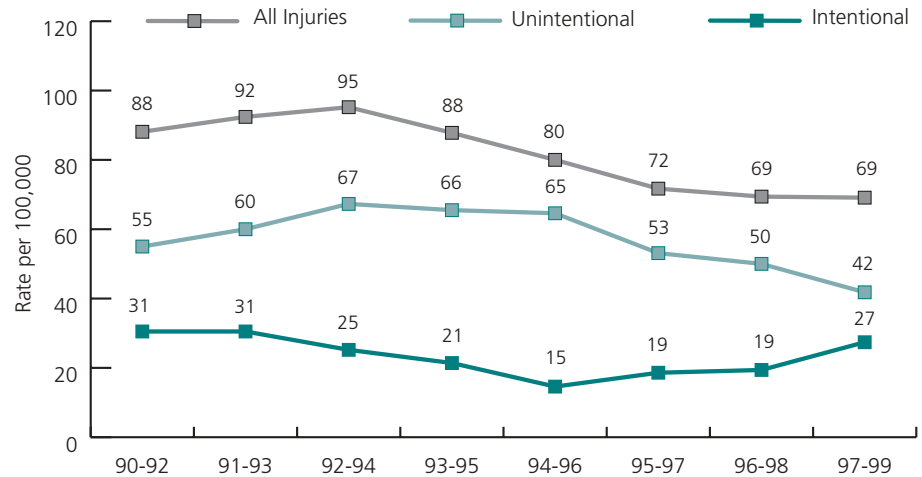
Injury Scenario # 2

A young father is driving his family home after a vacation in British Columbia. Feeling tired after driving over 12 hours, he decides to press on. His three-year old daughter who is asleep in the back seat is not in a car seat. His wife is napping in the front seat. Feeling extremely drowsy, the driver allows the vehicle to drift toward the side of the road where it strikes a patch of loose gravel. He loses control and drives into a ditch. The impact hurls his daughter throws her full force against the back of her mother's seat. She receives major head and spinal cord injuries. The father, who was not wearing a seat belt, is thrown from the vehicle and dies. His wife was wearing a seat belt and receives minor injuries.

^d Unintentional and intentional do not add to all injuries for all time periods because rates for undetermined are not shown.



Figure 5
Age-standardized Injury Mortality Rates, NWT 1990-92 to 1997-99
(three year rolling average)



Source: NWT Vital Statistics

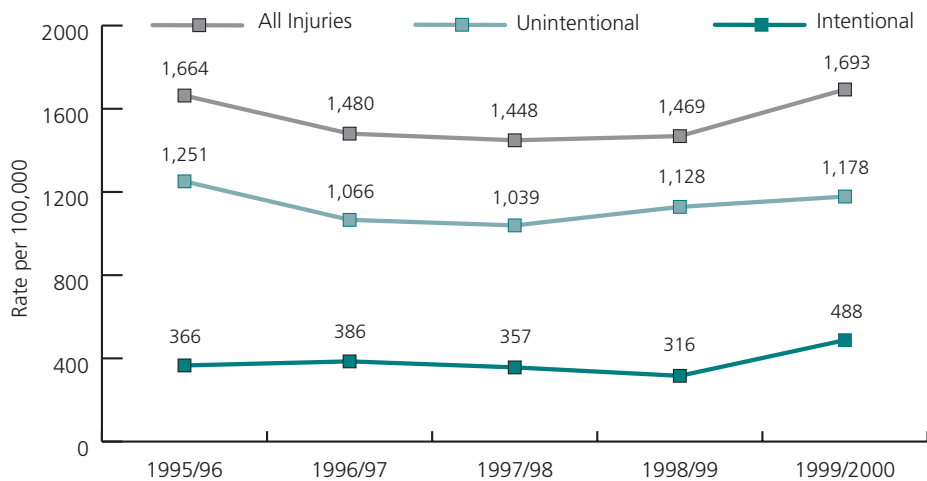
Hospitalizations

There was no significant change in the hospitalization rate for all injuries between fiscal years 1995/96 and 1999/2000. The age standardized hospitalization rate for all injuries was 1,664 per 100,000 in 1995/96 compared to 1,693 per 100,000 in 1999/2000. Hospitalization rates due to unintentional injuries also showed no significant change during this period – 1,252 per 100,000 in fiscal year 1995/96 and 1,178 per 100,000 in 1999/2000.

The overall trend in hospitalizations due to intentional injury did not show a significant change between 1995/96 and 1999/2000. The rates were fairly constant between fiscal years 1995/96 and 1998/99, fluctuating between 316 per 100,000 and 386 per 100,000, but jumped to 488 per 100,000 in 1999/2000.^e

^e Unintentional and intentional do not add to all injuries for all time periods because rates for undetermined are not shown.

Figure 6
Age-standardized Injury Hospitalization Rates, NWT 1995/96 to 1999/2000



Source: CIHI Discharge Abstract Database

Summary

While there appeared to be a slight decline in the overall injury mortality rate in the NWT during most of the 1990s, the decrease was not statistically significant. There was no significant change in the hospitalization rate for all injuries between fiscal years 1995/96 and 1999/2000.

Injury Scenario # 3

A toddler wanders into the kitchen while her mother is preparing tea for guests. Her mother has just finished boiling water in an electric kettle and the cord dangles over the counter. While her mother's back is turned, the toddler pulls on the cord, bringing the kettle down on herself, scalding her face and upper body.

Types of Injuries

The following section examines the relative importance of different causes of injury among specific groups of Northwest Territory residents. It is important to keep in mind that the percentage of injuries attributed to specific causes do not tell us which groups have the highest *rates* or risk of injury due to that cause. For example, motor vehicle traffic crashes accounted for 23% of all injury deaths for children less than 15 years of age compared with 12% for ages 25 to 34, but the mortality *rate* from this cause was higher among the 25 to 34 year olds (10.8 vs. 6.1 per 100,000 person-years). However, the following analysis does provide an indication of which types of injuries are the most important for different groups within the NWT population. An examination of which groups in the NWT population were most at risk of overall injury death and hospitalization can be found immediately following this section of the report.

Mortality

Suicide was the leading cause of injury death between 1990 and 1999, based on 78 recorded deaths (24%). Firearms were used in sixty-five percent of the suicides. Suffocation (hanging) was the second most common method of suicide, 18%.

Motor vehicle traffic crashes were the second leading cause of injury deaths (55 cases or 17%). This category includes all deaths resulting from motor vehicle traffic injuries involving automobiles, vans, trucks and motorcycles known or assumed to be traveling on public roads or highways. It includes both passengers and drivers of these motorized vehicles, as well as pedal cyclist and pedestrians who were hit by a motor vehicle on a public road.

Other transport-associated injuries include those from various means of transportation including snowmobiles and all-terrain vehicles as well as other off-road motor vehicles not in traffic. It also includes injuries associated with aircraft crashes as well as watercraft-related incidents where the person did not drown. Six percent of injury deaths fell in this category. Most (63%) of the deaths in this category occurred in aircraft crashes. Almost all others occurred in snowmobile-related incidents. If this category were combined with motor vehicle traffic crashes, transportation-related incidents would have accounted for 22% of all injury deaths.

Drowning was the third leading cause of injury-related deaths (11%). Most of the deaths in this category were due to submersion where the person fell into the water while boating. Incidents where the person fell into the water from shore or through ice or drowned while swimming were also important causes of drowning.

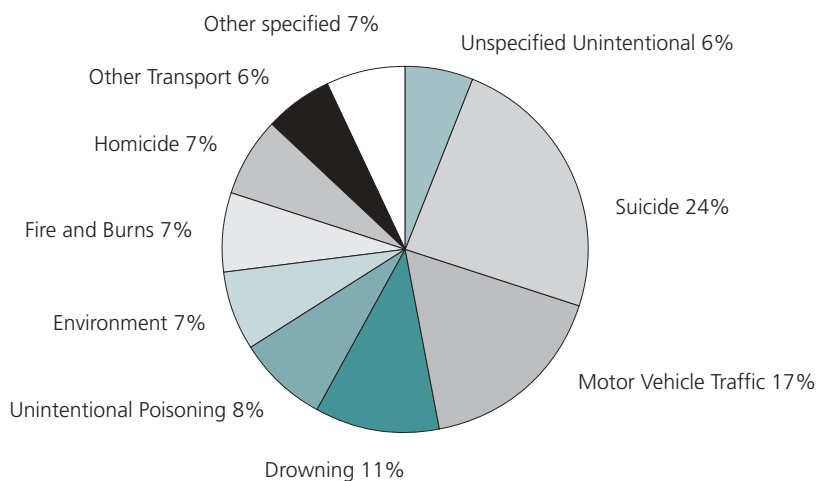
Suicidal behaviour cannot be characterized as either a predominantly male or female phenomenon. While males were nearly seven times more likely than females to die due to suicide, females were hospitalized due to self-inflicted injury at a rate two times that of males. It seems that males attempting suicide are more likely to use more lethal means, such as firearms, which increase their likelihood of completing the act.

Unintentional poisoning was the fourth leading cause of injury death (9%). This category includes unintentional deaths due to the toxic effects of drugs and other medicinal substances, alcohol, food, other solid and liquid substances as well as gases such as carbon monoxide. Sixty-one percent of deaths in this category were due to acute alcohol toxicity.

Environmental factors made up 7% of all injury deaths and almost all were due to exposure to excessive cold weather conditions. Fires and burns also accounted for 7% of all injury deaths. This category includes deaths caused by fire and flames, including those from smoke inhalation. It does not include burns from electric current, from exposure to radiation, or from explosions of combustible material. Structural fires, mainly in private residences, were the major cause of fire and flame related deaths.

Interpersonal violence also accounted for 7% of all injury deaths. One quarter of all interpersonal violence deaths in the NWT between 1990 and 1999 occurred during one instance, a deliberately set explosion at a local mine. In another one third of the deaths in this category, the victim was stabbed or cut.

Figure 7
Leading Cause of Injury Mortality, NWT 1990-1999



Source: NWT Vital Statistics

The relative importance of various causes of fatal injury varied with age (Table 1). House fires, motor vehicle traffic crashes and drowning were the main causes of death for children less than 15 years of age. Suicide was the leading cause of injury deaths among NWT residents between the ages of 15 and 64. Motor vehicle traffic crashes were also a leading cause of injury death for this age group, ranking second for the 15 to 24 year olds and the 35 to 44 year olds, and ranking third for the 25 to 34 year olds and the 45 to 64 year olds.

Drowning was also an important cause of injury death for NWT adults, ranking third among people between 15 and 24, second among 25 to 34 year olds and fourth among the three older age groups. Homicide was in the top five causes of injury deaths for all age groups between 15 and 64 years of age. Unintentional poisoning was an important cause, ranking third among 35 to 44 year olds (18%) and second among 45 to 64 year olds (14%).

For seniors, the cause of injury death was unspecified in 35% of cases. Complications following fractures of the hip or upper leg accounted for 11 of the 16 deaths in this category, yet nothing is known about the underlying cause of these fractures. If we assume that all of these fractures resulted from falls, complications due to falls would by far be the main cause of injury deaths among seniors (37%). Falls were identified as the cause of 13% of injury related deaths among seniors in the current mortality database. Exposure to excessive cold weather conditions was another important contributing cause of injury deaths for this age group accounting for 17% of the total.

Table 1
Leading Causes of Injury Mortality by Age Group, NWT 1990 - 1999

Rank	Age Group					
	0 - 14 (n=30)	15 - 24 (n=68)	25 - 34 (n=73)	35 - 44 (n=56)	45 - 64 (n=58)	65+ (n=46)
1	Fire & burns (30%)	Suicide (40%)	Suicide (25%)	Suicide (30%)	Suicide (19%)	Unspecified unintentional (35%)
2	Motor vehicle traffic (23%)	Motor vehicle traffic (26%)	Drowning (18%)	Motor vehicle traffic (21%)	Unintentional Poisoning (14%)	Environmental (17%)
3	Drowning (17%)	Drowning Environmental Homicide (7%) each	Motor vehicle traffic Homicide Other transport (12%) each	Unintentional Poisoning (18%)	Motor vehicle traffic (12%)	Falls (13%)
4	Suffocation (10%)	Other transport (6%)	Fire & burn Poisoning (5%) each	Drowning (7%)	Fire & burns Homicide Drowning (10%) each	Drowning Unintentional Poisoning (9%) each
5	Other transport Suicide (7%) each	Unintentional Poisoning (3%)	Environmental (4%)	Homicide (5%)	Environmental (9%)	Suicide (7%)

Source: NWT Vital Statistics

“Injury risk changes with each stage of life, corresponding with normal human growth and development. Young children, for example, are physically smaller in a world primarily oriented to adult’s size. Their limited coordination, poor judgment of distance, coupled with inexperience and curiosity, places them at higher risk for falls, poisoning, suffocation and drowning. As they grow, youth begin to tackle new experiences, including driving and working. Their inexperience and sense of invincibility make young people, particularly males, susceptible to injury. Combine lack of experience with alcohol and drug experimentation, and high risk-taking behaviour and the results are often serious - even deadly.”

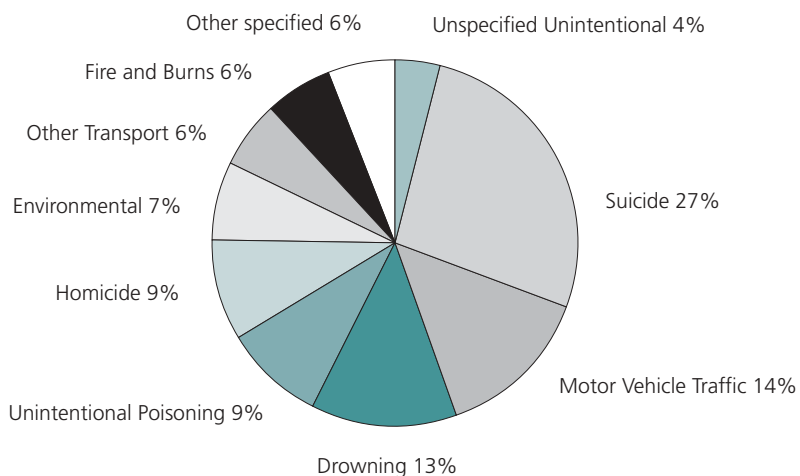
Ontario 2002 Chief Medical Officer of Health Report. (2002). *Injury: Predictable and Preventable* (p. 14).



Suicide was the leading cause of injury-related deaths for males, accounting for 27% of the total. The second leading cause of injury related death for males was motor vehicle traffic crashes (14%). Drowning ranked third for males, accounting for 13%, followed by unintentional poisoning (9%) and homicide (9%).

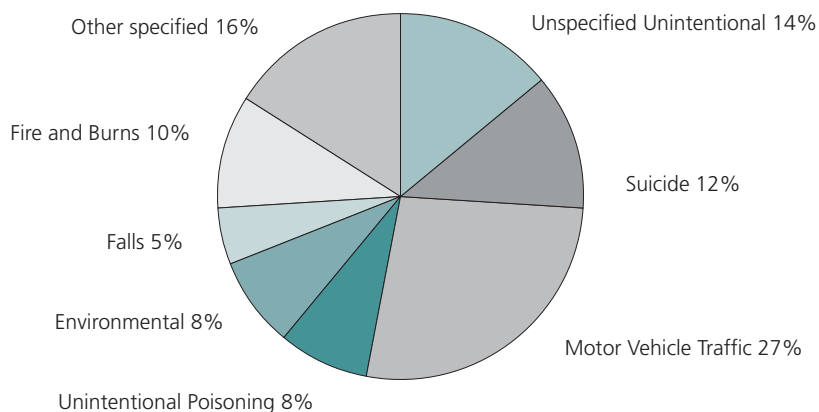
Motor vehicle traffic crashes were the leading cause of injury related deaths among females accounting for 27%. Suicide ranked second (12%), followed by fire and burns – primarily in the context of house fires (10%). Meanwhile, unintentional poisoning and environmental factors – mainly exposure to cold weather conditions – each accounted for 8% of all injury related deaths among females.

Figure 8
Leading Causes of Male Injury Mortality, NWT 1990-1999 (n=258)



Source: NWT Vital Statistics

Figure 9
Leading Causes of Female Injury Mortality, NWT 1990-1999 (n=73)



Source: NWT Vital Statistics

Suicide was the leading cause of injury death among Inuit, and among Metis and Non-Aboriginals, accounting for 33% and 32% of all injury deaths respectively. It was the third leading cause for Dene (12%). Motor vehicle traffic crashes was the leading cause for Dene (19%), and the second leading cause for both Inuit (12%), and Metis and Non-Aboriginal (17%). Drowning was the second leading cause of death for Dene (16%), the third leading cause for Inuit (10%).

Suicide was the leading cause of injury death in all three community types with motor vehicle traffic crashes the second leading cause. Meanwhile, drowning was the third leading cause in the smaller communities (16%), environmental factors were the third leading cause in the regional centres (12%), and unintentional poisoning was the third leading cause among Yellowknife residents (14%).

Table 2
Leading Causes of Injury Mortality by Ethnicity & Community Type,
NWT 1990-1999

Rank	Ethnicity			Community Type		
	Dene (n=138)	Inuit (n=67)	Metis & Non Aboriginal (n=126)	Yellowknife (n=92)	Regional Centres (n=83)	Smaller Communities (n=156)
1	Motor vehicle traffic (19%)	Suicide (33%)	Suicide (32%)	Suicide (27%)	Suicide (27%)	Suicide (20%)
2	Drowning (16%)	Motor vehicle traffic (12%)	Motor vehicle traffic (17%)	Motor vehicle traffic (18%)	Motor vehicle traffic (18%)	Motor vehicle traffic (15%)
3	Environmental (13%)	Drowning Unintentional Poisoning (10%) each	Unintentional Poisoning (9%)	Unintentional Poisoning (14%)	Environmental (12%)	Drowning (16%)
4	Suicide (12%)	Other transport Fire & burns (9%) each	Drowning Homicide Other transport (6%) each	Drowning Homicide (8%) each	Unspecified unintentional (8%)	Homicide (10%)
5	Homicide (9%)	Environmental (7%)	Fire & burns 5%	Unspecified unintentional (5%)	Fire & burns (7%)	Fire & burns (9%)

Source: NWT Vital Statistics

“Children playing with fire, occupants who smoke cigarettes and alcohol consumption are major factors in most residential fires in the NWT.”

Northwest Territories Municipal and Community Affairs. (1999). *Office of the Fire Marshal 1999 Annual Report*. Yellowknife NT (p.13).



Hospitalizations

Overall, falls were the main cause of injury hospitalization (920 separations between 1995/96 and 1999/2000, or 28% of all injury hospitalizations). Falling as a result of slipping or tripping accounted for 33% of hospitalizations in this category. Falls from one level to another such as falls from chairs or other furniture, falls from an embankment, or from playground equipment, accounted for 20% of the cases. Falls on or from stairs or steps accounted for 13% of fall-related injury hospitalizations. Falls from ladders and scaffolds accounted for 3%. However, 28% of all fall-related hospitalizations were coded as unspecified.

Self-inflicted injury was the second leading cause of injury-related hospitalizations, accounting for 13% of the cases. Poisoning from drugs and medicinal substances was by far the most common method used in self-inflicted injuries that resulted in hospitalization, accounting for 75% of all cases. Another 9% were due to poisoning from another or unspecified substance. Meanwhile, 10% were due to self-inflicted cuts.

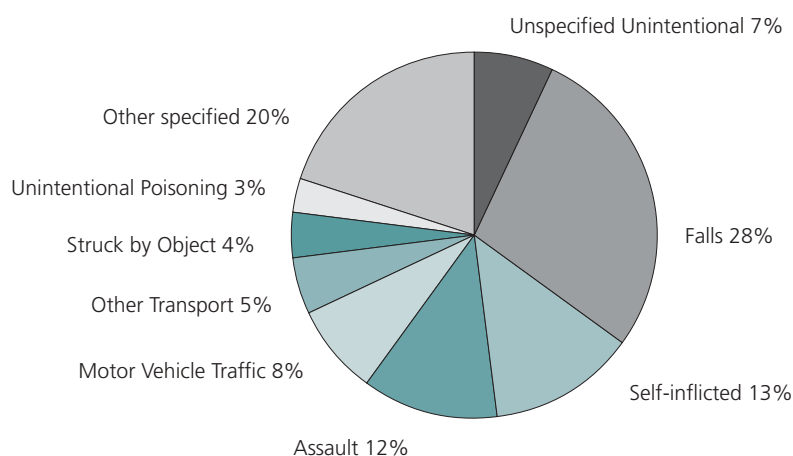
Injuries resulting from assaults were also a significant cause of injury-related hospitalization, accounting for 12%. Over half (58%) of hospitalizations in this category resulted from unarmed fights or brawls. Battering and other maltreatment accounted for another 11% of hospitalizations due to interpersonal violence. Assaults using a cutting or piercing object made up 10% of hospitalizations in this category, and in 7% of the cases the injury was sustained from the use of a blunt object.

Motor vehicle traffic crashes accounted for 8% of injury-related hospitalizations. The injured person was identified as an occupant in 64% of the hospitalizations in this category. Pedestrians hit by a motor vehicle accounted for 13%. A large proportion of pedestrians were children less than 15 years of age.

Crashes of off-road vehicles such as snowmobiles and all-terrain vehicles (ATVs) accounted for 5% of all injury-related hospitalizations. Snowmobile-related incidents accounted for 65% of hospitalizations in this category. Unlike snowmobiles, there is no defined code for incidents involving all-terrain vehicles (ATVs). However, given the widespread use of these vehicles in the NWT, it seems likely that a large number of the cases in this category involve ATVs.

Figure 10

Leading Causes of Injury Hospitalization, NWT 1995/96-1999/2000 (n=3,220)



Source: CIHI Discharge Abstract Database

The leading causes of injury related hospitalization varied by age group. For children less than 15 years of age, falls were the leading cause (36%). Unintentional poisoning and self-inflicted injuries were also important causes for this group (8% each). Self-inflicted injuries were the leading cause of injury related hospitalization for youth and young adults between 15 and 24 years of age (26%), followed by assaults (16%). Meanwhile, assaults were the leading cause for 25 to 34 year olds (20%) followed by self-inflicted injury (16%). Falls and motor vehicle traffic crashes were also important causes for these two age groups.

Unintentional falls were the leading cause of injury hospitalization for persons 35 years of age and older. Self-inflicted injuries ranked second for 35 to 44 year olds, making up 16% of the cases and assaults was third at 14%. Unspecified unintentional was the second largest category for people 45 years and older and the fourth largest category among 35 to 44 year olds. About one third of the cases in this category were listed as fracture cause unspecified. If most of the unspecified fractures were actually due to falls, the percentage of hospitalizations due to falls would increase considerably. Motor vehicle traffic crashes were also an important cause of injury hospitalization for people 35 years and older.

It can happen in an instant: reaching on a chair for something located on a high shelf, tripping over uneven walkways, tripping over a rug, slipping on a patch of ice, or getting up from a bath, a chair or a bed. There are numerous ways a person can slip, trip or lose his or her balance and fall. For seniors the outcome is often an injury that in some cases results in hospitalization or even death.

Scott V. et al. (2004). *Prevention of Falls and Injuries Among the Elderly: A Special Report From the Office of the Provincial Health Officer*. British Columbia Ministry of Health and Planning. Victoria.

Table 3
 Leading Causes of Injury Hospitalizations in the NWT by Age Group,
 1995/96-1999/2000

Rank	Age Group					
	0 - 14 (n=550)	15 - 24 (n=548)	25 - 34 (n=667)	35 - 44 (n=534)	45 - 64 (n=576)	65+ (n=345)
1	Falls (36%)	Self-inflicted (26%)	Assault (20%)	Falls (24%)	Falls (33%)	Falls (68%)
2	Poisoning Self-inflicted (8%) each	Assault (16%)	Self-inflicted (16%)	Self-inflicted (16%)	Unspecified unintentional (11%)	Unspecified unintentional (8%)
3	Environmental Other transport Motor vehicle traffic Struck by object (5%) each	Falls Motor vehicle traffic (12%) each	Falls (15%)	Assault (14%)	Assault (9%)	Motor vehicle traffic Assault (4%) each
4		Other transport (7%)	Motor vehicle traffic (10%)	Unspecified unintentional (7%)	Motor vehicle traffic (8%)	Overexertion Environmental Other transport (2%) each
5		Cut, pierce (5%)	Unspecified unintentional (7%)	Motor vehicle traffic (6%)	Self-inflicted (7%)	

Source: CIHI Discharge Abstract Database

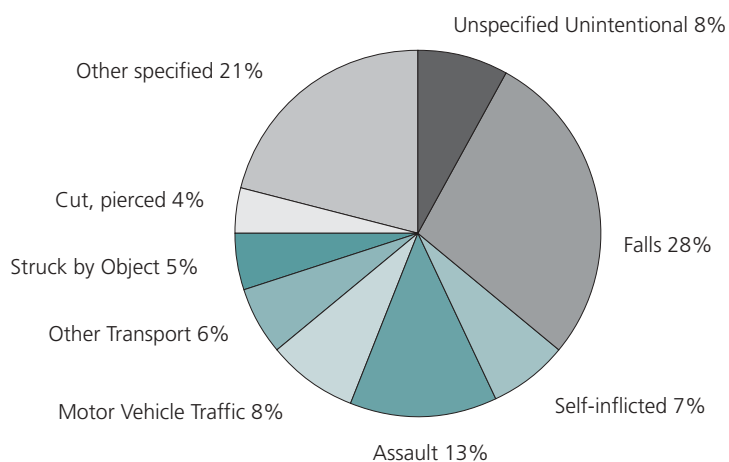
Unintentional falls were the leading cause of injury hospitalizations for both males (27%) and females (32%). However, self-inflicted injury made up 21% of all injury hospitalizations among females compared to 7% among males. Meanwhile, interpersonal violence accounted for 13% of all injury-related hospitalizations among males and 9% among females.

Motor vehicle traffic crashes accounted for 8% of all injury hospitalizations for males and 7% among females. Incidents involving off-road vehicles accounted for 6% of all injury related hospitalizations among males^f compared to 3% among women. Another 3% of injury related hospitalizations among women were due to unintentional poisoning – mainly the unintentional ingestion of medicinal substances. Overexertion and strenuous movement also caused 3%. Injuries sustained from being unintentionally stuck by an object or

^f Snowmobile crashes accounted for most (70%) of these cases.

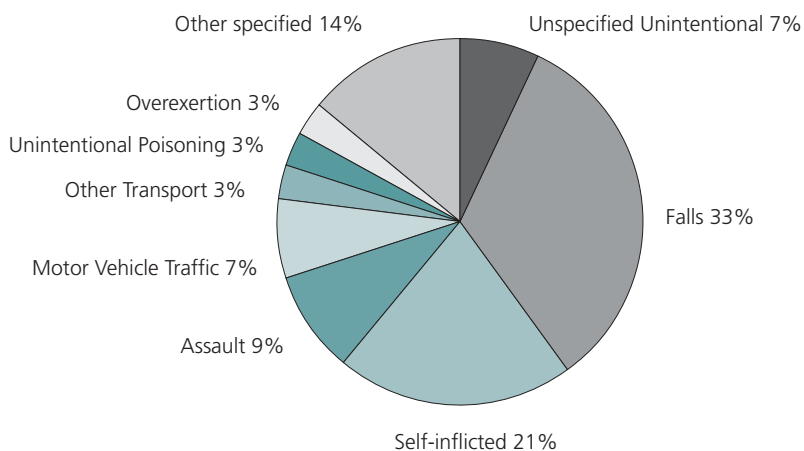
another person while engaged in sports or other activities accounted for 5% of all injury related hospitalizations among males. Meanwhile, unintentional cuts sustained from hand tools or other cutting instruments made up 4%.

Figure 11
Leading Causes of Male Injury Hospitalizations,
NWT 1995/96-1999/2000 (n=1,924)



Source: CIHI Discharge Abstract Database

Figure 12
Leading Causes of Female Injury Hospitalizations,
NWT 1995/96-1999/2000 (n=1,296)



Source: CIHI Discharge Abstract Database

Falls were the most frequent reason for injury-related hospitalizations for Dene (31%), and Metis and Non-Aboriginals (29%). Self-inflicted injuries along with falls were the leading causes for Inuit (21% each). Interpersonal violence was the second leading cause for Dene (15%) and Inuit (14%) while self-inflicted injury ranked second for Metis and Non-Aboriginal (11%). Injury sustained

“One of the earliest chances you have to protect your baby is your first car ride together... Car seats, used correctly, have been proven to prevent many of these injuries. By using a car seat each and every time from the beginning, your child will accept this as the only way to travel.”

Alberta Health. *Safe and Secure: A Guide to Prevention of Injuries to Preschoolers* (p.4).

in a motor vehicle traffic crash was in the top five causes of injury related hospitalizations for all three ethnic groups. Incidents involving off-road motor vehicles were among the leading causes of injury hospitalizations for both Dene and Inuit.

The leading causes of injury related hospitalization were similar for each of the three community types. Falls were the leading cause for all three (28% in Yellowknife, 28% in the regional centres, and 29% in the smaller communities). Self-inflicted injury and injuries sustained through interpersonal violence were second and third for each community type. Motor vehicle traffic crashes were the fifth leading cause of injury hospitalization among Yellowknife residents (7%) and the fourth leading cause among the residents of regional centres (9%) and smaller communities (7%). Injuries sustained while riding in/on an off road vehicle – primarily snowmobiles – was the fifth leading cause for residents of the smaller communities.⁹

Table 4
Leading Causes of Injury Hospitalization by Ethnicity & Community Type, NWT 1990-1999

Rank	Ethnicity			Community Type		
	Dene (n=1,393)	Inuit (n=540)	Metis & Non Aboriginal (n=1,287)	Yellowknife (n=1,014)	Regional Centres (n=1,063)	Smaller Communities (n=1,143)
1	Falls (31%)	Falls Self-inflicted (21%) each	Falls (29%)	Falls (28%)	Falls (28%)	Falls (29%)
2	Assault (15%)	Assault (14%)	Self-inflicted (11%)	Self-inflicted (13%)	Self-inflicted (13%)	Assault (14%)
3	Self-inflicted (12%)	Motor vehicle traffic Other transport Unspecified unintentional (6%) each	Motor vehicle traffic (9%)	Assault (11%)	Assault (10%)	Self-inflicted (13%)
4	Motor vehicle traffic Unspecified unintentional (7%) each	Unintentional poisoning (4%)	Assault Unspecified unintentional (7%) each	Unspecified unintentional (8%)	Motor vehicle traffic (9%)	Motor vehicle traffic (7%)
5	Other transport (4%)	Environmental (3%)	Struck by object (6%)	Motor vehicle traffic (7%)	Unspecified unintentional (7%)	Other transport Unspecified unintentional (6%) each

Source: CIHI Discharge Abstract Database

^g This cause accounted for 4% for Yellowknife residents and 4% for residents of regional centres.

Summary

The term “injury” encompasses many types of injuries (e.g. head injuries, fractures, burns), many of which arise from a wide range of external causes or mechanisms. Suicide was the leading cause of injury mortality in the NWT, accounting for 24% of deaths. Self-inflicted injury was the second leading cause of injury-related hospitalization (13%). Motor vehicle traffic crashes involving automobiles, trucks and motorcycles known or assumed to be traveling on public roads or highways accounted for 17% of all injury-related deaths and 8% of all injury-related hospitalizations. Injuries associated with other means of transportation including snowmobiles, other off-road motor vehicles not in traffic, and aircraft accounted for 6% of deaths and 5% of hospitalizations. Combining other transportation and motor vehicle traffic crashes means that vehicle-related incidents accounted for 23% of all injury deaths and 13% of all injury-related hospitalizations in the NWT during the study periods. Drowning was another important causes of injury mortality, accounting for 11% of deaths. Meanwhile, unintentional falls were the main cause of injury-related hospitalizations, accounting for 28% of all cases. Injuries sustained from interpersonal violence were also an important cause of injury-related hospitalizations (12%).

The Canadian Pediatric Society's Injury Prevention Committee published statements recommending a ban on ATV use by children less than 14 years of age. ATVs are powerful, heavy machines that are inherently unstable due to their high centre of gravity.

Canadian Pediatric Society Accident Prevention Committee.

Who Gets Injured?

Injuries are not random events; rather there are patterns regarding who is injured and the risk factors associated with injuries. While injuries can potentially affect everyone, they tend to cluster among certain groups of people. The NWT population can be divided into different groups according to age, sex, ethnicity and where they live. All of these characteristics influence a person's life experiences and beliefs that in turn affect risk factors as well as how he or she responds to prevention efforts. By looking at which groups are most affected by injuries, it is possible to target prevention efforts where they will have the greatest impact and design prevention programs that are tailored to the needs, preferences and particular circumstance of the group. This summary report presents overall injury mortality and hospitalization rates for specific groups. Individuals interested in looking at which groups are at higher risk for some of the more common causes of injury should refer to the larger statistical report, *Injury in the Northwest Territories: A Descriptive Report*.

Age & Sex

Injury mortality and hospitalizations differ by age and by gender. In general, most deaths and hospitalizations occur among youth and younger adults between 15 and 44 years of age. However, injuries remain a significant concern throughout life. In fact, seniors have the greatest risk of dying or admission to a hospital because of an injury. Overall, males are more likely to be injured than are females.

Mortality

The number and rates of injury deaths and hospitalizations vary greatly with age. Children less than 15 years of age accounted for 9% of all injury deaths. Meanwhile, persons between 15 and 34 years of age accounted for 43%. Seniors, 65 years of age and older, made up 3% of the NWT population but accounted for 14% of all injury deaths. As a result, this age group had the highest injury mortality rate (335 per 100,000 person-years). Almost all of the injury deaths among seniors were unintentional in nature. Children less than 15 years of age had the lowest overall injury mortality rate at 26 per 100,000 person-years. The injury mortality rate jumps dramatically to 105 per 100,000 person-years for those between 15 and 24 years of age. The overall injury mortality rate was 89 per 100,000 for persons between 25 and 64 years.

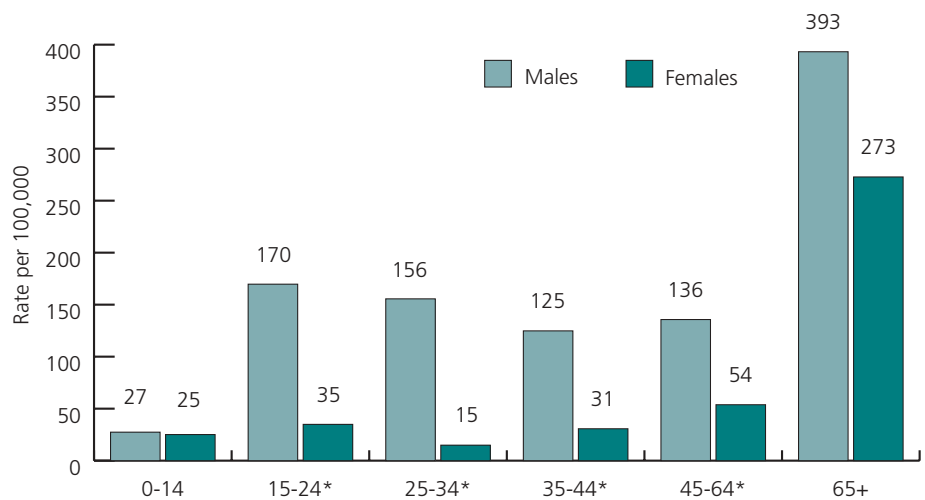
More males died from injury than females. Between 1990 and 1999, males accounted for 78% of all injury deaths. Figure 13 presents the injury mortality rates for males and females for various age groups. Overall, the injury mortality rate for males was over three times the rate for females (122 vs. 38 per 100,000 person-years). The risk of dying due to an injury for both sexes was

Among all age groups, NWT residents between the ages of 15 and 24 had the highest mortality rate and hospitalization rate due injuries sustained in a motor vehicle traffic crash. They were also the highest risk age group for both suicides and hospitalizations due to self-inflicted injury.



similar for children less than 15 years of age. After the age of 14, the likelihood of males dying due to injury jumps dramatically while the risk for females remains about the same. For all age groups between 15 and 64 years of age, males were much more likely than females to die due to injury. The mortality rate among male seniors was also higher than the female rate, however, the difference was not statistically significant.

Figure 13
Injury Mortality Rates by Age and Sex, NWT 1990-1999



* Significant difference between sexes ($p < 0.05$).
Source: NWT Vital Statistics

Hospitalizations

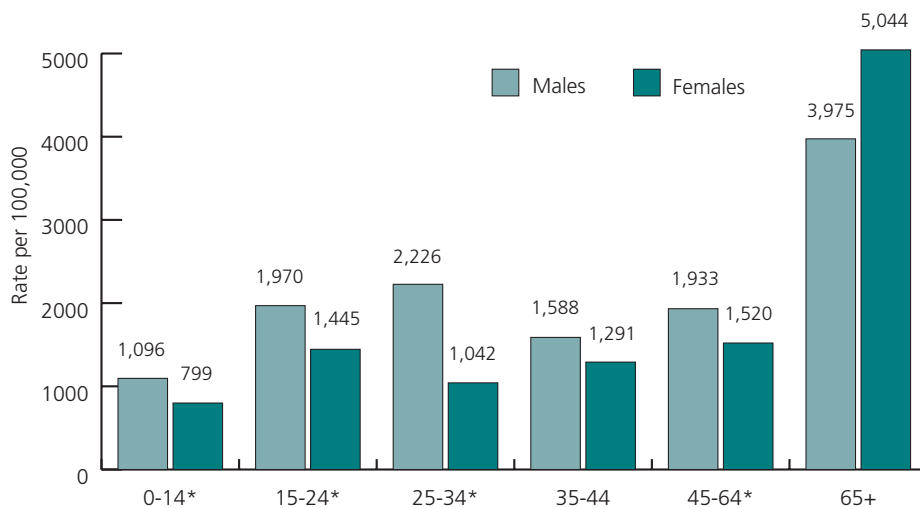
The greatest number of injury hospitalizations involved NWT residents between 25 and 34 years of age (21% of the total). The proportion was about the same (around 17%) for all other age groups except seniors 65 years of age and older, who accounted for 11% of all injury hospitalizations. However, as with injury deaths, seniors had the highest injury hospitalization rate during fiscal years 1995/96 to 1999/2000 (4,495 per 100,000 person-years), almost three times higher than the NWT rate as a whole. The vast majority of the injuries for this group were unintentional in nature. Children less than 15 years of age had the lowest rate of injury-related hospitalization (951 per 100,000 person-years). The rate for youth and young adults between 15 and 24 years of age was almost two times higher (1,718 per 100,000 person-years). The overall injury hospitalization rate was 1,610 per 100,000 person-years for those between 25 and 64 years of age.

Males accounted for 60% of all injury related hospitalizations, outnumbering females for all age group, except seniors. Among seniors, women accounted for 55% of all injury related hospitalizations. Overall males were 1.4 times

more likely than females to be hospitalized due to injury. The hospitalization rate for males was 1,778 per 100,000 person-years, compared to 1,301 per 100,000 person-years for women. While this difference is statistically significant, the differences between male and female injury hospitalization rates were not as great as the differences in injury mortality rates.

The injury hospitalization rate for males was particularly higher than the rate for females among younger age groups in the NWT population. The greatest difference between men and women occurred among those between 25 and 34 years of age; men were over two times more likely than women to be hospitalized due to injury (see figure 14). After the age of 35, the difference in hospitalization rates between males and females decreased, but was still significant for those between 45 and 65 years of age. Hospitalization rates were higher for females over the age of 64 compared to males in the same age group, although this difference was not statistically significant.

Figure 14
Injury Hospitalization Rates by Age and Sex, NWT 1995/96-1999/2000



* Significant difference between sexes ($p < 0.05$).
Source: CIHI Discharge Abstract Database

Ethnicity

The population of the NWT can be divided into four major ethnic groups: Dene or First Nations, Inuit, Metis and Non-Aboriginal. Dene mainly live in smaller communities throughout most of the territory. During the 1990s they made up 29% of the total population. Inuit live mainly in the northern-most communities and comprise 10% of the total territorial population. For the purposes of this report, the Metis and Non-Aboriginal population were combined. These two groups live mainly in larger regional centres and

During the study period, males accounted for 92% of all drownings and 84% of deaths due to crashes of off-road vehicles. They were nearly two times more likely than females to be hospitalized due to motor vehicle traffic crashes and interpersonal violence. And they were nearly three times more likely than females to be hospitalized due to crashes of off-road vehicles such as snowmobiles and ATVs.

“Aboriginal people are exposed to many risk factors for unintentional and intentional injuries. Their physical environment (e.g. cold temperatures, remoteness), ... social conditions (e.g. low socio-economic status), frequent use of risky vehicles such as ATVs and snowmobiles, pattern of alcohol and tobacco use, location of many communities near large bodies of water, and a lack of safety devices and procedures place them at an increased risk of being injured.”

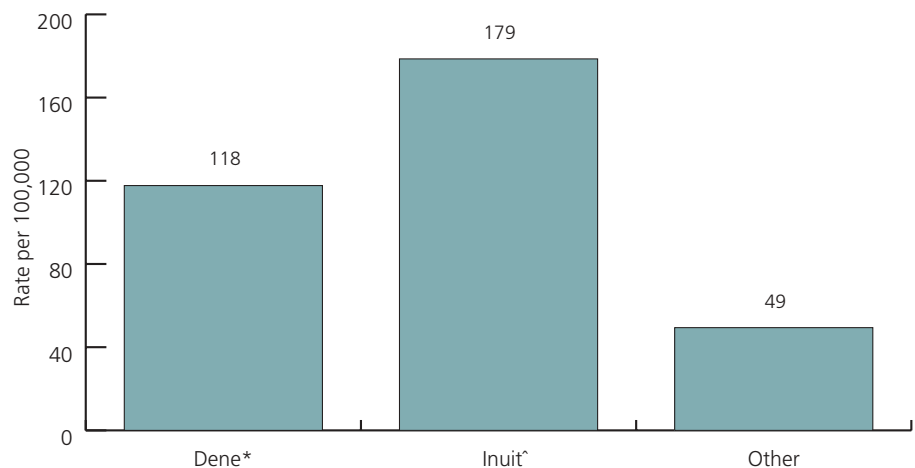
(Health Canada. (2001). *Unintentional and Intentional Injury Profile for Aboriginal People in Canada: 1990-1999*. Minister of Public Works and Government Services Canada. (p.16).

Yellowknife. They comprise 61% of the population. The mortality rates were age-standardized to the overall NWT population using the direct method to control for differences in the age structures between the ethnic groups.

Mortality

Between 1990 and 1999, 42% of all injury deaths occurred among the Dene population. Meanwhile, Inuit accounted for 20%, and Metis and Non-Aboriginal groups (referred to as “Other”) accounted for the remaining 38%. Meanwhile, Inuit had the highest overall injury mortality rate followed by Dene.^h The age-standardized rate among Inuit was over three times higher than the Non-Aboriginal and Metis rate, while the Dene rate was two times higher (see figure 15). There were differences between ethnic groups not only in the overall death rate but also in age-specific patterns. The Inuit injury mortality rate for persons 15 to 64 years of age was significantly higher than the other ethnic groups. Meanwhile, Dene had the highest mortality rate for children less than 15 years of age and seniors 65 years of age and older.

Figure 15
Age-standardized Injury Mortality Rates by Ethnicity, NWT 1990-1999



* Dene and Inuit significantly higher than Other;

^h Inuit Significantly higher than Dene (p<0.05)

Source: NWT Vital Statistics

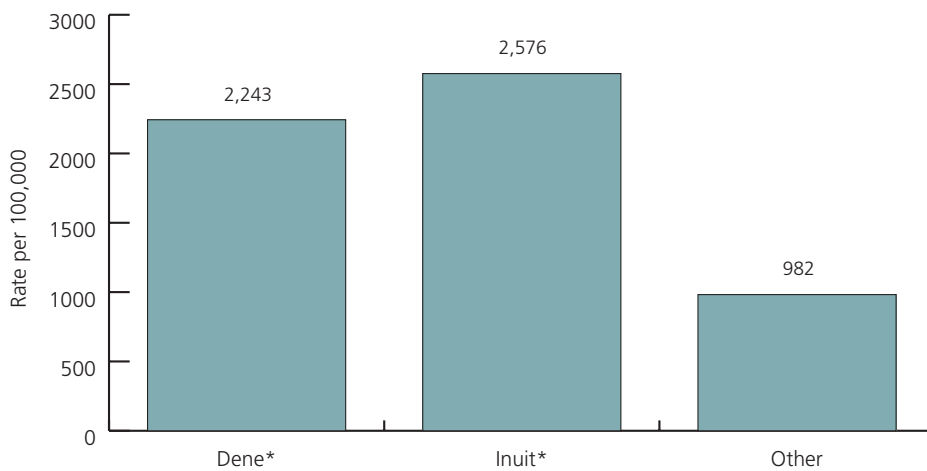
Hospitalizations

Dene accounted for 43% of all injury hospitalizations between fiscal years 1995/96 and 1999/2000. Inuit accounted for 17%, and Metis and Non-Aboriginals 40%. Inuit had the highest hospitalization rate due to injuries, followed closely by Dene. The age-standardized rates for both of these groups

^h The apparent discrepancy between the lower number of injury cases and higher injury rates among the Inuit can be explained by the fact that this ethnic group makes up a smaller proportion of the population of the territory. During the study period they accounted for 10% of the total population but 20% of all injury deaths.

were over two times higher than the Metis and Non-Aboriginal rate (see figure 16). Moreover, Inuit and Dene were at higher risk of hospitalization due to injury across all age groups.

Figure 16
Age-standardized Injury Hospitalization Rates by Ethnicity,
NWT 1995/96-1999/2000



* Dene and Inuit significantly higher than Other ($p < 0.05$)
Source: CIHI Discharge Abstract Database

Dene residents had the highest mortality and hospitalization rates due to motor vehicle traffic crashes.

Inuit had the highest mortality rate due to injuries sustained in crashes of off-road vehicles such as snowmobiles, ATVs and aircraft, nearly three times higher than Dene and over five times higher than Métis and Non-Aboriginals. They also had the highest injury-related hospitalization rate due to these types of incidents.

Community of Residence

The population size of most communities in the Northwest Territories is too small to allow analysis of injury data at the individual community level. Therefore, all communities were grouped into three categories based on socio-demographic characteristics: Yellowknife, regional centres (Hay River, Fort Smith, and Inuvik), and “other communities” (the smaller communities in the NWT). During the study period 33% of the territorial population lived in one of the smaller communities, 24% lived in one on the regional centres and 43% lived in Yellowknife.

Mortality

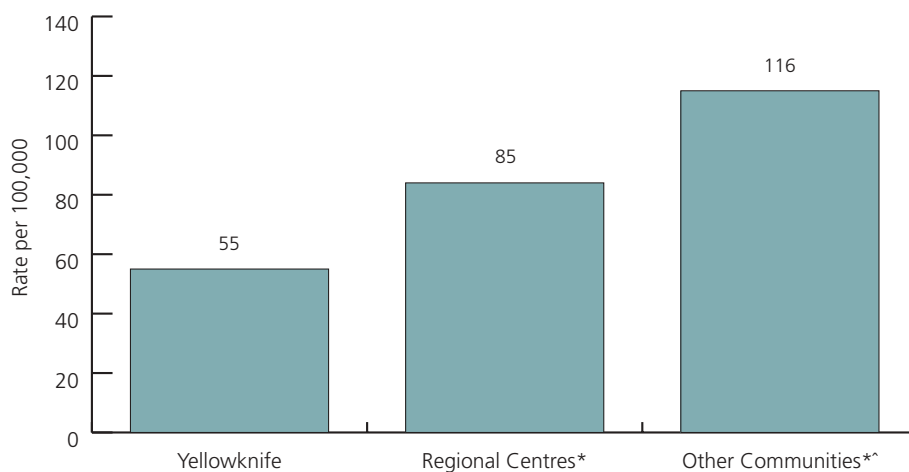
Residents of the smaller communities in the NWT accounted for nearly half (47%) of all injury deaths between 1990 and 1999, individuals living in the regional centres of Fort Smith, Hay River and Inuvik accounted for 25%, and Yellowknife residents accounted for 28% of all injury deaths.

Meanwhile, residents of the smaller communities had the highest injury mortality rate, followed by residents of the regional centres. Yellowknife had the lowest injury mortality rate during the study period. The age-standardized

During the study period, residents of the NWT were 6.1 times more likely than Canadians as a whole to die because of drowning. Males accounted for 92% of all drowning fatalities in the NWT. Drowning rates were highest among residents of the smaller communities, about four times higher than rates in the larger centres. Boating incidents were the most common type of drowning death in the smaller communities.

injury mortality rate for residents of smaller communities was over two times higher than the rate for Yellowknife residents (see figure 17). The differences in mortality rates between the three community types were observed for all age groups.

Figure 17
Age-standardized Injury Mortality Rates by Community Type, NWT 1990-1999



* Smaller communities and regional centres significantly higher than Yellowknife

^ Smaller communities significantly higher than regional centres ($p < 0.05$)

Source: NWT Vital Statistics

Hospitalizations

The number of hospital separations due to injury was evenly divided between the three community types. Thirty-one percent of all separations involved Yellowknife residents, the regional centres accounted for 33%, and residents of the remaining smaller communities made up 36%. The overall age-standardized injury hospitalization rate was highest among residents of the regional centres (2,178 per 100,000 person-years) followed by residents of the smaller communities (1,633 per 100,000) and Yellowknife (1,168 per 100,000). This pattern was observed across all age groups. In general, residents of the regional centres were two times more likely to be hospitalized due to an injury than residents of Yellowknife and 1.3 times more likely than residents of the smaller communities.

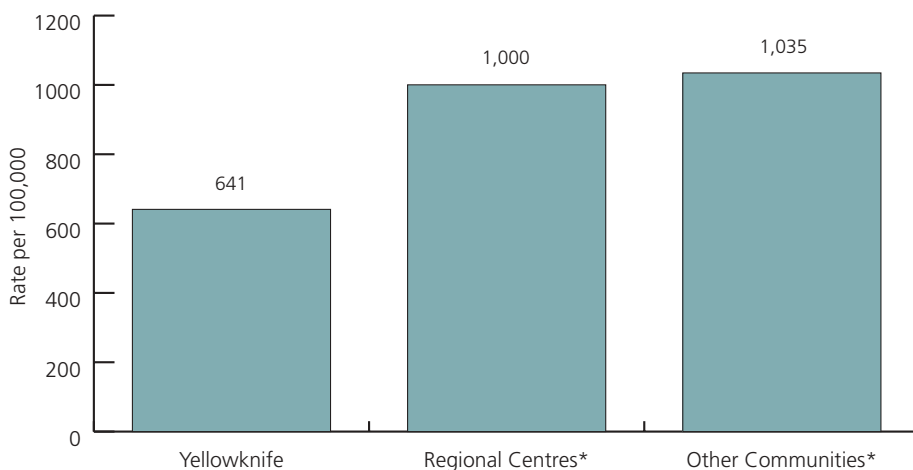
It is important to keep in mind that the data in this report represents the number of hospital discharges and not the number of people hospitalized due to injury. For example, the same person may be admitted several times for follow-up treatment of the same injury and would be counted in each case. Individuals living in communities where a hospital is located may be more likely to be hospitalized for follow-up treatment of the same injury and/or observation/ treatment of more minor injuries than residents who live in the

smaller communities where follow-up and/or treatment of more minor injuries can be done at the community health centre.ⁱ On the other hand, limited evidence suggests that for some types of injuries – for example, fracture of a limb without complications – hospitalization may be more likely for residents of smaller communities than residents of towns where a hospital is located who receive treatment on an outpatient basis.

It is difficult to determine what impacts these factors have on differences in injury hospitalization rates for residents of the three types of communities examined. However, the system for transferring seriously injured patients from smaller communities to hospitals is well established in the NWT. Therefore, hospitalization data should provide a good record of the overall patterns of nonfatal injuries that are more severe in nature. A robust estimation of injury severity was beyond the scope of this report. Instead, a rough estimate based on the length of hospital stay was used.

When the analysis is limited to hospitalizations where the patient's length of stay was two or more days the differences between the regional centres and the smaller communities disappeared. In this case, the age-standardized hospitalization rate for regional centre residents was very similar to the rate for residents of the smaller communities; both were significantly higher than the rate for Yellowknife residents (see figure 18).

Figure 18
Age-standardized Injury Hospitalization Rates by Community Type, NWT 1995/96-1999/2000 (stay 2 days or more)



* Smaller communities and regional centres significantly higher than Yellowknife ($p < 0.05$)
Source: CIHI Discharge Abstract Database

ⁱ There are four hospitals in the NWT, one in Yellowknife and one in each of the three regional centres. Community health centre are located in most of the smaller communities.

Everyone has a responsibility for making the NWT a safer place to live. This includes individual Northerners and their families, communities, community-based organizations, regional health authorities, professional groups, education system, business and industry, and the municipal, territorial and federal governments.



Summary

In general, over half of injury deaths and hospitalizations occur among individuals between 15 and 44 years of age. However, injuries remain a significant cause of death and hospitalization throughout life. Seniors had the highest injury-related mortality and hospitalization rates. The high rate is due to the number of deaths and hospitalizations relative to the small number of people in this age category. Moreover, when injuries do occur in this group, their consequences and potential complications are often more severe.

Males accounted for 78% of all injury deaths and 60% of all injury-related hospitalizations. The injury mortality rate for males was over three times higher than the rate for females. Men were 1.4 times more likely than women to be hospitalized due to an injury. The injury mortality and hospitalization rates among Inuit and Dene were over two times higher than the rates for other NWT residents. Individuals living in one of the smaller communities in the NWT or in one of the regional centres of Hay River, Fort Smith or Inuvik were more likely to die or be hospitalized due to an injury than were residents of Yellowknife.

Differences in injury rates between community types, or by extension, ethnic groups reported here should be interpreted with some caution.^j Rates are good summary measures that help identify groups more at risk of being injured, and the risk of injury is normally associated with environmental or behavioural risk factors. However, as noted above, factors other than the risk of injury may be affecting some of the rates presented in this report. It is difficult to determine what impacts these factors have on differences in injury rates for residents of the three types of communities and ethnic groups. Further research and analysis in this area is needed. However, given the good access by the population to the health care system in the NWT, hospitalization data should provide a reasonable indication of the overall patterns of more severe nonfatal injury. Moreover, as discussed in the next section, evidence from various other sources suggests that residents of smaller communities are at greater risk of injury due to a number of risk factors including personal behaviours as well as exposures to higher-risk environments or activities. It is these risk factors on which injury prevention efforts need to focus in order to address the rates of injury among different groups.

^j Ethnicity and community of residence are highly correlated. That is, Dene and Inuit are much more likely than other ethnic groups to live in one of the smaller, more remote communities in the territory.

Risk Factors

The descriptive data in this report has shown that injuries are not random events. Rather, there are specific patterns as to who is being injured. Some groups in the territory are more at risk of injury than others. Knowing where and to whom injuries occur is not enough. To plan effective injury prevention measures, it is necessary to have an adequate understanding of why some people are more at risk. A person's age, gender, ethnic status, and community of residence do not in themselves constitute a direct casual link to injury. Rather these characteristics predispose individuals to certain types of risk factors. A risk factor is any feature associated with an increased probability of being injured, including, personal characteristics and behaviours, as well as exposure to high-risk environments.

Because of reliance on existing administrative data compiled for purposes other than injury prevention, the analysis of risk factors in this report is limited. Using mortality and hospitalization data, it is often impossible to determine what the person was doing at the time of the injury, exactly where the injury occurred, and what other contributing risk factors were present. For example, it is not possible to determine if a large number of motor vehicle traffic crashes occurred on a particular section of the highway, if a large number of drivers were intoxicated, or if occupants were wearing seatbelts. The following discussion of risk factors is based on information obtained from a number of available sources including coroners' reports, a report on traffic crashes in the NWT and a 1999 population survey on risk taking behaviours and attitudes. While it is not possible to determine if the general risk factors discussed contributed to many of the injury incidents presented in this report, some general inferences can be made that point to a number of issues for consideration.

Participation in various types of activities affects the risk of injuries. Some groups have greater risk of injury due to more frequent exposure to certain environments, equipment, or activities. For example, males are more likely than females to engage in occupations such as mining and construction, as well as traditional activities like hunting and fishing, which expose them to higher risk environments. The same may be said for residents of smaller communities. Moreover, males are more likely than females to operate a boat or snowmobile, related to either traditional lifestyles or to recreation. Similarly residents of smaller communities may be more likely than individuals living in larger centres to engage in these types of activities. Their greater exposure explains in part their higher rates of injury from boat and snowmobile-related activities. However, the risk of injury associated with various activities can also be reduced or increased depending on any number of other personal, equipment and environmental risk factors.⁵ In the above example, the likelihood of sustaining an injury is also influenced by behavioural factors such as drinking alcohol, wearing a personal flotation device and wearing a helmet.

"The successful reduction in injuries will come about not by any single factor or single approach but through understanding the complex interrelationships that influence injuries both at the individual and societal level."

Federal/Provincial/Territorial Sub-Committee on Injury Prevention and Control. (2001). *Report on Proposed National Priorities for Injury Prevention and Control* (p.7).



Intoxication is perhaps one of the most important behavioural risk factors for injury in the NWT. A review of Northwest Territories Coroners' Reports for the years 1999 to 2001 found that alcohol was a contributing factor in 44% of all unintentional injury deaths and 39% of all suicides investigated.⁶ A 2001 report on motor vehicle traffic crashes indicated that between 1991 and 2001, alcohol was a contributing factor in 23% of all traffic crash-related injuries.⁷ When NWT residents were asked in the 1999 Safety and Injury Survey what was the main reason for injuries in their communities, 58% cited alcohol use. Residents of smaller communities were more likely to view alcohol use as the main reason for injuries in their communities (70% compared to 59% for the regional centres, and 49% for Yellowknife).⁸ This observation is supported by other survey data that suggest regular heavy drinking is more prevalent among residents of smaller communities. According to the 2002 NWT Alcohol and Drug Survey, 30% of residents 15 years of age and older living in the smaller communities reported drinking heavily on a regular basis compared to 17% of residents living in the larger centres of Yellowknife, Hay River, Inuvik and Fort Smith.^{k, 9}

In another study, 153 key informants in 14 southern NWT communities were interviewed in early 2000 to obtain information about their perceptions of causes of injury in their community and their attitudes toward injury prevention. Several common themes emerged from these interviews; one was the perception that alcohol abuse was an important risk factor for injury. Another was a perceived increase in the number of motor vehicles including snowmobiles and ATVs while control mechanisms (e.g. speed limit enforcement) had not always kept pace.¹⁰

Teens and young adults are at greater risk for many types of injuries, particularly motor vehicle traffic crashes and self-inflicted injuries. Inexperience as drivers makes them more prone to motor vehicle crashes. At the same time, they are more likely to act impulsively, make poor decisions about the dangers in hazardous driving situations and engage in high-risk behaviours such as driving fast, overtaking other vehicles in a risky manner, riding with someone who is drinking, or drink and drive. Driving inexperience coupled with drinking and driving puts this group at a particularly high risk of serious motor vehicle crashes. Impulsiveness, along with factors such as depression, underdeveloped coping skills, substance abuse, perceptions of limited opportunities, and poverty can also put this group at a higher risk of self-inflicted injury and interpersonal violence.¹¹

^k Regular heavy drinkers are defined as individuals who indicated they drink alcohol at least once per month and who also indicated that on those days they normally consume five or more drinks. Occasional use of moderate amounts of alcohol in appropriate circumstances need not be a risk factor for injury. Problems often arise when large quantities are consumed prior to taking part in higher-risk activities such as operating a boat, motor vehicle or snowmobile, or during periods of depression.

Although some types of exposures may be lower for seniors (e.g., kilometers driven in a motor vehicle or snowmobile and amount of time spent in a boat), others that are conducive to falls such as use of stairs or walking on slippery surfaces persist as people get older. As we have seen, age is a significant risk factor for falls. Seniors have the greatest risk of injury as a result of a fall because of several concomitants of age including: increased fragility of bones; impairment of vision, gait, and balance; reduction in reaction time, agility and alertness. Seniors may also be more likely to fall due to various other medical problems or side-effects from prescription drugs and are more susceptible to complications following injury.

In general, the severity of injuries from falls is affected by the distance fallen, the nature of the surface impacted upon, and the strength and flexibility of the victim's tissues and bones. Given the climate in the NWT, ice can make surfaces slippery for periods of the year. Hospitalizations due to falls from slipping or tripping are more likely to occur in the NWT between October and April. A number of other environmental factors can increase a person's risk of falling. Poorly designed stairs and the lack of appropriate handrails will increase the risk of falling from stairs. Poor lighting in and around the home and public places can also be a factor.

The benefits of seatbelt use in reducing the severity of injury resulting from a motor vehicle traffic crash is well established.¹² To be of benefit, seat belts must be worn every time a person is in a moving vehicle. While a law requiring the use of seat belts does exist in the Northwest Territories, compliance appears to be low. Results from the 1999 Safety and Injury Survey show that 62% of NWT residents 15 years of age and older said they always use a seatbelt when riding in a car or truck. This proportion dropped to 51% for residents of the smaller communities in the territory.¹³ It is also important to point out that studies comparing self-reported seat belt use from surveys with observed seat belt use from observational studies have shown that self-reported use is substantially higher than the observed rate.¹⁴

Northerners are at a higher risk of drowning due to the proximity of many communities to rivers, lakes and the sea. Boats are often used during activities of daily living or for recreational activity. Low water temperatures also increase the likelihood of hypothermia and drowning deaths. There is good evidence that behaviour also plays a role. Failure to wear a personal flotation device (PFD) while in a boat is one of the most significant risk factors for drowning. According to coroner's reports, none of the drowning victims involved in boating incidents between 1992 and 1996 were wearing a PFD.¹⁵ Results from the 1999 Safety and Injury Survey show that 65% of NWT residents indicated they always wore a PFD when in a boat. Residents of Yellowknife and the regional centres were more likely than those living in the smaller communities

“Determining the most effective course of action to prevent injuries requires not only an understanding of the factors that contribute to injury but also of the behaviours that contribute to compliance with injury prevention measures.”

Federal/Provincial/Territorial Sub-Committee on Injury Prevention and Control. (2001). *Report on Proposed National Priorities for Injury Prevention and Control* (p.12).



to engage in this protective activity (70% vs. 53%).¹⁶ Alcohol use is also an important risk factor, particularly among recreational boaters. A review of coroner's reports for the period 1992 to 1996 showed that alcohol was involved in 50% of all boat-related drownings in the NWT.¹⁷

Heavy use of snowmobiles and all-terrain vehicles (ATVs) increases the risk of injury. ATVs tend to roll over easily due to their high center of gravity while snowmobiles present risks due to their use over unsafe ice conditions and their lower maneuverability, particularly for young children. Injuries to the head or face accounted for 25% of snowmobile and 19% of ATV-related hospitalizations, yet evidence suggests that many NWT residents do not wear a helmet when operating these vehicles. Only 61% indicated they always wore a helmet when riding a snowmobile and this proportion is even lower among residents of smaller communities (33%). Meanwhile, only 57% of NWT residents 15 years and older who ride ATVs indicated they always wore a helmet. Again, the proportion was lower among residents of smaller communities (30%).¹⁸ Intoxication may also be a contributing factor in a large number of snowmobile and ATV-related injuries.

Injury risk factors not only include more immediate personal health practices such as heavy alcohol consumption and failure to wear a seatbelt, but also include more indirect or underlying determinants such as socio-economic status, quality of the physical environment, education levels, self-esteem and coping skills, all of which impact on a person's life experience and personal choices, and eventually on their risk of injury.¹⁹ For example, poverty and low education levels are often associated with living in lower quality physical environments, sometimes with heavy alcohol use, factors that increase the risk of injury. These determinants of health are important causes, not only of injury, but also of many diseases. Results from the 2001 Census show that residents who live in smaller NWT communities tend to have lower incomes, lower levels of education and experience more unemployment than residents of larger centres.²⁰ Efforts to improve socio-economic conditions may not only reduce injuries but also improve overall health status.

Summary

The interaction of certain combinations of personal, environmental, and equipment factors associated with various activities increases the probability of an injury-causing event. While the interaction of these multiple factors is often complex, the modification of even one can be enough to reduce the probability of injury. It is also important to keep in mind that the above discussion of injury risk factors is preliminary and more research is required to identify specific risk factors associated with various types of injuries and to better understand the interaction between various determinants and injury risk.

Injury Prevention

After the burden of injury, at-risk groups and risk factors have been identified, the development of injury prevention or control initiatives can then be considered. It is beyond the scope of this report to describe the evidence supporting specific injury prevention strategies. Rather, the following discussion is presented in order to help identify some possible opportunities for action in order to illustrate the field of injury prevention.

In practical terms, injury prevention means making positive choices about minimizing risk at all levels of society while maintaining healthy, active and safe communities and lifestyles. These choices are strongly influenced by the social, economic and physical environments where one lives, works, learns and plays.²¹

It is important to recognize that injuries include a large number of injury types that take place in a wide variety of settings. Causes vary a great deal. For different injury settings, types and causes there may be a number of potential prevention measures that achieve reductions in the frequency of events or in the severity of injuries that occur. Reviews of injury prevention and control measures since the 1960s have led to the conclusion that no single intervention strategy is likely to be sufficient to address the problem. Successful programs have been based on complementary interventions including health education, environmental modifications and engineering, and legislative regulations and enforcement. This conceptual framework is often termed the 3 Es of injury prevention.^{22, 23}

Education refers to efforts to use public education messages to reduce risk taking among the target audience. This is the most challenging approach in injury prevention because changes in people's beliefs and behaviours must occur for the intervention to work. However, effective education programs can work if the messages are clear, appropriate for the audience and periodically repeated. Public education programs concerning the use of personal flotation devices when boating, the use of helmets when riding snowmobiles and ATVs, and ensuring children wear helmets when riding a bicycle are examples of this approach.

In some cases, education programs are coupled with legislative regulations and enforcement to increase compliance. For example, education coupled with enforcement of legislation has been shown to be effective in increasing the use of seatbelts and child restraint in vehicles, while decreasing the incidence of drinking and driving. Sometimes new legislation will lead to a reduction in the incidence and severity of injuries. For example, there is extensive evidence that lowering the legal blood alcohol concentration to

In general, injury prevention strategies can be divided into two very broad groups based on the required level of individual actions. Passive interventions need no input or action by the individual and are usually accomplished by modifying the vehicle or environment. The introduction of anti-lock brakes and air bags in cars are examples. Active intervention requires individuals to take action for the intervention to work, for example seat belts and bicycle helmets.

Robertson L.S. (1997). *Injury Control: Some Effects, Principles, and Prospects*. In R. Detels, W.W. Holland, J. McEwen, G.S. Omenn (Eds.), *Oxford Textbook of Public Health Third Edition Volume*

Injury Scenario # 1

Revisited

The young man replaced the broken light soon after noticing the problem. Understanding that drinking and driving a snowmobile is extremely dangerous, he kept his alcohol consumption to a level that did not impair his driving ability. As a result of these actions, he was able to avoid the rock later that night. Alternatively, he was unable to avoid the rock and was thrown clear but did not sustain a head injury because he was wearing a helmet. In pain because of the dislocated shoulder, he was still able to walk and find medical assistance.

0.05% leads to a reduction in alcohol related motor vehicle traffic crashes.²⁴ Moreover, graduated licensing systems designed to keep beginning drivers out of higher risk situations while they are learning to drive appear to reduce injuries due to motor vehicle traffic crashes among youth.²⁵

Environmental modifications have been effective in preventing injuries from many different types of mechanisms. Modifying the environment may have the greatest beneficial impact on the number of injuries due to falls. Hazards in and around the home should be examined. Removing clutter, ensuring steps on stairs are at least one foot wide and are kept ice free, securing rugs and electrical cords, improving lighting, and installing handrails, grab bars, and nonskid strips in high-risk areas can reduce falls in the home.²⁶ The installation and maintenance of smoke detectors in the home can reduce the risk of injury due to a fire. If youth are more prone than older adults to suicide as an impulsive act, restricting access to firearms is one measure that can reduce the incidence of suicides in this group. Measures could include gun-storage boxes, trigger locks, storing guns unloaded and storing guns and ammunition in separate locations. The safe storage of medications can have a similar impact.

An advantage of the environmental modification approach is that individuals need not take specific actions to change their behaviour. However, the most effective injury prevention programs will use a combination of all three approaches. The important thing to keep in mind is that any injury event can be seen as the culmination of a chain of causation. Interventions that break any of the links in this chain will be effective. For example, if intoxication is a major injury risk factor, any initiatives that reduce heavy alcohol use and binge drinking in the population will have a positive effect on injury reduction in the territory.

In general, injury prevention embodies the goal of decreasing injuries through better understanding of risk factors and actively addressing these factors. These risk factors not only include the more immediate causes such as heavy alcohol consumption, failure to wear a seatbelt or personal flotation device, but also more proximal determinants of health such as socio-economic status, quality of the physical environment, education levels, social support networks and personal health practices and coping skills that impact on a person's overall health status. Examining these determinants of health as factors for injury prevention ensures that their influence on injury occurrence and severity is considered. This expands possible points of intervention to include actions that address these more general patterns of contributing factors. In effect, injury prevention can be conceptualized within a population health approach where prevention strategies are composed of a wide variety of interventions involving many sectors of society.²⁷

Conclusion

Injury in the Northwest Territories: A Summary Report shows that injury is one of the leading causes of mortality and morbidity for all residents of the Northwest Territories and the leading cause of premature death. More residents between one and 44 years of age died as a result of injury than from all other causes combined. There was no significant change in injury mortality and hospitalization rates during the 1990s. The term “injury” encompasses many types of injuries (e.g. head injuries, fractures, burns), any of which arise from a wide range of external causes or mechanisms. Suicide was the leading cause of injury mortality in the NWT followed by motor vehicle traffic crashes and drowning. Unintentional falls were the main cause of injury-related hospitalization. Self-inflicted injury was second followed closely by injuries sustained from interpersonal violence. Motor vehicle traffic and off-road vehicle crashes were also important causes of injury-related hospitalizations.

The report showed that injuries tend to cluster around different groups of people determined by age, sex, ethnicity and community of residence. Over half of injury deaths and hospitalizations occur among residents between 15 and 44 years of age. However, injuries remain a significant cause of death and hospitalization throughout life. Seniors had the highest injury-related mortality and hospitalization rates. Males accounted for the majority of injury deaths and injury-related hospitalizations. The injury mortality and hospitalization rates among Inuit and Dene were over two times higher than the rates for other NWT residents. Individuals living in one of the smaller communities in the NWT or in one of the regional centres of Hay River, Fort Smith or Inuvik were more likely to die or be hospitalized due to an injury than were residents of Yellowknife.

A number of possible injury risk factors were identified using available coroners’ reports, results from a survey on injury-related behaviours and attitudes and traffic collision reports. Intoxication was identified as one of the most important possible risk factors for a large number of different types of injury in the territory. Failure to engage in injury-preventing behaviours such as wearing a seatbelt when in a motor vehicle, wearing a PFD when in a boat and wearing a helmet when riding a snowmobile or ATV were also identified as possible risk factors.

Using mortality and hospitalization data, this report represents a first step towards better understanding the nature of injuries in the Northwest Territories, namely describing the burden of various types of injuries among different groups. It is important to point out a number of limitations in the descriptive analysis presented. First, deaths and hospitalizations represent the tip of the injury iceberg. For every NWT resident who dies or is hospitalized

Injury Scenario # 2 Revisited

Remembering some public health information on the role of fatigue in motor vehicle crashes the father decides to pull into a motel when he feels tired rather than press on. Alternatively the father decides to continue driving but is wearing his seat belt. Moreover, his daughter is in a properly installed and fitting car seat. As a result, all three occupants receive only minor injuries when the vehicle left the road.

Injury Scenario # 3 Revisited

Months before, while in the store to purchase an electric kettle, the mother remembered some public health information encouraging new parents to purchase kettles with short, curly cords that are less likely to dangle over the edge of the counter. She chooses a model with this feature. Alternatively, the mother receives some public health education advising her of the importance of safely tucking away the kettle cord.

due to injury, many more are seen at a community health center, hospital emergency room or physician's office. Second, the specific injury mechanism was not always clearly identified in both death and hospitalization data sources. For example, the cause of injury was not specified in 35% of injury deaths among seniors, and not specified in 7% of all injury-related hospitalizations. Third, and possibly most important for injury prevention efforts, the mortality and hospitalization data examined does not contain information about risk factors that contributed to the injury, making it difficult to directly uncover some of the underlying causes of the injuries described. Utilizing information from coroner's annual reports along with a report on motor vehicle traffic crash and one cross-sectional survey of NWT residents, a preliminary discussion of several possible injury risk factors was carried out. However, more research and analysis in this area is needed in order to further our knowledge of the many underlying causes of injuries in the NWT.

It is hoped there is sufficient descriptive information in this report to increase awareness and knowledge of injuries in the Northwest Territories. Even knowing some of the most prevalent types of injury can suggest some possible causes and thus assist with planning prevention interventions. The identification of high-risk groups can also help target prevention efforts. We already know many simple and effective measures can be initiated to prevent serious injury and death. Installing and maintaining smoke detectors in home, ensuring outside stairs and walkways are not slippery, using seatbelts and child restraint in motor vehicles, using personal flotation devices when boating, wearing a helmet when operating a snowmobile or ATV, ensuring children wear helmets when riding a bicycle and deciding not to drink and drive are just a few. The first step in reducing injuries in the Northwest Territories is to improve awareness and understanding of injury as a major public health and safety issue that is both predictable and preventable rather than unfortunate accidents that occur by chance.

To say that injury is a major public health problem does not imply that the social response should be mounted primarily or exclusively by public health agencies. The activities involved in injury prevention are complex, and no one group can address the issue alone. Local governments, public health officials, health care providers, law enforcement officials, fire services, transportation, community groups and schools all have a part to play in reducing the high levels of injury mortality and morbidity in the Northwest Territories. Coalitions and partnerships need to be encouraged and supported. The more widespread and coordinated the efforts, the more likely we are to see a reduction in injury. Leadership and coordination is required to bring together diverse groups to focus on integrated community-level interventions that consider multiple risk factors within the context of people's lives and use multiple strategies in comprehensive approaches to injury prevention and control.

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