

Child Death Review Unit

Office of the Chief Coroner

2007 ANNUAL REPORT



Dedication

As with all of our reports, we begin with what we know – the death of a child is a profound loss not only to the child's parents and family, but also to the larger community. In order to reduce the numbers of these tragic losses, we must first understand how and why our children are dying. We must learn from their lives and deaths and take that knowledge forward.

On behalf of the Chief Coroner of British Columbia Terry Smith, the men and women of the BC Coroners Service, and the members of the BC Child Death Review Unit, we want to thank the families of the 395 children whose lives and deaths are reflected in this report. These children lost their lives between 1999 and 2007. They and their families lived across the province in both urban and rural settings. This report is intended to describe the trends and patterns found across the 395 child deaths and to make practical and tangible recommendations to improve health and safety outcomes for all BC children.

We remain grateful to the parents, grandparents and other family members who met with CDRU members to share the memories of their loved ones. We acknowledge the courage shown by these families as they put their own pain aside in the hopes of making a difference to others.

To the parents – your generosity made it possible for us to better understand how and why your children died. Thank you for the pictures, the stories and the site visits to where young lives were lost. Thank you for helping us to develop a child death review process that is meaningful and inclusive. Thank you for continuing to advocate for change. Your contribution remains invaluable. Through your efforts, this year we acknowledge the enhanced Newborn Screening Program. The enhanced screen will now identify those infants at risk like Vayda, whose parents have written about their personal and tragic experience in the following section: Letter from a Parent. Today, BC infants like Vayda, will benefit from early detection. Our heartfelt sympathies to you the parents; our congratulations and a Gold Star to those healthcare providers who are committed to ensuring the well-being of our most vulnerable citizens.

Every death of a child in British Columbia matters. As always, this annual report is dedicated to the 395 children, their families, friends and communities whose lives were changed forever. In working to improve the health and safety of all British Columbian children, we have much to learn from these children, who they were in life and in death.

We honour their memories.

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Message from a Parent

Vayda Irene Oliver Porochnavy “Betamax”

August 6, 2006 - September 2, 2006

She visited many and touched many hearts



Our beautiful daughter Vayda was born five weeks early, on August 6, 2006. She weighed 5 lbs.1 oz. and was 18^{3/4} inches long. There had been some concerns in my pregnancy related to high HCG levels, my age, and an abnormal triple screen test, but an amniocentesis came back normal.

Our daughter was born tiny, compact and perfect. She initially became a bit jaundiced and received light therapy for 24 hours, but five days later we took our bundle of joy home.

On August 16, 2006 we received a phone call telling us that my brother had been killed. We took Vayda for a check-up to ensure she was healthy enough to fly for the funeral. She was 10 days old when she flew, and by all accounts was very healthy. A few weeks later we decided to drive to Kelowna to visit family. Again we took her to the doctor, and she got another clean bill of health. She was 14 ounces above her birth weight. We were one happy family; she was doing well.

During our journey, Vayda became lethargic, cold, and unresponsive. I put her inside my shirt for warmth as we quickly detoured to Merritt Hospital. She took a last gurgled breath as I was running into emergency. Staff immediately began CPR. We ran down a long echoing corridor to a room where they hooked her up and intubated her. They tried three times to insert an IV. We watched her go from white to grey. She was not breathing. We could hear her heartbeat on the monitor get lower and lower, not responding to anything. A huge clock above was ticking away and we knew this was not good. Between the staff I could see her little fists at her face and how she was becoming greyer. We felt horror and disbelief as the unimaginable happened.

Vayda was pronounced dead at 11:05 September 2, 2006, after 45 excruciating minutes spent trying to revive her. This was not a movie- we watched her die and there was nothing we could do. How did this happen? Why? The staff were silent and in shock. They had no answers.

The answers eventually came from autopsy. Vayda had a slightly enlarged heart and a fatty liver, but not to an extent that would cause death. Blood tests showed Vayda had LCHAD, or Long-Chain Hydroxyacyl-CoA Dehydrogenase deficiency. LCHAD is an inherited metabolic condition where both parents carry a mutated gene and have a 25% chance of passing this to their children. These children's bodies cannot use fat for energy so during periods of fasting, stress or illness the body breaks down muscle for energy. Fatty acids attack vital organs and can quickly lead to a metabolic crisis or sudden death. Treatment is a low fat, high carbohydrate diet and frequent meals. If the child becomes ill or needs to fast, intravenous glucose is required.

When I look back, I think my daughter did show signs of her condition. Vayda had trouble keeping warm. It would take hours to increase her body temperature; she would quickly cool down. Nursery staff would blame me for not keeping her warm, and I often held her against my skin to warm her. Vayda had a high-pitched thrill, not a definite cry, more like a bird. Her blood sugar levels were low- normal. Her muscle tone was okay but she was jittery at times. She fed well, by both breast and bottle, but would periodically spit up and need re-feeding. I often questioned Vayda's low temperature, frequent spitting up and jitteriness and was always reassured these were frequently seen in newborns, particularly premature babies. I was told "preemies do that" and therefore I felt somewhat re-assured. I now know that while these symptoms are normal in most cases, in a small but important group of babies they may be ominous signs of an underlying metabolic disorder.

When we learned of Vayda's condition, we also learned that Vayda's form of LCHAD was a common subtype and had been seen before. I had to ask myself - how does a parent handle this? Seen before? Common? Then why don't we screen for it?

We learned that many other Canadian provinces test for multiple metabolic disorders, as do the United States. Early detection is only possible through newborn screening tests. At birth these newborns appear healthy. Screening must be done at birth because early detection is vital. Disorders are not curable but are treatable if detected early. If BC had enhanced screening like other provinces, we believe Vayda would be alive today.

We all should have insight on this subject, especially those working with children. We must save our children by enhancing our newborn screening program and educating healthcare providers and any affiliated programs. No parent should have to go through what we have, especially when other provinces and the US are screening for these disorders. We are left wondering, if Vayda had been born in another province, would her death have been prevented? We are left grieving, struggling, and trying to pick up the pieces after the death of our innocent little angel. While we call for and support an expanded *Newborn Screening Program*, its adoption would leave us with a hollow victory- nothing can heal the pain, the void and the heartbreak we live with daily.

Sincerely, heartbroken parents

Brenda Porochnavy and David Oliver

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Executive Summary

This is a summary of findings arising from the 395 child deaths that were referred to and reviewed by the BC Child Death Review Unit in 2007. Of these 395 deaths, 215 were sudden-unexpected deaths investigated by a coroner; 180 were natural-expected deaths. Several key findings emerged.

Transport-related Fatalities

- Impaired driving, unsafe speed and failure to use protective equipment such as restraints, helmets and personal flotation devices were the leading risk factors.
- The majority of transport-related deaths involved male youth.

Drowning Deaths

- The majority of drowning fatalities involved preschoolers and youth.
- Preschoolers drowned more frequently in private swimming pools. Youth died in natural bodies of water.
- Lack of active supervision and an absence of environmental barriers to water were the leading risk factors in drowning incidents involving preschoolers. High risk behaviour was the leading factor in drowning deaths involving youth.

Poisoning Deaths

- The majority of poisoning deaths involved youth who overdosed on illicit drugs.
- More than three quarters of the youth experienced untreated chronic substance use that often occurred within the context of family challenges, mental health disorders and behavioural issues.

Fire-related Deaths

- The lack of knowledge around fire safety in the home was a risk factor in the fire-related fatalities reviewed.

Suicide Deaths

- Male youth were the most frequently reported demographic for suicide.
- A history of substance use, mental health disorders and chronic family challenges were the leading risk factors identified.
- Half of the children had attempted suicide in the past. The majority had previously expressed thoughts of suicide.

Fatal Assaults

- The highest number of fatal assaults involved female preschoolers and male youth.
- Preschoolers were more often assaulted by an adult caregiver, youth by a peer or acquaintance.
- Assaults on preschoolers often occurred within the context of complex family challenges, social isolation and communication breakdown between service providers.
- Assaults on youth often occurred within the context of a peer group typified by high risk behaviour including violence and substance use.

Sudden Infant Deaths

- The majority of sudden infant deaths occurred prior to 6 months of age.
- Modifiable risk factors were present in many of the infants' lives.
- Placement on unsafe sleep surfaces was present in the majority of cases; the most common was an adult mattress.
- More than half of the infants were bed-sharing at their time of death.
- Less than half of the infants were placed to sleep on their back.

Natural Deaths

- The highest number of natural sudden-unexpected deaths was attributable to cardiovascular conditions or complications.
- These children often had chronic health conditions that were further complicated by issues around access to and appropriateness of medical care.
- The majority of natural-expected deaths involved neonates who died as a result of complications arising from the perinatal period. Prematurity was the most frequently reported cause of death.

Deaths of Aboriginal Children

- Among cases of sudden infant death, just over half of Aboriginal infants were bed-sharing with an impaired caregiver and the majority were sleeping on an unsafe sleep surface, such as an adult bed, couch or makeshift bed. The majority of Aboriginal infants were sleeping supine (on the back) at the time of the incident.
- Aboriginal children experienced a higher percentage of risk factors than non-Aboriginal children across all categories, with the exception of the behavioural category which showed no variation. Eighty-one per cent of Aboriginal children who died suddenly and unexpectedly were determined to have social risk factors in their lives.
- Half of the sudden-unexpected deaths involving Aboriginal children were determined to be preventable.

A review of the 395 child deaths resulted in the following recommendations:

1. To the Office of the Superintendent of Motor Vehicles

The CDRU recommends that offence of failure to wear a seatbelt be assigned demerit point penalties to align with the majority of the other provinces in Canada.

2. To the Office of the Superintendent of Motor Vehicles

The CDRU recommends that legislation and/or regulations be changed to ensure that upon a review or intent to prohibit a young person's license in the Graduated Licensing Program, that the young person's parent also receive notification of that prohibition (or intent to prohibit) by registered or certified mail.

3. To the Office of the Superintendent of Motor Vehicles

The CDRU recommends that the OSMV review the current policy relating to excessive speed and other high risk driving infractions to consider longer prohibitions and that a combination of these infractions would result in a review of that license by the OSMV.

4. To the Office of the Superintendent of Motor Vehicles

The CDRU recommends that a review of the legislation take place to ensure that young persons who receive infractions within the Graduated Licensing Program, are unable to move to the next stage of the GLP or full license until that infraction has been adjudicated.

5. To the Insurance Corporation of British Columbia

The CDRU recommends that the "Drive" program piloted by ICBC be implemented throughout the province of British Columbia to help educate and inform young drivers about the risks inherent as a young driver.

6. To Transport Canada

The CDRU recommends that a higher standard of safety on pleasure craft be achieved by:

- a) Establishing minimum standards for Rental Boat Safety Checklists that must be used by a person who makes a houseboat or other pleasure craft available for rent. When indicated that children will be on board the vessel, standards must ensure that operators are supplied with, at minimum, child-sized Personal Flotation Devices (PFDs) and barriers to restrict child access from the vessel to the water.
- b) Requiring that a person who makes a houseboat or other pleasure craft available for rent provide operator training and safety orientation prior to severing their connection to the vessel.

7. To the Building and Safety Policy Branch, Office of Housing and Construction Standards

The CDRU recommends that, following assessment of possible mechanisms for the regulation of pool fencing in BC, a law is established requiring at minimum 1.2 m high, four-sided pool fencing with self-closing and self-latching gates. This standard should apply to all forms of home pools with a depth over 0.6 m and require fencing that does not facilitate climbing.

8. To the Office of the Fire Commissioner of BC

The CDRU recommends that a practical barbeque safety resource be developed for and distributed to the BC public in collaboration with relevant public and private sector agencies.

9. To the Provincial Health Officer of BC

The CDRU recommends the scope of the existing Safe Sleep Task Force be expanded to address infant safe sleep practices in all environments, from hospital to home, in a manner that is representational for all peoples and cultures across the province.

10. To the College of Physicians and Surgeons of British Columbia

The CDRU recommends that the case of male youth F.D. be referred for review of the medical plan and care received at Burnaby General Hospital on May 10, 2005.

11. To the Executive Director and Medical Director of Burnaby General Hospital

The CDRU recommends that the case of male youth F.D. be referred for further review of the medical treatment plan and care received at Burnaby General Hospital on May 10, 2005.

12. To the Ministry of Health

The CDRU recommends that the Ministry of Health enhance the current complaint resolution and patient advocacy framework in all health authorities with a view to having a clearly defined, patient-centred and well communicated approach that is readily available to patients and their families.



Gold Stars

During the review of the 395 child deaths, the CDRU identified a number of programs, initiatives and organizations working towards the prevention of future deaths. These efforts are acknowledged in the Gold Star sections found throughout this report:

- RCMP “E” Division (Oceanside)
- Road Safety Vision 2010 (Federal)
- Cameron Gulbransen U.S. Kids and Cars Safety Act of 2007
- Safe Kids Canada (Sick Kids Hospital Toronto)
- A Drug Prevention Strategy for Canada’s Youth (Federal)
- The Office of the Fire Commissioner (BC)
- The Period Of PURPLE Crying ®
- Ministry of Education and the BC S.P.C.A
- Jordan’s Principle
- British Columbia’s Tripartite First Nations Health Plan
- Many Hands One Dream
- The Newborn Screening Program (BC)

Part 1. Child Death Review

1. History of Child Death Review

Child death review teams were first established during the late 1970s in the United States as a result of concern on the part of parents, health-care workers and other professionals over the increasing number of children who were dying from apparently preventable abuse, neglect or injury. The first interagency child death review team was established in Los Angeles County in 1978. Since then, child death review teams have been formed in most states and in some provinces. The first child death review teams in Canada were created in the 1990s. The basic mission of child death review teams is to review child deaths in order to identify trends and risk factors to prevent similar fatalities.

2. History of Child Death Review in BC

In 1996, the Children's Commission was created to review all child deaths in British Columbia. In February 2002, based on the recommendations of the Attorney General, the Children's Commission and the Office of the Child, Youth and Family Advocate were eliminated. The Office for Children and Youth was established to absorb a number of key functions, including the monitoring of services provided for children; advocacy; investigation of complaints; education; and providing advice to the government on child and youth issues. Although the BC Coroners Service has always had the mandated responsibility for investigating all sudden-unexpected deaths, the additional responsibilities for child death review were transferred to the BC Coroners Service in January 2003.

During this initial period the CDRU was staffed by a coroner supported by other staff within the BC Coroners Service. The focus of the Unit was on developing a child death review program that was based in part on effective public health models that were focused on prevention and evidence-based practices.

BC Children and Youth Review

In April 2006, the Honourable Ted Hughes OC, QC, LL.D. issued a special report on BC's child protection system. He was asked (in part) to examine and make recommendations to improve how child deaths were reviewed including the issue of public reporting. The resulting recommendations were:

- That the coroner's child death investigation function be continued as the child death investigation protocol provides valuable information to those responsible for the protection of children;
- That the Child Death Review Unit continue within the Coroners Service; and
- That the *Coroners Act* be updated to reflect the coroner's role today.

With these recommendations accepted by government, the function of child death review remained embedded within the BC Coroners Service.

3. Child Death Review in BC- Present Day

The overarching goal of the CDRU is the prevention of future child deaths in BC. Recent changes within the Unit, including resource-building, re-structuring and new legislative authority under the *Coroners Act*, have significantly enhanced the Unit's ability to take more aggressive action on this goal.

The CDRU is currently staffed by four full time multi-disciplinary specialists responsible for *Case Review and Investigation; Outreach and Injury Prevention; Forensics and Project Management; and Paediatric Medicine*. All specialists perform a core function of case review and participate in internal multi-disciplinary meetings.

A fifth specialist is due to be appointed, one who will provide insight and experience into the review of Aboriginal child deaths. The *Aboriginal Specialist* will also establish linkages to Aboriginal leadership, communities and organizations.

The Unit is guided by the Executive Director and supported by the Program Assistant.

The CDRU methodology is based on a standard public health model. Internal multidisciplinary reviews allow the Unit to assess the problem in relation to circumstances of child death and identify risk and protective factors present in the children's lives.

Following the completion of individual case reviews, the CDRU engages in a best practice review and recommendation development process. The focus of this multi-day session is to identify areas of child death requiring targeted action, to review best practices for prevention and consider interventions that have shown success in other jurisdictions. The CDRU compares best practice evidence to the current prevention climate in BC, in order to identify gaps in services, programs or policies. Recommendations are crafted to target these gaps or advance prevention efforts already underway in the province. During this process, the CDRU utilizes a recommendation

development tool to identify appropriate agencies, to assess feasibility of suggested interventions and to establish timelines and activities involved. The tool aids in ensuring recommendations are targeted, evidence-based, are feasible and are developed within a social and policy context. Recommendations are finalized in consultation with the target agency prior to their release. The collaboration is invaluable.

The CDRU has moved forward with several initiatives including the establishment of a death review panel looking at alcohol-related deaths of six Aboriginal children. This panel, convened by the Chief Coroner, was held on April 18, 2008. A second meeting to advance recommendations is planned for July 2008. Panel members came together from a variety of jurisdictions to discuss the risk factors surrounding the deaths of these children and possible actions that would prevent future deaths of this kind. Child death review panels are an effective means of fostering communication and collaboration between organizations that play a role in child safety and well being. These organizations are well placed to develop new strategies for prevention.

Over the past year, the CDRU has been committed to encouraging the participation of families in the review process. In most cases of sudden-unexpected child death, a letter was sent to the child's family inviting them to raise questions, concerns or provide comments about the review process. This also allowed the family to share additional information about their child. Unit staff made site visits and saw first hand where children lived and died. Parents and family members provided details about their children not otherwise found in case files. These discussions assisted the Unit in enhancing the review process and in focusing prevention efforts.

4. Interface with BCCS and Other Jurisdictions

Because the CDRU is notified of all child deaths as they occur, the Unit is involved in current, on-going monitoring of all child deaths. Working within the BC Coroners Service contemporaneously allows Unit members to:

- Identify trends in child deaths immediately;
- Provide feedback to the Deputy Chief Coroner and Executive Director of Regional Operations to improve the quality and consistency of information gathered for future review;
- Provide information collected from other child death investigation and review jurisdictions intended to strengthen the BC Coroners Service response to child death;
- Make informed decisions on topics for special reports based on contemporary themes and areas of risk; and
- Exercise the powers of investigation set out in section 11 of the new *Coroners Act*, in order to obtain necessary information relating to a child.

The responsibility to investigate and review child deaths in BC is shared by:

- The Chief Coroner of BC

- The Representative for Children and Youth
- The Ombudsman of BC
- The Provincial Director of Child Welfare
- The Public Guardian and Trustee (critical injuries).

These high level decision-makers, together with the Provincial Health Officer are members of the Children's Forum, a group formed in response to a recommendation made by Mr. Hughes in the BC Children and Youth Review. The Children's Forum meets regularly to support cross-jurisdictional communication, coordination and collaboration.

Over the past year, CDRU staff have participated in committee work, sat as part of multi-agency working groups, have provided briefings and made presentations across the province. They have attended and participated in educational sessions both nationally and internationally.

5. CDRU Mission, Goals and Objectives

Mission

The CDRU is committed to the comprehensive review of all child deaths to better understand how and why children die, and to use those findings to take action to prevent other deaths and improve the health, safety and well-being of all children in British Columbia. These reviews are founded on best practices from across North America and Australia.

Goals

- To monitor classifications and causes of child deaths;
- To develop uniform, consistent and retrievable data collection on risk and protective factors to allow for the formulation of practical and tangible recommendations;
- To identify significant risk factors and trends in child deaths;
- To facilitate the linkages of identified patterns and trends in child deaths with agencies and organizations;
- To influence and develop education and prevention strategies to reduce child death; and
- To develop and maintain strong relationships with other child death review jurisdictions in order to benefit from shared best practices.

Objectives

- To conduct evidence based case reviews of all child deaths;
- To identify risk and protective factors present in the child's life and death;
- To obtain all accessible and available information on the child's circumstances and when necessary, exercise the use of authority under the *Coroners Act*;
- To seek out and invite participation from a child's parents or family;
- To examine child deaths individually and on aggregate in order to identify patterns and trends;
- To determine case dispositions for every child death reviewed and where appropriate, refer cases or clusters of cases to the child death review panel;
- To develop evidence based recommendations that address specific barriers and systemic issues related to a child's life circumstances;
- To provide real time advice and expertise in the support of continuous quality improvement to the BC Coroners Service on matters related to child death;
- To facilitate communication and information-sharing among key stakeholders and enhance the coordination of prevention and risk reduction strategies at the local, provincial and national level;
- To identify emerging areas for prevention in British Columbia and support the development of coordinated strategies to target these areas of risk;
- To establish strong partnerships with agencies across the public and private sector for the purposes of enhancing information sharing and best practices within CDRU;
- To inform appropriate jurisdictions of CDRU recommendations that are directed toward them for the purpose of preventing future loss of life; and
- To support all British Columbia jurisdictions who share in the responsibility to investigate or review child deaths.

Part 2. Prevention, Education and Outreach

The overarching goal of the CDRU is the prevention of child deaths that occur under avoidable circumstances. Similar to child death review teams in other jurisdictions, the CDRU can be a catalyst for action that focuses on advancing the health, safety and well-being of children across the province. There are various ways in which the CDRU can support prevention, including:

- fostering accountability through targeted and meaningful recommendations;
- information sharing and knowledge exchange with stakeholders and the public;
- collaborating and coordinating to multiply the efforts of others;
- monitoring of trends related to child death which compel action; and
- recognizing individuals, agencies and communities who are making a positive impact in the area of child health and safety.

In September 2007, the CDRU developed a strategic framework to direct its efforts in the areas of prevention, education and outreach. This strategy is built on a core set of principles consistent with a population health approach and identifies the Spectrum of Prevention as the framework under which the Unit's prevention efforts will operate. Consisting of six levels of increasing scope, the Spectrum of Prevention aids the development of a comprehensive and multi-system approach to child death prevention. The synergy between each level maximizes the result of an individual prevention activity by strengthening the linkages between multiple efforts.¹ This model is endorsed by the U.S National Center for Child Death Review as being a tool that child death review teams can use to create long-lasting, positive changes within communities.²

The Spectrum of Prevention consists of the following six levels:

1. Strengthening individual knowledge and skills
2. Promoting community education
3. Training providers

4. Fostering coalitions and networks
5. Changing organizational practice
6. Influencing policy and legislation

The implementation of the CDRU prevention, education and outreach strategy will begin undergoing priority setting in mid 2008. This process will help to effectively direct the Unit's prevention efforts within its greater mandate and ensure maximal impact is sought by actions taken.

The CDRU recognizes the ongoing work of the many organizations who work tirelessly towards building healthy, injury-free communities for our children and youth. We continue to consult and build relationships with those who are actively involved in advancing child health and safety in the province.

Part 3. Summary of Reviewed Cases

The Child Death Review Unit (CDRU) multi-disciplinary team reviewed 395 cases of child death between October 2007 and February 2008.

Of the 395 cases, 215 (54%) were sudden-unexpected deaths investigated by the BC Coroners Service; 180 (46%) were natural-expected deaths.

The majority of the 395 deaths (46%) occurred in 2007 (Table 1).

The 395 deaths do not represent all child deaths that occurred in 2007. Although the CDRU monitors all child deaths that occur in BC in real time, a detailed case review only takes place after the coroner's investigation is complete. Cases under active investigation have not been included in this report.

For the purposes of this report, the deaths reviewed by the CDRU were organized by the circumstance in which the child died. The circumstance of death was determined as part of the case review process and included deaths due to transport-related incidents, drowning, poisoning, fire, suicide, fatal assault, natural causes and sudden infant death.

Definitions of terms can be found in the Glossary.

Table 1 Child deaths reviewed by year death occurred (CDRU 2007)

Year of Death	Sudden-unexpected Deaths Reviewed	Natural-expected Deaths Reviewed	Total Number of Cases Reviewed
1999	1	0	1
2000	1	0	1
2001	2	0	2
2002	3	0	3
2003	8	0	8
2004	27	1	28
2005	71	0	71
2006	96	1	97
2007	6	178	184
Total Cases	215	180	395

Summary of Sudden-unexpected Deaths Reviewed: 215 Children

A. DEMOGRAPHICS

- The age distribution of the 215 children whose deaths were sudden and unexpected is provided in Table 2. These deaths were investigated by the BC Coroners Service and were concluded by a Judgement of Inquiry or by Verdict at Inquest.
- Youth represented the highest number of child deaths, accounting for almost half of all sudden-unexpected deaths. The children ranged in age from 3 minutes to 18 years old.
- Seventy-one per cent of all deaths involving infants were the result of sudden infant death. Seventy-five per cent of all neonatal deaths were found to have natural causes.
- One hundred and twenty-four of the children (58%) were male. Ninety-one (42%) were female.
- Male youth accounted for the highest number of deaths at 71 deaths (33%).
- Forty-two children (19%) were Aboriginal; 39 were First Nations, one was Métis and two were of unknown Aboriginal ancestry. Of the 31 cases where information was available, 13 First Nations children lived on-reserve.
- Fourteen children were in care of the Ministry of Children and Family Development (MCFD) at the time of their death. Two children went into care after the critical incident occurred. Of these two children, one died several years after the critical incident. One died in hospital days after the critical incident.

In this report, the use of the term Aboriginal includes children of First Nations (Status and Non-Status), Métis or Inuit ancestry.

Table 2

Sudden and unexpected child deaths reviewed by age group and circumstance of death (CDRU 2007)

Age group	Natural	Transport	Drowning	Poisoning	Fire	Sudden Infant Death	Other	Suicide	Fatal Assault	TOTAL
neonate	21	0	0	0	0	6	1	0	0	28
infant	10	1	0	0	0	30	0	0	0	41
preschooler	4	4	5	0	1	3	1	0	7	25
child	8	7	0	0	1	0	2	1	1	20
youth	13	46	7	8	0	0	4	17	6	101
TOTAL	56	58	12	8	2	39	8	18	14	215

B. CIRCUMSTANCES

Location

- Children died by natural means more frequently in the Vancouver Metro region (Table 3). This was due to the location of BC Children's Hospital (BCCH) within the Vancouver Metro region. Children from throughout the province with critical medical conditions are often transported to BCCH for treatment.
- In one case, the child died as a result of a near-drowning incident that occurred outside the country. His death occurred several years later in the Island region.

Typology

- Transport-related incidents and natural causes accounted for the highest number of sudden-unexpected deaths at 58 (28%) and 56 (26%). (Figure A).

Table 3 Sudden and unexpected child deaths reviewed by region of incident and circumstance of death (CDRU 2007)

Region of incident	Natural	Transport	Drowning	Poisoning	Fire	Sudden Infant Death	Other	Suicide	Fatal Assault	TOTAL
Vancouver Metro	23	2	3	1	1	5	2	4	2	43
Fraser	11	10	2	3	1	17	2	2	4	52
Northern	4	19	1	1	0	3	2	1	3	34
Interior	7	17	5	1	0	6	1	6	2	45
Island	11	10	0	2	0	8	1	5	3	40
Out of country	0	0	1	0	0	0	0	0	0	1
TOTAL	56	58	12	8	2	39	8	18	14	215

Figure A Sudden and unexpected child deaths reviewed by circumstance of death (CDRU 2007)

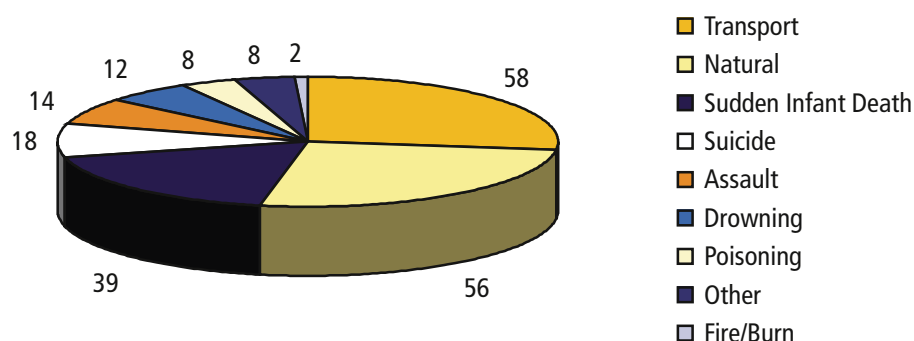


Table 4 Sudden-unexpected child deaths reviewed by sex and circumstance of death (CDRU 2007)

Sex	Natural	Transport	Drowning	Poisoning	Fire	Sudden Infant Death	Other	Suicide	Fatal Assault	TOTAL
Male	32	44	7	4	1	22	6	11	7	124
Female	24	14	5	4	1	17	2	7	7	91
TOTAL	56	58	12	8	2	39	8	18	14	215

Table 5 Levels of prevention used by the CDRU (2007)

Level of prevention	Definition	Example
Primary (pre-event)	The death could have been prevented before the event* occurred.	If there had been a 1.2 m high isolation fence around the pool, the child wouldn't have fallen in.
Secondary (event)	The death could have been prevented as the event* was occurring.	If the child had been wearing a PFD on the boat she wouldn't have drowned.
Tertiary (post-event)	The death could have been prevented after the event* occurred.	The child might have recovered from hypothermia if he had received re-warming treatment at a medical facility.

- The distribution of the 215 cases by sex is provided in Table 4. Transport-related incidents were the most reported circumstance of death for males at three times the number of females in this category. Eighty-two per cent of males (82%) in this category were youth.
- Natural circumstances were the most reported circumstance of death for females followed by sudden infant death.

C. RISK FACTORS AND PREVENTABILITY

Following a review of the risk factors for each of the 215 sudden-unexpected cases, it was determined, in all likelihood, that 126 (58%) of the deaths were preventable. A preventable death is one in which, with retrospective analysis, it is determined that a reasonable intervention may have prevented the death at the primary, secondary or tertiary level (Table 5). The majority of preventable child deaths were preventable at the primary level.

In 40 cases, the review was unable to determine preventability. This high number is due in part to the number of sudden infant deaths reviewed where, while significant external risk factors were evident, the deaths could not be definitively determined to be preventable.

Forty-nine child deaths were determined to be not preventable. Of these, 39 (79%) were classified as natural deaths.

RISK AND PROTECTIVE FACTORS

The identification of risk factors and protective factors present in a child's life assists the CDRU in focusing prevention, education and outreach efforts where they will have the most influence.

Risk factors: An aspect of personal behaviour or life-style, an environmental exposure, or an in-born or inherited characteristic that is known to be associated with an increase in the probability of a certain outcome such as injury or disease.³

Risk factors were classified as behavioural, social, environmental, economic and developmental (Table 6). A cluster of risk factors appeared to have been evident in the lives and deaths of the 215 children (Table 7).

Risk factors were looked at within the context of whether they were modifiable or non-modifiable.

Modifiable risk factors: A risk factor that can be modified by intervention, thereby reducing the probability of a specific outcome such as injury or disease. An example of a modifiable risk factor would be putting an infant to sleep on their stomach rather than on their back.

Non-modifiable risk factors: A risk factor that is fixed, such as sex or age.

Table 6 Definition and examples of risk factors used by the CDRU (2007)

Risk Factors	Definition	Example
Behavioural	An individual's lifestyle and actions/reactions to other people and events	Driving while drug-impaired
Social	An individual's social network (family, peers, community) and culture	Lack of active supervision
Environmental	An individual's surroundings that are generally out of the individual's control	Access to a firearm
Economic	An individual's economic status	Lack of access to proper nutrition
Developmental	An individual's level of physical and mental maturity	Inability to turn head due to young age

The majority of risk factors were social in nature. Many of these social elements included family challenges and belonging to a high risk peer group.

Protective factors: An aspect of personal behaviour or life-style or an environmental or social influence that tends to protect the individual, group, or community from certain risk factors.

Protective factors were identified in 144 or 67% of cases and generally involved social factors such as positive family and peer relationships. Protective factors, when documented, were consistently outnumbered by the risk factors present.

The risk and protective factors identified do not necessarily represent all factors that may have been present in the child's life and/or death.

Table 7 Sudden-unexpected child deaths reviewed by risk factors identified (CDRU 2007)
(Note: numbers do not equal 215 as cases had more than one risk factor)

Risk Factors	Natural	Transport	Drowning	Poisoning	Fire	Sudden Infant Death	Other	Suicide	Fatal Assault	TOTAL
Social	11	45	11	8	2	29	7	17	14	144
Environmental	10	31	11	1	2	34	5	3	3	100
Medical	55	2	3	3	0	20	3	8	2	96
Developmental	25	3	7	1	0	38	2	4	9	89
Behavioural	3	42	3	7	0	0	2	13	1	71
Economic	7	2	2	1	0	14	0	4	2	32

■ Summary of Natural-expected Deaths Reviewed: 180 Children

Of the 395 cases reviewed by the CDRU in 2007, 180 (46%) were natural-expected deaths. Natural deaths are coded into classifications in order to aid in identifying statistical trends and to standardize data collection and retrieval. This allows for quick and easy comparison of data within the database, or with databases from other national or international jurisdictions. The CDRU uses a template of 8 standard classifications, based on the model from the American Centre for Disease Control (CDC).⁴ See Appendix B for definitions and examples of classifications.

A review of the 180 natural deaths found:

A. DEMOGRAPHICS

- One hundred and one children (56%) were male; 79 children (44%) were female.
- Fourteen of the 180 children (7%) were identified as Aboriginal.
- The children came from communities throughout the province with the highest number residing in the Fraser region.

B. CIRCUMSTANCES

- One hundred and seventy-two of the 180 children (95%) died while in a medical care facility such as a hospital or hospice.
- Nearly 60% of all natural-expected deaths occurred in the Vancouver Metro region.
- The majority of natural-expected deaths involved neonates whose deaths were the result of an incident arising from the perinatal period. The second largest group of children were those who had congenital or chromosomal anomalies. Neoplasm or cancer related deaths were the third most often seen.

C. RISK FACTORS AND PREVENTABILITY

The 180 children who died of natural-expected causes were all faced with significant medical risk factors. Children who have critical medical conditions such as congenital disorders or cancer were seen most often in the group of natural-expected death. These deaths occurred despite the best possible family and medical care.

Detailed information relating to the circumstances in a child's life is often limited in the cases of natural deaths reported through the BC Vital Statistics Agency. Although medical risk factors could be identified, additional data on factors outside the health care system which may have impacted health outcomes for the children were not available during the review process. This includes determinants such as income, education, social support networks, genetic endowment and social and physical environments. Previously, lack of information on these determinants and their interactions in a child's life and death created a significant challenge to determining preventability of natural-expected deaths.

The BC Coroners Service is now responsible for investigating all child deaths that occur in the province including those natural-expected deaths previously reported through the BC Vital Statistics Agency. This will allow for improved data collection and analysis of the underlying factors which are known to influence health outcomes. This will enhance CDRU's ability to comment on the risk factors and preventability of natural-expected child deaths in the future.

Note to the Reader

For clarity in this report, the subsequent detailed analysis across circumstances of death will cluster all Natural deaths in one section: Sudden-unexpected Natural deaths (56) and Natural-expected deaths (180) for a total of 236.

Part 4. Circumstances of Death

TRANSPORT-RELATED FATALITIES: 58 children

A 17 year old boy was driving with his two male friends. They were on their way home from a house party where they had been drinking with other youth. The boys lived only a few minutes away so they decided to drive rather than call for a ride. A witness reported being passed by the youth at a high rate of speed and then observed the car go out of control and strike a utility pole. Damage to the car was extensive. The jaws of life were required to remove the three from the vehicle. The driver and rear passenger died of blunt force head injury. The police and the coroner concluded that high speed and alcohol intoxication contributed to the crash.

Fifty-eight (28%) of the 215 sudden-unexpected deaths reviewed were transport-related. These children died in 54 separate transport incidents. A review of these deaths found:

A. DEMOGRAPHICS

- Forty-six fatalities (79%) involved youth, the majority between 16 and 18 years of age. The remaining cases involved one infant, four preschoolers and seven children.
- Forty-four (76%) were male; 14 (24%) were female.
- Eight children were Aboriginal. All were First Nations. Four lived on-reserve.
- One child was in the care of MCFD.

Transport incidents are the leading cause of death and injury for young people in Canada and throughout the world.

B. CIRCUMSTANCES

Time and Location

- The highest number of transport-related deaths occurred in the Northern and Interior regions which reported 18 and 16 deaths. The Island region reported 10 deaths; the Fraser region eight deaths; and Vancouver Metro region two deaths.

Part 4. Circumstances of Death

- Transport incidents occurred most frequently on highways (Figure B).
- The majority of transport-related deaths occurred in the summer months (June to August) between 4 p.m. and midnight.

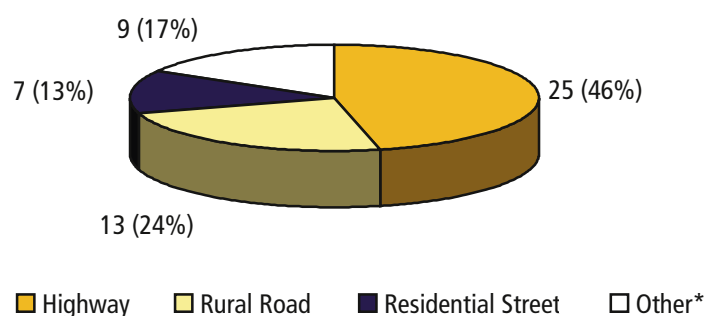
Young males tend to be involved in crashes more often than young females particularly when speed and alcohol are involved.⁵

Typology

- Thirty-four of transport incidents (63%) involved a car, truck, van or sport-utility vehicle. The remaining incidents involved eight off-road vehicles, three bicycles, two motorcycles and one boat. Six children were pedestrians.
- Sixty-five per cent of crashes involved only the child's vehicle.
- Of the 52 fatalities where the child was a passenger or operator of a vehicle (includes cars, truck, motorcycles, off-road vehicles, and bicycles), 27 involved children who were passengers. In 23 cases, children were operators. In two cases, one involving a car and the other a snowmobile, it could not be confirmed if the child was the operator or a passenger.
- Of the 40 children who were involved in an incident in a car, truck, van, SUV or motorcycle, 15 were drivers, 24 were passengers.
- In one case the child's position inside the car could not be determined. The child's vehicle left the roadway and rolled over. There were other youth passengers in the vehicle; all were found to be alcohol impaired. Unsafe speed, lack of restraint use, and multiple peer passengers were determined to be contributory factors in this crash.

Figure B

Transport-related deaths reviewed by location of incident (CDRU 2007)



* "Other" locations include driveways, off-road areas, and bodies of water and forestry roads.

■ DRIVER FATALITIES: 15 children

Fifteen of the 58 transport-related fatalities (26%) involved children who were operating a car, truck, van, sport utility vehicle or motorcycle. A review of these deaths found:

A. DEMOGRAPHICS

- Nine of drivers (50%) were 18 years of age; five were 17 and one was 16.
- Ten children (67%) were male and five (33%) were female.

Young drivers account for only eight per cent of all drivers in BC yet they are involved in 20% of all fatal crashes. Unsafe speed and alcohol were the leading contributing factors.⁶

B. CIRCUMSTANCES

Location

- Ten driver fatalities (67%) occurred on a highway. Four took place on a rural road and one on a residential street.
- The highest number of driver fatalities took place in the Interior region.

Typology

- Ten of the drivers (67%) who died were involved in single motor vehicle incidents. These incidents included collision with stationary objects as well as rollovers indicating that the driver lost control of the vehicle and left the road.
- Five driver fatalities were the result of a multiple vehicle incident.
- Eight children were in a car, two in a van or sport-utility vehicle, three in a pick up truck and two on a motorcycle.

Driver History and Licensing

- Of the 15 driver fatalities, nine had a Class 7 Novice license; three had a Class 7 Learners license; one had a prohibited license; and one had a Class 6 motorcycle license. One driver did not have a license. The prohibited driver had had his driving privileges withdrawn in the past.

Descriptions of the levels of licensing used in BC's Graduated Licensing Program (GLP) can be found in Appendix C.

PASSENGER FATALITIES: 24 children

Of the 58 transport-related fatalities, 24 children (41%) were passengers in cars, trucks and sport utility vehicles. These children died in 23 separate transport incidents. A review of these deaths found:

A. DEMOGRAPHICS

- Seventeen passenger fatalities (71%) involved youth; four were children, two were pre-schoolers and one was an infant.
- Seventeen children (71%) were male and seven (29%) were female.

B. CIRCUMSTANCES

Location

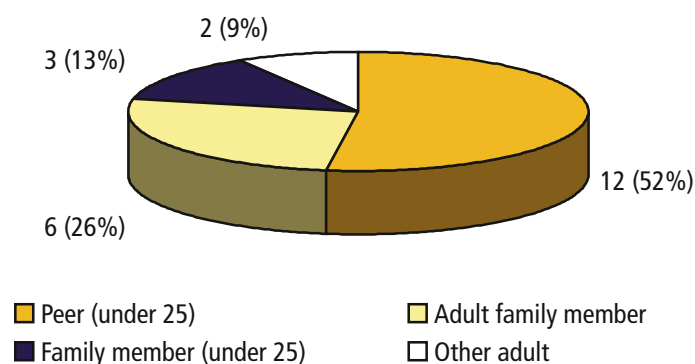
- Fourteen incidents (61%) occurred on a highway. Five took place on a rural road; one took place in a gravel pit, one on a residential street and one in an off-road area.
- Of the 23 incidents that resulted in 24 passenger fatalities, seven occurred in both the Island and Northern regions; five in the Fraser region and four in the Interior region.

Typology

- Fourteen (61%) were single vehicle incidents. Nine (39%) were multiple vehicle incidents. In the majority of single vehicle incidents, the child's vehicle lost control and left the roadway either striking a stationary object or flipping over.

Figure C

Passenger fatalities reviewed by driver of child's vehicle (CDRU 2007)



- Of the nine incidents where multiple vehicles were involved, two were the result of an error made by the driver of the other involved vehicle. In one instance, the driver collided with the child's vehicle that had broken down and was stationary at the side of the highway. In the other case, the driver was fleeing the police and intentionally drove into the child's vehicle.
- The 23 incidents involved 15 cars, five vans or sport utility vehicles and three pick-up trucks.

Driver History and Licensing

- In 12 of the incidents (52%), the passenger was in a vehicle driven by a peer under the age of 25 (Figure C). One driver had a Class 5 license, five had a Class 7 Novice license and one had a Class 7 Learners license. In one further case, the driver had a prohibited license. In four cases, the driver's level of licensing could not be determined.
- In 10 cases where information related to traffic violations was obtained for peer drivers, seven had previous traffic violations. The majority were for unsafe speed. Three of the drivers had had their licenses prohibited in the past.
- In two cases, the child was being driven by someone other than a family member or peer. One driver was an adult family friend. The other was a school volunteer under the age of 25. Both had previous traffic violations involving unsafe speed and failure to wear a restraint.
- Of the six adult family members who were driving, five had a Class 5 license and one had an expired license. Level of licensing could not be determined for the three family members who were under 25 years of age.
- In the two cases where information related to traffic violations was obtained for drivers who were family members, one had a previous violation.

PEDESTRIAN FATALITIES: 6 children

Six of the 58 transport-related fatalities (10%) involved pedestrians. A review of these deaths found:

A. DEMOGRAPHICS

- Two were preschoolers, one was a child and three were youths.
- All six were male.

B. CIRCUMSTANCES

Time and Location

- Three pedestrian fatalities occurred on a residential street. One incident took place on a highway, one on the driveway of a child's home and one incident occurred on a city road.
- Most pedestrian incidents occurred in the afternoon or evening.

Child pedestrian incidents are a leading cause of injury-related death for Canadian children under the age of 14; 2, 412 children are seriously injured each year and approximately 30 are killed. The average child pedestrian who is killed in Canada is male, between the ages of 10 and 14 and was crossing the street at an intersection within 5 kilometres of his home.⁷

Typology

- The majority of the pedestrian fatalities were the result of children being struck by a standard car, pick-up truck or SUV. In one instance, a youth was struck by a city bus.
- One child and one preschooler entered the roadway mid-block from between parked cars. One preschooler was backed over. Two youths entered the roadway, one onto a highway and one a city street and into oncoming traffic.

Driver History and Licensing

- Of the six drivers involved in the pedestrian fatalities, four had a Class 5 license and two had a Class 7 Novice license.

BICYCLE FATALITIES: 3 children

Three of the 58 transport-related fatalities (5%) involved cyclists. A review of these deaths found:

A. DEMOGRAPHICS

- One child and two youths, all between 12 and 17 years of age, died as a result of a bicycle incident.
- All were male.

B. CIRCUMSTANCES

Location

- Two incidents occurred on a rural road and one on a residential street.
- Incidents occurred in the Fraser, Northern and Interior regions.

Typology

- Two bicycle fatalities were the result of a collision with a pick-up truck and a car. The child was the bicycle operator in both cases. Inattention on the part of the cyclist was identified as contributory in these two fatalities.
- In the third case, the bicycle left the roadway and collided with a tree.

■ OFF-ROAD VEHICLE FATALITIES: 8 children

Eight of the 58 transport-related fatalities (14%) involved off-road vehicles. A review of these deaths found:

A. DEMOGRAPHICS

- One was a child and seven were youths. The children ranged in age from 12 to 18.
- Six children were male and two were female.

B. CIRCUMSTANCES

Location

- The highest number of ORV-related fatalities occurred in the Northern region accounting for six of the eight. One fatality occurred in the Fraser and one in the Interior region.
- Three incidents occurred on rural roads. Two incidents took place on a forestry road. One occurred on a residential road, one on a driveway and the other on a frozen lake.

Typology

- These incidents involved three ATVs, three snowmobiles and two dirt bikes.
- Five fatalities were the result of a collision with a motor vehicle; three of these were with a pick up truck, one with a tanker truck and one with a logging truck. In three incidents involving only the child's vehicle, two were roll-overs. One occurred when the child's snowmobile fell through the ice on a lake. Thin ice and poor weather conditions were identified as risk factors in this death.
- In six ORV fatalities, the child was the operator of the ORV at the time of the incident. In one case the child was a passenger in an ATV driven by a 9 year old child. The age and development of the driver was determined to be a risk factor in this fatality. In one case the ORV operator could not be determined. The majority of children were with peers at the time of the incident.

Off-road vehicle (ORV):
Any motor vehicle designed or adapted for off-road use including a dirt bike, a dune buggy, a motorized snow vehicle or an amphibious vehicle.

All-terrain vehicle (ATV):
An ORV with three- or four-wheeled motorized vehicles (although newer models may have up to six wheels), with large, low-pressure tires designed for use in off-road terrain.

Children and youth are at a special risk for ATV-related injuries and death as they lack the necessary knowledge, physical development, cognitive and motor skills to safely operate these vehicles.⁸

In Canada, nearly 25% of ATV-related deaths involve children less than 15 years of age.⁹ Children make up approximately 40% of injuries and deaths caused by snowmobile crashes each year.¹⁰

BOAT FATALITY: 1 child

A. DEMOGRAPHIC

- The incident involved a 16 year old male youth.

B. CIRCUMSTANCE

- The incident occurred in the evening on a lake in the Island region.
- The child was a passenger in a motorized boat that struck a wooden piling.

CORONER RECOMMENDATIONS

Recommendations were made by the coroner in two transport-related deaths. In one case the recommendations were for informational purposes.

INQUEST

One transport-related death went to inquest and resulted in recommendations made by the jury. This involved a child whose vehicle had been intentionally hit by another vehicle while the driver was fleeing from police. The manner of death was decided, by jury at inquest, to be Homicide.

NON-MODIFIABLE RISK FACTORS

Age

Forty-six transport-related deaths (79%) involved youth. Lack of developmental maturity among youth can lead to impulsive behaviour, poor decision making, and over-confidence in their abilities as well as “risky” driving styles such as speeding, following too closely or dangerous passing.¹¹

Sex

Forty-four of transport-related deaths (76%) involved males. According to recent provincial statistics, males are more likely to be involved in motor vehicle incidents than females particularly when speed and alcohol are factors. The BC Injury Research and Prevention Unit state that the likelihood of being in a fatal crash increases for passengers and drivers in their teens and twenties and that this is particularly significant for male youth.

MODIFIABLE RISK FACTORS

Unsafe Speed

Unsafe speed was identified as a factor in 24 of transport-related fatalities (41%). Of these 24 fatalities, nine were drivers and 13 were passengers in cars, trucks, SUVs or motorcycles. In one case, the youth’s position in the car was unknown. Unsafe speed was also identified as a factor in one fatality involving a passenger in a motorized boat.

Of the nine drivers, four had previous violations for unsafe speed, two of which were for excessive speed. One driver had recently received a *letter of intent to prohibit license* from the Superintendent of Motor Vehicles based on several traffic violations for unsafe speed.

In BC in 2005, 27% of drivers in all speed-related injury or fatal crashes were young drivers.¹² A survey of young drivers found that over 93% reported driving in excess of the posted speed limit.¹³

Alcohol and/or Drug Impairment

Alcohol and/or drug impairment was identified as a factor in 30 of transport-related fatalities (51%). Of these 30 fatalities, nine were drivers and 12 were passengers in cars, trucks, SUVs or motorcycles. In one case, the youth's position in the car was unknown. Impairment was also identified as a factor in the deaths of three ORV operators, three pedestrians, one bicycle passenger and one motorized boat passenger.

Of the nine drivers who were alcohol and/or drug impaired, four had used alcohol, one had used illicit drugs and five had used both alcohol and illicit drugs. Of the eight cases where alcohol contributed to impairment, seven of the drivers had blood alcohol levels that exceeded the legal driving limit of 0.08%.

The combination of driver inexperience and impairment greatly increases the risk of being involved in a motor vehicle crash. In BC, young males were responsible for 16.2 % of all alcohol-related motor vehicle incidents in 2002 despite representing a small portion of the overall total driving population.¹⁴

Alcohol and/or drug impairment was determined to be a factor in 12 incidents resulting in passenger fatalities. In seven of the 12 cases, the driver of the child's vehicle was impaired. The passenger was also impaired in four cases. Passenger impairment can increase the level of distraction for the driver, especially if the driver is also a youth. In one instance, the driver of the other vehicle involved was impaired. In four cases involving two children driven by a peer and two driven by a family member, the driver had been previously cited for driving while impaired.

Two of the three pedestrians were alcohol or drug impaired. Both were male youths who entered into oncoming traffic and appeared to be unaware of their surroundings. The youth were engaging in high risk behaviour in the presence of their peers. High risk activities included jay walking on a busy city street and walking on a highway line. In one pedestrian fatality, the driver of the vehicle was found to be alcohol impaired. In BC in 2001, alcohol impairment on the part of the pedestrian was a significant factor in almost 30 % of all pedestrian fatalities.¹⁵

Of the three ORV fatalities where impairment was a factor, all three involved the vehicle operator. Current statistics show that 27 % of ATV-related injuries and fatalities involved alcohol levels above the legal driving limit.¹⁶

In both the bicycle fatality and the boat fatality, the operators and the passengers were impaired. Alcohol impairment was a contributory factor in 39 % of all boating fatalities in Canada between 1991 and 2000.¹⁷

Non-use of Personal Protective Equipment

Non-use of personal protective equipment was a factor in 25 transport-related fatalities (48%).

Sixteen of the 25 involved passengers or drivers in cars, trucks, SUVs or vans who were not wearing a restraint. Eleven (69%) were ejected from the vehicle upon impact.

In Canada, youth have the lowest rate of restraint usage when compared to other age groups. Young male drivers and passengers, especially those in rural areas, are the least likely to use a restraint. According to a recent study, close to two thirds of child passengers who die in a crash were unrestrained.¹⁸

Non-use of a helmet was a factor in all three bicycle fatalities. All three children suffered significant head injuries that were causal to their death. Three quarters of all cycling deaths involve head injuries. Close to 85 % of serious head injuries resulting from bicycle incidents could be prevented by wearing a properly fitted helmet.¹⁹

Non-use of personal protective equipment was a factor in four ORV fatalities (50%). None of the children were wearing a helmet. Non-use of a restraint was identified as a risk factor in one fatality involving a multi-person ATV equipped with a roll bar and seatbelts. The operator lost control of the ATV on uneven ground and as a result the vehicle rolled, landing on top of the child.

In the case where the youth died as a result of a boating incident, the youth was not wearing a PFD although one was available on the vessel.

Driving with Peers

Having more than one peer passenger in a vehicle was a factor in 14 transport-related fatalities (24%). Of these 14, six were driver fatalities, seven were passenger fatalities and one was a boating fatality. Among these six drivers with peer passengers, five were also found to be alcohol and/or drug impaired.

The likelihood of being in a fatal car crash has been found to increase when passengers are in their teens or twenties. Research shows this is especially significant for young male drivers.²⁰ In a situation where a youth is driving with multiple teen passengers, four elements have been noted to come together to create a high risk driving situation: peers who may value risk behaviour, youth who need social acceptance, the likelihood that the riskiest youth will be the loudest and a youth's lack of immunity to peer pressure.²¹

A recent study looking at risk factors associated with passenger deaths found that more than half of the children died as passengers in vehicles driven by young drivers (20 and under). Almost two thirds were driving with male drivers.²²

Personal protective equipment: Safety equipment or special clothing worn on or around parts of the body to protect from injury. For example, vehicle restraints, helmets, personal flotation devices.

Transport Canada estimates that if all drivers and passengers wore their seatbelt, an estimated 300 lives would be saved annually in Canada.

Alberta and BC are the only provinces in Canada that do not have mandatory helmet legislation for ORV users.

High Risk Peer Group

In 20 cases the child's peer group was identified as a risk factor. These children belonged to a peer group typified by high risk behaviours such as substance use, high risk driving and criminal activity.

In one case, the young person was reportedly pressured by peers to get into a vehicle with a driver who was impaired. This driver had a known history of impaired driving, traffic violations and driving prohibitions.

High Risk Behaviour

In two cases, the drivers were operating stolen vehicles. In one instance, the driver sped through a road block without stopping. This driver was found to have had a prohibited license at the time of the incident as well as a history of prohibitions and traffic violations, the majority of which were for unsafe speed.

Inattention on the part of the cyclist was identified as a risk factor in two fatalities. One child failed to stop at an intersection with a red light. The second child entered the middle of the road while going around a curve at a high rate of speed.

Inattention on the part of the ORV operator was determined to be a risk factor in five incidents. In three cases, the children failed to stop at a traffic sign. In two cases, the children were driving on the wrong side of the road and were struck by oncoming traffic.

Decreased Visibility

Decreased visibility was determined to be a factor in 14 transport-related fatalities (24%).

Of these 14, four involved pedestrians; seven involved passengers or drivers in cars, trucks, vans or SUVs; two involved cyclists; two involved ORV operators and one involved a passenger in a motorized boat.

In three of the four cases involving pedestrians, the child's size was identified as affecting visibility; two of these children entered the street from between parked cars and one was backed-over by an SUV. Dark conditions led to decreased visibility in one case.

Safe Kids USA reports that children are at a greater risk of being hit by a car in areas of high traffic volume with higher posted speed limits where there are a high number of parked cars on the street and where there are few play areas such as parks.²⁴

In Canada, 90 % of serious bicycle-related injuries and deaths involve motor vehicles. In most cases, the child's action or inaction is contributory to the collision.²³



Gold Star

Prevention in Action: "Making it Happen" Pedestrian Safety Grant Awards

Safe Kids Canada, sponsored by FedEx, has developed a program to support the work of partner organizations in building sustainable environmental changes for pedestrian safety. In 2006, 10 organizations received a grant to implement a pedestrian awareness campaign. In 2007, organizations received a second grant to be used to implement environmental strategies to increase child pedestrian safety in their communities. Pedestrian safety was also the theme of the 12th Annual Safe Kids Week campaign, which took place May 26th – June 1. For more information visit www.safekidscanada.ca.

In one of the two cycling deaths where visibility was a factor, the child was cycling at night wearing dark clothing with no reflectors or lights. The second child was cycling on a narrow, windy road, compromising the visibility of both the cyclist and the driver of the other involved vehicle. Decreased visibility due to multiple curves in the road was also identified as an additional factor in two off-road vehicle (ORV) deaths.

Decreased visibility due to darkness was determined to be a factor in four passenger and three driver fatalities. In one instance, visibility was affected by bright sunlight in the driver's line of sight. Darkness was a factor in the one boating fatality; the boat's lights were not in use.

Environmental Factors and Road Conditions

Road conditions were determined to be a factor in eight fatalities (14%) involving one driver and seven passengers. Six involved conditions where snow, ice or water had collected on the roadway leading to decreased traction. Two incidents took place in rough terrain, both with steep grade and gravel surfaces.

Mechanical Deficiencies

Mechanical deficiencies were identified as risk factors in nine fatalities (15%) involving two drivers, six passengers and one passenger on a bicycle. These deficiencies included poor tire tread or mismatched tires, and flaws in the brakes and carburetor throttle. The bicycle did not have a functioning braking system.

Supervision

Inadequate supervision was determined to be a risk factor in the death of one pedestrian. The preschooler entered the driveway of the family home unnoticed and was involved in a back-over incident.



Gold Star

Prevention in Action: RCMP "E" Division

In one case reviewed by the CDRU in 2007, risk factors associated with poor road engineering at the site of the incident were identified as significant. It was determined through follow-up with the Oceanside RCMP that substantial modifications had been made to this stretch of road in response to several transport incidents that had occurred there. The CDRU commends the efforts of the Oceanside RCMP and other local agencies who took action by advocating for the necessary changes in road design. This response will help reduce the risk of transport-related deaths and injuries in the future and illustrates the important role of environmental modifications in the prevention of unintentional injuries.

The CDRU acknowledges the work of the BC Injury Research and Prevention Unit (BCIRPU), who in 2005 completed a review of motor vehicle crashes and youth. "Motor Vehicle Crashes Among Young Drivers: Systemic Review and Recommendations for BC" can be accessed at <http://www.injuryresearch.bc.ca/Publications/Reports/MVC%20Yth%20Report.pdf>

PROTECTIVE FACTORS

Protective factors were identified in 19 transport-related child deaths (33%). Protective factors included positive peer and family relationships, religious beliefs, participation in extracurricular activities, community involvement, access to addiction services, success at school and employment.

PREVENTABILITY

Fifty-five transport-related deaths (95%) were determined, in all likelihood, to be preventable:

- Thirty-three at the primary level
- One at the secondary level
- Twenty-one at both primary and secondary levels

In the remaining three cases there was insufficient information to determine preventability.

A review of statistics shows that car crash rates (per mile driven) are three to 10 times higher among teenage drivers than among older, more experienced drivers.²⁵ Canadian statistics show that although youth aged 16-19 comprise 5% of the licensed driver population, they account for 10% of fatally injured drivers. This age group is also seven times more likely to be killed in a car crash than the general driving population.²⁶ In BC, 24% of youth aged 15-24 who die from unintentional injuries die due to motor vehicle crashes.²⁷ Two factors contributing to this heightened risk are driving inexperience and developmental immaturity.

Best practice review determined that prevention strategies for modifiable risk factors would:

Reduce impaired driving

BC's legal drinking age is 19. Novice drivers by law should be sober drivers. Youth are developmentally immature, which combined with inexperience leads to a lesser ability to respond effectively when distracted or at night.²⁸ Adding alcohol to developmental immaturity results in a high risk situation.



Gold Star

Prevention in Action: Cameron Gulbransen U.S. Kids and Cars Safety Act of 2007

On February 14, 2008, the Cameron Gulbransen Kids Transportation Safety Act of 2007 was passed in the U.S. senate. The bill was named after 2 year-old Cameron, who was killed when inadvertently backed over by an SUV because the blindzone behind the vehicle made it impossible to see him. The legislation directs the U.S. Department of Transportation to issue new safety standards within specific time periods that will lead to the installation of safety technologies as standard equipment in all vehicles to prevent deaths and injuries in and around motor vehicles. The bill also requires the department to establish a database of noncrash incidents and develop a program to provide the public with safety information regarding nontraffic dangers to young children.

Promote vehicle and passenger safety

Youth drivers are at higher risk for vehicle crashes, so ensuring they are in vehicles that are mechanically sound with safe tires is recommended. Parents and young drivers should consider the crash worthiness of the vehicle the youth is driving. Seat belt usage is also mandatory by law and aids in keeping both drivers and passengers safe.

BC does not have demerit points in place for seatbelt offences.²⁹

Encourage use of personal safety equipment

Personal safety equipment such as helmets and PFDs help with prevention at the secondary level. When using transport such as ATVs, boats, dirt bikes or snowmobiles, all protective gear should be worn to prevent or minimize injury or death if an incident does occur.

Promote parental involvement in their child's driving

Parents are encouraged to be involved in their child's foray into driving. Negotiating driving privileges with a young driver reinforces the expectations and safety requirements of both the law and the parents.

Best practice review determined that prevention strategies for non-modifiable risk factors would:

Impose restrictions on the most vulnerable and at risk group

BC's graduated licensing program (GLP) is designed to allow the novice teenaged driver to begin driving under relatively safe conditions that involve lower risk.³⁰ Restrictions during the GLP include zero tolerance for alcohol, no driving between midnight and 5 a.m., and a maximum number of passengers apart from a qualified adult driver over 25 years of age.³¹ These restrictions correspond to the period of highest developmental risk and continue until the youth is fully licensed and developmentally more mature.

RECOMMENDATIONS

To the Office of the Superintendent of Motor Vehicles

The CDRU recommends that offence of failure to wear a seatbelt be assigned demerit point penalties to align with the majority of other provinces in Canada.

To the Office of the Superintendent of Motor Vehicles

The CDRU recommends that legislation and/or regulations be changed to ensure that upon a review or intent to prohibit a young person's license in the Graduated Licensing Program, that the young person's parent also receive notification of that prohibition (or intent to prohibit) by registered or certified mail.

The Alberta Occupant Restraint Program position paper (2005) notes that provinces with the lowest fatality and injury rates from motor vehicle collisions also had demerit points in place for seatbelt violations. The Canadian Council for Motor Transport Administrators recommended introduction of or increase in the number of demerit points for violations. One cited research study interviewed young male drivers who stated they would change their behaviour and buckle up if demerit points were attached to seat belt offences.

To the Office of the Superintendent of Motor Vehicles

The CDRU recommends that the OSMV review the current policy relating to excessive speed and other high risk driving infractions to consider longer prohibitions and that a combination of these infractions would result in a review of that license by the OSMV.

To the Office of the Superintendent of Motor Vehicles

The CDRU recommends that a review of the legislation take place to ensure that young persons who receive infractions within the Graduated Licensing Program, are unable to move to the next stage of the GLP or full license until that infraction has been adjudicated.

To the Insurance Corporation of British Columbia

The CDRU recommends that the “Drive” program piloted by ICBC be implemented throughout the province of British Columbia to help educate and inform young drivers about the risks inherent as a young driver.

**Gold Star****Prevention in Action: Road Safety Vision 2010**

Road Safety Vision 2010, Canada's National Road Safety Plan, was officially endorsed by all ministers of transportation and highway safety in 2000. The goal of this plan is to make Canada's roads the safest in the world. Among other targets, Road Safety Vision 2010 is aiming for a 20% decrease in the number of young drivers (aged 16-19 years) killed or seriously injured in crashes. Progress toward the 2010 young drivers target continues; among young drivers, traffic-related deaths are down by 13.5% and serious injuries are down by 11.9% since 1996-2001 figures. For more information visit www.tc.gc.ca/roadsafety/vision/menu.htm.

DROWNING: 12 children

A 2 year old girl was playing on the deck of her house while her mother was making a meal inside. The girl had only recently learned to open the door to the area where the in-ground swimming pool was located. While the mother was momentarily distracted, the child opened the door and walked into the pool area. She was found face down in the pool by her mother less than 10 minutes later. Aggressive resuscitative efforts were unsuccessful.

Of the 215 sudden-unexpected child deaths reviewed in 2007, 12 (5%) were the result of drowning. The review of these deaths found:

A. DEMOGRAPHICS

- At the time of the drowning incident six of the children were preschoolers and six were youth.
- Seven male and five female children drowned.
- At the time of the incident, four children lived in the Interior region and four lived in the Fraser region. Two resided in Vancouver Metro and one in the Northern region. In one case, the child died in the Island region 12 years after a near-drowning event that occurred

outside of Canada when the child was two years old. This event left the child with significant developmental and physical challenges and was determined as causal in the child's death.

- Two male youths were identified as Aboriginal. Both were First Nations. One was known to live on-reserve.

B. CIRCUMSTANCES

Time and Location

- Four drowning deaths occurred in a private swimming pool on the child's family's property (Table 8). All involved preschoolers.
- Of the eight drowning incidents that occurred in a natural body of water, four were in a river, three in a lake and one in the ocean. Youth more frequently drowned in a natural body of water.
- These incidents occurred between May and September. The majority took place in the afternoon or early evening.

In Canada, male preschoolers and male youth are at higher risk of drowning than females in the same age group.³²

NON-MODIFIABLE RISK FACTORS

Age

At the time of the drowning incident, six of the children were preschoolers and six were youth. These two groups of children are distinctly at risk due to their respective stages of development. Preschoolers lack the physical and mental development necessary to self-rescue after an unexpected water immersion, regardless of their perceived swimming ability. Youth often lack the ability to use judgement and respond to situations quickly and in a safe manner.

MODIFIABLE RISK FACTORS

Lack of Active Supervision

A lapse in adult supervision was identified as a factor in six drowning deaths. All involved preschoolers. Four occurred in a private swimming pool. Two occurred in a natural body of water.

In four drowning incidents the parent was distracted and not actively watching the child. One of the four preschoolers was playing in a lake close to his parent. The caregiver was momentarily distracted during which time the child disappeared. The child was later found nearby in the

Table 8 Drowning deaths reviewed by location of incident (CDRU 2007)

Location	Preschooler (1-4 years)	Youth (13- 18 years)	Total
Swimming pool- private	4	0	4
Natural body of water	2	6	8
Total	6	6	12

water. A Personal Flotation Device (PFD) had been worn by the child while in the water earlier during the day. It could not be determined why the child was not wearing the PFD in this instance. Significant family challenges, including a history of inadequate supervision and poverty were identified as risk factors in this child's life.

In one case the child entered the water unattended in the early morning while her caregivers were asleep.

In one incident the child was being supervised by a sibling who lost sight of the child for a short period of time.

In three of the six cases, the supervisor was not aware that the child was near the water.

Access to Water

Access to a swimming pool at the child's place of residence was a factor in four deaths.

Two children had access to the pool through a gate or a door of which neither were self-locking. In both cases, the child had recently learned how to open the gate or door. One child gained access to the swimming pool directly from the family residence. There was no fencing or gate in place to restrict access.

In one case, the child gained access to the pool through a gap in the fence around the perimeter of the pool. The child's parents were unaware of this gap as it was covered in vegetation.

One child was staying with family members on a houseboat and entered the water unnoticed. It was believed that the child gained access by opening a window in her bedroom.

High Risk Behaviour

High risk behaviour was identified as a risk factor in the deaths of three male youth. In one case, the male youth was scuba diving in the ocean with unfamiliar equipment. The youth and his male youth dive partner had planned the dive to go beyond the scope of their recreational dive training and experience.

A second male youth was found to have drowned in a lake after ingesting *Datura* seeds with his peers. It is likely, based on the known effects of *Datura* ingestion, that the youth's impairment was a contributory factor in his drowning. Family challenges and mental health issues were identified as additional factors.

In the third incident, a male youth was in a physical altercation with a young male on a bridge immediately prior to entering the water. A large group of peers were present. There was insufficient information to determine how the youth entered the water. Family challenges as well as violence, substance use and poverty in the community were identified as additional risk factors.

Datura seeds come from the Datura Stramonium plant (aka Jimson Weed). The Datura plant grows wild in the Okanagan region and is sold in commercial nurseries. Datura plants are a poisonous weed; its seeds and leaves contain active deliriants. Effects of ingesting Datura seeds include dilation of pupils, warm dry skin, dry mouth, urinary retention, rapid heart beat and jerky movements. These symptoms can come within 1-6 hours of ingestion and can last hours or days.

Environmental Conditions

Environmental conditions were identified as factors in three drowning incidents that occurred in a natural body of water. One youth was white-water rafting as part of an organized group activity when the raft she was in struck a rock. The youth was ejected into the river and trapped by a log jam. Fast current, cold water temperature and the presence of log jams were identified as environmental risk factors in the death. In the context of the environmental risk factors, the lack of physical strength and developmental ability of the other young people in the raft were also identified as factors in the death.

The second youth was walking beside a series of “potholes” formed by a fast-moving river when she slipped and fell in. Cold water temperature, fast current and the depth of the potholes were identified as factors in her death.

In the third case, the youth drowned while playing in the falls of a river. Current, cold water temperature and slippery rocks were identified as risk factors in his drowning.

PROTECTIVE FACTORS

Protective factors were identified in the lives of three children (25%). These included positive peer and family relationships, spirituality, leadership, goals and involvement in extracurricular activities.

PREVENTABILITY

Nine drowning fatalities (75%) were determined, in all likelihood, to be preventable:

- five at the primary level
- four at both the primary and secondary levels

A review of statistics shows that drowning is the second leading cause of accidental death for Canadian children. An estimated 58 children under 14 years of age drown annually in Canada.³³ Most drowning incidents do not actually involve people swimming. One study showed that 76% of children involved in a drowning incident were playing or walking near water when drowning or near-drowning occurred.³⁴

For many Aboriginal communities, traveling by boat or snowmobile is a part of daily life. Snowmobile-related drowning incidents occur late in the day or at night. They often occur in January to March when people believe the ice is thick and strong. Snowmobiles can reach high speeds, so in dark or blowing snow conditions, thin ice or small holes may be difficult to see or avoid.³⁵

Best practice review determined that prevention strategies for modifiable risk factors would:

Limit access to water

Barriers between children and water are one of the five layers of protection against drowning. Safe

Kids Canada states that safe pool fencing should:

- completely enclose the pool on all four sides;
- be of minimum height of 1.2 m (4 ft);
- have a self-closing and self-latching gate; and
- be designed to deter young children from climbing.³⁶

BC does not currently have province-wide regulations to require safer fencing of private swimming pools.

Ensure adult supervision of children in proximity to water

Active supervision involves staying within sight and reach of a child at all times. Research shows that a child can drown in less than 10 seconds therefore even momentary lapses in supervision can put a child at increased risk. Active supervision and creating barriers to water should be used in tandem to best aid in the prevention of drowning fatalities involving young children.

Encourage use of personal safety equipment

Young children who are swimming or playing in or near water should wear a PFD that fits properly and is in good repair. Recreational activities around or in water also require attention to safety. This includes boaters, rafters and scuba divers.

Mitigate high risk behaviour

World-wide, males have higher rates of drowning than females. Studies suggest this may be due to high risk behaviour around water.³⁷ Marketing and education campaigns related to the dangers of drowning may need to be targeted to high risk groups.

RECOMMENDATIONS

To Transport Canada

The CDRU recommends that a higher standard of safety on pleasure craft be achieved by:

- a) Establishing minimum standards for Rental Boat Safety Checklists that must be used by a person who makes a houseboat or other pleasure craft



Gold Star

Prevention in Action: 11th Annual Safe Kids Week "Splash Into Safety"

Safe Kids Week is a national education campaign presented by Safe Kids Canada with sponsor support from Johnson & Johnson. Every year during Safe Kids Week, hundreds of community organizations across the country join Safe Kids Canada to focus attention on preventing injuries to children. In 2007, the theme of the 11th Annual Safe Kids Week campaign "Splash Into Safety" was drowning prevention. Over 500 partners participated in the campaign, including nine communities in BC, by distributing over 440,000 'Splash Into Safety' brochures to families across the country. Additional community activities included PFD fittings and advocacy for 4-sided pool fencing bylaws. Since the campaign, Safe Kids Canada has been in contact with over 22 municipalities to assist them in the development or modification of their current pool fencing by-laws. The City of Toronto now has a four-sided pool fencing bylaw and the government of Quebec recently passed Bill 18, which establishes minimum standards for pool fencing in the province. The 12th Annual Safe Kids Week Campaign took place May 26 to June 1, 2008. For more information visit www.safekidscanada.ca.

available for rent. When indicated that children will be on board the vessel, standards must ensure that operators are supplied with, at minimum, child-sized Personal Flotation Devices (PFDs) and barriers to restrict child access from the vessel to the water.

- b) Requiring that a person who makes a houseboat or other pleasure craft available for rent provide operator training and safety orientation prior to severing their connection to the vessel.

To the Building and Safety Policy Branch, Office of Housing and Construction Standards

The CDRU recommends that, following assessment of possible mechanisms for the regulation of pool fencing in BC, a law is established requiring at minimum 1.2 m high, four-sided pool fencing with self-closing and self-latching gates. This standard should apply to all forms of home pools with a depth over 0.6 m and require fencing that does not facilitate climbing.

■ POISONING: 8 children

A 16 year old girl and her friend attended a house party at the home of an acquaintance. According to friends, the girl consumed alcohol over the course of the night as well as illicit drugs. Friends described her as being very intoxicated. At approximately 2 a.m., she went to lie down in one of the bedrooms. At 7 a.m., the girl was found on the bed unresponsive. All efforts to revive her were unsuccessful. Toxicological analysis revealed lethal amounts of heroin along with methamphetamines, metabolites of cocaine and low levels of alcohol.

Of the 215 sudden-unexpected deaths reviewed, poisoning accounted for eight deaths (4%).

A review of these deaths found:

A. DEMOGRAPHICS

- All eight poisoning fatalities involved youth between 15 and 19 years of age.

New Transport Canada regulations require all operators of motorized pleasure craft in Canada to have their proof of competency by September 15, 2009. Already, any boater born after April 1, 1983, or anyone who operates a motorized pleasure craft less than four metres long, including personal watercraft, must have proof of competency on board, or risk fines up to \$250.

Proof of competency can be a:

- Pleasure Craft Operator Card
- Proof of passing a boating safety course in Canada before April 1, 1999; or
- Completed Rental Boat Safety Checklist.

Under Section 8 of the Competency of Operators of Pleasure Craft Regulations SOR/99-53, further to the *Canada Shipping Act 2001*, a person who makes a pleasure craft available for rent must include, in a rental boat safety checklist, a statement that they have given to the persons who will operate the pleasure craft information pertaining to:

- (a) the operation of the pleasure craft;
- (b) the principal boating safety rules; and
- (c) the geographic features and hazards in the area in which the pleasure craft will be operated.

- Four were female and four were male.
- One female youth was identified as First Nations and was living off-reserve.

B. CIRCUMSTANCES

Location

- Three poisoning fatalities occurred in the Fraser region. The Island region reported two and the Vancouver Metro, Northern and Interior regions all reported one fatality.
- Poisonings occurred more frequently at the child's home or at the home of a friend.
- The majority of poisoning incidents occurred in the late evening or early morning hours after the youth had been out with peers.

Typology

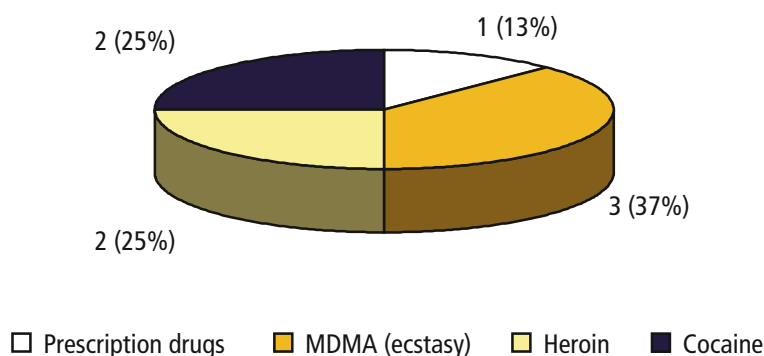
- All were determined to be unintentional overdoses. Six of the eight were known to be using substances with their peers in the hours prior to their death. The majority of unintentional overdoses involved illicit drugs (Figure D).
- One youth died as a result of a prescription drug overdose. The youth ingested lethal levels of prescription morphine that had been prescribed to a family member.

NON-MODIFIABLE RISK FACTORS

Age

- All eight poisoning fatalities involved youth. According to current research, adolescence is the primary period of initiation to substance use and represents the period of the highest rate of use in the population. The younger a person starts using a drug, the more likely they are to have problems- such as chronic dependence with substances later in life.³⁸ This is why early intervention is key.

Figure D Poisoning fatalities reviewed by type of substance ingested (CDRU 2007)



Sex

- Females and males were represented equally in the poisoning deaths reviewed. Research shows that rate of high risk behaviour such as binge drinking, getting drunk, smoking and using illicit drugs is on the rise for young females. In the past, male youth have typically had higher rates of substance use than their female counterparts.³⁹

MODIFIABLE RISK FACTORS

A combination of risk factors has shown to increase the likelihood that a young person will use substances. These include a history of physical, sexual or emotional abuse; growing up with a parent who is mentally ill, suicidal, in prison, addicted or absent; having a concurrent mental health illness; having limited or no social supports; and having a social group which is typified by substance use.⁴⁰

Substance Use

Seven of the eight children had a history of substance use. There was no information to indicate that treatment for substance use was made available to these children at any time prior to their deaths.

High Risk Behaviour

Three children were known to have engaged in high risk behaviour including involvement in criminal activity, impaired driving, prostitution and gang activity.

Mental Disorders

Three youths were known to have suffered from depression. Two of the three had demonstrated suicidal behaviour such as suicide ideation and self-harming prior to their deaths. One young person had accessed and received treatment for mental health issues in the days prior to her death. Up to 50% of youth who seek substance abuse treatment have a concurrent mental health disorder such as depression or anxiety.⁴¹

Family Challenges

Four children were identified as having significant family challenges. These included sexual abuse, family transience, being separated from family and ongoing conflict with a family member and/or spouse. The cases reviewed reflect much of the current research which shows a strong correlation between youth substance use and family challenges such as conflict, history of neglect and abuse, issues of attachment and bonding between a parent and child, exposure to a parent with substance use issues and poor parenting practises.⁴²

School Challenges

Three youths were identified as having challenges at school. These included bullying, non-compliance with school rules and challenges with school work. In some cases these lead to a decrease in the child's attendance at school.

School interruptions or a decline in school achievement due to absenteeism appear to be related to substance use among adolescents. In addition, academic performance has been shown to be adversely affected by substance use. A reduction in school performance and other social activities are often signs of problems connected to substance abuse and require careful intervention.⁴³

PROTECTIVE FACTORS

Protective factors were identified in the lives of two children. These factors included positive family relationships and access to mental health treatment. A recent survey by the Vancouver Coastal Health authority found that connection to school, family, peers and community activities help to reduce substance use.⁴⁴

PREVENTABILITY

All nine poisoning deaths were determined, in all likelihood to be preventable:

- eight at the primary level
- one at both the primary and secondary levels

A review of statistics show the BC Poison Control Centre receives almost 26,000 poison exposure calls annually. Poisoning in youth account for only 7% of these calls, however almost half are intentional (suicide attempts or drug use).⁴⁴ A 2004 study showed that 38% of drug-injecting youth and 46% of female drug-injecting youth began injecting at age 16 or younger.⁴⁵ Deaths in Canada from illegal drug use and alcohol have increased at a rate that exceeds the rate of population growth.⁴⁶

Best practice review determined that prevention strategies for modifiable risk factors would:

Use early intervention and target specific vulnerable groups

Early initiates for illicit drug use have distinct risk profiles. This has implications for target age groups and gender-specific programs or education.⁴⁸

Developmental needs of adolescents must be considered in any campaign. Interventions should also incorporate family support and treatment.⁴⁹

Utilize a population health approach

Strategies must address the wide range of factors and underlying challenges that put people at risk for drug poisoning. These include marginalization, inadequate support systems, poor coping skills, unhealthy child development, and mental health challenges. There must also be access to health and addiction services in the child's community.⁵⁰



Gold Star

Prevention in Action: A Drug Prevention Strategy for Canada's Youth

On October 24, 2007, the Government of Canada introduced its new \$64 million National Anti-Drug Strategy, which is a collaborative effort involving Health Canada, Public Safety Canada and the Department of Justice. It includes a Prevention Action Plan, which focuses on youth as well as parents, educators, law enforcement and communities. This Prevention Action Plan comprises a number of initiatives, including \$10 million in new funding over two years to launch a national youth drug prevention mass media campaign to be mounted by Health Canada and a five year \$10 million Drug Prevention Strategy for Canada's Youth led by the Canadian Centre for Substance Abuse (CCSA) and other partners. The goal of the prevention strategy is to reduce illicit drug use by Canadian youth between the ages of 10 and 24 by working on risk and protective factors in youth before illicit drug use begins. For more information visit www.ccsa.ca or www.nationalantidrugstrategy.gc.ca.

FIRE OR BURN FATALITIES: 2 children

A 3 year old boy was in the backyard with his family while his father tended to the barbeque. When dinner was ready, the boy's parents brought the food in the house and the boy remained outside. Seconds later, there was an explosion that came from the barbeque. The boy suffered serious burn injuries that proved to be fatal. The investigation revealed that neither the barbeque nor the tank valve had been properly turned off. The hose that connected the barbeque and tank had become dislodged causing a sudden release of propane and ignition from the still burning barbeque.

Of the 215 sudden-unexpected cases reviewed, two children (<1%) died as a result of smoke inhalation or burns. A review of these deaths found:

A. DEMOGRAPHICS

- The two fatalities involved a male preschooler and a 12 year old female child.
- The children resided in the Fraser and Vancouver Metro regions.

B. CIRCUMSTANCES

Location

- Both incidents occurred in urban areas in the region where the child resided.
- One incident occurred in the child's home and one in a relative's home.

Typology

- The preschooler was involved in a fire that started when a propane powered barbeque was accidentally ignited on the deck. An explosion followed. It was determined that a small propane leak was contributory. This child died as a result of extensive burns causing respiratory failure.
- In the second incident, the child was involved in a fire that started when a cigarette ignited a piece of upholstered furniture situated on the deck. The child was sleeping in the living room and died as a result of smoke inhalation.

MODIFIABLE RISK FACTORS

Barbeque Safety

Inspection of the barbeque determined that a small, propane leak was contributory. It was found that the propane tank was expired. It was believed that neither the barbeque nor the tank valve had been turned off and that the hose that connected the barbeque and tank became dislodged. This resulted in a sudden release of propane and subsequent ignition from the still burning barbeque.

In one Canadian study, the majority of barbeque-related fires were found to have been caused by gas leaks. Poor maintenance or improper lighting procedures were often to blame.⁵¹

Lack of Active Supervision

Lack of active supervision was a contributory factor in the death of the preschooler. The adult caregiver was not aware that the child was in the vicinity of the barbeque.

Cigarettes and Fire Safety

Careless smoking was a contributing factor in one death. Careless smoking can lead to fires that smoulder for hours before resulting in flames. It is the leading cause of home fires in Canada.⁵²

Additional environmental factors such as high winds and house structure were also identified as contributory. It appears that smoke had accumulated in parts of the home for sometime unnoticed by the occupants.

Smoke alarms were installed in the home but it could not be determined if they activated. There were no fire extinguishers present in the residence.

Family Challenges

One child had a number of family challenges including a history of neglect and inadequate supervision, exposure to domestic violence, parental substance use and social isolation.

Careless smoking includes behaviours such as failing to properly extinguish smoking materials (cigarette, cigar, matches, ashes); leaving smoking materials unattended; smoking in bed or while tired; and smoking in the proximity of flammable materials.

PROTECTIVE FACTORS

It was known that the preschooler had positive family relationships. In addition, fire extinguishers were present in the building and were used by a family member in an attempt to suppress the fire.

In the case of the 12 year old child, little information was known regarding protective factors. It was evident that the child had a close and positive relationship with an adult sibling.

PREVENTABILITY

Both fire-related deaths were determined to be preventable at the primary level.

A review of statistical findings shows that, in Canada, fire kills eight people a week and injures many more. Residential fires are particularly worrisome, accounting for 40% of total fires and 73% of fire deaths.⁵³ In BC, the *Office of the Fire Commissioner's (OFC) 2001-2003 Statistical Report* noted that in 2001, 53% of fire-related injuries involved people who were awake and unimpaired at the time of the fire. In 2003, 22% of fires in BC were ignited by smoker's materials and "open" flames.⁵⁴

Best practice review determined that prevention strategies for modifiable risk factors would:

Improve home fire safety

It is critical that working smoke alarms are installed outside each sleeping area of your home and on each floor. Smoke alarms should be tested at least twice a year. Families should develop a fire escape plan that is clearly communicated to all family members. Important safety points of the plan would include knowing two escape routes from every room, and ensuring those routes are accessible at all times. Once outside a building, no-one should re-enter for any reason. In 2003, 47% of fire-related casualties in BC were injured because people remained at the fire to fight the fire, attempt a rescue or save property.⁵⁵

Decrease careless smoking

Prevention of smoking fires involves both home residents and visitors. It is important that all cigarettes are put out and disposed of appropriately. The OFC recommends smoking be done outside the home, large deep ashtrays be used to keep ashes and cigarette butts away from carpets and upholstery, and ashes be cooled completely before disposal.⁵⁶

Ensure barbeque and propane safety

Propane tanks and cylinders should be inspected and re-certified a minimum of every 10 years. It is also important to ensure that barbeques using gas power be turned off properly and that regular maintenance checks for leaks and proper cleaning are done. The BC Safety Council has a barbeque safety bulletin with tips to keep families safe during barbeque use.⁵⁷

Best practice review determined that prevention strategies for non-modifiable risk factors would:

Ensure child safety related to cooking facilities and fire safety

It may be helpful for parents to establish a no-go zone for young children around a cooking area such as a barbeque or stove. In outdoor areas, a “boundary line” such as a circle of stones or a painted line around the barbeque establishes a safety net for children.⁵⁸

Child-oriented fire safety education programs are available through schools and use developmentally appropriate language and concepts to teach fire safety behaviours through programs like Learn Not to Burn®, offered at preschool through Grade 8 levels. The BC Professional Fire Fighters’ Burn Fund sponsors Burn Awareness Week each year. This campaign, targeting students across the province, is designed to reduce the number of fire-related injuries among children.⁵⁹



Gold Star

Prevention in Action: The Getting to Know Fire Curriculum

The Getting to Know Fire curriculum is an internationally recognized in-demand program that provides clear, supported, and easy to deliver packages that target particular audiences. The program is designed for fire service personnel to be able to deliver each module successfully. This is an excellent program which is modularized, targeted to various audiences, has room for growth and development to meet emerging needs and was provided free to every fire department in the province. For more information visit the Public Education section of the Office of the Fire Commissioner's website at www.pssg.gov.bc.ca/firecom.

RECOMMENDATIONS

To the Office of the Fire Commissioner of BC

The CDRU recommends that a practical barbeque safety resource be developed for and distributed to the BC public in collaboration with relevant public and private sector agencies.

SUICIDE: 18 children

An 18 year old boy had been feeling depressed over the last few months. There was a history of substance use in his immediate family and he had experienced on-going conflict with both parents. He had recently become estranged from his mother. His friends and co-workers had noticed that he seemed down lately. He had attempted suicide on one previous occasion and had recently confided to a friend that he was having recurring thoughts about killing himself. Antidepressant medication had been prescribed in the past but the youth was not compliant with his medication plan at the time of his death. He died as a result of a self-inflicted gunshot wound.

Of the 215 sudden -unexpected deaths reviewed in 2007, 18 (12%) were suicides. A review of these deaths found:

A. DEMOGRAPHICS

- Seventeen of the 18 suicide deaths (94%) were youth. The majority were between 17 and 18 years of age.
- One 12 year old boy died.
- Eleven (61%) were male and seven (39%) were female.
- Three were Aboriginal; two were First Nations and one was Métis. Both First Nations children were living on-reserve at the time of their death.
- Seven children (39%) were living separately from their parents /caregivers at the time of their suicide. Of these seven, three were living alone, three were living with a spouse and one was living with friends.

Suicide is the second leading cause of death for young people in Canada, attributable to more deaths than cancer or any other natural cause of death.⁶⁰

B. CIRCUMSTANCES

Location and Time

- Six suicide deaths occurred in the Interior region followed by five in the Island region. Four occurred in the Vancouver Metro region, two in the Fraser region, and one in the Northern region.
- Eight suicides (44%) occurred in the child's home.

Part 4. Circumstances of Death

- Six suicides (33%) occurred in the early morning hours between midnight and 8 am.

Method

- Ten of the children (56%) died by hanging. Three died as a result of an intentional jump from a height into water. Two children died when they intentionally placed themselves in front of a transport vehicle, in one case a train and the other a tractor trailer. Single deaths were attributable to gunshot, poisoning and drowning.

Typology

- Seven children (39%) had experienced an acute and stressful event in the 24 hours prior to their death. These events included arguments with a parent, peer or romantic partner; death of a peer; and recent loss of home and possessions. In almost all cases, the acute event occurred within the context of underlying mental health disorders, family challenges, substance use and economic stressors.
- For five youth (28%), an acute event was identified as pivotal in the child's life. Many of these events took place some time before the child died but had a lasting effect on the child's mental health and behavioural development. These events included sexual assault by a peer, the suicide or death of a peer, break-up of a romantic relationship and peer conflict.

In Canada, eight out of 10 young people who attempted or died by suicide informed someone of their intent prior to taking their own life. In the majority of cases, the other person was a friend.⁶¹

Only one in every six Canadian youth who needs mental health care is able to access those services.⁶²

CORONER RECOMMENDATIONS

Recommendations were made by the coroner in one suicide death.

MODIFIABLE RISK FACTORS

Para-suicidal Behaviour

Of the 18 children, 13 (72%) had known suicide ideation. Twelve (67%) had made prior threats of suicide. Half had attempted suicide in the past. Two children were known to have been involved in a "suicide pact" as part of a previous attempt. There was no conclusive information to support that their subsequent deaths were also part of a pact.

Five children (28%) stated their intent to die by suicide to a family member or friend in the days leading up to their death. The family member was most often another young person.

Two children had a history of self-harming.

Mental Health Disorders

Four of the children (22%) had been diagnosed with a mental health disorder through a psychiatric assessment. Major depressive disorder was a component in all four cases. In addition, five children were prescribed antidepressants in the year prior to their suicide but had no known diagnosis of a mental health disorder.

Five children were perceived (most often by a family member or friend) as displaying symptoms of depression, but had not been prescribed medication or received a clinical diagnosis.

Based on the above numbers, 14 of the 18 children (77%) had either been diagnosed with a mental health disorder or were perceived to be depressed by their family or peers.

Eight children (44%) had accessed counselling at some point in their lives. The type and duration of counselling as well as the date of the last counselling session could not be determined due to insufficient information (Figure E).

Of the eight children who had been prescribed antidepressants in the past, seven were non-compliant at the time of their death. In one case it was unknown if the child was compliant.

Six children (33%) had no known mental health care prior to death.

People who die by suicide are frequently suffering from undiagnosed, under-treated, or untreated depression. This is especially true for youth whose depressive symptoms are often mistaken for “normal” developmental and emotional changes associated with transitioning into adulthood.⁶²

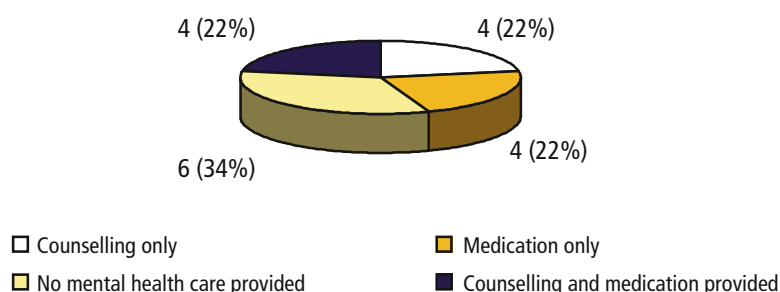
Substance Use

A toxicological assay was conducted in six suicide fatalities (33%), which resulted in four with relevant findings.

One child was alcohol impaired, two were drug impaired and one was both alcohol and drug impaired at the time of death. In one case where the child was drug impaired, the toxicological analysis confirmed that the cause of death was an overdose of prescription medications. These medications were purchased and obtained from an on-line source. In the remaining two cases where the child was drug impaired, cocaine and its metabolites were present. Suicide risk is shown to increase when alcohol and/or illegal substances are used, as intoxication may decrease inhibitions, increase aggressive behaviour and impair judgement.⁶³

A history of substance use was determined to be a risk factor for 11 children (61%). The majority of the children with substance use and addiction issues were also perceived to be displaying signs of depression. The risk of suicide in young people further increases when substance use is paired with depression or other mental disorders.⁶⁴

Figure E Suicide fatalities reviewed by type of mental health care provided (CDRU 2007)



Behavioural Challenges

Seven children (39%) were identified as having personal challenges relating to their behaviour. These challenges often involved a combination of impulsive and aggressive behaviours such as engaging in high risk activities, anger management issues, bullying, difficulty at school, arson, criminal activity and running away. In most cases these behavioural factors occurred within the context of complex family challenges.

Family Challenges

Eleven children (61%) were identified as having family challenges. These included on-going conflict with a parent or sibling; physical and sexual abuse; parental substance use and addiction; death of a relative; death of a relative by suicide; exposure to domestic violence; parental separation; and chronic neglect.

Economic Stressors/Poverty

Four children (22%) were identified as having economic stressors and/or poverty in their lives. These included homelessness, living on-reserve, recent financial independence and recent loss of a job.

PROTECTIVE FACTORS

Fourteen children were identified as having social protective factors in their lives. These included positive family and peer relationships, pets, school achievements and participation in extracurricular activities.

PREVENTABILITY

Of the 18 suicide deaths, 17 (94%) were determined to be preventable at the primary level. In one case, there was insufficient information to determine preventability.

Suicide is a complex and multidimensional phenomenon that can rarely be explained by looking at a single traumatic event or stressful relationship. It is therefore necessary, based on the very nature of suicide, that the prevention of suicide also be multidimensional. Effective primary prevention should address a multiplicity of cumulative and acute risk factors and involve the participation of all aspects of the child's social sphere.

FUTURE DIRECTIONS

In order to better understand the complexities of child and youth suicide, the CDRU will conduct a five-year retrospective review of suicide deaths that occurred between January 1, 2003 and December 31, 2007. This review will seek to reflect on overarching trends in demographics and risk factors in order to develop recommendations that will assist in the promotion of wellness in children and youth. It will be informed by collaboration with internal and external stakeholders as well as families of children who have died by suicide.

This review is currently in the initial stages of planning and development. A project charter has been created and the project lead has completed a brief internship with Child Death Review

teams in Australia who are recognized for their advances and best practice in the area of child and youth suicide. This internship also facilitated the project lead meeting with experts in child and youth mental health from the disciplines of education, psychiatry and psychology as well from the not-for-profit sector.

FATAL ASSAULTS: 14 children

A 3 year old girl was living with her biological mother and her mother's male common-law partner. The mother of the child was a victim of sexual abuse and had experienced domestic violence in her previous relationships. The family had moved many times in the recent past and did not have a support system in the community they were presently living in. The child did not attend daycare and was not visible in the community. On the evening of her death the child was left in the care of her mother's partner. Cause of death was determined to be as result of both blunt force trauma and strangulation.

Of the 215 sudden-unexpected deaths reviewed in 2007, 14 (6%) were the result of assaults. A review of these deaths found:

A. DEMOGRAPHICS

- At the time of the fatal assault, eight of the children were preschoolers and six were youths. In one case, the child died several years after the assault took place.
- Of the eight preschoolers, seven were female and one was male. All six youths were male.
- Three children resided in the Northern, Island, Fraser and Vancouver Metro regions. Two children resided in the Interior.
- Four (31%) children were First Nations. All lived off-reserve.
- Of the 14 children, five were living with both biological parents, three were living with a biological parent and the parent's partner and two were living with another relative. One child was living with a single biological parent, one with a foster parent and one was living alone. In one case there was insufficient information to determine what the child's family situation was.
- Three children were in care of MCFD at the time of their death. Of these, one child was in care of MCFD at the time of the fatal assault. Two children were placed in care after the critical injury which lead to the death occurred. One died several years later in foster care as a result of injuries sustained in the original assault. All reports indicate she had received excellent care from her foster parents. The second child died in hospital within days of the assault.

Female preschoolers and male youth were the most at risk groups for fatal assault. These two high risk profiles experienced significant risk factors linked to their distinct levels of development.

PRESCHOOLERS: 8 children

A. DEMOGRAPHICS

- Three children lived in the Northern region, three in the Island region, one in the Vancouver Metro region and one in the Interior.

B. CIRCUMSTANCES

Location

- All eight original assaults occurred within the child's home in the region of residence.
- Three deaths occurred in the Vancouver Metro region, three in the Island region, one in the Northern region and one in the Interior region. In two cases where death occurred in the Vancouver Metro region, the child had been assaulted and critically injured in the Northern region and brought to BC Children's Hospital for treatment prior to death.

Typology

- Blunt force trauma was the most frequently reported method of assault for this group resulting in five deaths. One child died from poisoning, one from sharp force injury and one from abusive head trauma.
- Three of the eight children showed signs of prior physical trauma upon post-mortem examination, likely due to acute or prolonged child abuse. One child was the victim of a murder-attempted suicide by the biological mother.
- In one case the perpetrator had ruminating thoughts of fatally assaulting the child.

Perpetrator-Victim Relationship

- The child was determined to be the intended victim in all cases.
- In six of the eight cases the child's primary caregiver(s) was the perpetrator of the fatal assault. Four were male and included two biological fathers and two other adult male relatives. One perpetrator was the biological mother. In one case, the specific perpetrator within the household remains unknown.
- In two of the eight cases, the perpetrator was the mother's male partner.
- The perpetrator was determined to be under the influence of alcohol at the time of the fatal assault in three cases.
- Four of the six male perpetrators had a known history of violent behaviour.
- In four of the eight cases, charges were laid and resulted in convictions.

MALE YOUTH: 6 children

A. DEMOGRAPHICS

- Three children lived in the Fraser region, two in the Vancouver Metro region and one in the Interior.

B. CIRCUMSTANCES

Time and Location

- Five fatal assaults occurred within the child's region of residence. In the one remaining case the child lived in the Fraser region but was involved in a fatal assault in the Vancouver Metro region.
- Four assaults occurred in a public outdoor area (park, lane, transit station, parking lot), one occurred at the youth's place of work and one occurred at the child's residence.
- The assaults all took place between 5:00 p.m. and 2:30 a.m.

Typology

- Four fatal assaults against male youth involved sharp force trauma. One assault involved a firearm; one involved blunt force.
- In the five cases where the circumstances around the assault were known, three followed an argument, one occurred during the commission of a crime and one was a targeted assault. All five youth were the intended victim of the assault.

Perpetrator-Victim Relationship

- The perpetrator was an acquaintance in three cases and a stranger in two. In one case the relationship between the youth and the perpetrator of the assault was unknown.
- In the majority of assaults on male youth the perpetrator was a male youth or young male adult.
- In five of the six cases charges were laid that resulted in convictions. In one case the perpetrator remains unknown.

In Canada, youth victims of homicides are more likely to be stabbed (41%), than beaten (21%) or shot (20%).⁶⁶

Canadian statistics show that in 37% of fatal assaults involving youth, the perpetrator was a close friend or acquaintance followed by a stranger at 26%. Thirty-eight per cent of fatal assaults on youth followed an argument with a peer.⁶⁷

INQUESTS

Six cases went to inquest and resulted in recommendations made by the jury. Five involved preschoolers who were assaulted by a family member or a parent's partner. In one case, the perpetrator remains unknown. The classifications made by the jury included Homicide and Accidental means.

REVIEW

MCFD conducted individual reviews of all six deaths that went to inquest. These reviews also resulted in recommendations.

NON-MODIFIABLE RISK FACTORS

Age

All of the children were either preschoolers or youth. Children under 6 years of age spend the majority of their time with a primary caregiver, a parent, relative or a paid caregiver and are at highest risk of intra-familial victimization. In contrast, youth spend a greater amount of time away from the family unit and are more prone to high risk behaviour that puts them at greater risk for victimization by peers or strangers.⁶⁸

Sex

Of the eight preschoolers, seven were female and one was male. Female children less than 6 years of age experience higher rates of family violence than their male counterparts regardless of familial relationship.⁶⁹

All of the youths were male.

MODIFIABLE RISK FACTORS

Family Challenges

All eight preschoolers experienced underlying family challenges. These included exposure to domestic and family violence; physical and emotional abuse; multi-generational history of physical and sexual abuse within family; poor physical and mental health of parents and/or children; neglect; economic stressors; custody issues; substance use within the family; family marginalization and break-up of parent's/caregiver's relationship.

In Canada between 1996 and 2005, a history of family violence was reported by police in nearly one-third (30%) of homicides committed against children. In addition, the presence of a psychological disorder such as depression or schizophrenia was noted in over one-quarter (28%) of family-related homicides against children.⁷⁰

Provision of Child Welfare Services

Four preschoolers were at increased risk as a result of deficits found in mandated service provision. These deficits were identified during the internal reviews conducted by the child welfare system after the deaths and included:

- insufficient information sharing between and within social service providers;
- failure to conduct comprehensive risk assessments;
- incorrect designation of and inadequate response to child protection reports; and
- non-compliance with child welfare standards and policies.

These practice challenges resulted in child welfare staff not fully understanding the potential for harm leaving the children at significant risk.

Social Isolation

The eight preschoolers were at increased risk due to their social isolation. In the majority of fatal assault deaths reviewed the child became less visible in the community in the months prior to their death. This decrease in visibility involved absence from daycare and other social programs, missed medical appointments, family transience and isolation from other family members.

High Risk Peer Group

In three incidents involving youth, the youth's peer group was identified as a risk factor. These peer groups were typified by high risk behaviours such as substance use, peer violence and criminal activity.

Previous Involvement in Violent Conflict

Two youths were known to have been involved in violent conflict in the past. In one case, the youth had previously been the victim of a targeted assault.

Substance Use

Four youths had been using substances prior to the fatal assault. In one case, it was determined that the perpetrator of the assault was under the influence of substances at the time of the assault. In the remaining five cases there was insufficient information to determine if the perpetrators of the assault were intoxicated.

PREVENTABILITY

All 14 fatal assaults were determined, in all likelihood, to be preventable at the primary level.

A review of statistics from the *National Trauma Registry 2007 Report* showed that in 2005-2006 being struck by a person/object was the third leading cause of paediatric injury in Canada, accounting for 11% of hospital admissions. Children in economically and socially impoverished neighbourhoods are more at risk for all forms of violence.⁷¹

In 1998, the *Canadian Incidence Study of Reported Child Abuse and Neglect* found a rate of almost 10 substantiated cases of child maltreatment for every 1,000 children in Canada. A family member was the alleged perpetrator in 93% of substantiated maltreatment cases.⁷²

According to the Canadian Family Violence Initiative, children are most frequently victimized by someone they knew; 52% of child victims reported to police in 2000 were assaulted by acquaintances. Family members committed 23% of reported assaults of children, and strangers only 19%. These numbers relate to fatal and non-fatal assaults. Fatal child assaults are most frequently committed by a parent or close acquaintance. Between 1974 and 2000, a family member was the perpetrator in 63% of Canadian child homicides.⁷³

Best practice review determined that prevention strategies for modifiable risk factors would:

Encourage community capacity

Children are an integral part of our communities. Enhancing community capacity through initiatives that strengthen community resources (services for counselling, addiction, mental health) and skills (programs on parenting, early childhood development) may also work to reduce youth violence.⁷⁴

Promote resiliency in youth

The ability to recover from adverse or unexpected events is protective against violence. Protective factors in a child's life may include positive adult role models, strong early childhood family/caregiver attachment, non-abusive home, and completion of education. Strategies that promote and support healthy families, communities and education may also work to reduce youth violence.

Reduce family violence

Children who witness domestic violence are at risk for a wide range of internalizing and externalizing behaviour problems depending on their developmental stage, and are reported to be at higher risk of being violent in adult relationships. Survivors of child abuse may also become abusive to others or victims in adult relationships.⁷⁵

Best practice review determined that prevention strategies for non-modifiable risk factors would:

Identify high risk groups of offenders and victims

Although youth violence cuts across all racial, religious, biological and socio-economic backgrounds, certain factors emerge as putting an individual at higher risk of experiencing or perpetrating violence. High risk characteristics include male sex, low economic level, and ethnic origin. Identifying those at risk allows for targeted early intervention initiatives regarding prevention of violence and promotion of health.⁸⁰

Educate parents about normal infant/child development

Crying is a common to all infants. Although many periods of crying may be attributed to a communication of a need (i.e. food, clean diaper, sleep) some crying appears to be for no reason and intractable. Parents may not understand the normalcy of this crying, and may feel frustrated, exhausted or inadequate. This may result in a shaking episode which can damage the infant's brain and may lead to permanent damage or



Gold Star

Prevention in Action: The Period of PURPLE Crying®

Prevent Shaken Baby Syndrome (SBS)
British Columbia is the only staffed program dedicated to shaken baby syndrome prevention in Canada. The main area of service for the BC program is the Period of PURPLE Crying®, a prevention program developed by Ronald G. Barr, MDCM, FRCPC and the National Center on Shaken Baby Syndrome (NCSBS). From over 25 years of research, Dr. Barr and other scientists have concluded that early infant crying, including inconsolable crying or colic is a normal part of early infant development. More recent research has shown that the frustration over this early infant crying is also the main trigger for shaken baby syndrome, providing the opportunity to educate parents about the normal characteristics of infant crying and the danger of shaking a baby. The Period of PURPLE Crying® (available in 7 languages) provides prevention education based on an infant developmental approach, and is now the only empirically-based SBS prevention materials on the market. The program communicates its message using a 10 minute video and booklet for parents that is delivered via maternity nurses, community and public health nurses, and a public education campaign. The Period of PURPLE Crying was launched to the province in April 2008 and implementation is progressing rapidly. For more information visit www.dontshake.ca.

death. The Period of PURPLE Crying® program utilizes empirically tested educational materials to educate parents about normal infant crying so that these injuries and deaths may be prevented.

Similar parental frustrations may occur around transitional developmental times in a child. Community programs (see Encourage community capacity above) and support by family and health care professionals may mitigate the risk of intentional injuries to children.⁷⁷

■ SUDDEN INFANT DEATHS: 39 children

An eight month old boy lived with his parents and an older sibling in a smoke-free home. Early in the morning on the day of his death the boy was breast-fed. He would not settle afterwards, so Dad took baby downstairs with the hopes that Mom could get some more sleep. Dad lay down on a mattress with the baby on his chest. After much soothing, the baby began to settle. Dad moved his son to the mattress beside him and continued to stroke his back until the baby fell asleep. Dad fell asleep shortly afterward. About two hours later, Dad awoke and turned to his son, who was lying on his stomach a short distance away. He picked his son up and found him unresponsive. After a panicked call to 911 and attempts by both Dad and medical personnel to resuscitate, the baby was pronounced dead. No specific cause of death was ever found.

Of the 215 sudden-unexpected deaths reviewed in 2007, 39 (18%) involved the sudden death of infants. This cluster included four child deaths that did not meet the traditional definition of a sudden infant death. These children will be reported out separately in Non-Traditional Sudden Infant-Child Deaths.

Historically, the terms sudden infant death syndrome (SIDS) or sudden unexplained death of an infant (SUDI) have been used to describe similar mechanisms of infant death. SIDS is defined as the sudden death of an infant less than one year of age which remains unexplained after thorough investigation, including autopsy, scene investigation and review of the clinical history. It is generally understood that these deaths occur during sleep.

As research into SIDS progressed, factors were identified which increased the risk of sudden infant death. Although these risk factors cannot be said to be causal, their presence does place the infant at heightened risk. The term SUDI was used to distinguish those sudden infant deaths where modifiable risk factors were present from those where no modifiable risk factors were found. This distinction allowed for enhanced data collection and the development of strategies intended to decrease the incidence of specific risk factors, with the eventual outcome of decreasing infant death.

An unintended outcome of this change is that nationally and internationally, jurisdictional methods of coding or classifying infant death varied, so data comparison and statistical trends were increasingly difficult. The BC Coroners Service is currently working with the Ministry of Health and BC Vital Statistics to address these issues.

A review of these 39 deaths found:

A. DEMOGRAPHICS

- Six children were neonates, 30 were infants and three were preschoolers.
- Twenty-two of the children (56%) were male, 17 (44%) were female.
- Sixteen children were from the Fraser region, eight from the Island, six were from the Interior, five from the Vancouver Metro and three from the Northern region.
- Twelve children were Aboriginal; 10 were identified as First Nations. Three of the 10 lived on-reserve. Ancestry of the remaining two children was unknown.
- Four children were in care of MCFD.

B. CIRCUMSTANCES

Location

- Twenty-one infants died sleeping on an adult bed; eight were in a crib or bassinette; five were on a couch, two were in a car seat, two were on a makeshift bed and one was on a hospital transport device.

Typology

- Four of the children (10%) died in circumstances other than those traditionally described as sudden infant death.
- Thirty-five of the children (90%) died in circumstances traditionally thought of as sudden infant death. Thirty one of these deaths (89%) involved circumstances where modifiable risk factors were identified. Four of these deaths (11%) involved sleep circumstances with no modifiable risk factors.

■ NON-TRADITIONAL SUDDEN INFANT-CHILD DEATHS

Four of the 39 deaths (10%) were classified by the investigating coroner as sudden infant death however fell outside the recognised definition of sudden infant death.

A. DEMOGRAPHICS

- One child was a neonate; three were preschoolers. Children over one year of age who die suddenly and unexpectedly are better classified as SUDC or sudden -unexplained death of a child.
- All four children were female.
- Two children lived in the Interior region, one in the Vancouver Metro region and one in the Fraser region.

- One child was Aboriginal of unknown ancestry.
- One child was in care of MCFD.

B. CIRCUMSTANCES

Location

- All four children died in their home region.
- Three of the children died at home and one died in hospital on her day of birth.

Typology

- Two children (15 and 21-months-old) had underlying medical issues. Both were sleeping supine alone in a crib when they died.
- One child was 1-year-9-days-old, and also had underlying medical issues. Although older than one year, she had been born prematurely, so her corrected age (developmentally) was less than one year. This child was bed-sharing with a parent in an adult bed. She was sleeping prone.
- The remaining child was a neonate being transported from one area of the hospital to another following her birth. She had both fetal and family history of cardiac issues. On reaching the hospital nursery, she was unresponsive and despite aggressive resuscitation she died at 1 hour 32 minutes of age.

Bed-sharing is defined as sleeping with a baby on the same sleep surface.

Co-sleeping is sharing a room, but not a sleep surface. The baby's sleep surface is proximate to the parents'.

Supine: *Lying face upward (on back)*

Prone: *Lying face downward (on stomach)*

SUDDEN INFANT DEATHS

Thirty-five of the 39 children (90%) died in circumstances traditionally thought of as sudden infant death. Each of these circumstances took place around sleep.

A. DEMOGRAPHICS

- All of the infants died under one year of age.
- Twenty-two were male and 13 were female.
- Sixteen infants lived in the Fraser region, eight lived in the Island region, four lived in the Interior and Vancouver Metro regions and three lived in the Northern region.
- Eleven (32%) were Aboriginal; 10 were First Nations. Three lived on-reserve.
- Four infants were in care of MCFD.
- Fourteen infants were breastfed and 17 were bottle fed. In three cases, the feeding method was unknown. In one case, the infant died before feeding could be established.

B. CIRCUMSTANCES

Location

- Thirty-four infants died at home or in the home of a friend or relative. One died in the family vehicle.

Typology

- All died in sleep-related circumstances.

SUDDEN INFANT DEATHS WITHOUT RISK FACTORS: 4 CHILDREN

Four of the 35 infants (11%) who died in sleep-related circumstances in their first year had no identified modifiable risk factors in their sleep environment.

- Three infants were sleeping supine alone in a crib or bassinette. The remaining infant was sitting in his car seat while traveling in a car.
- Two of the four infants had been born prematurely, one from a mother who used illicit substances in pregnancy. This infant had been born with Neonatal Abstinence Syndrome but had successfully been weaned off all treatment and was thriving.
- One of the infants had been born to a mother who had received treatment for her cancer during the pregnancy. He was also thriving.
- One had cold symptoms prior to his death.

SUDDEN INFANT DEATHS WITH RISK FACTORS: 31 CHILDREN

Thirty-one of the 35 infants (89%) who died in sleep-related circumstances in their first year had identified modifiable risk factors in their sleep environment.

Sleep Surface

- Three infants were sleeping in a crib or bassinette.
- Five infants were sleeping on a couch. Three of these were sharing their sleep surface; two were sleeping alone.
- Twenty of the infants (65%) were sleeping on an adult bed; 16 (80%) were bed-sharing, three (15%) were sleeping alone and in one case an adult was lying awake observing the baby as he slept and subsequently witnessed the death.
- Two infants were on a makeshift bed including soft items such as foam, pillows and blankets on the floor.
- One was sleeping in a car seat while in his residence.

Sleep Environment

- Twenty of the 31 infants (65%) were bed-sharing.

- Seventeen (55%) were exposed to cigarette smoke, at their place of death and/or in utero. This includes parents who smoked outside but shared a sleep surface with their infants.

Sleep Position

- Thirteen infants (42%) had been placed supine, eight had been placed prone, seven had been placed on their side, and one was sitting in a car seat. In two cases the infant's sleep position was unknown.

CORONER RECOMMENDATIONS

Recommendations were made by the coroner in four cases of sudden infant death. In one case, the recommendations were for informational purposes.

RISK FACTORS

As noted, four of the 35 traditional cases had no modifiable risk factors present at the time of death, although some non-modifiable risk factors were noted. The remaining 31 cases had multi-factorial presentations of both modifiable and non-modifiable risk factors.

MODIFIABLE RISK FACTORS

The CDRU collects data related to sudden infant death including variables such as overheating, superfluous items in the sleep area, birth weight and maternal age. The difficulty in reporting out on these and other variables is the lack of specific criteria to define at what point risk is evident. Does one superfluous item present a risk? At what room temperature is a sleeping infant at greater risk?

These questions need careful contemplation and research prior to being identified as modifiable risks. This work is underway. A CDRU five year retrospective review has been initiated examining sudden infant deaths related to unsafe sleep between January 2003 and December 2007. A Special Report is planned for release in late 2008.

These risk factors relate to the 35 traditional sudden infant deaths occurring around sleep. Although four cases have been noted as having no modifiable risk factors, non-modifiable risk factors may be present. The remaining 31 cases had multi-factorial presentations of both modifiable and non-modifiable risk factors.

Canadian Paediatric Society's Position

Risk factors that can be modified by caregivers include aspects of the baby's sleep surface, sleep position, and sleep environment. The Canadian Paediatric Society (CPS) states that "Infants should sleep (alone) on their back, in cribs meeting the Canadian Government's safety standards...for the first year of life" ... "and in the parent's room for the first six months". In addition, "the sleep environment must be free of quilts, comforters, bumper pads, pillows and

The CDRU follows the lead of the Canadian Paediatric Society's position statement on Recommendations for safe sleeping environments for infants and children. This may be accessed at <http://www.cps.ca/english/statements/CP/cp04-02.pdf>.

pillow-like items.” Surfaces such as water or air mattresses, car seats or infant carriers, couches or makeshift beds are all unsafe sleep surfaces.

Smoking during pregnancy and passive exposure to second hand smoke are associated with higher incidences of sudden infant death. If the child is exposed to cigarette smoke in conjunction with bed-sharing, the risk is further heightened.

CDRU findings related to the findings of the Canadian Paediatric Society

Sleep environment: Bed-sharing

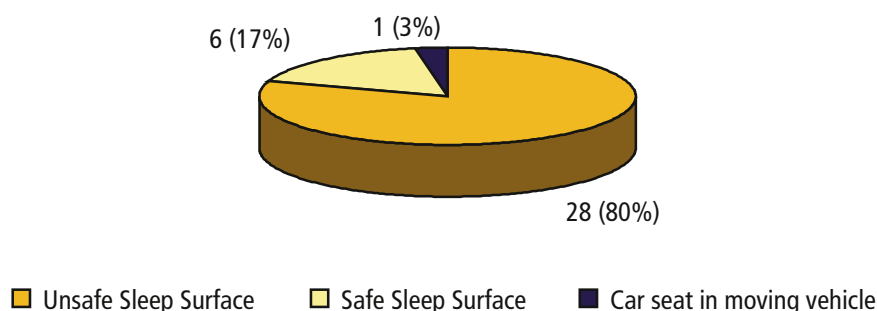
Contrary to CPS recommendations, 20 of the 35 infants (57%) were not sleeping alone. The risk for some was heightened by a cluster of risk factors present in their bed-sharing partner.

- Eleven infants were also exposed to second hand smoke (31% of total or 55% of those bed-sharing).
- Seven infants were also exposed to a parent who had used illicit substances or been intoxicated from alcohol in the 24 hours prior to their death (20% of the total or 35% of those bed-sharing).
- Five infants were with a parent who had both used substances/been intoxicated within the 24 hours prior to death and who also smoked cigarettes (14% of the total or 25% of those bed-sharing).

Sleep Surface

Safe sleep surfaces for infants must be firm, free of superfluous items, and meet strict safety standards regarding construction. Cribs, bassinets or playpens may all meet these criteria. In the 35 cases reviewed, only six infants (17%) were placed on one of these safe surfaces while they slept (Figure F). This number may be increased to seven (20%) by the addition of the child who was in a car seat. Although car seats or infant carriers are not appropriate sleep surfaces at home, this child was in a car so the car seat was the appropriate and safe place for him.

Figure F Traditional sudden infant deaths reviewed by sleep surface (CDRU 2007)



Sleep Position

The *Back to Sleep Campaign*⁷⁸ was devised to educate parents about the recommended supine sleep position. In the cases reviewed for this report, 16 infants (45%) had been placed supine for sleep (Figure G). Fifteen infants (43%) had been placed in a non-recommended position, either prone or on their side.

Infants who are unaccustomed to the prone sleep position are at increased risk when placed on their stomachs to sleep. Unaccustomed prone sleeping is associated with an 18-20 fold increase in sudden infant death.⁷⁹ Caregivers must ensure that babysitters, relatives or day care personnel who may place their infant to sleep are educated about safe sleep practices.

Many parents and caregivers choose to place infants to sleep on their stomach because prone babies rouse and cry less. Table 9 compares infant prone (on stomach) and supine (on back) sleep. Although supine sleepers may wake and cry more, it is the safest sleep position for an infant.

Figure G Traditional sudden infant deaths reviewed by position placed to sleep (CDRU 2007)

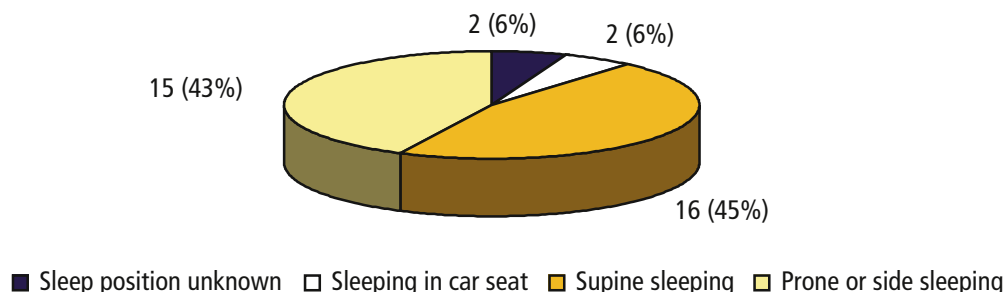


Table 9 Comparison of stomach sleep (prone) to back sleep (supine)
From the American SIDS Institute⁸⁰

	Stomach-sleep (Prone)	Back-sleep (Supine)
Cries more		X
Wakes more		X
Harder to arouse	X	
More likely to over-heat	X	
Re-breaths more	X	
Increases carbon dioxide	X	
Has more apnea	X	
Spits up more	Same	Same
More likely to choke	Same	Same
Greater risk of SIDS death	X	

NON-MODIFIABLE RISK FACTORS

Age

Sudden infant death is the most common cause of death in infants between one month and one year of age. The incidence of sudden infant death peaks between two and four months of age and 90% occur by six months of age.⁸¹ Among the 35 cases reviewed, 15 (43%) were between two and four months of age. Thirty one sudden infant deaths (89%) reviewed were of infants six months of age or younger, consistent with the predicted rate.

Prematurity

Sudden infant death rates are higher in preterm infants compared to those born at term. Very premature infants (born at 27 weeks or earlier) have been shown to have a later age at death (by six weeks) than term infants, which has implications for safe sleep messaging and education based solely on infant age.⁸² Eight infants reviewed (23%) were premature. Of note, one of the non-traditional deaths was of a child 1 year 9 days of age, who had been born prematurely with a low birth weight.

Sex

Males are slightly more vulnerable to sudden infant death than females. A recent study has shown that 60 % of sudden infant deaths involve male infants.⁸³ In the 35 cases reviewed for this report, 22 (63%) were male, which is consistent with most national findings.

Aboriginal Infants

The Canadian Foundation for the Study of Infant Deaths states that in Canada, Aboriginal communities face a rate of SIDS at least a three times higher than the non-Aboriginal population. While the sudden infant death rate has fallen in the general population, it remains high among Aboriginals.⁸⁴

The risk in each province varies. BC Vital Statistics reported that from 1991-1998, the BC Status Indian rate of SIDS was almost seven times higher than the rate for other BC residents. Since 1995, the rate of sudden infant death among Status Indians has dropped from seven times to just over three times the BC general population rate.⁸⁵

Of the 35 cases reviewed, eleven infants (31%) were Aboriginal. Although statistics for Aboriginal versus non-Aboriginal infants for 2007 were not available, Statistics Canada reports BC's population under 5 years in 2006 was 8% Aboriginal.⁸⁶

PROTECTIVE FACTORS

Breastfeeding

There is some evidence that breastfeeding may help decrease the incidence of SIDS.⁸⁷ Breastfeeding alone may not be protective; the protective effect may be multivariate. Breastfed infants may be more easily roused during sleep, more resistant to infection, and breastfeeding mothers may be more likely to be non-smokers. Research continues to be done in this area. Of the 35 sudden infant deaths reviewed, 14 (40%) were breastfed. This includes children who were not exclusively breastfed.

Room-sharing or Co-sleeping

The Canadian Paediatric Society (CPS) states room-sharing for the first six months of life is protective against sudden infant death.⁸⁸ The American Task Force on SIDS states that room-sharing with parents is associated with a lower risk of sudden infant death than either sleeping alone in a separate room or bed-sharing.⁸⁹ Of the 35 children who died suddenly in infancy, none were known to be room-sharing.

PREVENTABILITY

In the four non-traditional cases:

- One was found to be preventable at the secondary level
- One was found to have been not preventable
- In the remaining two cases, preventability could not be determined

In the 35 traditional sudden infant death cases:

- Four sudden infant deaths had no associated risk factors and were determined to be not preventable
- One infant was known to have asphyxiated due to obstruction of his airway while bed-sharing. This death was determined to be preventable at the primary level
- One death was witnessed by his parent who immediately recognized the infant's loss of breathing and called for help. This death was found to have been not preventable
- The remaining 29 sudden infant deaths had a wide range of risk factors that, if eliminated, may have reduced the risk to the child. These deaths may have been potentially preventable, however as no known cause of death could be established in these cases, preventability could not be determined

A review of statistics shows sudden infant death accounts for 35-55% of deaths in the post-neonatal period and 20-25% of death of infants less than one year. Despite ongoing study and increased understanding of associated variables, specific causation for sudden infant death is unknown.⁹⁰

As knowledge regarding risk and protective factors evolves, terminology has changed in reporting, classifying and coding these deaths. These shifts create difficulties in comparing data on sudden infant death from year to year and jurisdiction to jurisdiction.⁹¹



Gold Star

Prevention in Action: The Canadian Foundation for the Study of Infant Deaths (CFSID)

The Canadian Foundation for the Study of Infant Deaths (CFSID) is dedicated to reducing infant mortality and the rate of sudden and unexpected infant deaths, and to the emotional support of those who are affected. CFSID delivers infant health and safety education through an extensive network of volunteers in communities across Canada. CFSID provides resources and services for all infant deaths including miscarriage and stillbirth with respect to peer support, public education and awareness. CFSID also supports Sudden Infant Death Related Research. For more information visit www.sidscanada.org.

Best practice review determined prevention strategies for modifiable risk factors would:

Educate parents and caregivers on infant safe sleep practices

No sleep environment is completely risk-free, but safe sleep surfaces, positions and environments can reduce the risk of sudden infant death. Campaigns aimed at educating parents regarding safe sleep practices at several points along the prenatal, perinatal and postnatal pathway may impact the incidence of sudden infant death. Caregivers such as relatives, babysitters and day care providers should be included as target audiences.

Explore cultural perspectives related to infant sleeping practices

BC is a highly multicultural province whose population have diverse cultural mores and practices. Culturally sensitive or appropriate messaging will be most effective in targeting specific groups within BC.

Explore social and economic implications for unsafe sleep practices

Collecting data on reasons unsafe sleep practices are used may inform prevention strategies. Underlying challenges such as overcrowding, inadequate or transitional housing, domestic violence or poverty may impact a family's means of providing a safe sleep environment.

RECOMMENDATIONS

To the Provincial Health Officer of BC

The CDRU recommends the scope of the existing safe sleep task force be expanded to address infant safe sleep practices in all environments, from hospital to home, in a manner that is representational for all peoples and cultures across the province.

OTHER CIRCUMSTANCES OF DEATH: 8 children

Eight of the 215 sudden-unexpected deaths (4%) were attributable to circumstances of death that represented a single fatality or had other unique aspects to the deaths.

Four of these include a fall, a work-related incident, an animal attack and a case of positional asphyxia. These four deaths are reported in narrative format in Part 1 of this section.

Four additional cases are reported in Part 2. These cases had unique characteristics that precluded their inclusion under the circumstances of death already discussed in this report.

PART 1

Fall

A male First Nations youth was living on reserve in a remote, mountainous community in Northern BC. One evening, the youth was drinking alcohol outdoors with a group of peers. During the course of the night, he told his friends he was going home and left the group alone. When he did not return home the following day, the youth was reported missing and a search was initiated. He was later found at the bottom of a cliff, nearby to where he was last seen alive. Investigation determined that he died of a skull fracture as a

result of an un-witnessed fall down a rocky slope. The youth was found to have several risk factors in his life including underage alcohol use, belonging to a high risk peer group, impairment and ruggedness of the surrounding environment. He had also recently lost a close relative to suicide and was reported to be demonstrating para-suicidal behaviour prior to his death. His death was classified as accidental. On review, his death was found to be preventable at the primary level. Modifiable risk factors include alcohol impairment, high risk behaviour and para-suicidal behaviour.

Work-related Incident

A 17 year old male was injured while operating a fork lift at his place of work. The forklift tipped onto its side while on uneven ground and landed on the youth. He suffered extensive injuries and received numerous surgeries and treatment over the course of 13 months. He died as a result of a medical condition attributed to crush injuries sustained in the previous incident. Risk factors in this young person's life involved recurrent medical issues. Review of this case confirmed that his death was preventable at the primary level. Further review by the CDRU and the Medical Unit of the Coroners Service identified issues related to the medical plan and care this youth received while in hospital.

The following recommendations are being made in this case:

To the College of Physicians and Surgeons of British Columbia

The CDRU recommends that the case of male youth F.D. be referred for review of the medical plan and care received at Burnaby General Hospital on May 10, 2005.

To the Executive Director and Medical Director of Burnaby General Hospital

The CDRU recommends that the case of male youth F.D. be referred for further review of the medical treatment plan and care received at Burnaby General Hospital on May 10, 2005.

Animal Attack

A 3 year old male was rushed to emergency after being attacked by several dogs in the family home. He suffered extensive injuries and died as a result of wounds sustained in the animal attack. Several risk factors were found in the boy's life include chronic neglect, physical abuse, exposure to domestic violence, parental drug use, the age of the child, and the behaviour of the dogs. His death was determined to be preventable at the primary level. A Coroner's Inquest was held as a result of the death and a number of recommendations were made to government bodies including the Ministry of Children and Family Development, the Ministry of Health, the Ministry of Education and the Ministry of Agriculture and Lands.

Positional Asphyxia

A 10 year old female was found unresponsive in her bed. The girl had been diagnosed with severe cerebral palsy which resulted in her having little voluntary control over her movement. Her bed had side rails. Pillows were always placed on the bed in a way to help maintain positioning of her head while sleeping. One morning, the girl was found by her foster parent turned sideways and

wedged between the pillows, her head caught in the pillowcase. An investigation determined that the girl died as a result of positional asphyxia. Several risk factors were identified including exposure to drugs in utero, and not being able to self rescue due to her medical condition. Her death was determined to be not preventable.

PART 2

Ligature Strangulation

A 12 year old male was dropped off at home after school. Approximately 30 minutes later, a family member arrived home to find the child hanging in a closet by a yellow nylon rope. He was cut down and CPR was performed until an ambulance arrived. Despite aggressive resuscitation he died at the scene. The medical cause of death was asphyxia due to ligature strangulation. Based on the balance of probabilities, there was insufficient evidence to classify the death as either accidental or suicide. A review of his death identified several risk factors including a history of substance use, family challenges and possible exposure to a peer suicide. The death was found to be preventable at the primary level.

Undetermined Circumstance

The body of a deceased fetus/infant was found in an urban area. Post-mortem examination identified a fully formed and intact male fetus/infant with placenta and umbilical cord attached. There were no injuries or trauma present however, due to the level of decomposition, it was not possible to determine if it had been a live birth or the cause of death. Risk factors in the death of this child related to the child being born at home without a licensed professional present. A review of the death found that there was insufficient information to determine if this death was preventable.

Gunshot

An 18 year old male was at a friend's residence with a number of other male peers. In the early morning hours, a loud bang woke the residents of the house. The youth was found unresponsive lying on a sofa with a gun beside his hand. The youth died of a gunshot wound to the head. Review of this young



Gold Star

Prevention in Action: Ministry of Education and the BC SPCA's Bite Free Program

In April 2008, the Ministry of Education approved the BC SPCA's Bite Free Program as a recommended learning resource to be used in support of the Health and Career Education curriculum for Kindergarten to grade 5. The CDRU supports the Ministry of Education's decision and commends both the Ministry and the SPCA on their efforts to advance child safety in the province. The Bite Free Program includes a comprehensive kit for teaching dog bite safety to children that includes an instructor's guide with detailed lessons plans, the award winning video Bite Free: Playing it Safe with Dogs, a presenter training video and a master Bite Free brochure. For more information please visit www.sPCA.bc.ca.

person's death determined several risk factors including access to a firearm and belonging to a high risk peer group involved in criminal activity. It could not be determined whether the gunshot wound was accidentally inflicted, self-inflicted or intentionally inflicted by another individual. The death was found to be preventable at the primary level.

Poisoning

A 16 year old girl and her family immigrated to Canada from a violent country and settled in BC. She was described by friends and family as a happy girl with no signs of depression or suicidal thoughts. One morning, her mother awoke to find her daughter having a seizure. An ambulance was called and the girl was rushed to hospital where despite resuscitation efforts, she died. Toxicological examination established that the girl died as a result of acute salicylate intoxication. Intent could not be determined in this case. Risk factors included exposure to violence in a warring country and the murder of a parent. Protective factors included family support and successes at school. Her death was determined to be preventable at the primary level.

NATURAL DEATHS: 236 children

A 14 year old boy had relationships with both his biological and foster families. Although he experienced some challenges in school, he did well at sports and enjoyed working out and staying in shape. On the day he died, he spent the day playing games and Frisbee, and hanging out with family and friends. After dinner, he lay on the couch to play some video games. An hour later, his family noticed that his skin was blotchy and he appeared to be unconscious. Despite an aggressive attempt at resuscitation by both family and ambulance, he could not be revived. It was discovered on autopsy that he had contracted a viral illness that had affected his heart.

In 236 cases reviewed, the child died as a result of a natural defect or disease process, or a known or natural complication of a natural disease process. These cases include 56 sudden-unexpected Natural deaths as well as 180 Natural -expected deaths. Sudden-unexpected Natural deaths were investigated by a coroner, thus more information was available when reviewing these deaths.

A review of the 236 cases found:

A. DEMOGRAPHICS

- One hundred and thirty-three children (133) were male, 103 were female.
- One hundred and twenty-four children (124) were neonates, 38 were infants, 10 were preschoolers, 30 were children, and 34 were youth.
- Eighty-five children (85) lived in the Fraser Region, 50 in the Vancouver Metro region, 45 in the Island region, 27 in the Northern region, and 26 in the Interior region. Two children were from out of province and in one case the region of residence was unknown.

Part 4. Circumstances of Death

- Twenty- three children were Aboriginal, nine identified as First Nations. Six of the children lived on-reserve.
- Six children were in care at the time of their death.

B. CIRCUMSTANCES

Location

- One hundred and twenty- six deaths (126) occurred in the Vancouver Metro region, 48 deaths in the Fraser region, 28 in the Island region, 18 in the Northern region and 16 in the Interior region. The high number of children dying in the Vancouver Metro region reflects the number of high risk infants born in Women's Hospital, and the transport of critically ill children to BC Children's Hospital.
- One hundred and seventy- two children (172) died in hospital; 37 died at home, or in the home of a friend or relative; 19 died in a hospice. The remaining eight children died in other locations.

Typology

Sudden-unexpected Natural Deaths- 56 children

- Cardiovascular conditions or complications were most frequently seen in sudden-unexpected natural death, representing 17 (30%) of the 56 deaths (Table 10).
- Perinatal deaths were the second most commonly seen, with 12 deaths (21%).
- Twenty-one children (38%) had pre-existing chronic medical conditions, most commonly cerebral palsy (33%).
- Twelve (21%) had a recent acute illness in the week prior to their death.
- Twenty-seven (48%) had had a recent medical or surgical intervention.

Natural-expected Deaths- 180 children

- Perinatal deaths occurring in the neonatal period were the most common cause of natural-expected death in 2007, representing 74 (41%) cases.
- Congenital or chromosomal deaths were the second most common cause of death noted. If a child died in the neonatal period as a consequence of a congenital or chromosomal defect, the death was coded as congenital or chromosomal, rather than perinatal, in keeping with Center for Disease Control (CDC) guidelines.

Table 10 Sudden-unexpected and Natural-expected deaths by ICD coding (CDRU 2007)

Classification	Sudden-unexpected Natural Deaths	Natural-expected Deaths	Total
Perinatal	13	74	87
Congenital or chromosomal	0	40	40
Neoplasm	1	21	22
Respiratory	8	12	20
Cardiovascular	17	11	28
Central Nervous System	10	8	18
Metabolic, Endocrine or Nutritional	6	8	14
Sepsis	0	6	6
Undetermined medical cause	1	0	1
TOTAL	56	180	236

■ PERINATAL: 87 children

A. DEMOGRAPHICS

- Fifty-two children were male and 35 were female.
- All were neonates who died in the perinatal period, or during the first 28 days of life. Sixty (69%) died on their first day of life.
- Thirty-eight were from the Fraser region, 17 from the Vancouver Metro region, 14 from the Island region, 10 from the Interior region and seven from the Northern region. One child resided outside the province.
- Nine children were First Nations; one was known to live on-reserve.

B. CIRCUMSTANCES

Location

- Two neonates were born at home. Both home deliveries were vaginal after a previous Caesarean section; both fetuses were known to have a breech presentation. The home deliveries were high risk, against medical advice, and took place without licensed health care professionals present.
- Eighty-five neonates died in hospital, one died at home and one in a hospice.

Typology

Sudden-unexpected Natural Deaths-13 children

- Seven neonates died as a result of complications arising from the birth process. These complications included meconium aspiration (2 cases), perinatal asphyxia (2 cases), skull fractures due to forceps use (1 case), transmission of infection (1 case) and internal bleeding (1 case).
- One neonate died in a critical care unit in hospital after exhibiting complicated medical symptoms from birth, the origin of which was never determined. This death was complicated by a medication error.

Natural-expected Deaths- 74 children

- Sixty children (82%) were born prematurely; 73% died on their first day of life.
- Nine (15%) premature neonates were from multiple births (four sets of twins and one set of triplets).
- Of the 14 children born at term, eight died from complications of birth asphyxia, two from meningitis, two from fetal hydrops, and one each from sepsis and respiratory failure.

CONGENITAL AND CHROMOSOMAL: 40 children

A. DEMOGRAPHICS

- Twenty-five children were male and 15 were female.
- Twenty-nine children (71%) died in the neonatal period, 19 (65%) on their first day of life. Nine died in infancy, two died as preschoolers and one died in childhood.
- Thirteen children resided in the Fraser region, 10 in the Vancouver Metro region, seven each in the Island and North regions, and three in the Interior region.
- Three children were First Nations; one lived on-reserve.



Gold Star

Prevention in Action: The Newborn Screening Program

The Newborn Screening Program screens virtually all newborns in BC for treatable disorders through a simple blood test. Without newborn screening, affected infants may not be diagnosed early enough to prevent complications of their conditions, including damage to the brain or liver, blindness or even death. Early diagnosis and treatment in these children can mean the difference between lifelong impairment and healthy development. The Newborn Screening Program has recently been expanded to include LCHAD and Glutaric aciduria type I. Further expansion will include screening for another 12 conditions. These changes will be phased in over 24 months, a process which began April 1, 2008. For more information visit www.newbornscreeningbc.ca

B. CIRCUMSTANCES

Location

- Thirty-four children died in hospital, four in a hospice and two at home.

Typology

Natural-expected Deaths- 40 children

- Twenty-five children (63%) had congenital anomalies, primarily of the cardiovascular or central nervous system.
- Fifteen children (37%) had chromosomal anomalies.

CARDIOVASCULAR: 28 children

A. DEMOGRAPHICS

- Seventeen children were male; 11 were female.
- Two were neonates, seven were infants, three were preschoolers, five were children and 11 were youth.
- Seven children came from the Island region, six each from the Interior, Fraser and Vancouver Metro regions, and two from the Northern region. One child was from out of province.
- Four children were First Nations. Two lived on-reserve.

B. CIRCUMSTANCES

Location

- Twelve children died in hospital, nine children died at home or at a relative's home, one died in a hospice and six died in other locations.

Typology

Sudden-unexpected Natural Deaths - 17 children

- Three of the children had primary defects of their cardiovascular system (heart and blood vessels).
- Ten children developed a cardiac illness or disease that often resulted in a fatal arrhythmia.
- Four children succumbed to cardiovascular complications of other conditions: a volvulus, spinal surgery and central TPN infusion.

Natural-expected Deaths : 11 children

- All of the children had pre-existing health conditions, of which seven were congenital or chromosomal in nature.
- In three cases, the death was as a result of complications associated with medical treatment.

■ **NEOPLASM: 22 children**

A. DEMOGRAPHICS

- Ten children were male and 12 were female.
- Two were infants, four were preschoolers, nine were children and seven were youth.
- Nine children lived in the Fraser region, seven in the Vancouver Metro region, four in the Northern region and two in the Island region.
- One child was First Nations and lived on-reserve.

B. CIRCUMSTANCES

Location

- Seven children died in hospital, 11 in a hospice, three at home and one in another location.

Typology

Sudden-unexpected Natural Deaths - 1 child

- This child's death occurred as a result of complications of surgical treatment.

Natural-expected Deaths - 21 children

- Cancers of the blood (leukemia) and brain accounted for 57% of the cases.

■ **RESPIRATORY: 20 children**

A. DEMOGRAPHICS

- Seven children were male and 13 female.
- These deaths involved five infants, four preschoolers, five children and six youth.
- Ten children came from the Island, three came from the Vancouver Metro and Northern regions, two from the Fraser region, one from the Interior region. In one case the child's region of residence could not be determined.
- Four children were First Nations. One lived on-reserve.

B. CIRCUMSTANCES

Location

- Thirteen children died in hospital and seven children died at home or in the home of a relative.

Typology

Sudden-unexpected Natural Deaths - 8 children

- All eight children had underlying health concerns. Four were born prematurely between 27 and 37 weeks gestation. Of these, three died in their first four months of life. Three children were profoundly affected by cerebral palsy and/or spastic quadriplegia. One child had long-standing insulin-dependent diabetes.
- One of the deaths was complicated by an in-hospital medication error.

Natural-expected Deaths - 12 children

- Eleven children (92%) had an underlying or pre-existing illness or health condition.
- Seven of the underlying conditions were congenital or chromosomal in nature.
- In two cases, the respiratory illness occurred secondary to complications from a medical treatment.

CENTRAL NERVOUS SYSTEM: 18 children

A. DEMOGRAPHICS

- Thirteen children were male and five female.
- Two were neonates, three were infants, two were preschoolers, five were children and six were youths.
- Eight were from the Fraser region, four from the Interior region, three from the Vancouver Metro region, two from the Northern region and one from the Island region.
- One child was First Nations. The child lived off-reserve.

B. CIRCUMSTANCES

Location

- Twelve children died in hospital, four died at home or at the home of a relative, and one each died in hospice and in transit.

Typology

Sudden-unexpected Natural Deaths - 10 children

- Six children (60%) died of secondary brain injuries: three from hypoxic ischemic encephalopathy, two from infarctions and one from herniation.
- Two children died from complications of a blocked drainage shunt.
- One child died from a compression of his spinal cord due to a spinal defect.
- One child died from epilepsy.

Natural-expected Deaths - 8 children

- Three children had infectious processes.
- Three children had underlying health conditions.
- Two children died of brain injuries secondary to a cardiac arrest.

METABOLIC, ENDOCRINE AND NUTRITIONAL: 14 children

A. DEMOGRAPHICS

- Seven children were male and seven were female.
- Three were neonates, five were infants, one was a preschooler, two were children and three were youth.
- Four children came from the Vancouver Metro and Island regions, three from the Fraser region, two from the Interior region and one from the Northern region.
- One child was First Nations and lived on-reserve.

B. CIRCUMSTANCES

Location

- Twelve children died in hospital, one died at home or in the home of a relative, and one died in another location.

Typology

Sudden-unexpected Natural Deaths - 6 children

- Three children had an in-born error of metabolism.
- The remaining three children died of an adrenal crisis, hemorrhagic pancreatitis and a perforated gastric ulcer.

Natural-expected Deaths - 8 children

- Six children (75%) were between six days and seven months old and had necrotizing enterocolitis. Two of these children had an underlying congenital or chromosomal condition.
- The remaining two children were youth who had pre-existing illnesses.

■ SEPSIS: 6 children

A. DEMOGRAPHICS

- One child was male and five were female.
- Two were infants, three were children and one was a youth.
- Five of the children came from the Fraser region and one from the Northern region.

B. CIRCUMSTANCES

Location

- Five died in a hospital and one in a hospice.

Typology

Natural-expected Deaths - 6 children

- All of the children had pre-existing medical conditions that may have rendered them more vulnerable to infection.
- Three of the conditions were congenital or chromosomal in nature.
- Two developed sepsis as a complication of a medical treatment.

■ UNDETERMINED MEDICAL CAUSE: 1 child

A. DEMOGRAPHICS

- This death involved a male neonate from the Fraser region.

B. CIRCUMSTANCES

Location

- The child died in hospital in the Vancouver Metro region.

Typology

Sudden-unexpected Natural Death - 1 child

- This child's death occurred as a result of several unexpected and unexplained precipitous drops in vital signs related to invasive medical procedures.

CORONER RECOMMENDATIONS

Eight cases reviewed contained coroner recommendations. These recommendations were for agencies to examine the information in the Judgement of Inquiry.

REVIEWS

Hospitals conducted internal reviews in four of the cases reviewed. In three cases, the hospital review resulted in recommendations for the particular facility.

The Ministry of Children and Family Development conducted a review of one case, resulting in recommendations to MCFD practice.

The College of Midwives of BC reviewed one case that resulted in recommendations to its practitioners.

Reviews were also done in one case each by the College of Physicians and Surgeons and the Provincial Child Care Facilities Licensing Board. No recommendations came out of these reviews.

RISK FACTORS

Risk factors related to Natural death may contain both modifiable and non-modifiable aspects; for this section, these categories have been integrated together.

Natural-expected deaths were not investigated by a coroner, so information related to these deaths was limited. The following analysis of risk factors relate to the 56 cases of sudden-unexpected Natural death.

Lack of Access to Care

Lack of access to appropriate medical care was identified as a factor in four of the 56 cases. These children and their families lived in isolated communities often one to several hours away from a major hospital and/or medical resources. Lack of resources in remote communities may impact health care to children in these areas, particularly children with existing chronic health care concerns. Some parents of medically complex children must independently monitor and assess their children at home in their communities. These parents need significant support from local health care teams that includes effective communication with larger tertiary centres.

Perinatal Health Factors

Risk factors impacting perinatal health were noted in several cases. These included a lack of prenatal care or denial of pregnancy in three cases, maternal use of tobacco or illicit substances in five cases, presence of infectious disease at time of childbirth, high risk pregnancy and issues around the level of newborn screening available in BC. Eleven per cent of natural- unexpected deaths reviewed involved children who were born prematurely.

Pre-existing Chronic Medical Concerns

Prior to their acute illness, 23 children (41%) had underlying chronic medical conditions which may have left them more vulnerable to a secondary illness or an acute exacerbation of their chronic condition. These conditions included metabolic disorders, cancerous conditions, complications of prematurity, asthma, chromosomal anomalies, cerebral palsy, seizure disorders, cerebral shunts, cystic fibrosis, and diabetes.

Appropriateness of Medical Care

Issues around the medical care the child received were identified in 10 cases. In two of these cases, a possible contributory factor was an in-hospital medication error, which may have placed the child at a heightened risk. In two further cases, there was insufficient information to determine if there were issues related to appropriateness of care.

Parental Non-Compliance

In three cases, the child's caregivers were non-compliant with medical treatment regimes and advice. In all cases, this non-compliance was directly linked to the child's death. In one case, parents did not administer necessary medication to their child. In two cases, women acted against medical advice and chose to deliver their high risk pregnancies at home without benefit of a licensed health care provider.

Developmental Factors

Eighteen children (32%) were unable to communicate their symptoms due to their developmental stage. This included infants and young children as well as older children with developmental challenges.

Family Challenges

Six children (11%) had families who faced complex challenges, including neglect, exposure to domestic violence, conflict with a foster parent, physical abuse, over-crowding, parental abandonment, parental mental health issues, and parental prostitution.

Economic Stressors/Poverty

Seven children (13%) lived with families that faced economic stressors. In one case, the economic stressors were related to the overall financial hardships experienced living on-reserve.

PROTECTIVE FACTORS

The majority of these children had multiple protective factors present in their lives. These included ongoing family support and monitoring, access to medical care and social services, and support from First Nations communities and service providers.

PREVENTABILITY

Twelve (21%) natural sudden-unexpected deaths were determined to be preventable:

- Seven at the primary level
- Four at the secondary level
- One at both primary and secondary levels

In five deaths, there was insufficient information to determine preventability.

Best practice review determined that prevention strategies for modifiable risk factors would:

Enhance communication between parents and health care professionals

It can be difficult for parents to navigate the health care system, particularly if they are caring for a medically complex child. As the experts on their children, parents wish to be consulted and respected when offering the medical history of their child and their assessment and concerns.

As the guardians of the best interests of their children, parents need to be active members of the health care team. Research shows that participation helps prevent errors and improve results. *The BC Health Guide to Working in Partnership with Your Health Professional to Prevent Medical Errors* suggests that patients or parents:⁹²

- Speak up with questions or concerns
- Ensure a designated professional is in charge of medical care
- Ensure all health care professionals involved have pertinent information
- Have someone to advocate for them if they cannot do so themselves

Promote education of risk for home births against medical advice

In childbirth, safety is the central concern of all involved. Health care professionals trained in emergency management and backed by systemic medical support and appropriate equipment and supplies should be present at all deliveries for optimal safety of mother and child.

The government of BC integrated midwifery in to the health care system in 1993. Home birthing involves careful screening of a pregnant mother's suitability and safety. Midwives will attend home births only if specific exclusionary risk factors are not present antenatally or during labour. Mothers who choose moderate to high risk home births against the advice of medical or midwifery professionals face heightened risk.⁹³

Promote comprehensive fetal and newborn assessments including newborn screening

The birth process is a transitional time for a newborn. Internal stressors, such as post-natal pulmonary and circulatory changes, as well as external stressors from the birth process, may impact the newborn during this time. Careful and comprehensive assessment of the infant by hospital staff and public or community health personnel is vital in surveillance of early infant health.

One aspect of newborn assessment involves the newborn screening program of BC, which screens blood samples for a variety of conditions that, if diagnosed at birth, may be treated prior to the child being irreparably damaged or dying.

Promote careful assessment of ill children

Due to the wide range of physical and cognitive development throughout childhood, assessing children requires specialized skills and knowledge. Areas in which critically ill infants and children are seen infrequently may benefit from opportunities to improve their skills in this area.

Ensure all health care personnel dealing with children were appropriately trained in current resuscitation procedures

Appropriate courses such as Acute Care of At-Risk Newborns (ACoRN), Emergency Nursing Paediatric Course (ENCP) or Paediatric Advanced Life Support (PALS) may prepare front-line health care workers who intersect critically ill children in the health care sector.

RECOMMENDATIONS

To the Ministry of Health

The CDRU recommends that the Ministry of Health enhance the current complaint resolution and patient advocacy framework in all health authorities with a view to having a clearly defined, patient-centred and well communicated approach that is readily available to patients and their families.

Part 5. Aboriginal Children and Youth

A MESSAGE FROM THE FIRST NATIONS HEALTH COUNCIL

The death of an Aboriginal child speaks to our vulnerability, the death of Aboriginal children speaks to our liability, and the weight of their memory speaks to our desire to ensure the longevity of all of our children. There is no greater truth than the brevity and complexity of life and death, and the value of weighing the consequence of each within the beliefs that we pass on to our children. Our children carry all of who we are and where we come from, and we pray that our children carry forward all that we work for and aspire to. We are nations of people always praying for the wellbeing of our children.

Jordan's Principle is the effect of the death of one of our own. This Principle has raised a collective awareness of the circumstances that we are operating in, where conflict of interest issues can cloud our ability to care for our children. This conflict is further aggravated by the smallness of Aboriginal social units that constantly struggle for expertise, resources, justice, and the capacity to affect policy that allows us to protect Aboriginal children in life and in death. Jordan's Principle ensures jurisdictional disputes do not prevent Aboriginal children from receiving care otherwise guaranteed to all Canadian children. There is a need for police, social service agencies, provincial ministries, and for all of British Columbia to consult with each other to be brave enough to speak and uncover the truth, and for truth to assign social responsibility and an opportunity for change.

Change also defines the reality that there are few people that can fill jobs in our communities and fill those positions of great responsibility that look after our children. Disparity is continually accepted as a means to child care, community development, self government, and our right and title to care for each other. Current social agreements must address the need for all of British Columbia to rise to the challenge to take care of our children in a manner that reflects the principle that the death of a child is not acceptable under any circumstance.

The Transformative Change Accord: First Nations Health Plan forms the basis of a tripartite health promotion and disease and injury prevention strategy, which aims to eliminate the difference in health outcomes between First Nations and other British Columbians. This plan formed the basis of a growing partnership between the Child Death Review Unit and the First Nations Health Council, as we work collaboratively to address the disproportionately high number of deaths occurring among Aboriginal children and youth in BC. In working together towards common goals of disease and injury prevention, an important step is to exchange knowledge with Aboriginal people that are committed to protecting and promoting the health and safety of their children. We invite you to share the findings of this report with your family and community.

The First Nations Health Council acknowledges the spirit of those Aboriginal children that left us much too soon and stands with the families in their grief. We will pledge to work with each community in the arenas of social change and wellbeing and make every effort to insist on a standard of life for our children that is underpinned with equality, independence and safety. The First Nations Health Council acknowledges the work and dedication of the British Columbia Coroners Service and the Child Death Review Unit.

Jordan's Principle:

Under this principle, where a jurisdictional dispute arises between two government parties (provincial/territorial or federal) or between two departments or ministries of the same government, regarding payment for services for a Status Indian child which are otherwise available to other Canadian children, the government or ministry/department of first contact must pay for the services without delay or disruption. The paying government party can then refer the matter to jurisdictional dispute mechanisms. In this way, the needs of the child get met first while still allowing for the jurisdictional dispute to be resolved. For more information please visit: <http://www.fncaringsociety.com/more/jordansPrinciple.php>

Union of BC Indian Chiefs First Nations Summit BC Assembly of First Nations

■ Aboriginal Children and Youth: 56 Deaths

A 12 year old Aboriginal boy was living with his mom and siblings, after having moved in and out of foster care for several years. This boy faced several challenges throughout his childhood, including emotional abuse, loss of a family member to suicide, and exposure to domestic violence and alcohol misuse in his home. He had recently begun experimenting with alcohol and marijuana himself. Several agencies were involved in this boy's life, although a lack of communication between those involved was impacting the adequacy of services provided to him and his family. One night, following an argument with his mother, he ran out of his house and threatened to kill himself. This was not the first time he had talked about suicide. A search for the boy began, which ended later that night when he was found deceased in the bushes near his home. He had taken his own life.

In this report, the use of the term Aboriginal includes children of First Nations (Status and Non-Status), Métis or Inuit ancestry. The identification of Aboriginal children among cases reviewed by the CDRU is based on information provided on the child's registration of death. For children who died under sudden and unexpected circumstances, Aboriginal ancestry is further determined through documentation on the coroners file. Relying solely on the above systems of identification is known to result in an underestimation of Aboriginal representation among reviewed deaths, the extent of which is unknown.

A total of 395 child deaths were reviewed by CDRU in 2007, 56 of which involved Aboriginal children. Table 11 provides a breakdown of Aboriginal representation among sudden-unexpected deaths and natural expected deaths reviewed.

Child deaths reviewed for this report do not represent all child deaths that occurred in 2007. As outlined in Figure H, the 56 deaths involving Aboriginal children occurred between 2000 and 2007. The year that a death is reviewed by CDRU is not necessarily synonymous with the year in which the death takes place. Although the CDRU completes ongoing monitoring of child deaths as they occur, a detailed case review only takes place when investigation into the death is complete and the case is closed. For sudden-unexpected deaths, the gap that exists between the date of death and year of case referral to the CDRU is a reflection of the time required to complete a coroner's investigation. The CDRU is therefore only able to review and report on a fraction of sudden and unexpected deaths which take place in a given year. Given this limitation, the representation of Aboriginal children among sudden-unexpected deaths reviewed and related findings should be interpreted with caution. This limitation is not a factor for natural-expected deaths which do not require comprehensive investigation and are generally reviewed by CDRU during the same year that the death occurs.

A. DEMOGRAPHICS

- With respect to age at time of death, infants and youth were the most represented age groups, each accounting for 16 (29%) deaths. This is followed closely by neonates, who represented 12 (21%) of the 56 deaths reviewed. This age distribution is consistent with findings for all child deaths.

Table 11

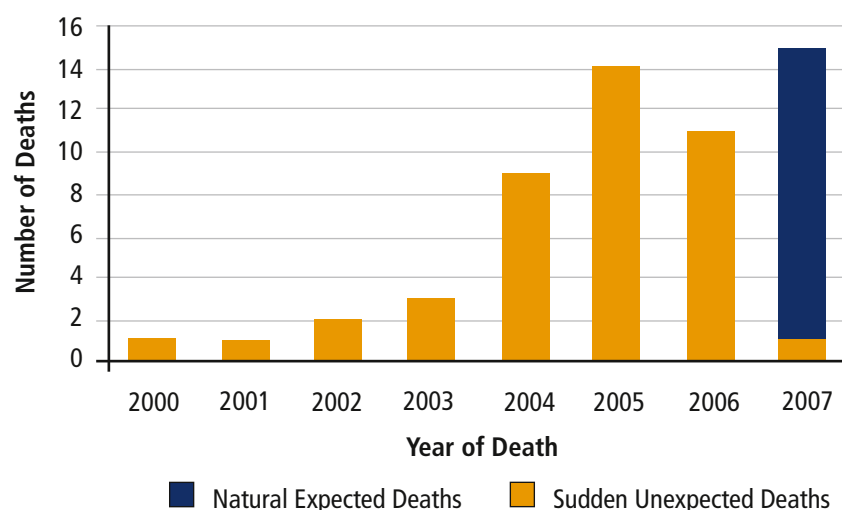
Number and percentage of Aboriginal and non-Aboriginal child deaths reviewed by category of death (CDRU 2007)

Child Deaths Reviewed in 2007			
	Coroner Cases	Natural Expected Deaths	Total
Aboriginal*	42	14	56
Non-Aboriginal	173	166	339
Total	215	180	395
% Aboriginal	19%	9%	14%

* Aboriginal children include those of First Nations (Status and non-Status), Métis or Inuit ancestry

Figure H

Deaths of Aboriginal Children Reviewed in 2007 by Category and Year of Death



- The number of males and females was close to equal; 26 cases (46%) involved males and 30 cases (54%) involved females. This differs from the distribution of sexes among non-Aboriginal child deaths, for which males had a higher representation.
- Of the 56 children, 53 (94%) were identified as First Nations. One child was Métis. Aboriginal ancestry for the remaining two children was unknown.
- Among the 53 First Nations children, 27 (51%) were determined to live off-reserve at the time of their death. In comparison, seventeen (32%) were identified as living on-reserve. Location of residence for the remaining nine children was unknown.
- Aboriginal children from the Island and Northern regions had the highest representation among cases reviewed, accounting for 21 (37%) and 18 (31%) deaths respectively. The geographical distribution of child deaths across the province differs when comparing region of residence to region of death, demonstrating the number of children who died outside of their home community (see Figure 2). The increased number of deaths taking place in the Fraser and Vancouver Metro regions is due to children being transferred to more urban areas for specialized paediatric care, including admission to BC Children's Hospital and other tertiary care centres. For a map of BCCS regions see Appendix A.
- Seven Aboriginal children were in care at the time of death.

Results of the First Nations Regional Health Survey showed that half of First Nations youth reported an injury requiring medical attention in the previous year, a higher proportion than any other age group.

Figure I Deaths of Aboriginal Children reviewed in 2007
by Region of Residence and Region of Death

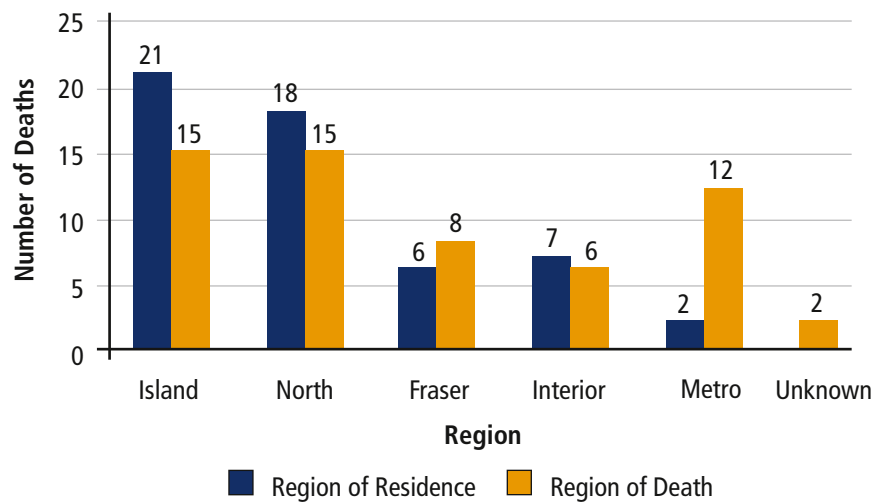
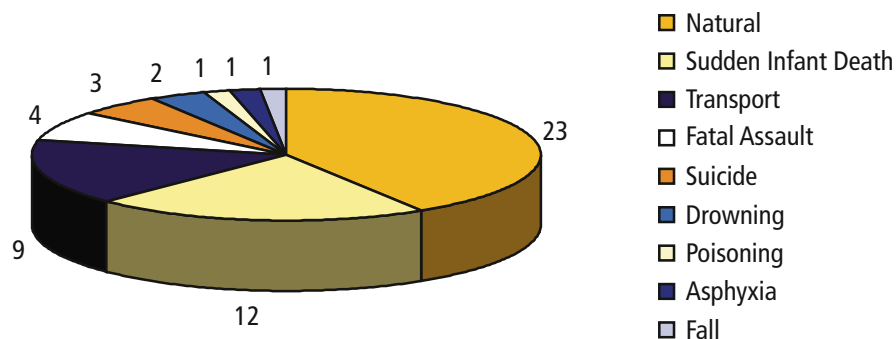


Figure J Circumstances of Death Reviewed in 2007, Aboriginal Children



B. CIRCUMSTANCES

- Natural deaths were the most common circumstance for Aboriginal children, representing 23 (41%) of the 56 deaths reviewed (Figure J).
- The second highest number of deaths reviewed was attributable to sudden infant death. Twelve (21%) of the 56 children died in these circumstances.
- Transport fatalities were the second most frequent circumstance of sudden-unexpected death (after sudden infant death), accounting for nine (16%) of the cases reviewed. This was followed by fatal assaults and suicide.

■ TRANSPORT-RELATED FATALITIES: 9 CHILDREN

Of the 215 total sudden-unexpected deaths reviewed, 58 children died in a transport-related incident. Nine of the 58 children (15%) were identified as Aboriginal. Findings from the review of all transport-related deaths referred to the CDRU in 2007 are reported on page 17.

A review of the nine transport-related deaths involving Aboriginal children found:

DEMOGRAPHICS

- Youth were involved in the highest number of deaths, representing six of the nine fatalities (67%). The remaining three deaths involved children.
- Six of the deaths (67%) involved males; three (33%) involved females.
- All of the children were identified as First Nations.
- Four children were determined to live on-reserve; four children lived off-reserve. In one case, the location of the child's residence was unknown.
- Five of the nine children (56%) were residing in the Northern region at the time of the incident. Two children resided in the Island region and two lived in the Interior.

The most common causes of injury in First Nations children are: falls (7.6%), riding a bicycle (2.8%), sports (2.1%) and motor vehicles (1.5%).⁹⁴

CIRCUMSTANCES

Location

- The highest number of incidents occurred in the Northern region, which accounted for five of the nine deaths (56%). Two incidents took place in the Interior, one in Vancouver Metro and one in the Island region.
- Four transport-related incidents (44%) occurred on a highway. Rural roads accounted for two of the fatalities and were the second most frequent location of death. The remaining incidents took place in other locations, such as a body of water or off-road area.

Typology

- All of the nine transport-related deaths were single events.
- Vans, trucks or SUVs were involved in four of the nine transport-related incidents (44%). Two cases involved off-road vehicles and one involved a car. A boat and bicycle were each involved in one case.
- Five of the deaths were single vehicle incidents; four involved multiple vehicles.
- Four of the nine children were passengers in the vehicle at the time of the incident. In three of these deaths, the vehicle was being driven by the child's peer. In one case the vehicle was being operated by a family member.

- The child was operating the vehicle in three of the incidents.
- The operator of the vehicle could not be determined in two cases. Both of these children were driving with peers at the time of the incident.

NON-MODIFIABLE RISK FACTORS

Age

Youth were involved in 67% of transport-related deaths of Aboriginal children. Lack of developmental maturity among teenagers can lead to impulsive behaviour, poor decision making, overconfidence in their abilities, as well as more risky driving styles, such as speeding, following too closely or dangerous passing.⁹⁵

Sex

Males were involved in 67% of transport-related deaths of Aboriginal children. This is consistent with research showing that young males tend to be involved in crashes more often than young females, particularly when speed and alcohol are involved.⁹⁶

Environmental Factors

Environmental risk factors were identified for three of the nine children (33%). All of these incidents took place under poor road conditions, either due to weather (snow/ice) or design (gravel/dirt roads). Poor visibility due to blowing snow was identified as a factor in one case.

MODIFIABLE RISK FACTORS

Alcohol and/or Drug Impairment

Driver impairment was a factor in five of the nine transport-related deaths (56%). Two of these children were alcohol impaired, one was drug impaired and two were both alcohol and drug impaired. Cocaine was the substance used in all cases of drug impairment. In three cases involving driver impairment, unsafe speed was also identified as a risk factor.

Unsafe Speed

Unsafe speed was a risk factor in four of the nine transport-related deaths (44%) involving Aboriginal children. In three cases, the vehicle was travelling in excess of the posted limit. In one case, the vehicle was travelling on a highway at a rate of speed far below the posted limit, and was subsequently struck from behind by a second vehicle.

Driver Inattention

Driver inattention was identified as a risk factor in two deaths (22%), both of which involved males. In both incidents, the child was travelling on a rural roadway with a group of peers and collided with another moving vehicle.

Non-use of Personal Protective Equipment

Five of the transport-related incidents involved motor vehicles that legally require use of a restraint when operated. Four of the children (80%) involved in these incidents were not wearing

More than 80% of First Nations people who died from motor vehicle collisions from 1996 to 2001 were not wearing their seatbelts.⁹⁷

a restraint. In one case involving a child passenger, restraint use could not be determined. Of the three Aboriginal children who were on bicycles or off-road vehicles, only one child was determined to be wearing a helmet.

Driving with Peers

In five of the nine transport-related deaths (56%), there was more than one youth passenger in the vehicle at the time of the incident. In an additional two cases, the child was riding a dirt bike or bicycle and was travelling with a group of peers.

Mechanical Deficiencies

In three of the nine transport-related deaths, the vehicle involved was determined to have mechanical problems; factors included mismatched tires, brake issues and a non-functioning carburetor.

PROTECTIVE FACTORS

Social protective factors were present in the lives of three children and included support from family, friends, community and faith. In one case, friends of the child attempted to take the keys away from the vehicle operator but were unable to dissuade the group from drinking and driving.

PREVENTABILITY

Eight of the nine transport-related deaths (89%) were preventable:

- two deaths were preventable at the primary level
- six deaths were preventable at the both the primary and secondary levels

In one case, there was insufficient information to determine preventability.

Modifiable risk factors occurring at the primary level include impairment, unsafe speed, driver inattention, driving with multiple peer passengers and mechanical problems. Not wearing personal protective equipment (such as seatbelt or helmet) was also a risk factor, modification of which would strengthen prevention at the secondary level.

Despite decreases over time, motor vehicle incidents remain a leading cause of death among Aboriginal people of all ages, including children and youth.⁹⁸ Modifiable risk factors associated with Aboriginal transport fatalities are consistent with those seen in the non-Aboriginal population, including impaired driving, speeding and non- use of personal protective equipment. Additional risk factors associated with motor vehicle incidents have been identified as unique to First Nations community living. These include the greater distance required to travel to places where regular activities or services can be undertaken, the necessary use of riskier types of vehicles (like snowmobiles and ATVs) because of rougher terrain, the significant influences of alcohol and substance use in First Nations communities and the greater distance between emergency facilities and many First Nations communities.⁹⁹

A review of best practices for the prevention of transport-related deaths by the CDRU identified various recommended interventions and opportunities for action in BC. The Assembly of First Nations has recognized several interventions to address vehicle safety issues in First Nations communities, including mandatory helmets and safety training for off-road vehicles, tougher drinking and driving enforcement, controlling excessive speed and strict enforcement of seatbelt usage.¹⁰⁰

For a fuller discussion on best practices for prevention and CDRU recommendations for the prevention of transport-related deaths, see page 29.

■ DROWNING: 2 CHILDREN

Drowning accounted for 12 of the 215 sudden-unexpected deaths reviewed by the CDRU; two of the drowning-related fatalities (17%) involved Aboriginal children. Findings from the review of all drowning deaths referred to the CDRU in 2007 are reported on page 31.

A review of two drowning deaths involving Aboriginal children found:

DEMOGRAPHICS

- Both drowning-related incidents involved male youth.
- Both of the youth were determined to be First Nations.
- One child lived on-reserve. In the remaining case, the location of the child's residence was unknown.
- At the time of death, one child lived in the Interior region; the second child lived in the Northern region.

CIRCUMSTANCES

Time and Location

- The incidents occurred in June and September.
- The incidents took place within the Interior and Northern regions.
- Both of the drowning-related incidents took place in a natural body of water.

The leading circumstances of drowning for the Aboriginal population are boating, aquatic activities such as swimming and wading, and falls into open water.¹⁰¹

Typology

- One of the youth drowned in a drug-related incident, following the intentional ingestion of seeds from a Datura plant. His death was not witnessed. In consideration of the known side effects of Datura seed ingestion, the investigation concluded that the youth's impairment was a contributory factor in his death. He had no history of alcohol or drug use; friends and family members believed that his apparent experimentation with Datura seeds was an isolated incident.

Datura seeds come from the Datura Stramonium plant (aka Jimson Weed). The Datura plant grows wild in the Okanagan region and is sold in commercial nurseries. Datura plants are a poisonous weed; its seeds and leaves contain active delirants. Effects of ingesting Datura seeds include dilation of pupils, warm dry skin, dry mouth, urinary retention, rapid heart beat and jerky movements. These symptoms can come within 1-6 hours of ingestion, lasting hours or days.

- The second youth fell from a bridge and into a river below. Although the event was witnessed, it was undetermined whether the fall was intentional or unintentional.

Twenty-three cases of Datura seed ingestion were reported to the BC Drug and Poison Information Center from 2004 to 2006.¹⁰² Datura ingestion has been associated with fatal unintentional injuries among recreational users, including drowning.

NON-MODIFIABLE RISK FACTORS

Age and Sex

Both cases involved male youth. In Canada, male youth are at higher risk of drowning than females in the same age group.¹⁰³ This trend is consistent for both the Aboriginal and non-Aboriginal populations.

Aboriginal Children

Aboriginal children were involved in two of the twelve drowning deaths (17%) reviewed by the CDRU. At a national level, in 1996, Aboriginal people had a drowning rate 6 times higher than other Canadians; Aboriginal toddlers had a drowning rate 15 times higher than other Canadians.¹⁰⁴

MODIFIABLE RISK FACTORS

High Risk Behaviour

Both of the youth were involved in high risk behaviours at the time of their death, including substance use and one becoming involved in physical altercations with other youth.

Family Challenges

Both of the Aboriginal children who died in a drowning-related incident experienced family challenges during their life. These included exposure to domestic violence, family history of mental health issues and living within community norms of substance use and poverty.

PROTECTIVE FACTORS

One of the children was reported to have multiple protective factors in his life. Behavioural protective factors included employment and future goals; social protective factors included positive family relationships and extracurricular school involvement.

PREVENTABILITY

Both drowning fatalities were determined to be preventable at the primary level. Prevention would involve addressing risk factors present before the child's death took place, by modifying high risk behaviour and family and/or social challenges which were present in their lives.

In general, additional risks resulting from factors that are unique to First Nations community living include their close proximity to rivers and lakes, cold water temperatures in northern areas which increase the likelihood of hypothermia and less access to swimming lessons and lifesaving training in remote communities. The Assembly of First Nations reports that safety and lifestyle habits do not emphasize safety practices such as use of floatation devices or limiting alcohol consumption when in or on the water.¹⁰⁵ These lifestyle habits are also frequently seen as risk factors for drowning in the non-Aboriginal population.

Health Canada reports that drowning is the second most reported cause of death in many Aboriginal communities; in some regions, the number of drowning fatalities is reported to exceed motor vehicle crashes when including snowmobile-related drowning incidents.¹⁰⁶ Two Aboriginal deaths reviewed were water-related transport fatalities; one involved a snowmobile falling through ice and the other involved an alcohol-related boating incident. For review findings related to these deaths, see the Transport section on page 23.

The typology of drowning deaths of Aboriginal children is somewhat unique to other circumstances of drowning fatalities reviewed by the CDRU. To view findings related to all drowning deaths and related CDRU recommendations, see page 34.

Assault has become a leading cause of serious injury and death among Canadians under 20 (CIHI)

FATAL ASSAULT: 4 CHILDREN

A total of 14 fatal assaults were reviewed by the CDRU in 2007. Aboriginal children were involved in four (29%) of these 14 deaths. Findings from the 2007 review of all fatal assaults are reported on page 47.

A review of fatal assaults involving Aboriginal children found:

DEMOGRAPHICS

- Two of the four deaths due to a fatal assault (50%) involved preschoolers; one fatal assault involved a youth. One case involved a child who died at age five due to a critical injury that occurred when she was a preschooler.
- Three of the children (75%) were female, all of whom were under five years of age. One of the fatal assaults involved a male (youth).

A recent Canadian study suggests that a minimum of 40 cases of shaken baby syndrome occur in Canada annually, with a mortality rate of almost 20%. Unfortunately, many cases of abusive head trauma often go unrecognized, resulting in further maltreatment and, in some cases, death.¹⁰⁷

- All of the children were First Nations and lived off-reserve.
- At the time of their deaths, the children resided in the Island, Fraser, Northern and Vancouver Metro regions.
- At the time of death two children lived with a foster family. One of these children was critically injured while living with her biological parents and subsequently placed into a foster home. The other child died while in her foster home. One child lived alone and one lived with extended family.

CIRCUMSTANCES

Location

- Two children died in the Vancouver Metro region. One child died in the Island region and one in the Fraser.
- All of the fatal assaults took place within the child's home.

Method

- In the case involving a male youth, the child was fatally assaulted with a knife.
- Among the fatal assaults involving preschoolers, one involved the use of blunt force trauma and one was caused by abusive head trauma by shaking. In the remaining case, the method of assault was unknown.

Typology

- In the death of the male youth, the fatal assault took place following an argument with a peer. The youth was the intended victim in the assault.
- All of the fatal injuries involving preschoolers were the result of acute or prolonged child abuse. Chronic neglect of the child was identified in two of the cases involving female preschoolers.

Perpetrator-Victim Relationship

- In the assault of the male youth, the perpetrator was another young male. The relationship between the perpetrator and victim was unknown.
- All three female children were assaulted by an adult caregiver. Perpetrators in the cases included the child's biological father and male relative. In one case, the perpetrator within the home remains unknown.

NON-MODIFIABLE RISK FACTORS

Age

Among Aboriginal children who died of fatal assault, 75% were preschoolers at the time of the critical incident. Children under six years of age spend the majority of their time with a primary caregiver be it a parent, relative or paid caregiver and are at highest risk of intra-familial victimization.¹⁰⁸ One case of fatal assault involved a First Nations youth. Youth spend a greater amount of time away from the family unit and are more prone to high risk behaviour that puts them at greater risk for victimization by peers or strangers.¹⁰⁹

Sex

Seventy-five percent (75%) of fatal assaults of Aboriginal children were female. Female children less than six years of age experience higher rates of family violence than their male counterparts regardless of familial relationship.¹¹⁰ One of the fatal assaults involved a male youth. Risk factors for youth violence include patriarchal values and peer group/gang involvement.

Aboriginal Children

Of the total fatal assaults reviewed by CDRU in 2007, four involved Aboriginal children (29%). Aboriginal people are reported to be over-represented among the total number of fatal assaults in the country; in 2005, Aboriginal people represented 17% of victims and 23% of persons accused of committing fatal assault.¹¹¹

Canadian statistics show that in 37% of fatal assaults involving youth, the perpetrator was a close friend or acquaintance followed by a stranger at 26%. Thirty-eight per cent of fatal assaults on youth followed an argument with a peer.¹¹²

MODIFIABLE RISK FACTORS

Social Isolation

Social isolation was identified as a risk factor for two of the female Aboriginal children who died due to fatal assault. Both children became increasingly isolated from the community in the months prior to their deaths. This decrease in visibility involved absence from daycare and other social programs, missed medical appointments and isolation from other family members.

Family Challenges

The three female children who died due to fatal assaults all experienced underlying family challenges. These included exposure to domestic and family violence, physical, sexual and emotional abuse, substance use, poor physical and mental health of their caregivers and neglect. These findings are consistent with known risk factors for the perpetration of family violence. Additional household risk factors commonly seen among cases of family violence and child abuse include dependence on social assistance as a major source of income, living in public housing, living in unsafe conditions and frequent moves.¹¹³

Provision of Child Welfare Services

Three female preschoolers were at increased risk as a result of deficits found in mandated service provision. These deficits were identified during the internal reviews conducted by the child welfare system after the deaths and included:

- insufficient information sharing between and within social service providers;
- failure to conduct comprehensive risk assessments;
- incorrect designation of and inadequate response to child protection reports; and
- non-compliance with child welfare standards and policies.

These practice challenges resulted in child welfare staff not fully understanding the potential for harm leaving the children at significant risk.

Alcohol and/or Drug Impairment and High Risk Peer Group

Substance use and being involved with a high risk peer group were identified as risk factors in the death of the male youth. Additional information regarding this child's circumstances in life is not known. Additional risk factors known to be associated with youth violence perpetration and victimization include poverty, racist discrimination, language barriers, lack of educational and employment opportunities, school failure and familial factors such as history of abuse during childhood, physical punishment by caregivers and criminality of other family members.

PROTECTIVE FACTORS

Protective factors were identified for one of the children. This child died at age five as a result of a compromised physical health condition arising from an intentional critical injury inflicted when she was a preschooler. Following the incident, the child was placed into the care of a foster family. Protective factors included family support and access to medical care, both of which were present in her life post-injury. She reportedly received excellent care.

The First Nations Longitudinal Regional Health Survey reports that alcohol played a role in 27% of all assault-related injuries reported.

PREVENTABILITY

All of the fatal assaults involving Aboriginal children were determined to be preventable at the primary level.

For incidents involving preschoolers, risk factors modifiable at the primary level include social isolation, family challenges and inadequate provision of child welfare services. For the incident involving the male youth, modifiable risk factors include impairment and involvement with a high risk peer group. Prevention of fatal assaults among youth involves the enhancement of protective factors against experience with violence, including living in a non-abusive home, early attachment to caregivers, good parental supervision, positive adult role models and completion of high school and post-secondary school.¹¹⁴

For further discussion on fatal assault, including best practices for prevention, see page 51.

SUICIDE: 3 CHILDREN

A total of 18 suicide deaths were reviewed by CDRU in 2007, three of which involved Aboriginal children (17%). Findings from the review of all suicide deaths are reported on page 43.

A review of suicide deaths involving Aboriginal children found:

DEMOGRAPHICS

- Two of the cases involved youth. The third case involved a 12 year old child.
- The deaths involved two males and one female.
- Two of the children were First Nations, both of whom lived on-reserve. The third child was Métis.
- The children resided in the Northern, Island and Interior regions.
- At the time of death, one child was living in a two parent family, one was living in a blended family and one was living in a single parent family.

CIRCUMSTANCES

Location

- All of the incidents took place within the same region as the child's residence.
- One death took place within the child's home. The remaining two deaths occurred outside, one on a road way and the other in a wilderness area.

Method

- Hanging was the method used in two of the suicide deaths involving Aboriginal children.
- In the third case, the child died after stepping in front of a moving vehicle.

Typology

- All three of the children experienced an acute and stressful event in the 24 hours prior to their death. One child had a recent argument with a parent. One child had experienced the loss of two friends in the week prior to their death. In the third case, the child had been absent from his family for an unknown period of time prior to his death. For all of the children, these acute events took place in the context of underlying life stressors, including family challenges, substance use and economic issues.
- In one fatality, the recent suicide of a peer was identified as pivotal in the child's life and had a lasting effect on her mental health and behavioural development.

NON-MODIFIABLE RISK FACTORS

Age and Sex

Two of the Aboriginal suicide deaths reviewed involved First Nations youth and two involved males. Death by suicide is highest among youth between 15 and 24 years of age. Rates are higher for First Nations males than females.¹¹⁵

Aboriginal Children

Aboriginal children were identified in three of the 18 suicide deaths that were reviewed by CDRU in 2007 (17%). The suicide rate is reported to be five to seven times higher than for First Nations youth than non-Aboriginal youth.¹¹⁶

Death of a Friend or Family Member

Two of the children were known to have experienced the suicide(s) of a friend or family member during their childhood. One female youth also experienced multiple deaths within her peer group in the week prior to taking her life.

MODIFIABLE RISK FACTORS

Substance Use

All Aboriginal children who died by suicide had a history of untreated substance use and all were alcohol and/or drug impaired at the time of their death. Suicide risk is shown to increase when alcohol or substances are used, as intoxication may decrease inhibitions, increase aggressive behaviour and impair judgement. Risk is increased further when substance use is paired with depression or other mental disorders.¹¹⁸

Suicide rates for First Nations people under 20 years of age are 5 times higher than rates for all Canadians.¹¹⁷

Family Challenges

Two of the children had complex family challenges that included physical abuse, chronic neglect, domestic violence and family substance use.

Mental Disorders

Two of the children received some form of mental health treatment during the course of their life, although it appeared that neither had been formally diagnosed with a mental disorder by a medical practitioner. One child had previously received counselling for behavioural and family issues; it could not be determined whether these services were being provided at the time of the child's death. The second child had been prescribed antidepressant medication in the past although the level of compliance with taking the medication was not known.

Economic Stressors and Poverty

Economic stressors and/or poverty were identified as a factor in two of the suicide deaths involving Aboriginal children.

PROTECTIVE FACTORS

Protective factors were identified for two Aboriginal children who died by suicide. Both children had social protective factors which included family cohesion and positive relationships with family members.

PREVENTABILITY

All of the suicide deaths of the First Nations children were determined to be preventable at the primary level.

Modifiable risk factors present in the cases include familial and personal substance use, chronic neglect, and poverty, exposure to domestic violence, physical abuse and mental health challenges.

The above findings are consistent with known risk factors for First Nations suicide. Research shows that poor social conditions and community dysfunction result in greater risks of violence and suicide in First Nations communities. Community characteristics that are correlated with increased suicide rates include a higher number of occupants per household, more single parent families, fewer Elders, lower than average income and lower than average education.¹²⁰ Consistent with CDRU findings, other risk factors associated with First Nations suicide include prolonged or unresolved grief, cultural dislocation, separation from family and physical, emotional or sexual abuse.

Suicide is the second leading cause of death for young people in Canada.¹²¹ The rate of Aboriginal suicide has decreased during the last decade, however a gap still exists between First Nations and the general population. Characteristics found to distinguish Aboriginal from Non-Aboriginal suicides include more powerful effects of adverse community conditions, separation from family, more family and personal alcohol abuse with accompanying violence and lower levels of diagnosed mental illness.¹²²

When considering the incidence of suicide among First Nations, it is important to recognize the significant variation which exists across different communities across BC. Youth suicide is not a problem in every community; more than half of First Nations communities in BC reported no youth suicides between 1993 and 2000.¹²³ Protective factors found within communities with lower suicide rates include self-governance, involvement in land claims and Band control of services such as education and health.¹²⁴

In order to better understand the complexities of suicide deaths among children and youth, the CDRU will conduct a five-year retrospective review of these deaths. Findings of this review will be issued in a special report, to be released in 2008. The report will identify overarching trends of risk factors with respect to suicide and include recommendations designed to prevent future deaths and promote mental health wellness for BC children and youth.

According to results from the Regional Health Survey, 9.6% of First Nations youth had attempted suicide; 21% had thoughts of suicide. (Assembly of First Nations (2007)).¹¹⁹

SUDDEN INFANT DEATH: 12 CHILDREN

Sudden Infant Death refers to deaths of children under 1 year of age which remain unexplained after a thorough investigation including review of the clinical history, examination of the deaths scene and a complete autopsy. This includes (but is not exclusive to) sudden infant deaths which take place during sleep, where recognized internal or external risk factors may or may not be present. Historically, the terms Sudden Infant Death Syndrome (SIDS) and Sudden Unexplained

Death of an Infant (SUDI) have been used to describe similar mechanisms of infant death. For background information on the evolving terminology used in reference to sudden infant deaths of an unknown cause, see page 53.

A total of 39 sudden infant deaths were reviewed by CDRU in 2007; Aboriginal children were identified in twelve (31%) of the 39 cases. Findings from the review of all sudden infant deaths are reported on page 54.

Eleven cases reviewed involved children under one year of age, consistent with the scope of sudden infant death. One case involved a child who died at 21 months old, therefore falling outside the usual age range of sudden infant death. To maintain the integrity of CDRU findings, this case will be considered non-traditional and discussed separate and apart from traditional cases of sudden infant death involving children under one year of age.

NON-TRADITIONAL SUDDEN INFANT-CHILD DEATHS: 1 CHILD

One case classified as sudden infant death involved a 21 month Aboriginal preschooler. Given the age of the child, this case fell beyond the scope of sudden infant death and is therefore categorized as non-traditional. A review of this death found:

DEMOGRAPHICS

- The child was a 21 month old female.
- She was First Nations and lived off-reserve.
- She was in care of MCFD; she lived in a foster home with her biological siblings in the Fraser region.

CIRCUMSTANCES

- The child's death took place in the Fraser region, at the child's home.
- The child died while sleeping in her crib.
- Her sleep environment was determined to be safe and free of external risk factors.

RISK FACTORS

Medical risk factors for the child included Failure to Thrive, exposure to maternal HIV and chronic colds. The child was also determined to be heterozygous for CPT1. Additional risk factors included exposure to tobacco in utero and global developmental delay.

PROTECTIVE FACTORS

Protective factors in this child's life included the support and diligence of her foster family and maintaining residence with her biological siblings.

PREVENTABILITY

This death was determined to be not preventable.

■ TRADITIONAL SUDDEN INFANT DEATHS: 11 CHILDREN

Eleven of the 12 cases were determined to fall within the scope of sudden infant death. A review of the 11 deaths found:

DEMOGRAPHICS

- Ten of the children (91%) were infants; one child was a 24 day old neonate.
- Six of the children were males; five of the children were females.
- Ten of the 11 deaths (91%) involved First Nations children. In one case, Aboriginal ancestry was unknown.
- Among the 10 First Nations children, four (40%) lived off-reserve at the time of their death; three (30%) lived on-reserve. Place of residence was unknown in three cases.
- Four of the children (33%) resided in each of the Island and Fraser regions. Three children resided in the Northern region. In one case, the child's region of residence was unknown.

CIRCUMSTANCES

Location

- Four of the traditional sudden infant deaths (36%) took place in the Island region. Three of the deaths (27%) occurred in each of the Fraser and Northern regions. One death took place the Vancouver Metro region.
- Six of the children (55%) died while sleeping in an adult bed. Three of the children (27%) were located on the couch within their home; one child was sleeping in a makeshift bed on the floor and one child was sleeping in a crib.

Typology

- All sudden infant deaths involving Aboriginal children took place during sleep.
- Five of the infants had viral symptoms in the week prior to their death.
- All cases involved external and modifiable risk factors.

NON-MODIFIABLE RISK FACTORS

Age

Nine of the 11 sudden infant deaths of Aboriginal children (82%) involved infants six months of age or under; three of the cases reviewed (27%) involved Aboriginal infants between two and four months of age. These findings are consistent with stages of infancy known to show particular

vulnerability to sudden infant death. Sudden infant death is the most common cause of death for infants between one month and one year of age; incidence peaks between two and four months of age; 90% occur prior to six months of age.¹²⁵

Prematurity

Sudden infant death rates are higher in preterm infants compared to those born at term. Very premature infants (born at 27 weeks or earlier) have been shown to have a later age at death (by six weeks) than term infants, which has implications for safe sleep messaging and education based solely on infant age.¹²⁶ Two Aboriginal infants were premature.

Aboriginal Children

Aboriginal children were identified in 11 of the 35 traditional sudden infant deaths (31%) reviewed in 2007. The Canadian Foundation for the Study of Infant Deaths states that Aboriginal communities in Canada face a rate of sudden infant death at least three times higher than the non-Aboriginal population. While the sudden infant death rate has fallen in the general population, it remains high among Aboriginal infants.¹²⁷

MODIFIABLE RISK FACTORS

Various risk and protective factors have been identified as having a relationship with sudden infant death. These risk factors are not proven to be causal, but rather increase the likelihood of adverse outcomes for infants. Modifiable risk factors are often external and relate to the child's sleep surface, position and environment. Conversely, evidence has also identified protective factors that may help to decrease the risk of sudden infant death. These factors include placing infants to sleep on their backs, room-sharing during sleep and breastfeeding.

Risk factors were identified in all cases of sudden infant death involving Aboriginal children. Modifiable risk factors were present in 10 (91%) of the eleven cases. In one case, the child was determined to be sleeping in a safe environment with no external factors. This child did however experience internal risk factors due to exposure to radiation in utero.

Findings related to risk and protective factors identified in the review of the 11 sudden infant deaths of Aboriginal children include:

Bed-sharing

Bed-sharing occurs when the infant shares the same sleeping surface with another person. This differs from room-sharing (co-sleeping), which refers to situations where an infant is within arms reach of his or her caregiver but does not share the same sleep surface.

In eight of the 11 sudden infant deaths involving Aboriginal children (73%), the infant was bed-sharing with an adult caregiver or sibling at the time of their death. All cases of bed-sharing were determined to occur with concurrent risk factors related to hazards in the infant's sleep environment and/or state of the supervising caregiver. On review, three risk factors seen in conjunction with bed-sharing include exposure to second-hand smoke, alcohol and/or drug impairment and the presence of economic stressors or poverty within the child's family. Of the eight Aboriginal infants who were bed-sharing:

- Six were also exposed to second hand smoke (75% of those bed-sharing).
- Six were also exposed to a parent who had used illicit substances or been intoxicated from alcohol in the 24 hours prior to their death (75% of those bed-sharing).
- Four were with a parent who had both used substances/been intoxicated within the 24 hours prior to death and who also smoked cigarettes (50% of those bed-sharing).
- Four were also faced with economic stressors or poverty (50% of those bed-sharing).

Figure K outlines the percentage of Aboriginal and non-Aboriginal sudden infant deaths where bed-sharing was present with concurrent risk factors.

The concurrent factors listed in this figure do not encompass all that may have been present in conjunction with bed-sharing; other possible factors may include the presence of superfluous items in the bed or overheating. These data were difficult to capture with consistency based on the information available during the review process. Work on strengthening this is currently underway.

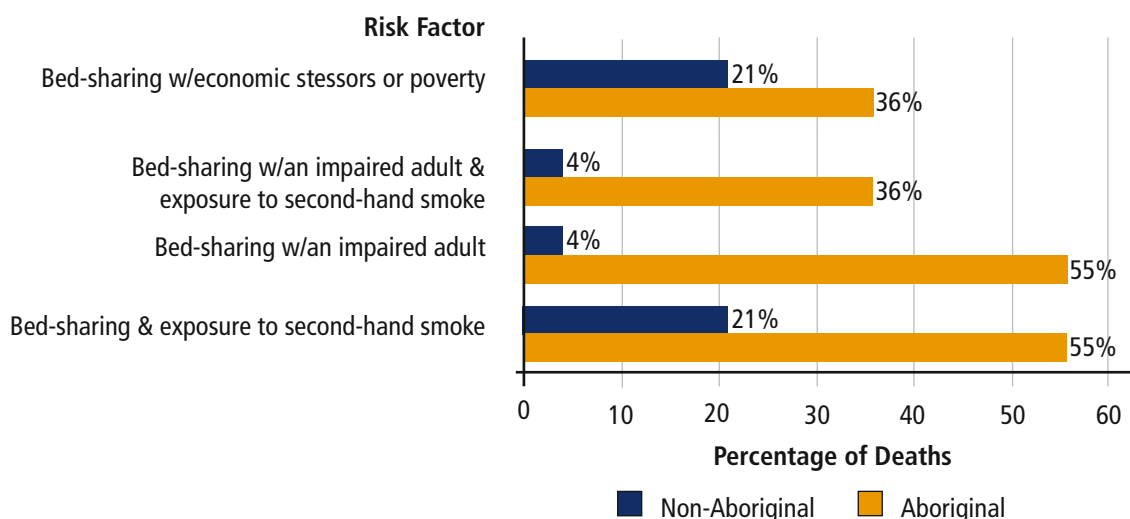
Sleep Surface

One Aboriginal infant was determined to be sleeping on a safe surface (a crib). Ten children (91%) slept on surfaces not designed for an infant; six were sleeping on an adult bed and the remainder were on couches or makeshift beds. The CDRU was unable to determine whether a crib or bassinette was present in the home but not used in these cases. Six Aboriginal infants were determined to have economic risk factors present in their lives, all of whom were sleeping on an unsafe surface at the time of their death.¹²⁸

Safe sleep surfaces for infants must be firm, free of superfluous items and meet strict safety standards regarding construction that may include cribs, bassinettes or playpens. According to

Figure K

Percentage of Sudden Infant Deaths Involving Bed-sharing in Conjunction with Other Risk Factors, 2007



the Canadian Paediatric Society, the use of soft bedding, pillows and covers that can cover the head increase the risk of death in all sleeping environments. Sleeping with an infant on a sofa is associated with a particularly high risk of sudden unexpected death in infancy.

Sleep Position

Three Aboriginal infants (27%) were determined to be sleeping prone (on their stomach) or on their side. Research shows that sleeping supine carries the lowest risk of sudden infant death. A change in sleep position can also place infants at risk; unaccustomed prone sleeping is associated with an 18 – 20 fold increase in sudden infant death.¹²⁹

PROTECTIVE FACTORS

Sleeping Supine

Eight Aboriginal infants (73%) were sleeping supine at the time of their death. In comparison, 33% of non-Aboriginal infants were sleeping supine at the time of their death.

Research shows that sleeping supine carries the lowest risk of sudden infant death.

Infants who are unaccustomed to the prone sleep position are at increased risk when placed on their stomachs to sleep.¹³⁰ Caregivers must ensure that babysitters, relatives or day care personnel who may place their infant to sleep are educated about safe sleep practices.

Breastfeeding

Breastfeeding was identified as a protective factor for six of the 11 Aboriginal infants (55%) who died of sudden infant death. This was higher in comparison to non-Aboriginal sudden infant deaths, of which only 33% of the infants were determined to be breastfed. There is some evidence to suggest that breastfeeding helps to decrease the incidence of sudden infant death. It is possible that this protective effect is not due to breastfeeding alone but is multivariate; for example, infants who are breastfed may also be more easily roused during sleep, more resistant to infection and more likely to have a non-smoking caregiver.

Room-sharing or Co-sleeping

Room-sharing (co-sleeping) has also been identified as a protective factor for sudden infant death; the Canadian Paediatric Society recommends that caregivers room-share with their infants for the first six months of life. Room-sharing was not identified as a protective factor in any of the 39 cases of sudden infant death reviewed by the CDRU.

PREVENTABILITY

Ten of the Aboriginal sudden infant deaths (91%) had modifiable risk factors present. Given the evidence on sudden infant death, it is reasonable to say that elimination of these risk factors would have reduced the risk to the child and their deaths potentially preventable. As no known cause of death can be established in these cases, true preventability can not be determined.

The CDRU supports the Canadian Paediatric Society's position statement on recommendations for safe sleeping environments for infants and children. Based on the available scientific evidence, the Society recommends that for the first year of life, the safest place for babies to sleep is in their

crib, and in the parent's room for the first six months. The Society recommends room-sharing as a safe alternative to bed-sharing; room-sharing is known to be protective against sudden infant death and still allows the baby to be close to the caregiver for breastfeeding purposes.

The prevention of sudden infant death is a complex issue due to absence of an apparent cause of death and lack of understanding on the possible social, economic, cultural or familial reasons behind choosing a particular sleeping environment. The problem is further compounded by competing messages that exist on the risks and benefits of bed-sharing and other sleeping practices. Providing a clear and consistent message to parents and caregivers is a challenging task, although fundamental to providing effective education on how to create safer sleeping environments for infants. Safe sleep messaging should be guided by the available evidence, which indicate that when infants sleep in their own crib, they are significantly safer than when they bed share. BC does not currently have a provincial-wide body to address this important public health challenge. A task force does exist, although the scope is limited to hospitals and health authorities.

To further our understanding of sudden infant death, the CDRU will be embarking on a five-year retrospective review of sudden infant deaths and unsafe sleep. Findings of the review will be issued in a special report, to be released in late 2008.

RECOMMENDATIONS

To the Provincial Health Officer of BC

The CDRU recommends the scope of the existing Safe Sleep Task Force be expanded to address infant safe sleep practices in all environments, from hospital to home, in a manner that is representational for all peoples and cultures across the province.

■ OTHER CIRCUMSTANCES OF SUDDEN AND UNEXPECTED DEATH: 3 CHILDREN

Positional asphyxia

A female First Nations child was found unresponsive in her bed. The girl had been diagnosed with severe cerebral palsy which resulted in her having little voluntary control over her movement. Her bed had side rails. Pillows were always placed on the bed in a way to help maintain positioning of her head while sleeping. One morning, the girl was found by her foster parent turned sideways and wedged between the pillows, her head caught in the pillowcase. An investigation revealed that the girl died as a result of positional asphyxia. Several risk factors were identified including exposure to drugs in utero, and not being able to self rescue due to her medical condition. Her death was determined to be not preventable.

Fall

A male First Nations youth was living on-reserve in a remote, mountainous community in Northern BC. One evening, the youth was drinking alcohol outdoors with a group of peers. During the course of the night, he told his friends he was going home and left the group alone.

When he did not return home the following day, the youth was reported missing and a search was initiated. He was later found at the bottom of a cliff, nearby to where he was last seen alive. Investigation determined that he died of a skull fracture as a result of an un-witnessed fall down a rocky slope. The youth was found to have several risk factors in his life including underage alcohol use, belonging to a high risk peer group, impairment and ruggedness of the surrounding environment. He had also recently lost a close relative to suicide and was reported to be demonstrating para-suicidal behaviour prior to his death. Upon review, his death was found to be preventable at the primary level. Modifiable risk factors include alcohol impairment, high risk behaviour and para-suicidal behaviour.

Poisoning

A female First Nations youth was living off-reserve in the Northern region. One night, the youth gathered with other young people at a friend's home. The group contacted a local drug dealer and purchased several ecstasy pills. After taking the drugs initially purchased, the group contacted the drug dealer a second time that evening to buy more. These pills were reported to be "double stacked" and therefore twice as potent. The party continued throughout the night and the youth became visibly impaired. She subsequently collapsed and was placed into bed by others who were present at the home. The following morning, she was found unresponsive. Emergency services were called and the youth was transported to hospital. She was pronounced dead upon arrival. Toxicology analysis revealed levels of MDMA (ecstasy) above the minimum lethal limit. During the investigation, community members reported concerns with increasing availability and decreasing cost of ecstasy within the area. Risk factors in this child's life included substance use, lack of treatment for her condition, mental health challenges including suicide ideation and self-harming behaviour, and problems with anger management. Upon review, her death was determined to be preventable at the primary level through modification of the risk factors noted above.

NATURAL DEATHS: 23 CHILDREN

A total of 236 deaths reviewed by CDRU in 2007 occurred under natural circumstances. This includes both natural sudden-unexpected deaths investigated by a coroner and natural-expected deaths reported to the CDRU through the BC Vital Statistics Agency. Natural deaths include those primarily resulting from a disease of the body and not resulting secondarily from injuries or abnormal environmental factors. This includes deaths which take place due to natural complications of a natural process (for example, during the birth process).

The CDRU further categorizes natural deaths into classifications based on the model from the American Centre for Disease Control (CDC), allowing for the standardization of data collection and cross-jurisdictional comparisons. The classifications used are: cardiovascular; perinatal; central nervous system; respiratory; metabolic, endocrine and nutritional; neoplasm and sepsis. Definitions of these ICD codes are listed in Appendix B.

A breakdown of the natural deaths reviewed by CDRU in 2007 is provided in Table 12. Findings from the review of all natural deaths are reported on page 65. Of the total 236 natural deaths reviewed, 23 (10%) involved Aboriginal children. A review of these natural deaths found:

Table 12 Natural deaths reviewed, Aboriginal and non-Aboriginal children (CDRU 2007)

Natural Deaths	Natural Unexpected	Natural Expected	Total
Aboriginal Children	9	14	23
Non-Aboriginal Children	47	166	213
Total	56	180	236

DEMOGRAPHICS

- Eleven of the deaths (48%) took place when the child was a neonate, which was the most highly represented age group among natural deaths. Five deaths took place during infancy; three cases involved children (5 to 12 years old) and three involved youth. One case involved a preschooler.
- Twelve of the 23 natural deaths (52%) involved males and 11 (48%) involved females.
- Specific Aboriginal ancestry of the children who died under natural circumstances could not be determined.
- Twelve of the children (52%) lived in the Island region at the time of their death. Of the remaining cases, five children resided in the Northern region (22%), three in the Interior region (13%) and one in each of the Fraser and Vancouver Metro regions (4%). Region of residence was unknown for one Aboriginal child who died under natural circumstances.

CIRCUMSTANCES

Location

- The Vancouver Metro region reported the highest number of natural deaths involving Aboriginal children, with a total of eight deaths (35%). This is followed by the Island region, in which seven (30%) deaths occurred.
- Figure L compares the geographical distribution of natural deaths with respect to region of residence and region of death, demonstrating the number of children who died outside of their home community. The increased number of deaths which took place in the Fraser and Metro regions reflects the number of children who are transferred to these areas for specialized paediatric care from BC Children's Hospital and other tertiary care centres.

Typology

Table 13 provides a breakdown of natural deaths of Aboriginal children by ICD code. Natural deaths due to complications during the perinatal period were the most frequent category reviewed, accounting for a total of nine (39%) deaths. The majority of these deaths took place as a result of prematurity.

Perinatal

Eight (89%) of the nine perinatal deaths took place as a result of prematurity. One perinatal death was due to meconium aspiration.

Congenital or Chromosomal

Three deaths were coded as congenital or chromosomal; causes included skeletal dysplasia and microcephaly with associated Fetal Alcohol Spectrum Disorder. In one case, cause of death was unknown.

Neoplasm

One child died as a result of kidney cancer.

Respiratory

Four deaths occurred as a result of a respiratory infection; three deaths were due to pneumonia and one was caused by necrotizing bronchitis.

Cardiovascular

Three deaths were due to arrhythmia secondary to cardiac illness (myocarditis). In one case, the child died due to exsanguination during surgery.

Central Nervous System

One child died due to a brain injury secondary to cardiac arrest.

Metabolic, Endocrine or Nutritional

One child died due to liver failure.

Figure L

**Distribution of Natural Deaths Reviewed in 2007
by Region of Residence and Region of Death, Aboriginal Children**

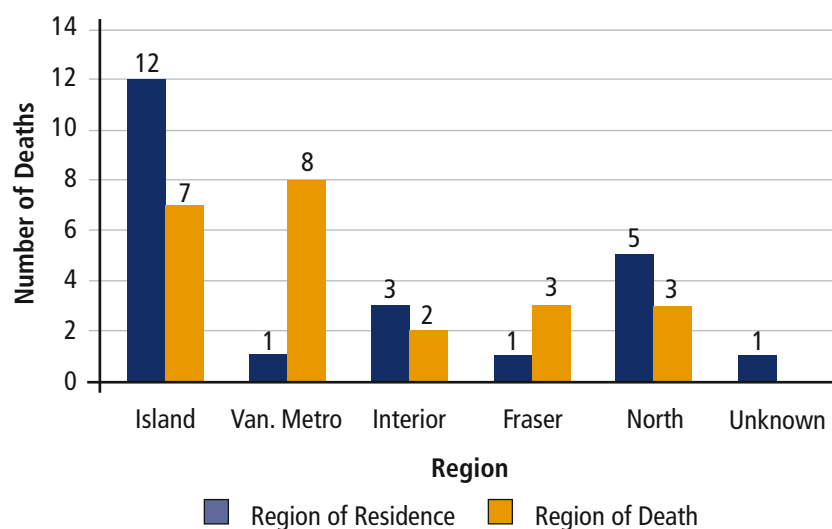


Table 13 Natural Deaths Reviewed by ICD Code (CDRU 2007)

ICD Codes	Sudden Unexpected Natural Deaths	Natural Expected Deaths	Total
Perinatal	2	7	9
Congenital or Chromosomal	0	3	3
Neoplasm	0	1	1
Respiratory	3	1	4
Cardiovascular	4	0	4
Central Nervous System	0	1	1
Metabolic, Endocrine or Nutritional	0	1	1
Total	9	14	23

RISK FACTORS

Risk factors related to Natural death may contain both modifiable and non-modifiable aspects; for this section, these categories have been integrated together.

Identification of risk factors among natural deaths is challenging due to limited data provided at the time of reporting. It is not currently possible to report on risk factors for natural-expected deaths reported to the CDRU via the BC Vital Statistics Agency, due to the limited amount of information on health determinants which is currently obtained in these cases. Risk factor data specific to natural- unexpected deaths is generally more accessible due to the coroner's investigation that takes place. Risk factors presented in this section are therefore specific to natural deaths which took place under sudden and unexpected circumstances and exclude natural-expected deaths reported through BC Vital Statistics.

The following analysis of risk factors relate to the 56 cases of sudden-unexpected Natural death.

Nine cases of natural sudden-unexpected deaths involved Aboriginal children.

Risk factors identified during the review found:

Perinatal Health Factors

Four of the Aboriginal children who died under were determined to be premature (less than 37 weeks gestation). In one of these cases, prematurity was determined to be the primary cause of death. Perinatal risk factors were also present for two children who were exposed to substances in utero; in one case, the child was also exposed to maternal smoking post-partum.

Appropriateness of Medical Care

Issues around the medical care the child received were identified in two cases. Problems with adequate assessment of risk upon admission to a medical facility were identified in both of these cases. In one death, a medication error also occurred.

Pre-existing Chronic Medical Concerns

Two children had underlying chronic medical conditions which may have left them more vulnerable to a secondary illness or an acute exacerbation of their chronic condition. Both children had long standing complications due to premature births at 27 and 30 weeks gestation, including chronic lung disease, reflux disease and developmental delay. One child had a neuro-developmental disorder. All of the children required substantial care.

Lack of Access to Health Services

Lack of access to appropriate medical care was identified as a factor in two cases. Both of these children lived in small, isolated communities, several hours away from a major hospital.

Economic Stressors and Poverty

Economic stressors and/or poverty were present in the families of three Aboriginal children who died under natural unexpected circumstances. One was identified as living on-reserve. Over-crowding was identified as a risk factor for one Aboriginal child who lived off-reserve.

PROTECTIVE FACTORS

Protective factors were identified for six (67%) children. Social protective factors were present for five children; factors included family support, provision of social services and cultural support from the child's community. One child was reported be physically active.

PREVENTABILITY

Six of the nine natural- unexpected deaths of Aboriginal children (67%) were determined to be not preventable. Two deaths were determined to preventable at the secondary level. For one child, insufficient information was present to make a conclusion regarding preventability.

For further discussion on findings from the review of natural deaths, best practices for prevention and related recommendations made by the CDRU, please see page 76.



Gold Star

Prevention in Action: Jordan's Principle

Jordan's Principle calls upon all provincial and territorial governments and the government of Canada to immediately adopt a child first principle to resolving jurisdictional disputes involving the care of First Nations children. Under Jordan's principle, where a jurisdictional dispute arises between two government parties (provincial/territorial or federal) or between two departments or ministries of the same government, regarding payment for services for a Status Indian child which are otherwise available to other Canadian children, the government or ministry/department of first contact must pay for the services without delay or disruption. The paying government party can then refer the matter to jurisdictional dispute mechanisms. In this way, the needs of the child get met first while still allowing for the jurisdictional dispute to be resolved. On January 24, 2008, Premier Gordon Campbell announced that BC will be the first provincial government to support Jordan's Principle. The CDRU applauds this decision and supports the adoption of Jordan's Principle at the provincial, territorial and federal levels. For more information visit www.fncfcs.com/more/jordansPrinciple.php.

RECOMMENDATION

To the Ministry of Health

The CDRU recommends that the Ministry of Health enhance the current complaint resolution and patient advocacy framework in all health authorities with a view to having a clearly defined, patient-centred and well communicated approach that is readily available to patients and their families.

SUMMARY OF RISK FACTORS, PROTECTIVE FACTORS AND PREVENTABILITY: 42 ABORIGINAL CHILDREN

The CDRU currently captures risk and protective factors under the categories of social, environmental, developmental, medical, economic and behavioural. These factors are identified in cases of sudden and unexpected deaths only, given data limitations that exist relative to natural expected deaths reported through BC Vital Statistics.

As previously noted, 215 sudden-unexpected deaths were reviewed by CDRU in 2007, 42 (20%) of which involved Aboriginal children.

Results of the First Nations Regional Longitudinal Health Survey showed that the average rate of smoking during pregnancy was 36.6%. This rate is significantly higher compared to the general Canadian population (NLSCY 1998–1999) which was 19.4%.

RISK FACTORS

Figure M compares the distribution of risk factors for sudden-unexpected deaths involving Aboriginal children to that of non-Aboriginal children. Aboriginal children experienced a higher percentage of risk factors than non-Aboriginal children across all categories, with the exception of the behavioural category which showed no variation.

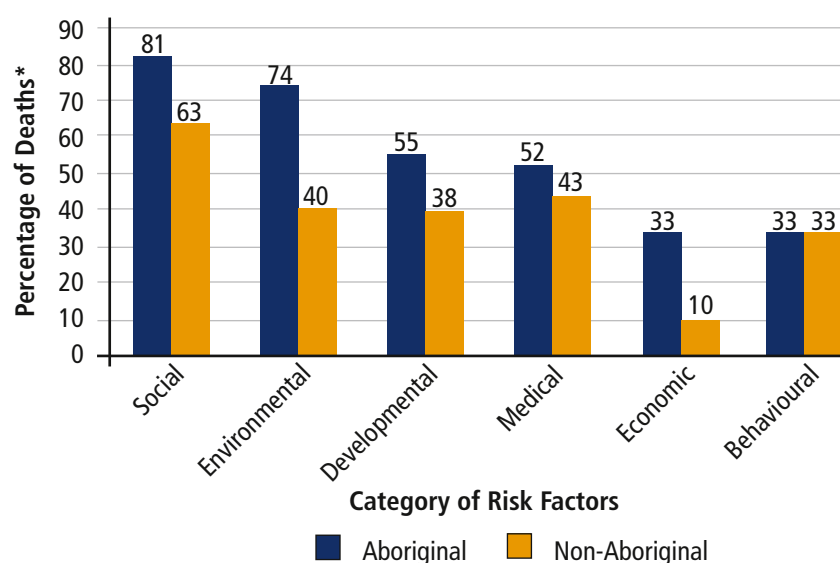
PROTECTIVE FACTORS

Twenty-two children who died suddenly and unexpectedly (52%) were identified as having protective factors in their lives. The majority of these were social factors which included positive peer and family relationships, religious beliefs, support from social services, community support, school involvement, breastfeeding and cultural support from the child's band. Behavioural protective factors identified among the children included future goals, success at school, participation in sports and other extra-curricular activities and employment. Access to health care, including prenatal care and public health services, were also identified.

For First Nations people, there is evidence showing that injury risk is related to income and education, as well as alcohol and substance abuse.¹³¹

Figure M

**Percentage of Sudden and Unexpected Deaths Reviewed in 2007
by Category of Risk Factors, Aboriginal and Non-Aboriginal Children**

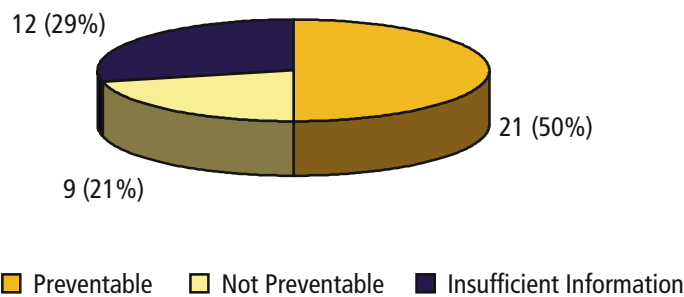


* Percentages are based on sudden-unexpected deaths only. Of the total 215 sudden-unexpected deaths reviewed in 2007, 42 involved Aboriginal children and 173 involved non-Aboriginal children.

PREVENTABILITY

In each case of sudden-unexpected death, preventability was determined following the completion of a multi-disciplinary review of the case. A preventable death is one in which, with retrospective analysis, it is determined that a reasonable intervention may have prevented the death at the primary (pre-event), secondary (event) and tertiary (post-event) level. For more detailed definition of levels of preventability, see page 12.

In assessing preventability, a death is determined as preventable; not preventable or insufficient information to determine preventability. Preventability of sudden-unexpected deaths involving Aboriginal children is presented in Figure N. Comprehensive review by the CDRU determined that 21 of the 42 sudden-unexpected deaths (50%) involving Aboriginal children were preventable. Thirteen (62%) were determined to be preventable at the primary level, two (9%) were preventable at the secondary level and six deaths (29%) were preventable at both the primary and secondary levels.

Figure N**Preventability of sudden-unexpected deaths reviewed in 2007, Aboriginal children**

Injury and First Nations Youth – Results of the Regional Longitudinal Health Survey

Although injuries are a problem for youth throughout Canada, results of the Regional Longitudinal Health Survey show that the injury rate for First Nations youth continues to be higher than for other youth in Canada. Injuries are extremely common in First Nations Youth: 50% of those surveyed indicated they had been injured in the previous year. This rate was almost double that of other youth in Canada and for First Nations youth living off reserve. Results of the survey show that injury risk in youth is tied to a broader constellation of personal and social problems. Youth who were struggling with personal problems were more likely than others to be injured. Injury rates were significantly higher for youth who were depressed, had low self-esteem, or had a close friend or family member commit suicide in the past year or reported having problems learning at school. Rates were also higher for those youth who reported drinking alcohol.

(Adapted from the Healthy Children, Healthy Families, Healthy Communities: The Road to Wellness. BC First Nations Regional Longitudinal Health Survey 2002/2003. This document is available from the First Nations Chiefs' Health Committee at www.fnchc.ca.)

**Gold Star**

Prevention in Action: British Columbia Tripartite First Nations Health Plan

Subsequent to the signing of the Transformative Change Accord in November 2005, the First Nations Leadership Council and British Columbia developed the Tripartite First Nations Health Plan. This plan identifies priorities for action to close the health gap between First Nations and other British Columbians through four key areas: governance, relationships and accountability; health promotion and disease and injury prevention; health services; and, performance tracking. The CDRU supports the work of the First Nations Health Council as leaders in the implementation of the First Nations Health Plan and is committed to working collaboratively to address the disproportionately high number of deaths occurring among Aboriginal children and youth in BC. For more information visit www.fns.bc.ca.

FUTURE DIRECTIONS

Aboriginal children and youth are overrepresented in many circumstances of death discussed in this report, reflecting the broader health inequalities that exist between Aboriginal people and other residents of BC. The forces behind these gaps are multifaceted and reflect complex social, cultural and historical issues. In recognition of the principles of *Many Hands One Dream*,¹³² the CDRU supports a new approach to Aboriginal child and youth health that has children, youth, families and communities at its core.

It is important to acknowledge the significant work that is underway to address child health, injury prevention and safety promotion in Aboriginal communities; this includes actions of the First Nations Health Council (FNHC) and their responsibility for driving implementation of the First Nations Health Plan. The CDRU is committed to working collaboratively with the FNHC and other stakeholders on Aboriginal-led strategies that create meaningful improvements for Aboriginal children and youth in BC.



Gold Star

Prevention in Action: Many Hands One Dream

Many Hands One Dream: New Perspectives on the Health of First Nations, Inuit and Metis Children and Youth is a document intended to support those who work with children, youth and families. It is the result of discussion among more than 160 Aboriginal and non-Aboriginal health professionals, community leaders, teachers, social workers, parents and others who care about the health of Aboriginal children and youth. This document is the result of the collaborative efforts of 11 national organizations engaging a wider community to help define child health, acknowledge the barriers and strengths of the current health system, and to articulate what a desirable future may hold to lay the foundation to better support the health of Aboriginal children and youth in Canada. The principles provided in Many Hands, One Dream are intended to serve as a foundation for a new approach to Aboriginal child and youth health – one that has children, youth, families and communities at its core. For more information visit www.manyhandsonedream.ca.

Acknowledgements

The issuing of this report marks the first year anniversary of British Columbia's Child Death Review Unit in its contemporary form. It has been a year of learning and growth. Through the comprehensive review of 672 child deaths, we have had the opportunity to share our findings with the people of British Columbia in order to prevent future deaths of our children.

This would not have been possible without the support of government and the leadership within the BC Coroners Service and the Ministry of Public Safety and Solicitor General. Our work was sustained by budget and by new legislation, the *Coroners Act* (2007). We have developed a model that is unique in North America.

We have been fortunate to work with members of the Children's Forum, and have formed solid working relationships with the Ministry of Health and the First Nations Health Council. Their contribution to the development of our framework and model has been invaluable.

We are appreciative of the collaboration and consultation with the Office of Superintendent of Motor Vehicles; Transport Canada (TSB and Office of Boating Safety); Office of Housing and Construction Standards (Building and Safety Policy Branch); ICBC; BC Association of Chiefs of Police; the RCMP; Ministry of Education; Ministry of Tourism, Sports and the Arts; Office of the Fire Commissioner; Canada Firearms Center; Provincial Health Authorities; Safe Kids Canada; Newborn Screening Program of BC; BCAA; BC Perinatal Health Program; and our partners within the Public Affairs Bureau.

Our process has benefited from coaching and expert advice from other child death review jurisdictions in Boston, Florida, Michigan, St. Louis, King County, Texas and most recently, Australia. Our colleagues have been generous with their time and resources.

As with all of our reports, we must acknowledge the work that is done on a daily basis by the men and women of the BC Coroners Service. Throughout the province, and around the clock, they work to identify who the children were and how, when, where and by what means they died. These coroners bring compassion and professionalism to the families during the most difficult and tragic of times.

Acknowledgements

Over the year, we have reached out to the parents and families of children who have lost their lives suddenly and unexpectedly. We have had the opportunity to meet with families, to visit their communities, and to see first hand where young lives were lost. Families have told us about their children. Parents have expressed strong views about how and why their children died and how they are determined to speak out in the name of prevention. Their children mattered in life; the lessons they leave us with matter in death. To date, there has been a direct link between these parents' voices and change in social policy. We are particularly grateful to the parents of Frances, Levi and Vayda.

This is humbling work. People often ask us if it is depressing - the answer is a resounding no. There are moments of sadness and profound empathy for the parents, families and communities left behind. Mostly, we feel privileged to be doing this work on behalf of the children and youth of BC. We hope that the lessons learned from the children and the advice we received from their courageous families will be widely shared.

Glossary

Aboriginal

In this report the term Aboriginal includes children of First Nations (Status and Non-Status), Métis or Inuit ancestry.

Abusive Head Trauma

Abusive Head Trauma (AHT) or Shaken Baby Syndrome (SBS) is the name given to the collection of signs and symptoms resulting from violently shaking an infant or a young child, with or without impact to the head.¹³⁴

All-terrain vehicle (ATV)

A three- or four-wheeled motorized off-road vehicle (although newer models may have up to six wheels), with large, low-pressure tires designed for use in off-road terrain.

Bed-sharing

Sleeping with a baby on the same sleep surface.

Child

Overall term used to refer to an individual 18 years of age or younger. More specifically classified as neonate (birth to 28 days), infant (29 days- 365 days), preschooler (366 days- 4 years), child (5 years- 12 years) or youth (13 years- 18 years).

Children in Care of the Ministry of Children and Family Development

A child who is in the custody, care or guardianship of a Director or a Director of Adoption.

Co-sleeping

Sharing a room with a baby, but not a sleep surface. In this situation, the baby's sleep surface is proximate to the parents'. Also referred to as room-sharing.

Illicit drugs

A controlled substance or precursor, the import, export, production, sale or possession of which is prohibited or restricted pursuant to the *Controlled Drugs and Substances Act*.¹³⁵

Modifiable risk factors

A risk factor that can be modified by intervention, thereby reducing the probability of a specific outcome such as injury or disease. An example of a modifiable risk factor would be putting an infant to sleep on their stomach rather than on their back.

Non-modifiable risk factors

A risk factor that is fixed, such as sex or age.

Off-road vehicle (ORV)

Any motor vehicle designed or adapted for off-road use including a dirt bike, a dune buggy, a motorized snow vehicle or an amphibious vehicle.

Para-suicidal behaviour

Any self-injurious behaviour with a clear intent to cause bodily harm or death, including both lethal suicide attempts and more habitual or low-lethality behaviours such as self-mutilation.

Perinatal

The period from 20 weeks of gestation to 28 days of age.

Personal protective equipment

Safety equipment or special clothing worn on or around parts of the body to protect from injury. For example, vehicle restraints, helmets, personal flotation devices.

Pleasure craft

A vessel that is used for pleasure and does not carry passengers, and includes a vessel of a prescribed class.

Prone

Lying face downward (on stomach).

Protective factors

An aspect of personal behaviour or life-style or an environmental or social influence that tends to protect the individual, group, or community from certain risk factors.

Risk factors

An aspect of personal behaviour or life-style, an environmental exposure, or an in-born or inherited characteristic that is known to be associated with an increase in the probability of a certain outcome such as injury or disease.¹³⁶

Supine

Lying face upward (on back).

Unsafe speed

Driving too fast, or in some cases too slow, for road and traffic conditions.

Appendix A

BC Coroners Service Regions

Fraser Region

Includes Burnaby to the Coquihalla Highway Toll Booth, east to Manning Park and north to Jackass Mountain bordering Merritt.

Interior Region

Includes the region north to 100 Mile House and Blue River, east to the Alberta border, south to the USA border and west to the Manning Park gate, including Ashcroft, Lytton and Lillooet.

Island Region

Includes all of Vancouver Island, the Gulf Islands and Powell River.

Northern Region

Includes the region north, east and west from Williams Lake to all borders, Bella Bella and the Queen Charlotte Islands.

Vancouver Metro Region

Includes Sunshine Coast, Sea to Sky Corridor, North Shore, Vancouver, UBC, Delta and Richmond.



It is important to note that the BCCS regions do not correspond to the regions set out by the BC Health Authority.

Appendix B

INTERNATIONAL CLASSIFICATIONS OF DISEASE (ICD)¹³⁷

Cardiovascular:

Death from conditions that arise from the circulatory system (heart and blood vessels), or cardiovascular complications from another medical problem.

Example: Congestive heart failure

Central Nervous system:

Death from conditions that arise from the brain or nervous system, or neurologic complications from another medical problem.

Example: Meningitis

Congenital and chromosomal:

Death that arises from a genetic condition or one that is present at birth. This classification “trumps” a perinatal classification, in that if a neonate dies within the perinatal period of a condition that is attributable to a congenital or chromosomal anomaly, it would be classified as congenital/chromosomal rather than perinatal. In older children, there may be an underlying congenital or chromosomal anomaly, yet death may be attributable to another circumstance, such as an infection.

Example: Trisomy 18 or Microcephaly

Metabolic, endocrine or nutritional:

Death that arises from an inborn error in metabolism, from a problem with the endocrine system (including pineal gland, pituitary, thymus, adrenals, pancreas and ovaries/testes) or from complications related to digestive or nutritional issues.

Example: Diabetic Ketoacidosis (coma)

Neoplasm:

Death that arises from a cancerous process.

Example: Leukemia

Conditions arising out of the perinatal period:

Death that occurs within the period from the 20th week of gestation (pregnancy) to the 28th day of life. This classification also encompasses infections (sepsis) that occur within this time period.

Example: Extreme prematurity

Respiratory:

Death that arises from conditions that arise from the respiratory system (airways and lungs), or respiratory complications from another medical problem.

Example: Pneumonia

Sepsis:

Death that arises out of an infectious process, and that is systemic in nature. That is, it encompasses an overwhelming body-wide reaction to the infection.

Example: Necrotizing fasciitis (flesh-eating disease)

Appendix C

ICBC GRADUATED LICENSING PROGRAM (GLP)¹³⁸

LEVELS OF LICENSING

Class 7 Learner Stage (L)

In order to obtain your Class 7 Learners license an individual must be 16 years old, pass a knowledge test and meet all application requirements. This stage lasts 12 months. During this stage the driver must display a learner sign (L) on their vehicle and have a qualified supervisor in the car. There is a passenger limit and a zero blood alcohol requirement as well as a restriction of driving hours.

After 12 months in the learner stage, you are eligible to take the Class 7 road test and if successful, you move to the Novice Stage of the graduated licensing program (GLP).

Class 7 Novice Stage (N)

In this stage, some restrictions are removed. The driver must display a novice sign (N) sign on their vehicle. There is a passenger limit and a zero blood alcohol requirement as well as a restriction of driving hours.

This stage lasts 24 months. This stage can be reduced by six months if the driver has no driving infractions or at-fault crashes and has taken an ICBC approved driving course.

Upon completion of the Novice stage, a Class 7 (N) driver may take the Class 5 road test. If you pass the test, you exit the GLP and receive your full-privilege Class 5 license.

Appendix D

FOLLOW-UP TO RECOMMENDATIONS

1 . Follow up to “THE 955 TRANSITION FILES” of the former Children’s Commission

In November 2006, the BC Coroners Service issued a Special Report on the review of the 955 Transition Files. The central focus of the review was to meet the commitment that all of the files held by the former Children’s Commission would be reviewed.

The report contained a factual summary of the information found during that review and contained recommendations intended to prevent future deaths of BC’s children and youth.

Since the release of the report, there have been a number of changes to how we respond to child death in BC:

- The provincial government adopted the recommendations arising from the Hughes Report;
- The Representative for Children and Youth Mary Ellen Turpel-Lafond was appointed and her legislation proclaimed;
- With the Representative acting as the Chair, the Children’s Forum was created with membership including the Provincial Health Officer, the Public Guardian and Trustee, the Provincial Director of Child Welfare, the Ombudsman of BC and the Chief Coroner;
- The BC Coroners Service Child Death Review Unit was fully operational and supported by the new *Coroners Act*; and
- All child deaths are investigated and reviewed by the BC Coroners Service.

Over the past months, CDRU has had the opportunity to meet and consult with those jurisdictions that had recommendations directed to them. We are encouraged by the work that is underway. Recommendations were made to the following organizations:

- Ministry of Children and Family Development
- Ministry of Aboriginal Relations and Reconciliation
- First Nations Leadership and Health Council
- Representative for Children and Youth
- British Columbia Association of Chiefs of Police
- Superintendent of Motor Vehicles, ICBC and Ministry of Public Safety and Solicitor General
- Ministry of Education

Over the past year, members of the CDRU have developed solid working relationships with the First Nations Health Council and meet on a regular basis. The Office of the Superintendent of Motor Vehicles and our joint colleagues within the Ministry of Public Safety and Solicitor General have been involved in the case review process; their contribution has been invaluable. Members of the Children's Forum have been active participants in the exchange of critical information and in providing feedback on the child death review framework.

The 955 Report concluded with the following statement that holds true today:

"We learned that child death is a serious concern for all people who work with children in this province and that following any and all child injury and child death, there are substantial levels of inquiry and/or review to find ways of preventing it happening again".

2. Follow Up to the Child Death Review Unit 2006 Annual Report

On December 12, 2007, the CDRU issued the Annual Report on 244 child death cases that were referred to the Unit in 2006. These children lost their lives between 2003 and 2006. Recommendations were directed to the Chief Coroner; BC Association of Chiefs of Police; Office of the Superintendent of Motor Vehicles; Ministry of Education, Ministry of Tourism, Sport and the Arts and to the Canada Firearms Centre.

To date, positive responses have been received from the office of the Superintendent of Motor Vehicles, Ministry of Education, Ministry of Tourism, Sport and the Arts, the Canada Firearms Centre and the Chief Coroner of British Columbia.

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