



BC CORONERS SERVICE
CHILD DEATH REVIEW UNIT
SPECIAL REPORT



INFANT DEATHS 2003-2004

Executive Summary

The purpose of this report is to gain a better understanding of the deaths of children in BC. More specifically, this report focuses on the deaths of infants - children under the age of 1 year. The time-span covered in this report is January 1st, 2003, thru to June 30th, 2004¹. The cases that occurred post-June, 2004, were not included in this analysis as a high number of these cases remain under ongoing investigation.

Of the 129 child deaths under the age of 1 year reported to the Coroners Service in this 18-month time-span, 59 were concluded as Non-Coroners cases - natural deaths that did not meet the criteria of section 9 of the Coroners Act - and 23 remain under ongoing investigation. Statistical discrepancies in future updates of this report may be attributed to the closing of these cases.

The remaining 47 infant deaths that occurred between January 2003 and June 2004 are the focus of this report. There are several variables included in the analysis, including demographic, temporal and spatial variables. The nature of infant sleeping practices is also examined, and guidelines to promote safe infant sleep are included.

¹ The BC Coroners Service works in a real-time database environment and therefore, statistics are subject to change until all Coroners' cases are complete.

Introduction

The responsibilities related to Child Death Review that were once undertaken by the Children's Commission and the Office of the Child, Youth and Family Advocate were delegated to the BC Coroners Service in January, 2003. While the BC Coroners Service always had the mandated responsibility of investigating *all* sudden, unnatural and unexpected deaths, including those of children, these changes resulted in the expansion of the Coroners Service's responsibilities to include Child Death Review.

The Child Death Review Unit of the BC Coroners Service is committed to a comprehensive review of 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.

The Child Death Review Unit has the responsibility of monitoring child deaths, including a public reporting component, the establishment of a Child Death Review Team, and the maintenance of a database for all child deaths. The goals of the unit are:

- To establish accurate causal determinations in child deaths;
- To develop uniform, consistent and retrievable data collection involving on-going surveillance of all childhood fatalities to allow for the formulation of prevention strategies;
- To identify significant risk factors and trends in child deaths;
- To facilitate the linkage of identified patterns and trends in child death with agencies and organizations influencing and developing education and deterrence/prevention strategies to reduce the mortality of children;
- To provide relevant training to personnel involved in child death investigation;
- To initiate local, community and provincial activities to prevent childhood injuries and fatalities.

In an effort to better monitor child deaths and to fulfill our reporting responsibilities with respect to child deaths specifically, this report strives to capture a sub-set of the child death population and to closely examine the issues affecting this group. As such, the data that were collected and examined in this report were chosen to highlight the issues pertaining to *infant* deaths specifically and include the following general and infant-specific variables:

- Details of death – classification and immediate cause of death;
- Details of birth – birth weight, prematurity and birth abnormalities;
- Demographic variables – gender, ethnicity, age of the deceased infant and age of the parents of the infant;
- Spatial variables – illness/injury region and illness/injury township;
- Temporal variables – month of illness/injury;
- Incident activity;
- Sleeping practices – co-sleeping, found with items covering head, sleep position and sleep surface.

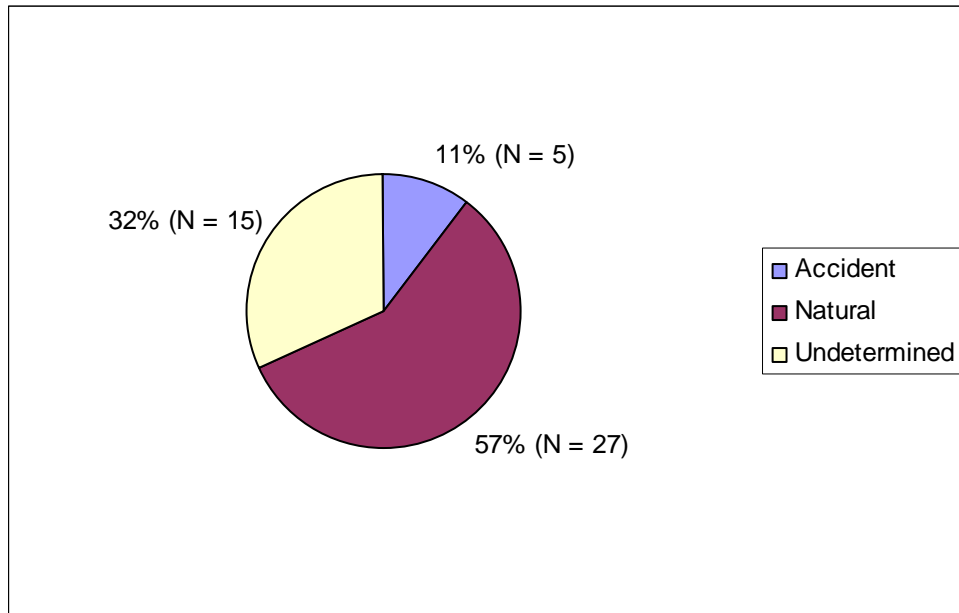
Analysis

Between January, 2003, and June, 2004, there were a total of 47 infant deaths that were investigated and concluded by the Coroners Service. Below is a descriptive summary of these infant deaths.

Details of Death

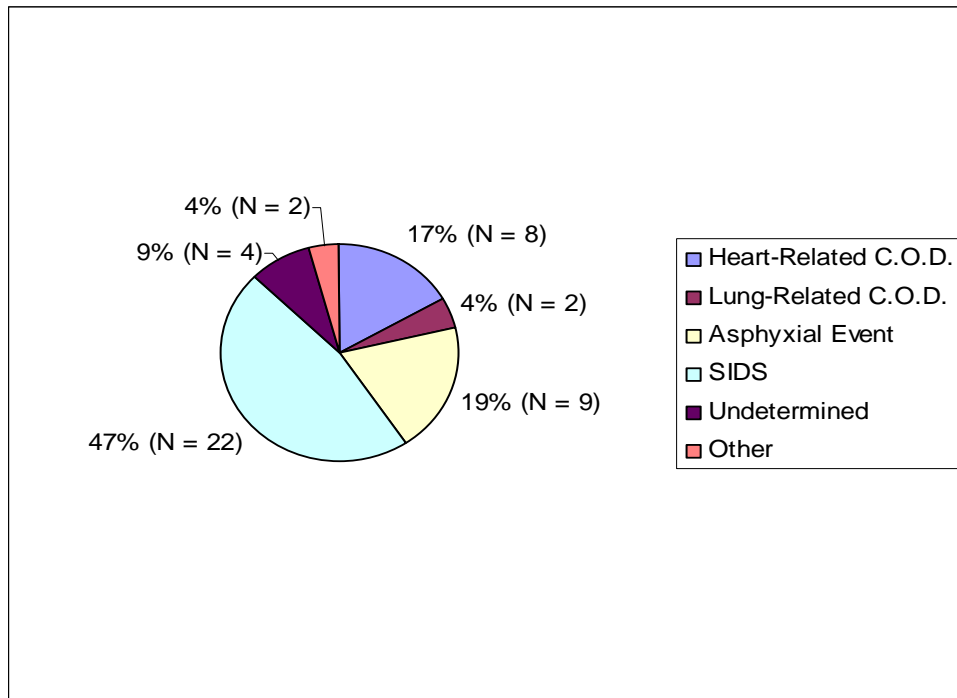
- As shown in Figure 1, the majority of infant deaths in the time period examined were classified as Natural, representing 57% of these deaths.

Figure 1: Percentage of Infant Deaths by Classification, January 2003 - June 2004



- With respect to the immediate cause of death in the cases examined, as shown in Figure 2, 47% of the infant death cases had *SIDS* (Sudden Infant Death Syndrome) as the immediate cause of death, followed by *Asphyxial event*, which represented 19% of infant deaths.

Figure 2: Percentage of Infant Deaths by Immediate Cause of Death (C.O.D.), January 2003 - June 2004



Details of Birth

- With respect to known birth weight, it was found that the average birth weight was 7 lbs with a weight range from 2.6 lbs to 10.1 lbs. A total of 4 infant cases were noted as having a low birth weight (LBW - between 1500 g and 2499 grams²) and 2 infants were noted as having a very low birth weight (VLBW - below 1500 grams³).
- The average gestational age in these infant death cases was 37 weeks, ranging from 26 weeks to 41 weeks. There were a total of 15 infants in these cases that were born prematurely (i.e. with a gestational age below 37 weeks), and 4 infants were born with birth abnormalities.

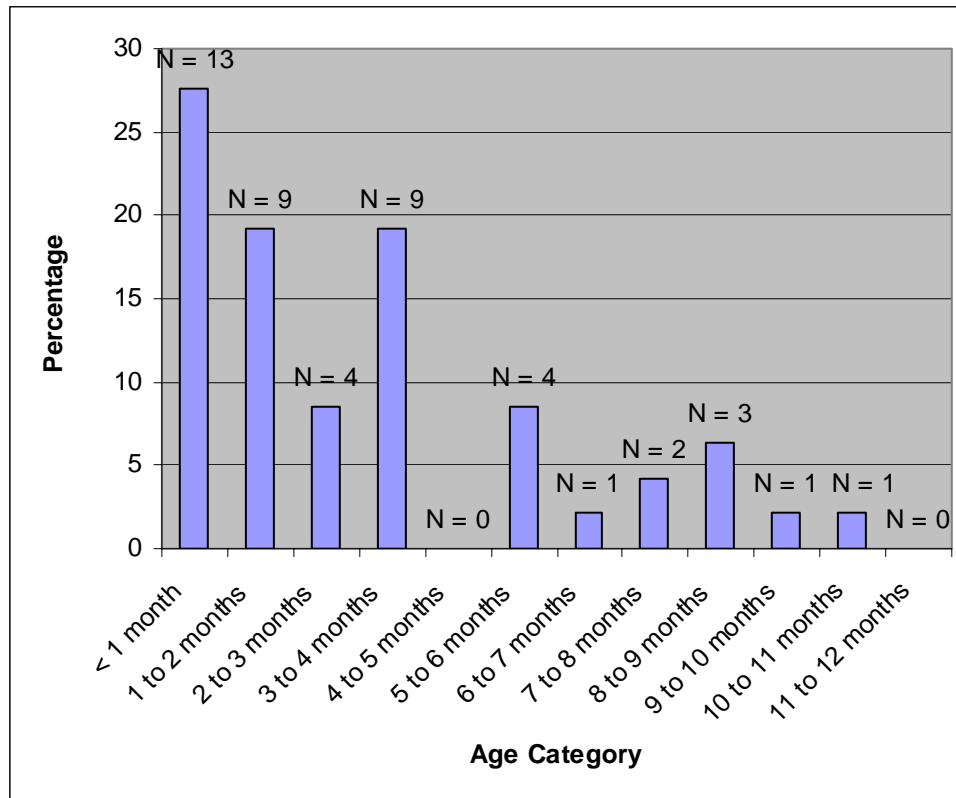
² Source: MacDorman, M. & al. (2002). Annual Summary of Vital Statistics – 2001. *Pediatrics* 110 (6): 1037 – 1052.

³ Source: MacDorman, M. & al. (2002). Annual Summary of Vital Statistics – 2001. *Pediatrics* 110 (6): 1037 – 1052.

Demographics

- There were approximately twice as many male infant deaths in the specified time period as there were female infant deaths (31 vs. 16, respectively).
- Approximately 1/3 (32%, N = 15) of the infant death cases examined were of Aboriginal infants, a disproportionately high percentage when compared to the 2-3% of Aboriginals in the BC population⁴.
- As shown in Figure 3, the majority of infants who died in the specified time period were under 1 month of age at the time of death, representing approximately 28% of these cases, followed by the 1-2 month age group and the 3-4 month age group, each representing approximately 19%.

Figure 3: Percentage of Infant Deaths by Age Category, January 2003 - June 2004



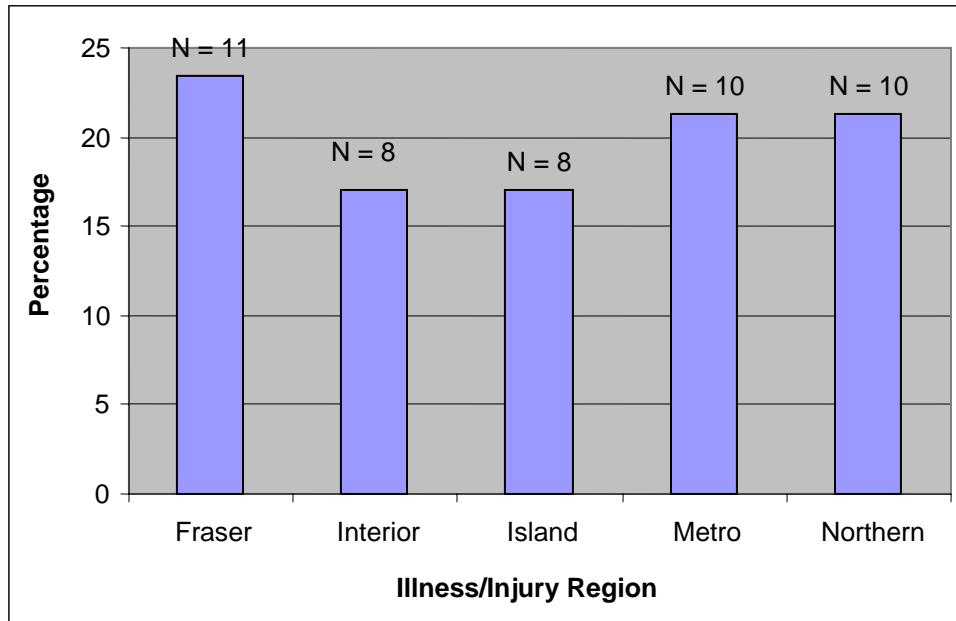
- The average age of the mothers of the infants in these cases was 27 years, with a range of 17 to 44 years, while the average age of the fathers in these cases was 29 years, with a range of 17 to 46 years.

⁴ Source: 2001 Census Profile – British Columbia.
<http://www.bcstats.gov.bc.ca/cen01/profiles/59000000/pdf>.

Place of Illness/Injury

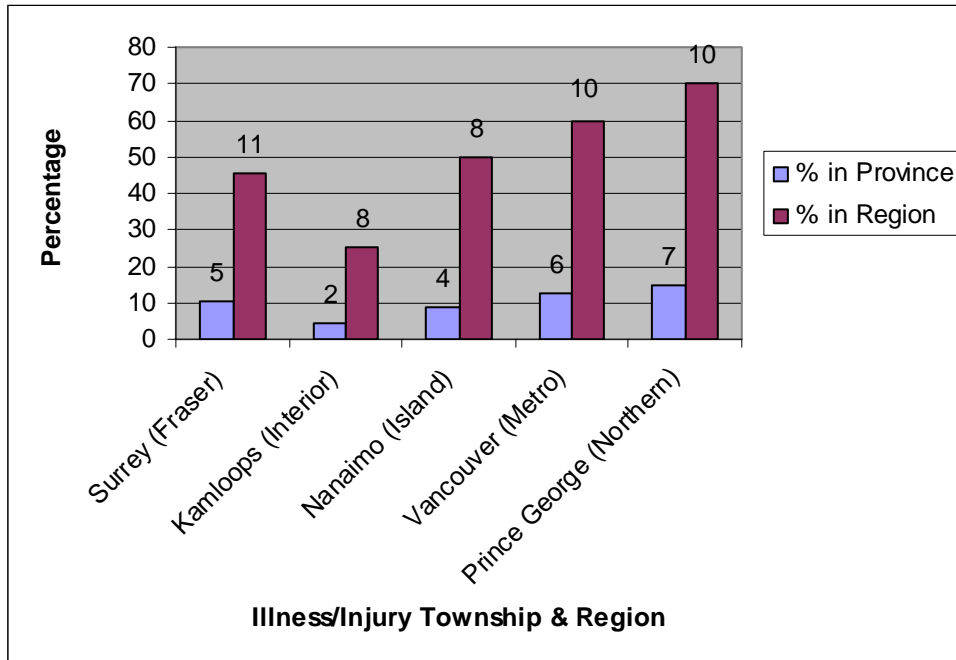
- As shown in Figure 4, the Illness/Injury region with the highest percentage of infant deaths in the specified time period was the Fraser region, representing approximately 23%, followed by the Metro and Northern regions, each representing approximately 21%.

Figure 4: Percentage of Infant Deaths by Illness/Injury Region, January 2003 - June 2004



- The majority of all infant deaths occurred in the same region and township that the child resided. In fact, all but 4 occurred in the same region as the child resided, and all but 7 of these occurred in the same township as the child resided.
- Figure 5 illustrates the Illness/Injury township with the highest percentage of infant deaths in the respective region. For example, while Prince George represents approximately 15% of infant deaths in the entire province during the specified time period, it represents 70% of infant deaths within the Northern region, the highest of all townships within that region.

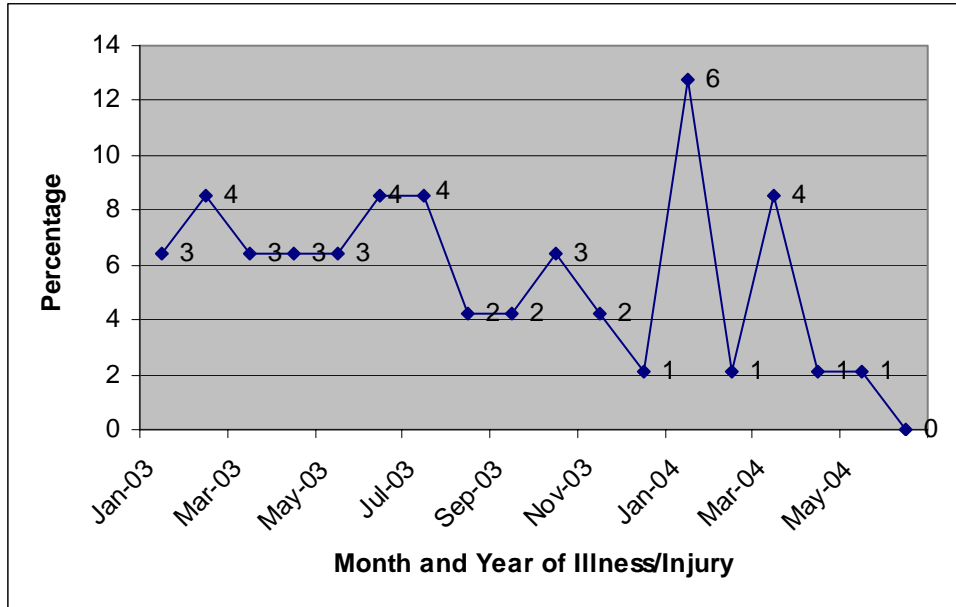
Figure 5: Percentage of Infant Deaths by Illness/Injury Township, January 2003 - June 2004



Deaths by Month and Year

- As illustrated in Figure 6, the month representing the highest proportion of Infant deaths in the specified time period was January, 2004, representing approximately 13% of such deaths. There were no such deaths yet recorded for June of 2004.

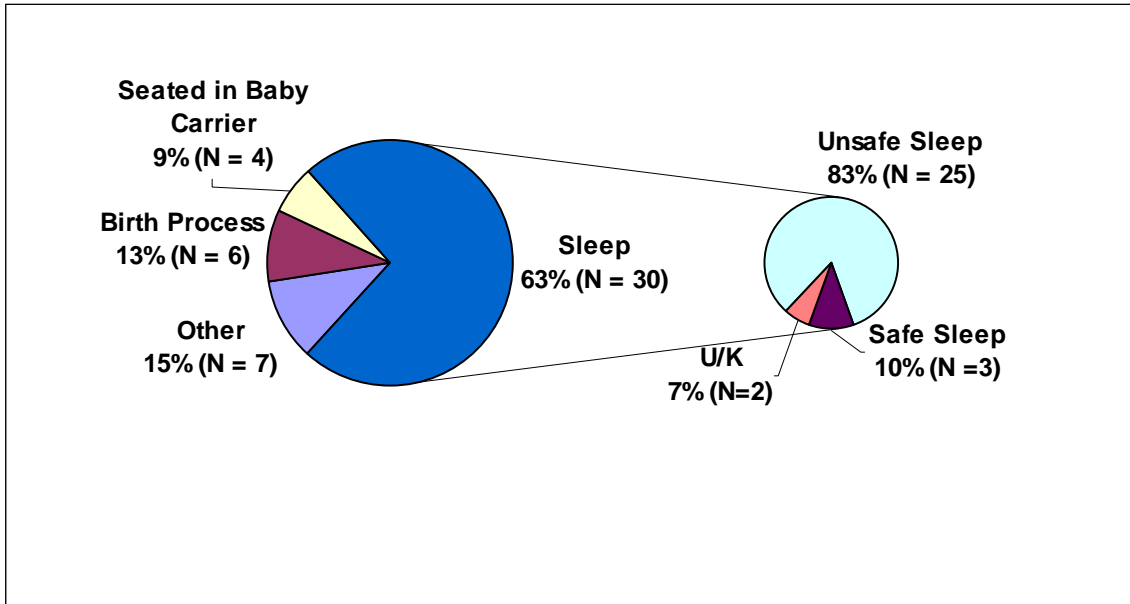
Figure 6: Percentage of Infant Deaths by Month and Year, January 2003 - June 2004



Incident Activity and Sleeping Practices

- Figure 7 reveals that the Incident Activity that was most prevalent in these infant deaths was *Sleep*, representing 63% of such deaths. This figure also reveals that the vast majority of these cases involved an unsafe sleep practice.

Figure 7: Percentage of Infant Deaths by Incident Activity with Emphasis on Sleeping Practices, January 2003 - June 2004

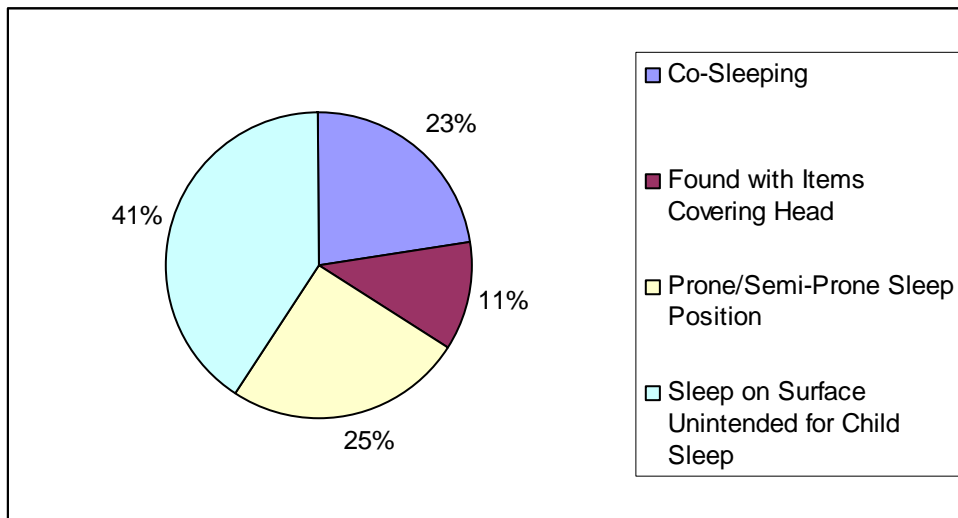


- More specifically, of the infant deaths that occurred during sleep, approximately 83% (N = 25) involved one or more of the following unsafe sleep practices: *Co-sleeping*⁵, *Sleeping on a Surface Unintended for Child Sleep* (such as an adult bed or a couch), *Sleeping in a Prone or Semi-prone Position*, or *Found Sleeping with Items Covering the Head*.

⁵ 'Co-Sleeping' is defined here as the sharing of a sleep surface between an infant and at least one other person.

- Figure 8 shows that *Sleep on a Surface Unintended for Child Sleep* was the most frequently occurring unsafe sleep practice. This was found to be the case when this unsafe sleep practice occurred on its own and also in combination with other practices, with the most prevalent unsafe sleep surface being the adult/parental bed.
- Note that the sleep practices in Figure 8 are not mutually exclusive. In fact, approximately 40% of the child deaths examined in this report involved 2 or more of the unsafe sleep practices listed, thus compounding the child's exposure to risk in his or her sleep environment. The most prevalent combination of unsafe sleep practices was the combination of *Sleep on a Surface Unintended for Child Sleep* and *Co-Sleeping*.

Figure 8: Percentage of Infant Deaths by Sleep Practice, January 2003 - June 2004



Conclusion

The primary purpose of this report was to examine a unique sub-category of sudden and unexpected child deaths – infants under the age of 1 year. This analysis revealed a few interesting findings that are specific to this group of children. Amongst these was the finding that the majority of these deaths were classified as Natural and the majority had an immediate cause of death of SIDS.

As prevention is the primary focus of Child Death Review in BC, there were two findings of this study that were of particular relevance: the Incident Activity that was most commonly found in these infant death cases was *Sleep*, and *Sleep on a Surface Unintended for Child Sleep* was a frequently occurring unsafe sleep practice. Furthermore, it was found that *SIDS* and *Asphyxial event*, respectively, were the two most prevalent immediate causes of death. In fact, pathological findings from autopsies of sudden unexpected infant deaths reveal significantly similar findings between asphyxia-related deaths and those defined as SIDS deaths. Due to this fact, increased scrutiny and awareness around sleep environment and attention to the investigation of the death scene have become increasingly important aspects in child death cases. It is believed by many medico-legal death investigators that more thorough scene investigations and scene re-creations will yield a much better understanding of how infants die in these circumstances and that the sleep environment has many preventable risk factors that were often not considered in the past. The greater the understanding we have about the risk factors involved in sleep related infant deaths, the better our ability will be to target prevention initiatives that can reduce these types of fatalities.

These and similar findings regarding the circumstances surrounding infant deaths have also led to increased standardization of the classification of infant deaths, a process that has been documented throughout North America⁶. Accordingly, the BC Coroners Service, as of November, 2004, has created specific standards for classification of infant deaths. This will ensure that there are uniform and consistent criteria applied to the classification of these types of death. Specifically, sudden unexpected infant deaths will no longer be classified as consistent with sudden infant death syndrome based on pathological findings unless all other sleep environment risk factors have been ruled out.

Increased understanding of issues relating to child sleep practices has also led to increased information for parents. In 1999, the Back to Sleep Campaign was launched in Canada to educate parents, caregivers and physicians on safe sleep positions for infants. While this campaign was a step in the right direction, our increased understanding of the risks associated with the sleep environment shows the need to promote greater awareness and a broader message which emphasizes safe infant sleep.

⁶ Source: Malloy, M. & MacDorman, M. (2005). Changes in the Classification of Sudden Unexpected Infant Deaths: United States, 1992-2001. *Pediatrics* 115 (5): 1247-1253.

In November, 2004, the Canadian Paediatric Society released a position statement regarding recommendations for safe sleeping environments for infants and children¹. The Child Death Review Unit of the BC Coroners Service supports this position statement and recommends the following Safe Infant Sleep Guidelines in an effort to help reduce the incidence of infant sleeping fatalities:

- Avoid co-sleeping. Infants sharing a sleep surface with adults, children or pets are at risk of overlay and suffocation. Put your infant to sleep alone.
- Infants should always sleep in a crib for their first year of life. They should not sleep on an adult bed, waterbed, couch, soft surface or any other surface unintended for infant sleep.
- Always put your infant to sleep on his/her back.
- Avoid loose items such as stuffed toys, soft bedding, pillows, comforters or bumper pads in cribs and ensure that the infant's face is uncovered during sleep for easy breathing.
- Dress your infant in a sleeper to reduce the use of heavy blankets.
- Use a firm mattress in cribs, with a tightly fitted sheet.
- After feeding, be sure to place your infant back in his/her crib.
- Monitor room temperature to ensure your infant maintains an appropriate body temperature. Infants do not have the same ability as adults to thermo-regulate.
- Avoid smoking anywhere near infants.

Evidence-based guidelines such as these, standardization, and more refined data collection through the use of comprehensive investigative protocols created by the Child Death Review Unit will contribute to a better understanding of the nature of circumstances leading to these and other child deaths. These are some of the key steps that will enable us to fulfill our preventative goals and to promote the health, well-being and safety of all British Columbian children.

¹ Source: Canadian Paediatrics Committee, Canadian Paediatric Society (2004). Recommendations for Safe Sleeping Environments for Infants and Children. *Paediatrics & Child Health* 9 (9): 659-663. (<http://www.cps.ca/english/statements/CP/cp04-02.htm>).