



SAFE AND SOUND:

A Special Report on the Unexpected
Sleep-Related Deaths of 145 Manitoba Infants

Copyright® 2020 Manitoba Advocate for Children and Youth
All rights reserved.
Printed in Canada.
ISBN (online): 978-1-9995410-5-7
ISBN (paperback): 978-1-9995410-6-4

For information concerning this report contact:
The Manitoba Advocate for Children and Youth Office
270 Osborne Street North
Winnipeg, Manitoba R3C 1V7
Email: info@manitobaadvocate.ca

This report can be reproduced, in whole or in part, provided the source is cited.

Suggested Citation

Manitoba Advocate for Children and Youth. (2020). *Safe and sound: A special report on the unexpected sleep-related deaths of 145 Manitoba infants*. Online: <https://manitobaadvocate.ca/wp-content/uploads/SafeSleep-Report.pdf>



ABOUT OUR OFFICE

The Manitoba Advocate for Children and Youth is an independent, non-partisan office of the Manitoba Legislative Assembly. We represent the rights, interests, and viewpoints of children, youth, and young adults throughout Manitoba who are receiving, or should be receiving, provincial public services. We do this by providing direct advocacy support to young people and their families, by reviewing public service delivery after the death of a child, and by conducting child-centred research regarding the effectiveness of public services in Manitoba. The Manitoba Advocate is empowered by legislation to make recommendations to improve the effectiveness and responsiveness of services provided to children, youth, and young adults. We are mandated through *The Advocate for Children and Youth Act* and guided by the *United Nations Convention on the Rights of the Child* (UNCRC) and we act according to the best interests of children and youth.

Our Vision

A safe and healthy society that hears, includes, values, and protects all children, youth, and young adults.

Our Mission

We amplify the voices and champion the rights of children, youth, and young adults.

Our Values

Child-Centredness

Equity

Respect

Accountability

Independence

DEDICATION

Because every child is uniquely special, when a child dies, the loss is overwhelming – nothing can be more devastating. We wish to remind the reader that every number, statistic, and point on a graph presented in this report represents a life not lived and a family grieving.

We dedicate this report to all the infants who have left us too soon and to the families, friends, and communities who have suffered this most profound loss.



Stock image.

OUR COMMITMENT TO RECONCILIATION

The mandate of our office extends throughout the province of Manitoba and we therefore travel and work on a number of treaty areas. Our offices in Southern Manitoba are on Treaty 1 land, which is the traditional territory of Anishnaabeg, Cree, Oji-Cree, Dakota, Ojibwe and Dene peoples, and the beautiful homeland of the Metis nation. Our Northern office is on Treaty 5 land, and the services we provide to children, youth, young adults, and their families extend throughout the province and throughout Treaty areas 1, 2, 3, 4, 5, 6, and 10.

As an organization, we are committed to the principles of decolonization and reconciliation and we strive to contribute in meaningful ways to improve the lives of all children, youth, and young adults, but especially to the lives of First Nations, Metis, and Inuit young people, who continue to be disproportionately impacted by systemic inequalities and other barriers in our communities. This is particularly true on the issue of infant mortality, the central focus of this study and the report we offer today.

With a commitment to social justice and through a rights-based lens, as an office, we integrate the *United Nations Convention on the Rights of the Child*, the *United Nations Declaration on the Rights of Indigenous Peoples*, and the national Truth and Reconciliation Commission's *Calls to Action* into our practice. Our hope is that the scope of our work on behalf of children, youth, young adults, and their families contributes to amplifying these voices and results in tangible improvements to their lives and outcomes.

ACKNOWLEDGEMENTS

The Manitoba Advocate for Children and Youth wishes to thank the following organizations for their cooperation with this report:

- The Office of the Chief Medical Examiner (OCME)
- The Assembly of Manitoba Chiefs' First Nations Health and Social Secretariat of Manitoba (FNHSS)
- The Winnipeg Police Service (WPS)
- The Royal Canadian Mounted Police Force (RCMP)
- The Manitoba First Nations Police Service (MFNPS)
- The Brandon Police Service (BPS)
- The Manitoba Centre for Health Policy (MCHP)
- The Institute of Urban Studies, The University of Winnipeg (IUS)
- Manitoba Families
- Manitoba Health, Seniors and Active Living

The scope of this report was broadened through a *Letter of Understanding* between the Office of the Chief Medical Examiner (OCME) and the Manitoba Advocate for Children and Youth (MACY). This allowed the report to include infants and families that had no contact with child welfare services within a year of their deaths, and whose deaths would typically have fallen outside the scope of MACY for review and investigation.

Special thanks to the following individuals: Dr. John Younes, Manitoba's Chief Medical Examiner, for acting as a third reviewer of infant deaths and lending valuable expertise to the inclusion criteria, and to Gordon Holens (OCME) for support during data collection. To Dr. Lynne Warda (WRHA) for ongoing consultation; Rhonda Campbell (FNHSS) for consultation and advice on the development of the data collection instrument; Pascal Lambert for statistical analyses; Dr. Dan Chateau (MCHP) for statistical consultation; Ryan Shirliffe (IUS) for GIS mapping; and Dr. Rachel Moon (American Academy of Pediatrics) for lending additional expertise.

We also thank all stakeholders who participated and provided feedback during consultations and during presentations on preliminary findings.

The Manitoba Advocate would also like to acknowledge the important efforts of public health and child welfare professionals across the province involved in providing care for infants, caregivers, and their families.

Importantly, we wish to acknowledge the families impacted by the unexpected loss of an infant. As advocates for children and youth, our team seeks to discover information and offer solutions to improve the safety and wellbeing of all children.

A NOTE ON CONTENT

This report presents a comprehensive review of findings from the research into sleep-related infant deaths. A concise summary of key information was created and can be accessed here:

<https://manitobaadvocate.ca/wp-content/uploads/SafeSleep-Pamphlet.pdf>

For public education purposes, an infographic has been created based on this report, and can be accessed here: <https://manitobaadvocate.ca/wp-content/uploads/SafeSleep-Infographic.pdf>

Table of Contents

About our Office 3

Dedication 5

Our Commitment to Reconciliation 6

Acknowledgements..... 7

A Note on Content 8

Table of Contents 8

Executive Summary..... 11

CHAPTER 1: INTRODUCTION 17

CHAPTER 2: BACKGROUND 20

CHAPTER 3: METHODS..... 24

CHAPTER 4: FREQUENCIES AND TRENDS 27

CHAPTER 5: THE INFANTS 32

CHAPTER 6: THE SLEEP ENVIRONMENT 42

CHAPTER 7: THE SOCIAL DETERMINANTS OF HEALTH..... 52

CHAPTER 8: INDIGENOUS INFANTS 57

CHAPTER 9: CHILD WELFARE INVOLVEMENT 60

CHAPTER 10: JURISDICTIONAL SCAN 68

CHAPTER 11: RECOMMENDATIONS..... 72

CHAPTER 12: CONCLUSION 81

Appendix A: Methodological Details..... 82

Appendix B: Data Tables 85

Appendix C: Jurisdictional Scan..... 88

Glossary of Terms..... 94

References 95

Tables

Table 1. <i>Risk factors for sleep-related infant deaths</i>	22
Table 2. <i>Rate of sleep-related infant deaths, < 12 months, Manitoba and British Columbia, 2013-2018</i>	29
Table 3. <i>Indigenous ancestry among sleep-related infant deaths, Manitoba, 2009-2018</i>	33
Table 4. <i>Number of sleep-related infant deaths by Regional Health Authority, Manitoba, 2009-2018</i>	35
Table 5. <i>Location of death among sleep-related infant deaths, Manitoba, 2009-2018</i>	38
Table 6. <i>Sleep position placed and found, Manitoba, 2009-2018</i>	43
Table 7. <i>Bed-sharing among sleep-related infant deaths, Manitoba, 2009-2018</i>	46
Table 8. <i>Bed-sharing and other risk factors in sleep-related infant deaths, Manitoba, 2009-2018</i>	47
Table 9. <i>Objects in the infants' sleep environment, Manitoba, 2009-2018</i>	47
Table 10. <i>Sleep-related infant deaths by any exposure to tobacco smoking, Manitoba, 2009-2018</i> ..	49
Table 11. <i>Sleep-related Infant deaths by average household income of neighbourhood</i> ,.....	54
Table 12. <i>Number of sleep-related infant deaths by availability of a safe sleeping surface</i> ,	55
Table 13. <i>Infant demographics by child welfare involvement, Manitoba, 2009-2018</i>	61
Table 14. <i>Sleep environment risk factors by CFS Involvement, Manitoba, 2009-2018</i>	62
Table 15. <i>Characteristics of CFS involved sleep-related infant deaths, Manitoba, 2009-2018</i>	63
Table 16. <i>Social determinants of CFS involved sleep-related infant deaths, Manitoba, 2009-2018</i> ...	64
Table 17. <i>Sleep-related infant death risk factors by sex, Manitoba, 2009-2018</i>	85
Table 18. <i>Sleep-related infant death risk factors by age of death, Manitoba, 2009-2018</i>	85
Table 19. <i>Risk factor for sleep-related infant deaths by Indigenous status, Manitoba, 2009-2018</i>	86
Table 20. <i>Sleep-related infant deaths by infant characteristics, Manitoba, 2009-2018</i>	87
Table 21. <i>Accuracy of public information across Canada</i>	90
Table 22. <i>Accuracy of policy, procedural, or regulatory documents across Canada</i>	91
Table 23. <i>Adherence to AAP recommendations by province of document origin</i>	92
Table 24. <i>Comparison of Manitoba safe sleep resources</i>	93

Figures

Figure 1. <i>Definition of sleep-related infant deaths</i>	20
Figure 2. <i>The Triple Risk Theory. Adapted from Filiano & Kinney, 1994.</i>	23
Figure 3. <i>Flow diagram illustrating how sleep-related infant death cases were selected for this study</i>	26
Figure 4. <i>Number of sleep-related infant deaths per year, by age, Manitoba, 2009-2018</i>	28
Figure 5. <i>Rate of sleep-related infant deaths under 12 months of age, per 10,000 live births, 2009-2018</i>	28
Figure 6. <i>Rate of sleep-related infant deaths, < 12 months, Manitoba and British Columbia, 2013-2018</i>	30
Figure 7. <i>Percentage of infant deaths by risk factor, Manitoba, 2009-2018</i>	30
Figure 8. <i>Frequency of sleep-related deaths by age (in months), Manitoba, 2009-2018</i>	33
Figure 9. <i>Infant feeding method among sleep-related deaths, Manitoba, 2009-2018</i>	34
Figure 10. <i>Location of sleep-related infant deaths by Regional Health Authority, Manitoba, 2009-2018</i>	36
Figure 11. <i>Location of sleep-related infant deaths by census tract, Winnipeg, 2009-2018</i>	37
Figure 12. <i>Place where sleep-related infant death occurred, Manitoba, 2009-2018</i>	38
Figure 13. <i>Sleep-related infant deaths by birth order, Manitoba, 2009-2018</i>	39
Figure 14. <i>Manner of death of sleep-related infant deaths, Manitoba, 2009-2018</i>	40
Figure 15. <i>Infant position when placed to sleep compared to position when found, Manitoba, 2009-2018</i>	43
Figure 16. <i>Percentage of sleep-related infant deaths by sleep surface, Manitoba, 2009-2018</i>	44
Figure 17. <i>Percentage of bed-sharing deaths, by reasons for bed-sharing, Manitoba, 2009-2018</i>	46
Figure 18. <i>Percentage of sleep-related infant deaths with overheating indicators, Manitoba, 2009-2018</i>	48
Figure 19. <i>Number of risk factors per sleep-related infant death, Manitoba, 2009-2018.</i>	51
Figure 20. <i>Household income by incidents of sleep-related infant deaths, Winnipeg, 2009-2018</i>	54
Figure 21. <i>Number and percentage of Indigenous and non-Indigenous sleep-related infant deaths, Manitoba, 2009-2018</i>	58
Figure 22. <i>Child welfare activities and opportunities to intervene</i>	65
Figure 23. <i>Adherence to AAP recommendations by province of document origin</i>	92

EXECUTIVE SUMMARY



The death of an infant is perhaps one of the most heartbreaking experiences a family can endure. This is particularly true when an infant dies unexpectedly in their sleep. Adults who are responsible for the care and protection of babies, almost without exception, do so to the best of their knowledge and abilities and draw from a mixture of personal experiences, cultural norms, and community input. What this special report shows is that our understandings about how to provide the

safest care for babies must evolve because the evidence shows that there are certain things we can do as caregivers that will increase risk to our babies, or increase our babies’ safety. Moreover, although some practices are familiar and frequently reinforced by myriad sources, they may be dangerous to our babies who need us to take every measure to keep them safe and sound.

This special report is about 145 Manitoba infants who died between 2009 and 2018, and whose deaths *occurred unexpectedly and in their sleep before they were two years old*. This is also the common definition we use for “sleep-related infant deaths” throughout this study and in the report, I am releasing today. In each of the 145 deaths we examined closely for this study, unsafe sleep environments were known to have contributed to, or resulted in their deaths. Importantly, this report is also about the families who loved these babies and the questions that were left unanswered in the wake of their losses. Through a careful and tender examination of the evidence, my team and I strive to offer some answers and hope.

The Manitoba Advocate has held the responsibility for reviewing and investigating the deaths of Manitoba children since 2008, when a legislative change transferred that unique responsibility from the Office of the Chief Medical Examiner (OCME) to the Manitoba Advocate for Children and Youth (“MACY,” then known as the Office of the Children’s Advocate). After noticing an unusually high number of infant deaths associated with unsafe sleep environments for 2018, combined with noticing a lack of recent information on the nature and extent of sleep-related deaths in the province, I launched a comprehensive research study and public education effort under Parts IV and V of *The Advocate for Children and Youth Act* (ACYA). This special report, which is also the most in-depth retrospective case review study of unsafe sleep-related infant deaths ever produced in Manitoba, is one example of how my office is actively representing the rights of infants, whose voices are not yet able to be heard.

In order to understand the scope of the issue, I directed my team to review all infant deaths in the last ten years so we could gain an in-depth understanding. Working closely with the OCME, researchers at my office reviewed more than 1,000 infant deaths in the last ten years, which resulted in the identification of 145 infants who had died unexpectedly and in their sleep before the age of two years old, where unsafe sleep environments were a factor in the infant's death.

In Canada, sudden and unexplained deaths remain the second leading cause of death for infants. **What you will read in this report is a clear message of hope: unsafe sleep-related deaths can be reduced in our province by addressing the known risk factors.** What is needed to increase infant safety and save families from experiencing this loss is improved public education, equal access to safe sleep resources, and improved professional training.

Sleep-related infant deaths are not only a serious public health concern, but they are also a children's rights issue.

Across the globe, every child has inherent rights that have been promised to them by their governments – including their right to live and thrive. The Government of Canada acknowledged the special place of children in Canadian society and assumed responsibility for the fulfillment of children's rights by ratifying the *United Nations Convention on the Rights of the Child* (UNCRC). As set out in the UNCRC, infants in Manitoba have a right to safe sleep environments. Moreover, governments have a responsibility to provide parents with (1) appropriate prenatal and postnatal health care, (2) information and education on basic knowledge of child health, and (3) preventative health care. Provincial and territorial governments, who deliver the bulk of public services, including health services, also shoulder these responsibilities and thus, the Government of Manitoba also holds obligations under the UNCRC. Overall, state parties, including Canada, have committed to diminishing infant and child mortality and this special report intends to highlight the governments' obligations under the UNCRC.

This report makes an important contribution to public health research in Manitoba. These findings can be used to inform, evaluate, and improve province-wide programs and systems to reduce infant mortality. My team and I anticipate that this report may also challenge long-held beliefs about infant safety, especially their safety when sleeping. Parents and caregivers, of course, make choices everyday concerning how they care for, raise, and keep their infants safe. As noted, those choices reflect their best understandings of how to keep their babies safe. What our research tells us is that while this may be a sensitive topic with strongly held beliefs by many people, it is important to see that the evidence is strong, compelling that some common practices should be avoided and alternative solutions must be found where available resources do not match the level of need. It is not my intent to cast blame or criticize the choices of caregivers who were acting with good intentions and doing what they believed to be in their best interests of their baby. My intent is to present the information we have learned about

infant sleep risks so that all caregivers can be informed and make safe choices. In turn, infants in our province can benefit from the evidence that shows how we as caregivers can do all we can to secure them in their environments. Increasing public awareness will be instrumental in reducing the number of sleep-related infant deaths in Manitoba. When we know better, we can do better.

This report addresses the extent and nature of unsafe sleep-related deaths in Manitoba, examines the barriers and gaps that prevent the reduction of known risk factors, and makes 13 targeted recommendations to increase the effectiveness and responsiveness of services for infants and their families.

My office's research found that although the individual numbers fluctuate from year to year, the overall rate of sleep-related infant deaths did not change significantly between 2009 and 2017, with the average each year being 14.5 sleep-related infant deaths in Manitoba. The year 2018 saw a sharp peak with Manitoba losing 25 infants in sleep-related circumstances that year, the highest rate of sleep-related infant deaths in the last ten years. At the time of writing, sleep-related infant deaths appear to be high once again for the current year, numbers we will be better able to analyze in the months to come. Ongoing monitoring of the rate of sleep-related infant deaths in Manitoba is needed to better understand long-term trends. For this reason, one of the recommendations I am making today is that the Infant Mortality Working Group, which has not been meeting regularly since 2018, be reinstated. This collaborative, inter-departmental group was a cross-section of experts working to reduce infant mortality, including a focus on safe sleep practices (Recommendation 11).

With a continued focus on ensuring the accuracy and completeness of data, I am recommending the Office of the Chief Medical Examiner, in partnership with my office develop an electronic database to collect and report on the incidence of and risk factors associated with all sleep-related deaths in the province (Recommendation 10). To ensure that information collected is as consistent and comprehensive as possible, I am also recommending that the OCME work with RCMP and other law enforcement agencies in the province to develop and implement a single standardized reporting form. This form would be used by all law enforcement officials who attend the scene of an infant death (Recommendation 9). Our offices have already had some encouraging discussions in this regard and I am hopeful that not only will we create the needed infrastructure to collect and analyze data in an effective way, but that in so doing, Manitoba will also be positioned as a national leader in this effort.

Foundational to this study was the examination of the known risk and protective factors in a sleep environment. While many of the known risk factors are modifiable, others are not. Still, it is well established that most sleep-related infant deaths can be prevented by reducing the known risk factors and by placing the infant **alone**, on their **back**, and in a **crib** for **every sleep**. This study found that the most commonly observed risk factors in Manitoba include bed-sharing, placing the infant to sleep on an

unsafe surface or in an unsafe position, objects in the sleeping environment, exposure to tobacco smoke, and infant overheating. In every case where information on a death was available, one or more of these risk factors was present at the time of death. Further, deaths involving only one risk factor were extremely rare, and when complete information on an infant's death was available, there were no deaths involving no known risk factors. This is an important finding because where risk can be reduced, deaths may also be reduced.

This study and jurisdictional scan has demonstrated that many families receive inconsistent, incomplete, conflicting, or simply unsafe information about infant sleep practices from health care providers, community organizations, family members, and the internet. There are many reasons for this, including that training for professionals is inconsistent and not all materials available adhere to the best evidence on infant safety. Therefore, one recommendation I am making is for Manitoba Health to work with the Assembly of Manitoba Chiefs' First Nations Health and Social Secretariat of Manitoba (AMC-FNHSS) to develop an accredited online learning module for health workers (Recommendation 6). This recommendation reflects the fact that of the available educational materials in Manitoba, the AMC-FNHSS reflects the highest adherence to best practice in its *Sacred Babies: Infant Survival Curriculum* materials, and which also reflects cultural wisdom and relevant community practices that increase an infant's safety.

Further, according to experts from the medical community, there has not been a comprehensive public outreach campaign through Manitoba Health or Manitoba Families, at least in the last ten years. Accordingly, I am recommending that Manitoba Health, Seniors and Active Living, in partnership with the Assembly of Manitoba Chiefs' First Nations Health and Social Secretariat of Manitoba develop, carry out, and subsequently evaluate ongoing public education campaigns to raise awareness of the known risk factors associated with sleep-related infant deaths (Recommendations 3, 4, 5). Findings from the special report suggest that for Manitoba specifically, risk reduction campaigns and public education materials, need to be responsive to the changing patterns of risk factors in sleep-related infant deaths by placing emphasis on eliminating objects in the sleep environment, ensuring the use of safe sleep surfaces, reducing bed-sharing, and encouraging smoking cessation for expectant mothers and caregivers of infants. The evidence clearly shows that the frequency of sleep-related deaths associated with these risk factors specifically have increased in the last ten years and have been factors in many of the infant deaths that were studied for this special report. In recognition that tobacco smoking rates are higher for First Nations peoples, which is a known risk factor for infants, I am recommending Manitoba Health, Seniors and Active Living work with AMC-FNHSS to create and make available a smoking cessation resource (Recommendation 7). In addition, despite no formal jurisdiction to issue recommendations to the federal government, evidence is clear from our study that First Nations in Manitoba have unequal access to prenatal and postnatal programs. To that end, I am recommending the

federal government work with First Nations governments to create a strategy to expand those programs in First Nations communities (Recommendation 8).

What the data also show is that a family's ability to access resources is linked to infant deaths. **In plain terms, families who experience lower socio-economic conditions and who may not be able to access infant supplies – like cribs or adequate housing for their family – also experience higher levels of sleep-related infant deaths.** In many of those deaths, a safe sleeping surface for an infant was not available, so infants slept on unsafe sleeping surfaces (i.e., adult mattress, couch, car seat), and/or the household circumstances created a necessity of bed-sharing – 50% of all infants in this report died while sleeping on an adult mattress. In this situation, parents and caregivers made decisions based on what they thought was best and safest for their child, and on what the family could afford. I am recommending, therefore, that the Governments of Manitoba and Canada work with First Nations and Metis governments to ensure all infants in Manitoba have access to a crib, bassinette, or culturally appropriate and safe sleep alternative in which to sleep (Recommendations 1 and 2). These recommendations are in keeping with Canada's commitment to Jordan's Principle and the *United Nations Convention on the Rights of the Child*, wherein governments have the responsibility to ensure that caregivers have the financial and physical resources they need to support the health and wellbeing of children (Article 27), and in keeping with every infant's right to the highest attainable standard of health (Article 24).

In Manitoba, it is clear that rates of infant deaths in unsafe sleep environments are sensitive to the persistent legacy of colonization, geographical location, and socioeconomic factors. Our research confirms that First Nations infants are overrepresented in the number of sleep-related infant deaths. Furthermore, in our province, nearly 60% of all sleep-related infant deaths occurred in neighbourhoods where the average household income was less than \$35,000 and a further 30% occurred in areas with average incomes between \$35,000 and \$50,000 per year. Clearly more needs to be done to address the structural inequality faced by families and communities, and which pose a risk to the health and wellbeing of infants. Addressing these persistent structural inequalities is also in line with the Truth and Reconciliation Commission *Call to Action* 19, which calls on the federal government in particular to close the gaps in health outcomes "between Aboriginal and non-Aboriginal communities...such as: infant mortality, maternal health...life expectancy, birth rates, [and] infant and child health issues."

One specific area of focus for my office was the opportunities for public service providers to deliver important infant safety information to parents and other caregivers. In particular, we looked at the practices of child and family services (CFS) agencies. Of the 145 infant deaths included in this study, 84 of the families had contact with CFS in the 12-month period prior to the death of the infant. When CFS is involved in a family, important opportunities are present to provide safe sleep information to expectant parents and to parents of newborn babies. The review of deaths uncovered a number of missed

opportunities to ensure the safety of infants. For instance, only 46% included a safety assessment being completed for the infant's home environment. Further, only 49% of infants had a home visit conducted by CFS prior to their death, and during those home visits, only 12% of infant sleep environments were observed by CFS workers. My team found that even when safety assessments took place, they often excluded infants. Safety assessments used currently do not measure variables with relevance to infant health, such as whether a safe sleeping surface and environment is available.

Rather than being seen as intrusive or unnecessary, CFS agencies must understand that they hold a key responsibility for increasing infant safety in their abilities to engage caregivers in the home and provide them with evidence-informed and life-saving information for their babies. These are missed opportunities because CFS workers, by the very nature of their involvement and mandated responsibility to conduct safety assessments, are uniquely placed to support caregivers by assessing infant sleeping environments and providing caregivers with the information and resources they need to keep their children safe. Accordingly, I am recommending that the Department of Families work with CFS Authorities to develop a provincial service standard that requires all CFS workers to assess infant sleep environments as part of prescribed face-to-face contacts with infants (Recommendation 13). Further, with the government's decision to end birth alerts in Manitoba, what remains ongoing is the need to ensure newborn and infant safety. As such, I am recommending a provincial standard be created requiring child welfare agencies working with a family to assess the infant sleep environment and use the opportunity to provide education and other resources to decrease risk to the infant (Recommendation 12).

Infant deaths are devastating to families, extended families, their communities, and truly, to all Manitobans when we consider the emotional impact on those who knew and loved the infant and the loss of a life not yet lived. As a caring society, we all have a part to play in reducing the number of sleep-related infant deaths in our province. As the Manitoba Advocate for Children and Youth, I also hold a legislative responsibility to give priority in my advocacy efforts to infants because of their unique vulnerabilities and complete dependence on adults for all of their needs (ACYA, s.11 (2)). What I strive to do in this report is to offer the evidence and to discuss that evidence inside the context in which families live their lives. Then, using a lens of children's rights I make recommendations informed by the evidence with the objective of increasing infant safety and reducing sleep-related infant deaths in the future.

CHAPTER 1: INTRODUCTION

Every child has the inherent right to life. It is the obligation of governments to ensure the survival and development of all children. This special report examines the circumstances of 145 infants who died unexpectedly in their sleep in Manitoba between 2009 and 2018.

Children hold a sacred place in cultures and communities. Protecting and ensuring that children thrive is the duty of all members in a community. Across the globe, every child and youth has inherent rights that have been promised to them by their governments.

The Government of Canada acknowledged the special place of children in society and assumed responsibility for the fulfillment of children’s rights by ratifying the *United Nations Convention on the Rights of the Child* (UNCRC). The UNCRC is an agreement between nearly every country in the world that recognizes and honours children and the support they need to help them experience happy, healthy, and safe childhoods. This special report focuses on the following commitments in the UNCRC made by Canada and shared by the Province of Manitoba:

- To ensure children survive and develop to the full extent possible (Article 6)
- To diminish infant and child mortality (Article 24)
- To ensure appropriate prenatal and postnatal care for mothers (Article 24)
- To ensure that all segments of society – including parents – have access to education and are supported in the use of basic knowledge of child health (Article 24)
- To ensure that caregivers have the financial and physical resources they need to support the health and wellbeing of children (Article 27)

The Manitoba Advocate for Children and Youth (Manitoba Advocate) is empowered by *The Advocate for Children and Youth Act* (ACYA) and guided by the UNCRC to raise awareness and understanding of the rights of children (ACYA, s.12).

In addition to children’s rights, the Manitoba Advocate is committed to reconciliation between Indigenous and non-Indigenous communities. This special report is aligned with the principles of the *United Nations Declaration on the Rights of Indigenous People* (UNDRIP) and the *Calls to Action* of the Truth and Reconciliation Commission of Canada. In particular, this special report reinforces Article 21 of UNDRIP, which asserts Canada’s responsibility to improve the health of Indigenous children and *Call to Action* 19, which calls for the reduction in health gaps, including infant mortality, between Indigenous and non-Indigenous communities.

“We call upon the federal government, in consultation with Aboriginal peoples, to establish measurable goals to identify and close the gaps in health outcomes between Aboriginal and non-Aboriginal communities, and to publish annual progress reports and assess long term trends. Such efforts would focus on indicators such as: infant mortality, maternal health, suicide, mental health, addictions, life expectancy, birth rates, infant and child health issues, chronic diseases, illness and injury incidence, and the availability of appropriate health services.”

- Truth and Reconciliation Commission: *Call to Action* 19

Rationale

The Manitoba Advocate is responsible for reviewing and investigating the deaths of children in Manitoba if that child or their family had received any reviewable service (child welfare) within a year of the death of the child (ACYA, s.11.1(c)). To this end, the Manitoba Advocate receives notifications of all child deaths in Manitoba from the Office of the Chief Medical Examiner (OCME).

In 2018, the Manitoba Advocate noticed an unusually high number of infant deaths associated with unsafe sleep environments. Due to a lack of recent information on the nature and extent of sleep-related deaths in the province, the Manitoba Advocate directed the launch and release of this special report under Parts IV and V respectively of the ACYA. The special report was guided by the following questions:

- (1) How has the rate of sleep-related infant deaths changed in Manitoba over the last ten years?
- (2) What are the unsafe sleep risk factors associated with infant deaths in Manitoba?

Purpose

Most sleep-related infant deaths can be prevented. The purpose of this special report is not to find individual responsibility, but to reduce the number of preventable deaths of infants who die in unsafe sleep environments. This special report intends to hold the government accountable to its obligations under the UNCRC by:

- (1) Increasing awareness of sleep-related risk factors and understanding of the UNCRC among caregivers in Manitoba (ACYA, s.12), and;
- (2) Developing recommendations that increase the effectiveness and responsiveness of services for infants and their families (ACYA, s.31(1)).

The Manitoba Advocate holds a legal responsibility to give priority to children without others to assist them (ACYA, s.11(2)). Infants are a vulnerable group. Due to their cognitive, physical, and emotional development, infants depend on adults to protect them. This special report is an example of how the Manitoba Advocate is actively representing the rights of infants, whose voices are not yet able to be heard, but whose stories have a lot to teach caregivers, community leaders, and advocates.

“A newborn is very powerful, the greatest of all teachers. They can sense things that are not the norm, and let you know. And they continue to teach us as they grow. For example, they will crawl, stand, fall down and get up again. You don’t just get up once and walk forever, you will fall, and you will have to get up again and again.”

- Elder Mary Lee, Manitoba First Nations Education Resource Centre



Stock image

CHAPTER 2: BACKGROUND

Sleep-related infant deaths are a serious public health and children’s rights issue. Sudden and unexplained deaths are the second leading cause of death for infants in Canada (Public Health Agency of Canada, 2017). The majority of sleep-related infant deaths are associated with unsafe sleeping environments (Schnitzer et al., 2012).

Although since the 1990s, sleep-related infant deaths in Canada have been reduced by 50% (Public Health Agency of Canada, 2008), the trend has not improved since the 1990s (Public Health Agency of Canada, 2014; Task Force on Sudden Infant Death Syndrome, 2016).

What are sleep-related infant deaths?

For the purposes of this special report, the Manitoba Advocate defines sleep-related infant deaths as **the death of an infant younger than 24 months that occurred unexpectedly during sleep or in a sleeping environment.**

Changes in the medical terms used to describe sleep-related infant deaths make it difficult to identify patterns and trends. For instance, the term SIDS (Sudden Infant Death Syndrome) was first used in the 1970s, but was discontinued by Canadian medical examiners in the 2000s (Weeks, 2017). Today, medical examiners most often use Undetermined or SUID (Sudden Unexplained Infant Death) to describe deaths of infants under one year of age previously attributed to SIDS (Office of the Chief Medical Examiner, 2014; Weeks, 2017).

Some infant deaths related to suffocation in sleep environments might be deemed accidental. In fact, some studies have shown that the decline in SIDS deaths might be partially attributed to the increasing use of other terms to describe the same conditions (Shapiro-Mendoza et al., 2006).

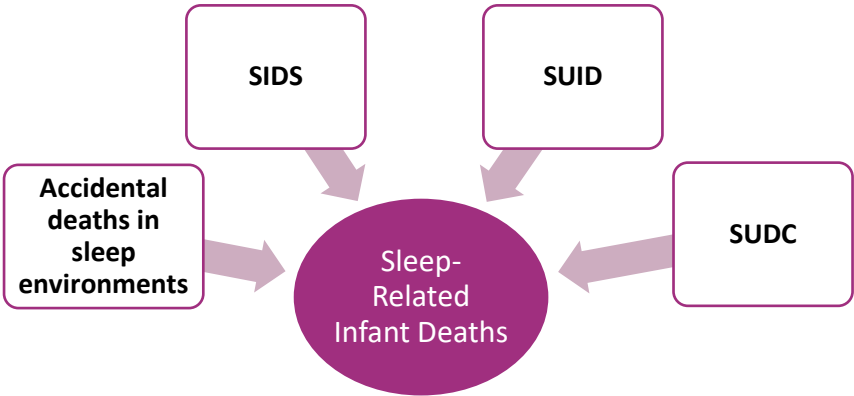


Figure 1. Definition of sleep-related infant deaths

While not as common, sleep-related deaths can happen after one year of age (McGarvey et al., 2012). Research limited to SIDS (infants under one year of age), of course, excludes this understudied population.

This special report looks beyond the terms SIDS and SUIDs to study the umbrella issue of sleep-related infant deaths (Figure 1). The study's definition of sleep-related infant deaths includes SIDS, SUID, and the Sudden Unexplained Death of Children older than a year (SUDC). It also includes deaths attributed to accidental causes while in a sleeping environment such as suffocation.

What are the causes of sleep-related infant deaths?

Most sleep-related deaths are classified as 'undetermined' by medical examiners because the exact manner of death remains unknown. Parents and caregivers do not witness the deaths take place, so investigators cannot get a clear description of the circumstances. This process is important for determining the manner of death.

It is important not to equate the label 'undetermined' with the idea that sleep-related deaths are inevitable. Even if the exact medical cause cannot be determined, many of the risk factors responsible for sleep-related infant deaths have been identified. Such risks are often included by medical examiners as contributing factors.

What are the most common risk factors for sleep-related infant deaths?

Decades of research have identified a number of factors that can increase the risk of sleep-related infant deaths. The most common of these factors and why they are considered risky are presented in Table 1.

Table 1. Risk factors for sleep-related infant deaths

Risk Factor	What is it?	Why is it risky?
Sleeping position on stomach or side	<ul style="list-style-type: none"> • Prone: infant sleeps on stomach • Side: the infant is placed on side to sleep 	<ul style="list-style-type: none"> • Rebreathing of exhaled air • Overheating, infant not able to cool down • Suffocation on soft bedding, other objects
Bed-sharing	<ul style="list-style-type: none"> • Sharing the same sleeping surface with an infant (e.g., adult bed, couch) 	<ul style="list-style-type: none"> • Overlay, bed-sharing partner rolls over infant • Overheating due to closeness with another person • Entrapment and suffocation due to items in the bed, clothing of bed-sharing partner, etc.
Prenatal Smoking	<ul style="list-style-type: none"> • Cigarette smoking by a mother during pregnancy 	<ul style="list-style-type: none"> • Tobacco smoke exposure in the womb compromises the development of parts of the brainstem responsible for breathing and waking-up
Second-hand and Third-hand smoke	<ul style="list-style-type: none"> • Second-hand smoke: smoke released from cigarette or breathed out by smokers • Third-hand smoke: smoke left on people and indoor surfaces 	<ul style="list-style-type: none"> • Tobacco smoke exposure affects an infant’s ability to wake-up from sleep
Clutter in the sleep environment	<ul style="list-style-type: none"> • Objects found in close proximity to an infant (e.g., stuffed animals, pillows, blankets) 	<ul style="list-style-type: none"> • Entrapment, being wedged between two surfaces • Suffocation
Unsafe sleep surface	<ul style="list-style-type: none"> • Any sleep surface that does not meet Canadian safety regulations (e.g., couch, car seat, swing, adult bed) 	<ul style="list-style-type: none"> • Suffocation due to position of the head • Entrapment due to soft surfaces like couch cushions
Swaddling	<ul style="list-style-type: none"> • When infant is wrapped in at least one layer of blankets 	<ul style="list-style-type: none"> • Overheating, if there are too many layers on the infant • Rebreathing and suffocation if swaddled infant rolls to their stomach. Infants old enough to roll over should not be swaddled. Swaddled infants should always be placed on their backs.

How do the risk factors for sleep-related deaths interact?

Most sleep-related infant deaths have multiple risk factors that interact to increase risk. The **Triple Risk Theory** suggests that infant deaths occur when vulnerable infants (risk 1), are exposed to certain environmental stress (risk 2), during critical periods of their development (risk 3) (Filiano & Kinney, 1994).

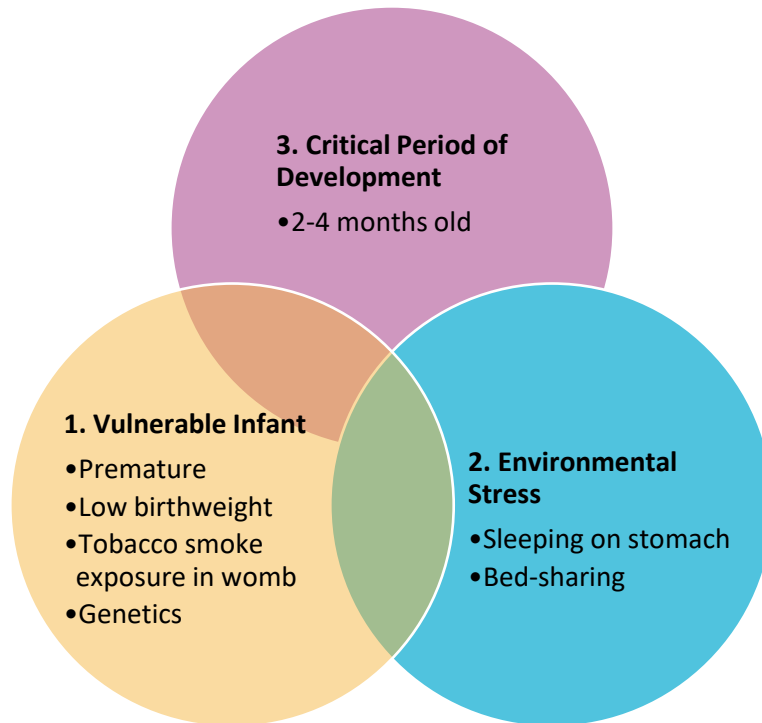


Figure 2. *The Triple Risk Theory. Adapted from Filiano & Kinney, 1994.*

Are sleep-related infant deaths preventable?

Yes. The number of infant deaths can be reduced by reducing the known risk factors. Sleep-related infant deaths can be prevented through public education, safe sleep resources, and professional training. There are multiple examples of successful prevention initiatives that have reduced infant mortality.

- **The success of Back to Sleep campaigns.** These campaigns took place around the world in the 1990s and focused on encouraging parents to place infants to sleep on their backs. The campaign is associated with a reduction of SIDS deaths in Canada (Government of Canada et al., 2018).
- **Crib delivery programs.** There are a few examples of crib, bassinette, or baby box crib delivery programs designed to reduce unsafe sleep practices, such as bed-sharing, in the U.S. and New Zealand (Baddock et al., 2018; Engel et al., 2019; Grant et al., 2017; Hauck et al., 2015; Middlemiss et al., 2019; Salm Ward et al., 2018; Tipene-Leach & Abel, 2019)..

- **Hospital-based education programs.** Staff working in labour/delivery and post-partum wards of a hospital received training so all staff could provide consistent messaging about safe sleep to parents. Before leaving the hospital, parents watched a brief safe sleep video, and signed a commitment statement saying that they would always place their infants alone and on their back in their cribs to sleep (the ABC model). The average death rate in the surrounding community that the hospital served fell by half (Krugman & Cumpsty-Fowler, 2018).



CHAPTER 3: METHODS

All infant deaths between 2009 and 2018 were reviewed. A total of 145 sleep-related infant deaths were selected for the study. The police files, child welfare records, health records, and autopsy reports of infant deaths were reviewed to understand their circumstances.

This is a ten-year population-based retrospective case review of sleep-related infant deaths in Manitoba from 2009 to 2018. The methods included four steps: (1) identifying cases of sleep-related infant deaths; (2) collecting information from the cases; (3) analyzing data, and; (4) developing recommendations. The following section summarizes the methods used. A more detailed description of the methodological process, can be found in [Appendix A](#).

Data Sources and Sample

The Manitoba Advocate receives notification of all child, youth, and young adult deaths up to the age of 21 in Manitoba from the Office of the Chief Medical Examiner (OCME). The initial sample represented all infants aged 0-24 months (not inclusive) who died between January 1, 2009 and December 31, 2018 (N=1,096).

All infant deaths in Manitoba for the time period were reviewed by three individuals including two researchers from the Manitoba Advocate and the Chief Medical Examiner to identify sleep-related infant deaths. Reviewers followed a flow chart for case assessment (Figure 3). A total of 145 infants were identified as sleep-related infant death.

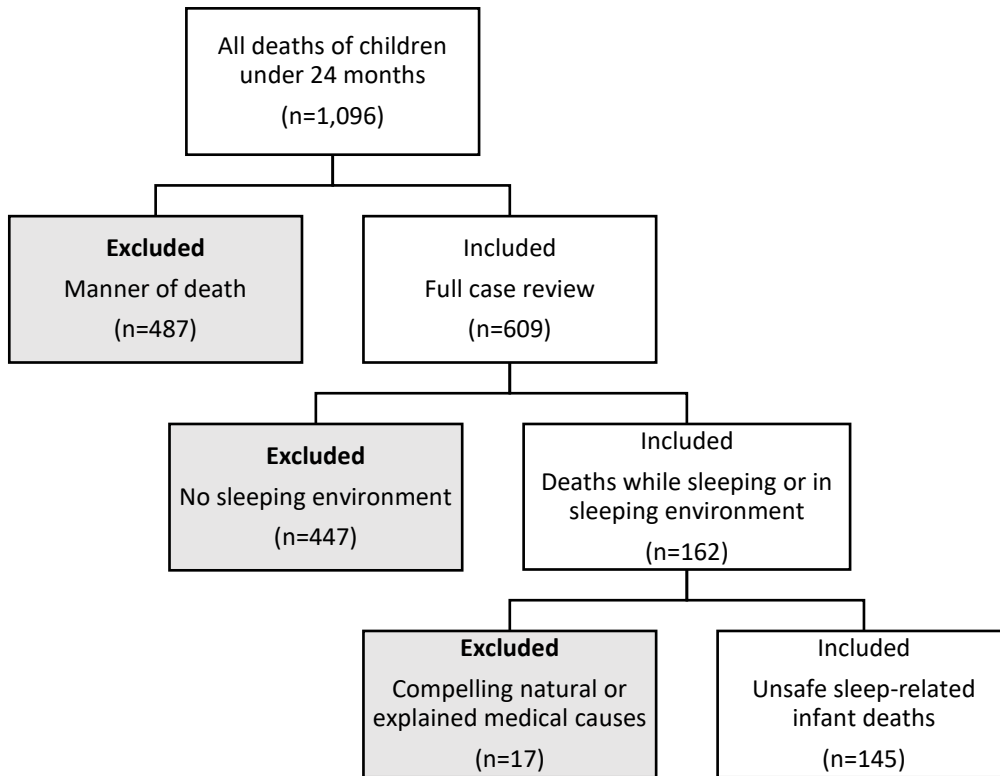
Data Collection and Analysis

A comprehensive literature review of risk and protective factors informed the development of a form used to collect demographics and risk factors in each case. The form was finalized following input from child welfare, public health, and Indigenous health professionals. Data were collected from records by three researchers at the Manitoba Advocate. A data collection protocol and a code book were developed to ensure reliability and consistency between abstractors. A series of statistical tests were conducted using R (statistical computing software) to examine the frequency and nature of sleep-related infant deaths.

Case Studies

Presented throughout this report are five case studies. Each one is based on the details of sleep-related infant deaths encountered in the cases reviewed for this study. Because some details were added or changed for privacy purposes, the case studies are most accurately understood as composite narratives. All names and identifying information have been changed to protect the families involved.

Figure 3. Flow diagram illustrating how sleep-related infant death cases were selected for this study



Recommendation Development

Recommendations were informed by the data, a narrative review of best-practices, and a jurisdictional scan of public education materials, policies, and programs across Canada. A consultation process with relevant government departments, public health organizations, health professionals, child welfare professionals, and Indigenous health care specialists followed data analysis in February and March 2020. The purpose of stakeholder consultations was to inform the Manitoba Advocate’s recommendations to improve the effectiveness and responsiveness of services in Manitoba and to reduce the likelihood of deaths occurring in similar circumstances in the future.

CHAPTER 4: FREQUENCIES AND TRENDS

This chapter describes how many sleep-related infant deaths took place in Manitoba between 2009 and 2018. It also analyzes changes in the rate of deaths over time and in the sleeping environments in which infants were found.

Key Findings

- There were 145 sleep-related infant deaths in Manitoba between 2009 and 2018, an average of 14.5 deaths every year.
- Although the individual numbers fluctuate from year to year, the overall rate of sleep-related infant deaths did not change significantly between 2009 and 2017, with the average each year being 14.5 sleep-related infant deaths in Manitoba. However, 2018 saw a significant increase and the highest number and rate of sleep-related infant deaths in the last ten years (25 infant deaths).
- The rate of sleep-related infant deaths in Manitoba (between 2013 and 2018) is 42% higher than in British Columbia.
- The percentage of infants found with soft objects in their sleep environment, found in unsafe sleeping surfaces, and found bed-sharing has increased in the last ten years.

Number of Sleep-Related Infant Deaths

There were 145 sleep-related infant deaths in Manitoba between January 1, 2009 and December 31, 2018. This translates to an average of 14.5 deaths every year. The number of sleep-related deaths ranges from eight deaths in 2009, to 25 deaths in 2018, which was the highest number of sleep-related infant deaths in the last ten years (Figure 4).

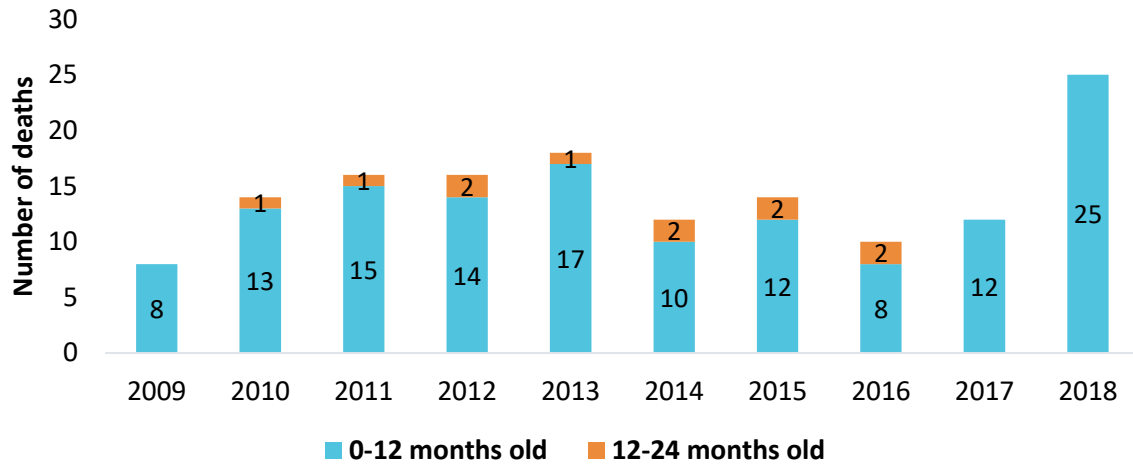


Figure 4. Number of sleep-related infant deaths per year, by age, Manitoba, 2009-2018

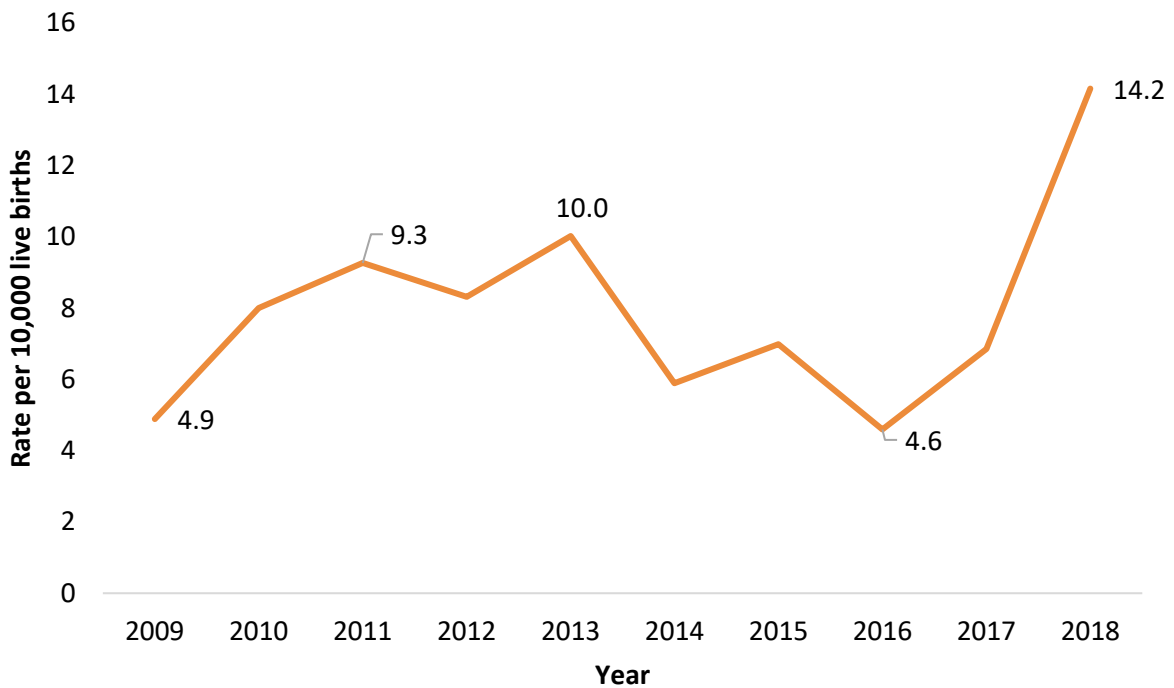


Figure 5. Rate of sleep-related infant deaths under 12 months of age, per 10,000 live births, 2009-2018

Rates of Sleep-Related Infant Deaths

As is standard in infant mortality rate calculations, infants over the age of 12 months at time of death were excluded from the rate calculations presented below.

Based on a ten-year average, in Manitoba, around 16,923 babies are born each year, of which, an average of 13.4 infants under one year died unexpectedly during sleep. This translates to an average of 7.9 sleep related infant deaths per 10,000 live births. Visual examination of the trend highlights a **peak in the rate of sleep-related infant deaths in 2018** (Figure 5).

Infants under 12 months are more likely to die from sleep-related deaths than from accidents, such as motor vehicle accidents. The accidental death rate for infants under 12 months of age in Manitoba was 0.05/10,000 live births, compared to 7.9/10,000 live births for sleep-related deaths. In other words, **the rate of sleep-related infant deaths among infants 12 months or younger was 197% higher than accidental deaths in the same age group.**

Are Sleep-Related Infant Deaths Increasing?

Analysis shows that there is no significant change in the rate of sleep-related infant deaths between 2009 and 2017 ($p > 0.05$). This is consistent with findings across Canada which suggest that the rates of sleep-related deaths have not improved since the late 1990s (Gilbert et al., 2012).

Findings of a peak in the rate of sleep-related infant deaths in 2018 are concerning. Ongoing monitoring of the rate of sleep-related infant deaths in Manitoba is needed to better understand long-term trends. This need is addressed in the formal recommendations that the Manitoba Advocate is releasing in this special report.

Rate Comparison

Given changes in terminology and definitions over time, it is difficult to compare findings of this study with research conducted across Canada. A recent report published by the British Columbia Coroners Service (British Columbia Coroners Service, 2019), however, is comparable due to overlapping periods and equivalent definitions of sleep-related infant deaths. For the purposes of comparison, we only included infants under 12 months of age in the analysis.

Table 2. *Rate of sleep-related infant deaths, < 12 months, Manitoba and British Columbia, 2013-2018*

Province	Rate/ 10,000 live births	Year(s)
Manitoba	8.1	2013-2018
British Columbia	5.3	2013-2018

During the same period (2013-2018), the rate of sleep-related infant deaths of infants younger than 12 months was 5.3 per 10,000 live births in British Columbia, and 8.1 per 10,000 live births in Manitoba (Table 2). This means that the rate of sleep-related infant deaths in Manitoba is 42% higher than in British Columbia. For every 10,000 live births, Manitoba has nearly three additional sleep-related infant deaths per year compared to British Columbia (Figure 6).

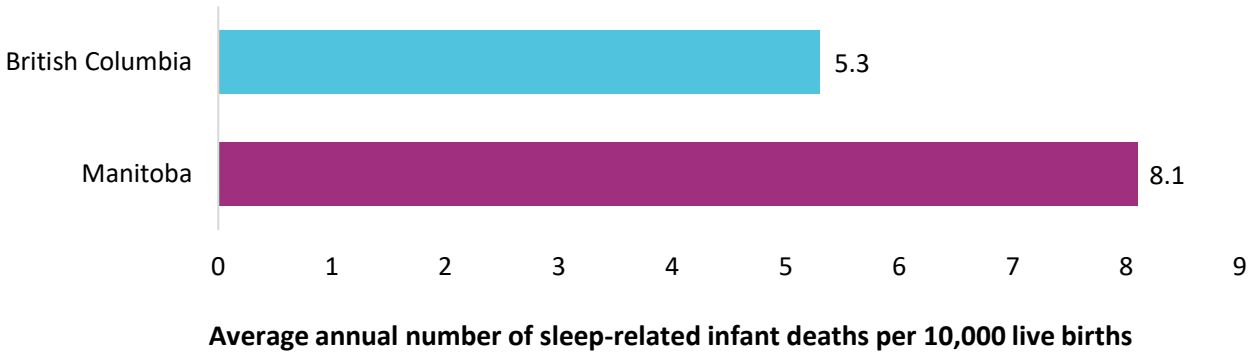


Figure 6. Rate of sleep-related infant deaths, < 12 months, Manitoba and British Columbia, 2013-2018

Changes in Sleep Environments over Time

Research has increasingly shown that the types of risk factors for sleep-related infant deaths have changed since the Back to Sleep campaign in the 1990s (Trachtenberg et al., 2012). In Manitoba, the percentage of infants found with objects in their sleep environment increased from 75% in 2009 to 92% in 2018 ($P<0.05$). There were also increases in the percentage of infants found in unsafe sleeping surfaces from 38% in 2009 to 84% in 2018 ($P=0.053$) and bed-sharing from 38% in 2009 to 84% in 2018 ($P=0.087$) (Figure 7). Tables 17, 18, and 19 in Appendix B presents all findings related to risk factors. Findings suggest that risk reduction campaigns, and particularly public education materials, need to be responsive to the changing patterns of risk factors in sleep-related infant deaths. In Manitoba, public education materials must place emphasis on clutter in the sleep environment, safe sleep surfaces, and bed-sharing.

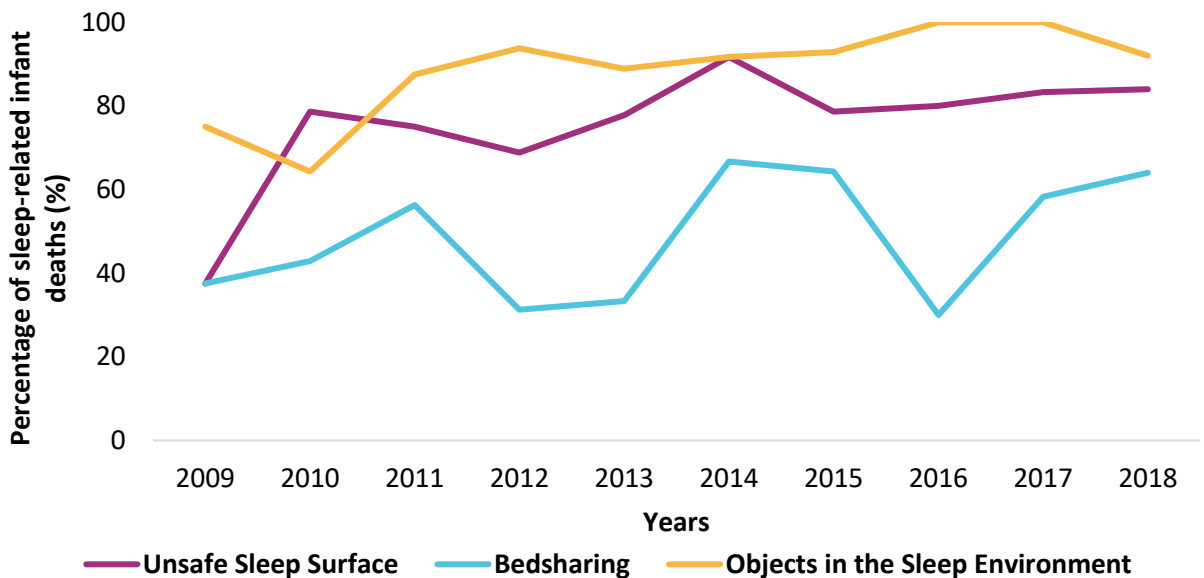


Figure 7. Percentage of infant deaths by risk factor, Manitoba, 2009-2018

Summary: Frequency and Trends

Manitoba has lost 145 infants in unsafe sleep environments over the last ten years. The rate at which infants die in unsafe sleep environments is high. Several risk factors for unsafe sleep deaths have increased over time, include bed-sharing, objects in the sleep environment, and the use of unsafe sleep surfaces. Unsafe sleep-related deaths account for more deaths in Manitoba than any other manner of death for infants under 12 months except natural deaths.

Sleep-related infant deaths are a serious public health issue in Manitoba. Children of all ages have the right to live and the right to the highest attainable standard of health, as articulated in the UNCRC. The Government of Manitoba has the corresponding obligation to provide caregivers with the information they need on child health to keep them safe (UNCRC, Article 24). Findings presented in this chapter suggest that Manitoba must invest in interventions to reduce sleep-related infant deaths. For this reason, the Manitoba Advocate is recommending the development of a new public education campaign that is responsive to the changing patterns of risk factors in sleep-related infant deaths (see Recommendations 3, 4, and 5). Furthermore, the Manitoba Advocate recommends that Manitoba Health, Seniors and Active Living work with partners to create a new online training module on safe infant sleeping practices. This module should be made available to healthcare and child and family services providers (see Recommendation 6).

CHAPTER 5: THE INFANTS

The following chapter presents demographic information about the infants who died in unsafe sleep environments. These factors are associated with the deaths but are not modifiable; that is, they cannot be changed to reduce the number of deaths. Table 20, which presents frequencies and percentages of demographic characteristics can be found in [Appendix B](#).

Key Findings

- More male infants (61%) died than female infants (38%).
- The average age at death was 4.8 months. Most deaths occurred within the first three months of life (57%), and the most common age at death was one month.
- First Nations infants were overrepresented in the number of sleep-related infant deaths (54.5%).
- Younger infants have different risk factors than older infants. Infants under the age of one were more likely than older infants to be found bed-sharing and sleeping on unsafe surfaces, such as adult mattresses or couches.

Sex

In Manitoba, 61% of sleep-related infant deaths were of a male infant. Male infants are at increased risk of sleep-related infant deaths compared to females (Fujita, 2002; Mitchell et al., 1992). This association has been found across nations and ethnicities (Chang et al., 2013; Millar & Hill, 1993). The reasons for the increased risk are unknown.

Age at Death

In Manitoba, the average age of infants who died in unsafe sleeping environments was 4.8 months, and the most common age at death was one month. Most deaths (57%) occurred within the first three months of life. As seen in Figure 8, the number of sleep-related deaths decreases as the infant age increases. This pattern is consistent with published research on unsafe sleep environments that show most sleep-related infant deaths occur within the first six months of life (Shapiro-Mendoza, Tomashek, Anderson & Wingo, 2006).

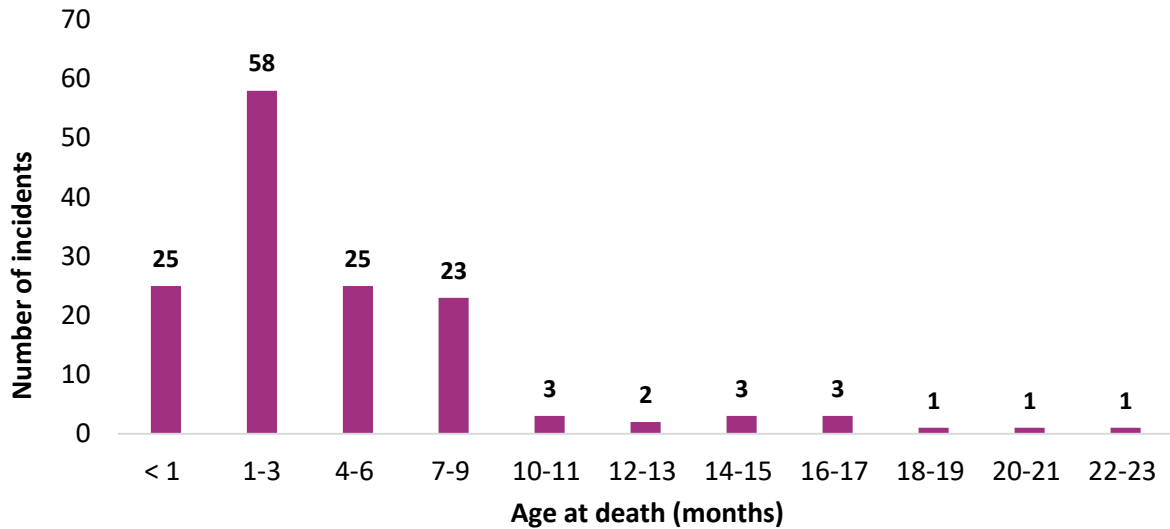


Figure 8. Frequency of sleep-related deaths by age (in months), Manitoba, 2009-2018

Risk Factors in the Sleep Environment by Age at Death

In Manitoba, younger infants (less than one year) were significantly more likely to die in unsafe sleep surfaces and while bed-sharing than older infants (over one year of age) ($P<0.05$). Our analysis also shows that a higher percentage of younger infants experienced exposure to tobacco smoke than older infants ($P=0.06$).

This is consistent with numerous research findings showing that young infants are at particular risk of death due to bed-sharing (Vennemann et al., 2012). More research needs to be conducted to understand the relationship between exposure to tobacco smoke and infant age.

Indigenous Ancestry: First Nations and Metis infants

Indigenous ancestry refers to whether an infant is First Nations, Metis, or Inuit (Statistics Canada, 2019). In Manitoba, 55% of infants who died in their sleep were First Nations ($n=79$), and 3% were Metis ($n=4$). First Nations infants are overrepresented in the sample of infants who died while sleeping or in a sleeping environment (Table 3). The ancestry for 47 infants was unable to be determined (32%). Administrative records, particularly for infants that were not involved with child welfare, do not routinely collect this information. Analysis of sleep environments by Indigenous ancestry can be found in Chapter 8.

Table 3. Indigenous ancestry among sleep-related infant deaths, Manitoba, 2009-2018

Infant ancestry	N	%
First Nations	79	54.5
Metis	4	2.8
Non-Indigenous	15	10.3
Unknown	47	32.4
	33	

Infant Health

The **Triple Risk Theory** suggests that infants who are born with vulnerabilities or who have mild infections might be at increased risk of sleep-related death (Filiano & Kinney, 1994). Prematurity (born before 37 weeks of gestation) and low birthweight (less than 2,700 g) are associated with an increased risk of sleep-related infant deaths (Malloy, 2013).

In Manitoba, 20% of infants who died in an unsafe sleep environment were born premature, while 13% were born underweight. Compared to all births in Manitoba, a significantly higher percentage of infant deaths occurred for premature infants and infants with low birthweights.¹

Of the total sleep-related deaths, our review found that 23 infants (17%) had been admitted to the neonatal intensive care unit (NICU) after their birth and 19 (13%) had been diagnosed with a chronic medical condition.² Seventy infants had an illness in the 72 hours leading up to their death (48%). Symptoms most often resembled those of the common cold, such as runny noses and coughs.

Breastfeeding

Breastfeeding was found to reduce the risk of sleep-related infant deaths (Thompson et al., 2017; McVea, Turner, & Pepler, 2000; Hauck et al., 2011; Ford et al., 1993; Hauck et al., 2003; Schellescheidt, Ott & Jorch, 1997). Breastfeeding does not have to be exclusive to confer protective effects (Thompson et al., 2017), but duration of breastfeeding is an important factor. Breastfeeding is only protective if it lasts over two months (Thompson et al., 2017). Unfortunately, we were not able to measure duration of breastfeeding in this special report.

In Manitoba, 77 (57%) infants who died in unsafe sleep environments were bottle-fed, while 57 (43%) had at least some breastfeeding (Figure 9).

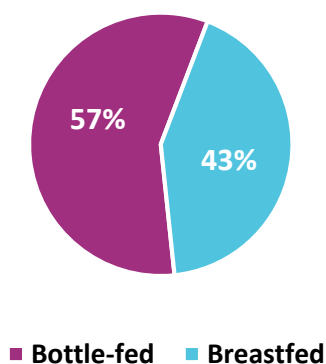


Figure 9. *Infant feeding method among sleep-related deaths, Manitoba, 2009-2018*

¹ According to Statistics Canada, preterm births and low birthweight as a percentage of all live births in Manitoba between 2000 and 2013 were 7.9 per cent and 5.6 per cent respectively. Statistics Canada (2016) <https://www150.statcan.gc.ca/n1/pub/82-625-x/2016001/article/14675-eng.htm>; <https://www150.statcan.gc.ca/n1/pub/82-625-x/2016001/article/14674-eng.htm>.

² Not all infants admitted to the NICU had chronic medical conditions and not all infants with a chronic illness had spent time in the NICU.

Location of Residence

Manitoba is divided geographically into five Regional Health Authorities, created in 2011. Most sleep-related infant deaths occurred within the geographical boundaries of the Winnipeg Regional Health Authority (42%), followed by those of the Northern Health Authority (22%). The remaining incidents were evenly distributed across the Southern (13%), Prairie Mountain (13%), and Interlake-Eastern Health Authorities (10%) (Table 4, Figure 10).

Table 4. *Number of sleep-related infant deaths by Regional Health Authority, Manitoba, 2009-2018*

Regional Health Authority	N	%
Interlake-Eastern	14	9.9
Northern	31	21.8
Prairie Mountain	18	12.7
Southern	19	13.4
Winnipeg	63	42.3

A map of Winnipeg indicates that sleep-related infant deaths are not evenly distributed across the city (Figure 11). Most incidents occurred in the core of the city.

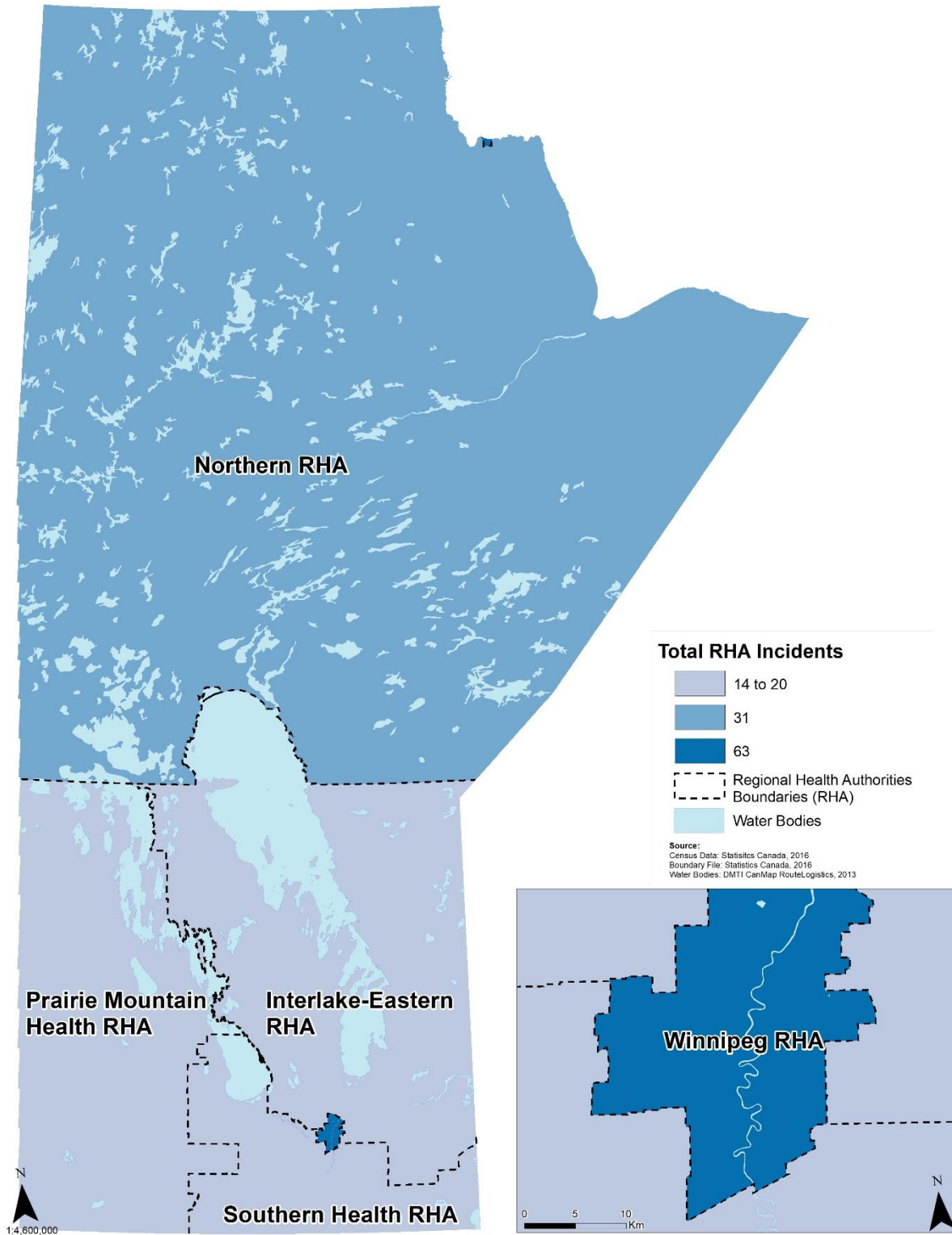


Figure 10. Location of sleep-related infant deaths by Regional Health Authority, Manitoba, 2009-2018

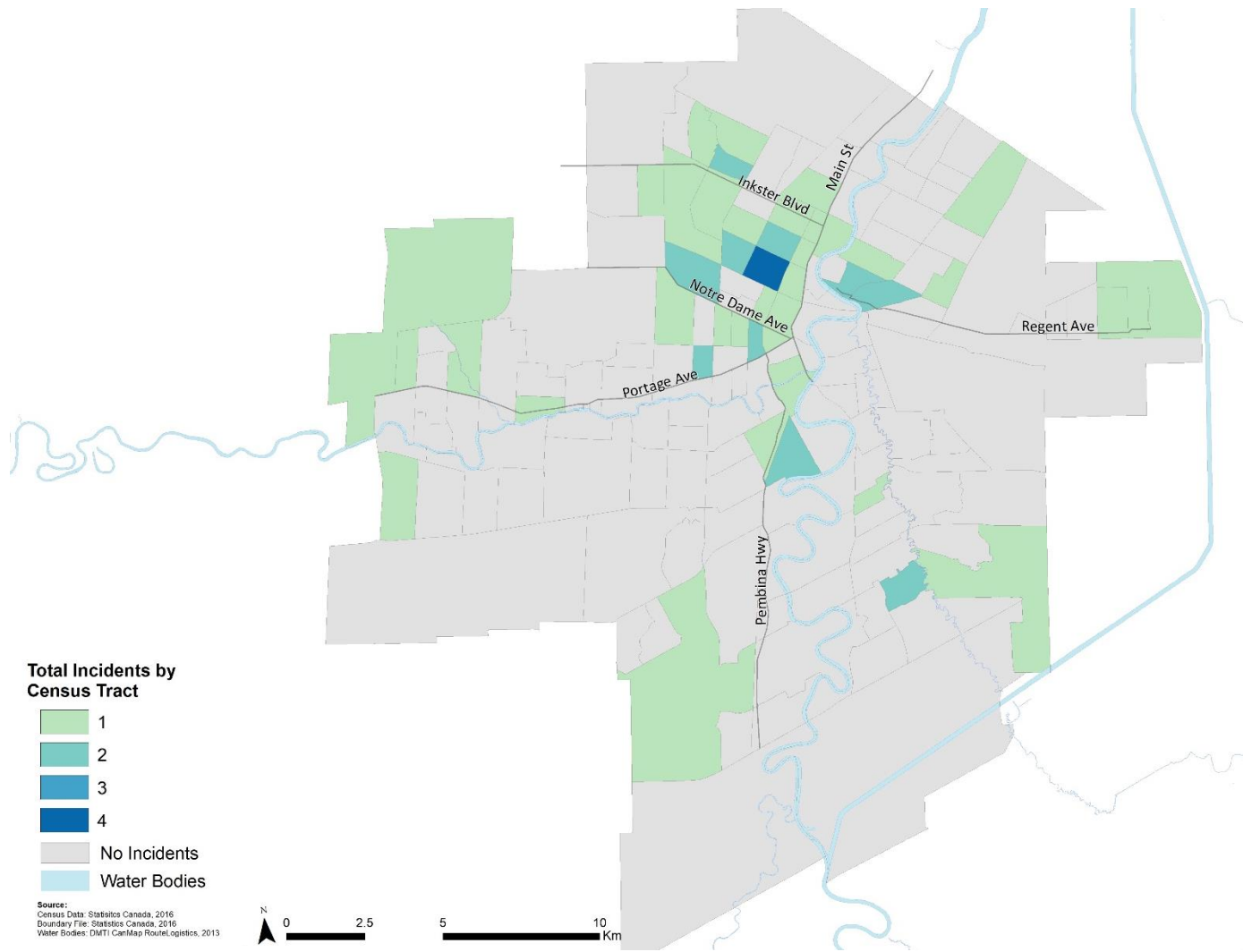


Figure 11. Location of sleep-related infant deaths by census tract, Winnipeg, 2009-2018

Place of Death

This section describes where the infant death occurred, not the location where death was pronounced by a medical professional, which was most often at a hospital or nursing station.

Table 5. Location of death among sleep-related infant deaths, Manitoba, 2009-2018

Place of death	N (145)	%
Parental home	108	74.5
Relative's home	14	9.7
CFS placement	11	7.6
Other	12	8.3

The majority (74%) of sleep-related infant deaths occurred while the infant was sleeping in their own residence and 10% occurred at the house of a relative (Table 5). For the remaining deaths, 8% occurred in a CFS placement and 8% occurred in other locations (e.g., in a car, daycare, hospital) (Figure 12).

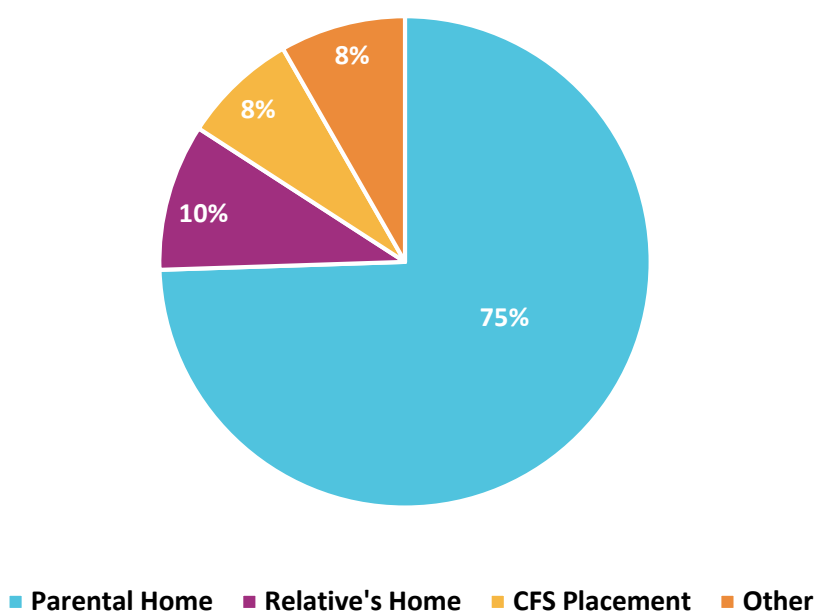


Figure 12. Place where sleep-related infant death occurred, Manitoba, 2009-2018

Although three quarters of the deaths occurred in the family home, sleeping away from home has been found to be a risk factor for infants (Schluter et al., 1998). Infants dying away from home have higher odds of dying in an unsafe sleep surface such as futons, car seats, and adult beds (Kassa et al., 2016).

Case Study: Milo

Milo was a healthy one-month-old. Milo's mother travelled outside of Winnipeg to visit extended family and introduce them to her new baby.

Milo slept in a crib at home, but the family visit was happening in a home where there was no crib or bassinet. So, the family set-up a mattress on the floor of the living room for the weekend. Milo, his sibling, and their mom slept there.

Milo was placed on his side in the centre of the mattress to prevent him from rolling off. Milo's mother fell asleep facing him after breastfeeding.

When Milo's mother woke up, she noticed that Milo did not look well; he was cold to the touch. Immediately, Milo's mother began CPR and other family members called an ambulance. Despite their best efforts, Milo was unable to be resuscitated at the home or once first responders arrived. Milo was pronounced deceased upon arrival at hospital.

Number of Siblings and Birth Order

Having more siblings is associated with a higher risk of sleep-related infant deaths (Alessandri et al., 1996). Specifically, the risk of sleep-related infant deaths increases with birth order (Hight & Goldwater, 2013; Peterson, 1982).

In Manitoba, families with one child make up 37% of couples with children, and 58% of lone-parent families (Statistics Canada, 2017). In the sample of sleep-related infant deaths, only 17% of infants were the first born in a family. The vast majority (83%) of infants were not the first born (Figure 13).

This evidence suggests that while prenatal and postnatal supports for new parents is critical, targeted outreach to parents with multiple children is needed.

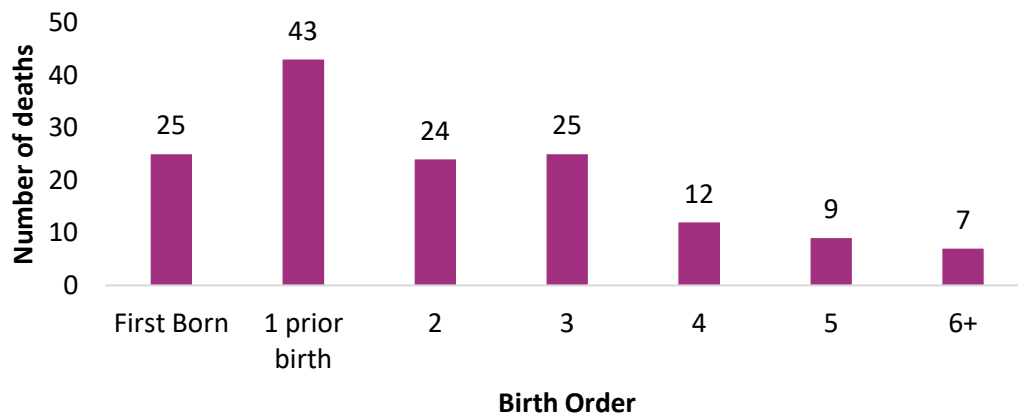


Figure 13. Sleep-related infant deaths by birth order, Manitoba, 2009-2018

Manner of Death

Of the 145 sleep-related deaths in Manitoba between 2009 and 2018, 125 (86%) were classified by the OCME as Undetermined, 13 (9%) as Accidental, and the remaining 7 (5%) as Natural (Figure 14).

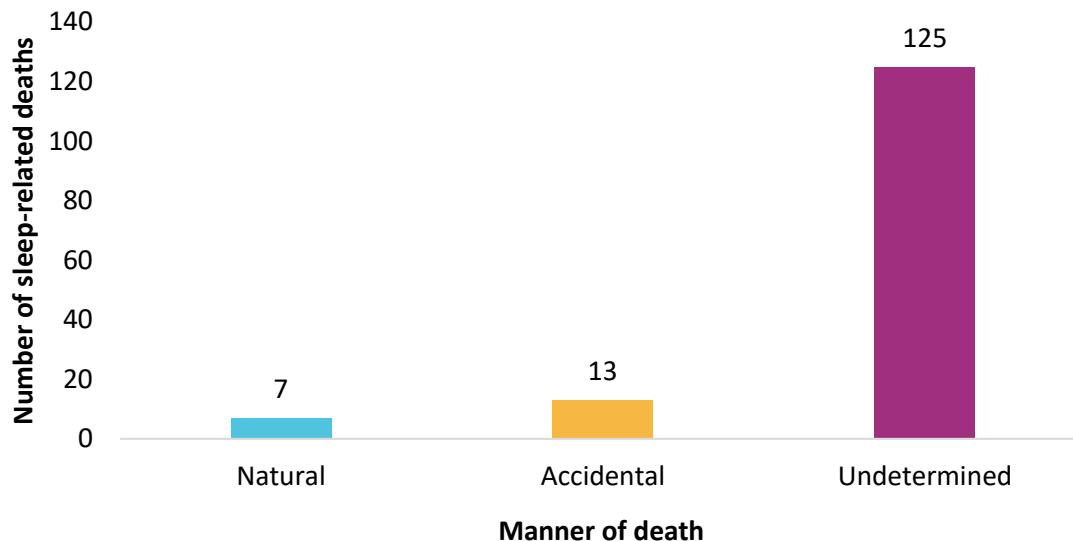


Figure 14. *Manner of death of sleep-related infant deaths, Manitoba, 2009-2018*

Case Study: Charlotte

Charlotte was a healthy and happy seven-month-old who had just mastered sitting. Charlotte was the youngest in a family of five children. She lived in a two-bedroom house with her parents, two adult extended family members, and her siblings. All of the adults that lived in Charlotte’s home smoked cigarettes, and during the coldest winter days, the adults smoked in the home.

The night Charlotte died, her parents decided to take a break from their busy home life and go out with friends. They arranged for a babysitter to care for the children, including Charlotte. That evening, after finishing a bottle and being burped, Charlotte fell asleep in the babysitter’s arms, so the babysitter placed Charlotte to sleep on her back on a couch in the living room.

In an effort to make the couch safer, the babysitter put a pillow between Charlotte and the edge of the couch so she wouldn’t roll off while sleeping. Charlotte regularly slept on the couch because the family could not afford a crib and her parents felt the couch was safer than sharing a queen sized mattress on the floor with her four siblings.

Later that night, Charlotte was found face down and not breathing on the couch. The couch itself was soft with loose seat cushions, and the blanket that had been used to cover Charlotte was found near her head.

Although the Medical Examiner recorded Charlotte’s manner of death as ‘Undetermined’, the pathologist raised the possibility of asphyxiation owing to the unsafe sleep surface on which she was put to sleep.



Summary: The Infants

The most common age of infants in sleep-related deaths was between one and three months of age. Nearly 83% of deaths occurred in families who already had at least one other child. The majority of infants who died were living within the boundaries of the Winnipeg Regional Health Authority, and most deaths occurred in their parents' home. Indigenous infants, in particular First Nations infants, are overrepresented in the number of sleep-related infant deaths.

Despite the contribution of this special report, the study was limited by significant amounts of missing data, especially information relating to Indigenous ancestry and infant health, including breastfeeding presented in this chapter. The following chapter on sleep environments also highlights important variables, such as sleep position, which have significant amounts of missing values. Complete information allows for the development and evaluation of evidence-informed interventions tailored to families and risk factors that are most salient in Manitoba.

To ensure that all relevant information concerning future sleep-related deaths is collected in a coordinated and systematic way, the Manitoba Advocate is recommending the use of a standardized reporting form. This form would be used by all law enforcement officers in the province who attend the scene of an infant death that is suspected to be related to unsafe sleep practices (see Recommendation 9). In order to report on future patterns – necessary for determining appropriate interventions – the Manitoba Advocate is also recommending the development of an electronic database to store all the information collected on the standardized form by law enforcement (see Recommendation 10) and that the Collaborative Inter-departmental working group on Infant Mortality meet regularly to review this data (see Recommendation 11).

CHAPTER 6: THE SLEEP ENVIRONMENT

The following chapter presents conditions in the sleep environment that increase the risk of sleep-related infant deaths. These risk factors are considered modifiable because they can be changed to reduce risk. A safe sleep environment requires that the baby be placed on their back, on a separate and firm sleep surface free of soft objects, and in a smoke-free environment without overheating. A table summarizing all findings on the sleep environment can be found in [Appendix B](#).

Key Findings

- When they died, 54% of infants were found in an unsafe sleeping position, such as on their stomach or on their side. Seventy seven per cent of infants were placed to sleep on an unsafe sleeping surface, the majority of which were adult mattresses.
- Nearly half of infants were bed-sharing when they died. The most common reason stated for bed-sharing was that it was the usual sleep position; 36% of caregivers who bed-shared, however, did not have a crib or other safe sleep surface in their home.
- Approximately 50% of infants were exposed to tobacco smoking either before or after birth.
- Of the deaths where complete information was available, there were no risk-free cases. Most infants had more than one environmental risk factor noted that could be changed to reduce risk and prevent deaths.

Sleeping Position

Placing an infant on their back to sleep is the safest position. Studies consistently note a significantly increased risk of sleep-related deaths for infants who sleep on their stomach compared to back (Gilbert et al., 2005; Hauck et al., 2003; Hutchison et al., 2011; Ostfeld et al., 2010; Oyen et al., 1997; Schellscheidt et al., 1997; Senter et al., 2011). Side sleeping is also considered unsafe because infants are at risk of rolling over and being found on their stomachs (Li, 2003).

Table 6. *Sleep position placed and found, Manitoba, 2009-2018*

Position Placed	N	%	Position Found	N	%
On stomach	14	9.7	On stomach	39	26.9
On back	65	44.8	On back	56	38.6
On side	13	9.0	Side	15	10.3
Sitting	7	4.8	Sitting	5	3.4
Breastfeeding	7	4.8	Wedged	8	5.5
Unknown	39	26.9	Unknown	22	15.2
Total Placed	145		Total Found	145	

As Table 6 indicates, a significant amount of information on the position of the infant when placed to sleep and when found is unknown, 27% and 15% of infants respectively. This reflects the need for both consistency across investigations over time and systematic data collection methods.

In cases where the information is known, 41 infants (39%) were placed in an unsafe sleeping position and 67 infants (54%) were found in an unsafe sleeping position (Figure 15).

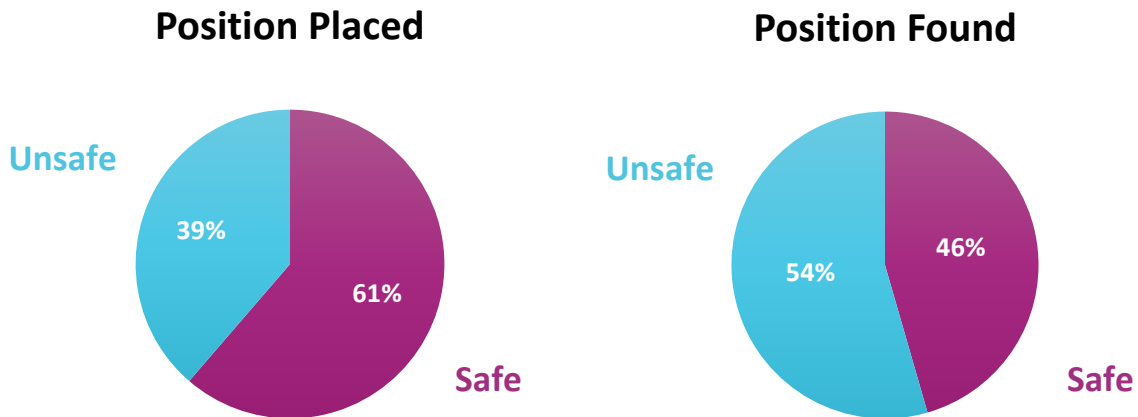


Figure 15. *Infant position when placed to sleep compared to position when found, Manitoba, 2009-2018*

The strongest evidence for the causal relationship between unsafe sleep positions and sleep-related deaths across multiple countries are the public health campaigns that encourage parents to place infants on their backs for sleep (Mitchell et al., 1994). A number of countries reported a significant decrease in stomach sleeping and increase in back sleeping immediately following the introduction of such campaigns, including in Canada (Rusen et al., 2004). Despite a reduction in stomach sleeping, our study confirms that infants continue to be found sleeping on their stomachs.

Sleep Surface

The safest place for infants to sleep is alone, in a crib or bassinette with a firm mattress and nothing else in the sleeping space. When infants fall asleep on a couch, adult bed, or armchair, there is an increased risk that they may be trapped in the soft surfaces and suffocate.

Of the 145 infants, 111 infants (77%) were placed to sleep on an unsafe sleeping surface, including 73 (50%) who died while sleeping on an adult mattress (Figure 16).

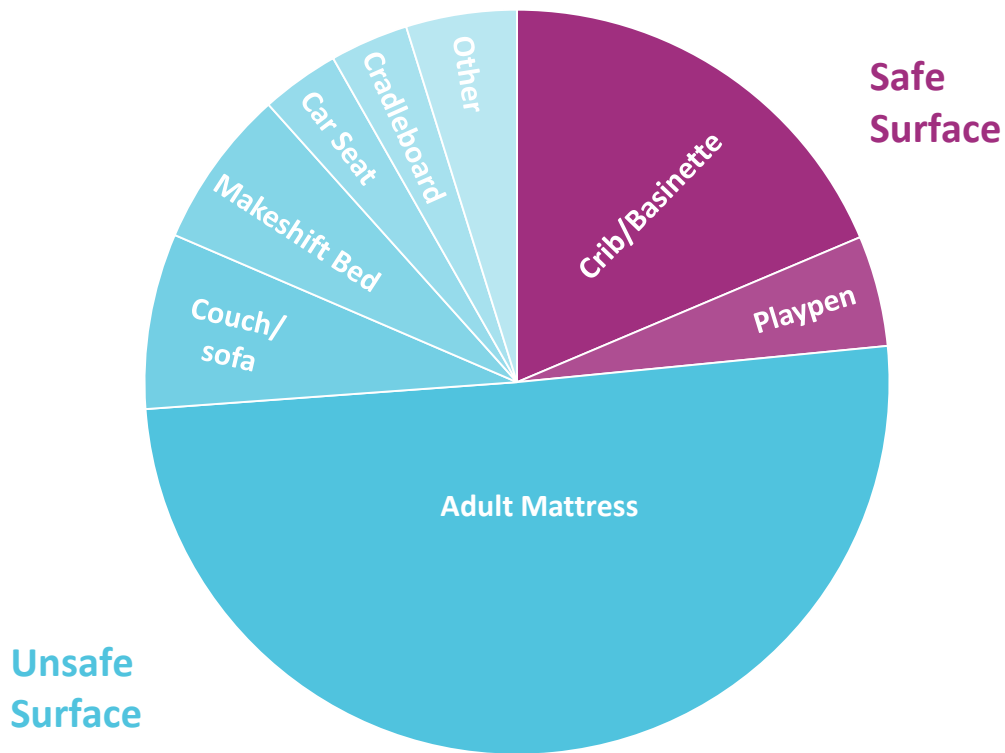


Figure 16. Percentage of sleep-related infant deaths by sleep surface, Manitoba, 2009-2018

In Figure 16, makeshift bed includes the use of blankets and pillows, children’s fold-out beds, and child mattresses on the floor, to make a sleeping surface for an infant. Cradleboards, or tikinagans, are First Nations and Metis baby swaddles with a flat back designed to keep infants warm, safe, and to ease carrying them. While five infants in our study died in a cradleboard, in 80% of those instances, the cradleboard had been placed on an adult mattress with multiple heavy blankets and where bed-sharing took place. There is no indication that cradleboards, in the absence of overheating indicators or bed-sharing on an adult mattress, are unsafe for use on infants (Manitoba First Nations Education Resource Centre Inc., 2015).

“Children also learned patient observation and mindfulness while in the cradleboard, having only their senses to rely on for entertainment. They would sit in stillness, watching their mothers work, listening to the sounds of their environment or their mother’s lullabies, taking in the fragrances around them, and feeling the sun, wind, warmth, and coolness on their face. There was no other option than to be mindful.”

- Sarah Sunshine Manning (National Aboriginal Council of Midwives, 2017)

Tikinagan/Cradleboard – Moss Bags

Prior to European contact, traditional parenting methods and tools, such as the medicine wheel, storytelling and song, and the importance of kinship were integral aspects of First Nations family life. Moss bags and cradleboards were also a vital part of child-rearing in Aboriginal communities. They were special items that were both useful and practical. Babies were wrapped in a moss bag and securely bound to a thin cushioned board usually made of pine or cedar wood, and laced with thin straps of leather. Boards were smudged with prayers, songs and good thoughts for the baby. They were then either carried in parents’ arms, worn on mother’s back during travel, propped up on the ground like a baby chair or secured to a sled for longer journeys.

The benefits of moss bags and cradleboards included longer sleeps, since the baby wouldn’t jerk and wake up; keeping the child’s backbone and legs straight, further strengthening the neck muscles; sharpening their gifts of vision, hearing and awareness; and being stimulated by their environment and family. Babies were allowed to see the world as mom and dad saw it, but since they were also kept close to their mothers, they felt secure and safe,

Living a traditional lifestyle in contemporary society is sometimes a challenge; however, today many First Nations across Canada are revitalizing the use of the traditional cradle board. By doing this, empowering each other and our children with knowledge of our culture, language, and history, we can strengthen our values and our families. Also, as we preserve and retain our cultural strength we become better equipped to live with a challenging and ever changing world.

Source: Manitoba First Nations Education Resource Centre, 2015



Tikinagan and moss bag photo source: Manitoba First Nations Education Resource Centre Inc.

Bed-sharing

Bed-sharing – sharing the same sleeping surface with an infant – is a known risk factor for sleep-related infant deaths. Bed-sharing creates the risk that the bed-sharing partner may roll over the infant; that the infant may overheat due to proximity of another person; or that an infant may become entrapped and suffocate due to objects in the sleep environment (e.g. blankets, pillows, toys).

In 72 (50%) of the 145 cases reviewed, infants died in their sleep while bed-sharing (Table 7). Of those, 42 infants (58%) were sharing a sleeping surface with more than one individual (most often biological parents and/or siblings). Compared to bed-sharing rates in Manitoba calculated in 2015-2016 (41%), a higher percentage of infant deaths occurred with infants who were bed-sharing (Gilmour et al., 2019).

Table 7. *Bed-sharing among sleep-related infant deaths, Manitoba, 2009-2018*

Bed-sharing	N	%
Yes	72	49.7
No	73	50.3
Number of bed-sharing partners	N	%
1	30	41.7
2	25	34.7
3	13	18.1
4+	4	5.6

Although a number of reasons were provided in investigative notes for why infants were put to sleep on surfaces with bed-sharing partners, that it was the usual sleeping pattern (49%) and that there was no crib available (36%) were the most cited reasons (Figure 17). Multiple reasons were possible per bed-sharing case.

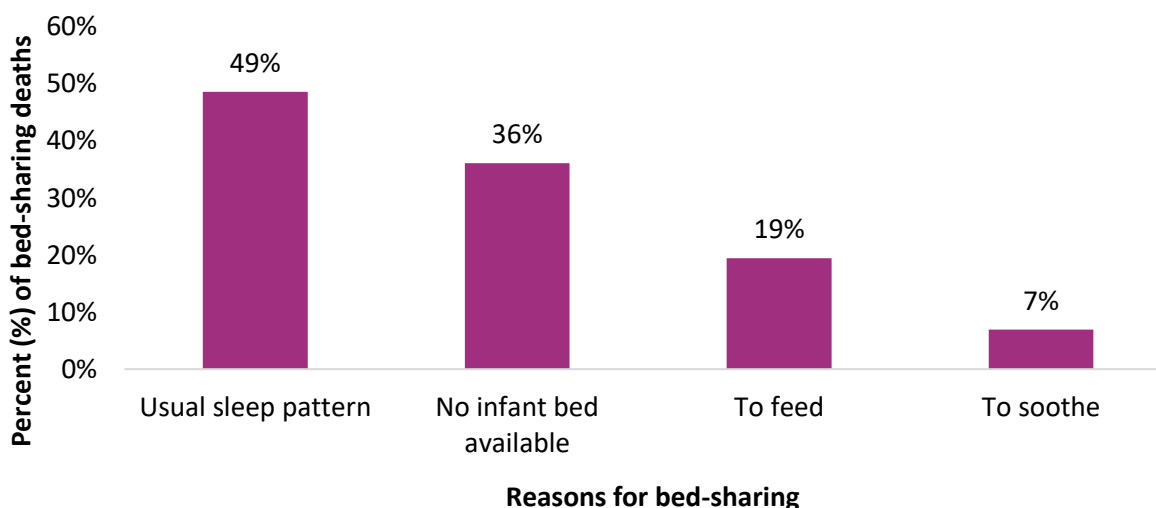


Figure 17. *Percentage of bed-sharing deaths, by reasons for bed-sharing, Manitoba, 2009-2018*

Bed-sharing and Other Risk Factors

In Manitoba, approximately one out of every three infants who died while bed-sharing did not have exposure to smoking or an intoxicated caregiver (Table 8). **That means that bed-sharing, even in the absence of smoking or alcohol intoxication is still unsafe.** The risk of bed-sharing increases significantly with a caregiver that smokes or if the caregiver was intoxicated with alcohol (Vennemann et al., 2012; Zhang & Wang, 2013). In Manitoba, we found that 57% of bed-sharing infants were also exposed to tobacco smoke in their home.

Table 8. *Bed-sharing and other risk factors in sleep-related infant deaths, Manitoba, 2009-2018*

Bed-sharing and caregivers intoxicated with alcohol	N (72)	%
Yes	18	25.0
No	40	55.6
Unknown	14	19.4
Bed-sharing and smoking in environment		
Yes	41	56.9
No	31	42.5

Objects in the Sleep Environment

There is no need for any objects in an infant's sleeping environment other than a firm mattress and fitted sheet. **To decrease the risk of entrapment and suffocation, it is important to ensure the crib or bassinette is free of toys, stuffed animals, pillows, extra blankets, bumper pads, and other objects.**

Our review found that blankets (80% of deaths), followed by pillows (50%) were the most frequent objects found in infants' sleeping environments (Table 9).³ Other objects observed included bottles (16% of deaths), toys/stuffed animals (9%), sleep positioners (5%), and crib bumper pads (2%). The number of objects found in the sleep environment ranged from one to 14, and the average number of objects found was four.

Table 9. *Objects in the infants' sleep environment, Manitoba, 2009-2018*

Objects in the sleep environment	N	%
Blanket	116	80.0
Pillow	72	49.7
Bottle	23	15.9
Crib bumpers/Sleep positioners	10	6.9
Toys	13	9.0
Other	13	9.0

³ The list in the accompanying table is not mutually exclusive.

Overheating Indicators

Overheating can occur when an infant is overdressed or swaddled, has their head covered, or is lying close to an adult. For the purposes of our study, indicators of overheating included the presence of at least one of the following: infant perspiration, head-covering, a warm room (over 21°C), or swaddling. Swaddling has the additional risks of rebreathing, when an infant breathes in exhaled air, and suffocation if the swaddled infant rolls on to their stomach. Our study found that 30 infants (21%) were swaddled at the time of death. In Manitoba, nearly half (48%) of all cases of sleep-related infant deaths included indicators suggestive of overheating (Figure 18).

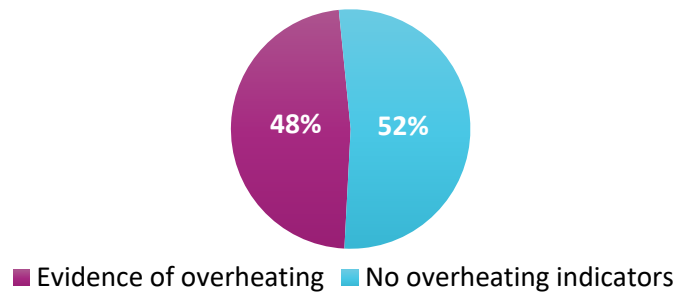


Figure 18. *Percentage of sleep-related infant deaths with overheating indicators, Manitoba, 2009-2018*

Case Study: Logan

Logan was born in the winter to first time parents who lived with extended family. He was an easy baby. His birth was uncomplicated, he was healthy, and he ate and slept well.

The house that Logan was brought home to was poorly insulated, and had drafts coming from the windows and under the doors. To make the home comfortable and warm for their new baby, Logan's parents purchased a small electrical heater for their shared bedroom. The plan was for Logan to sleep in a bassinet that had been borrowed from friends.

A couple of weeks after his birth, and on one particularly cold night, Logan was having a difficult time sleeping and his mother thought it might be because he was cold. She put footed fleece pyjamas on Logan, and then swaddled him tightly. She repositioned the space heater next to her side of the bed, and brought Logan into bed with her. Logan's parents were also sharing a blanket to keep them warm during the cold night.

His mother woke up early the next morning and realized that Logan was not breathing and his pyjamas were damp with perspiration from the previous night. Logan's parents immediately called emergency services but despite their best efforts and those of the first responders who arrived quickly, Logan was unable to be revived.

Tobacco Smoke

Maternal smoking before and after birth is an independent risk factor for sleep-related infant deaths (Alm et al., 1998; Hilder, 1994; MacDorman et al., 1997; Ostfeld et al., 2010; Paris et al., 2001; Schellscheidt et al., 1997; Shah et al., 2006; Zhang & Wang, 2013). Given the weight of the evidence, experts conclude that enough evidence exists to establish that tobacco smoking in pregnancy and after pregnancy can cause sleep-related infant deaths (Anderson & Cook, 1997; Mitchell et al., 1993).

Studies suggest that smoking during pregnancy affects the infant’s development of an area in the brainstem that coordinates breathing, heart function, and the ability of infants to wake up (Paine et al., 2014). As a result, infants exposed to prenatal smoking may be more vulnerable and less able to respond to environmental stressors that occur during sleep, such as bed-sharing or overheating (Moon, 2016). After birth, exposure to second- and third-hand smoke also increases the risk of sleep-related infant death (Mitchell et al., 1993).

Our study found that smoking occurred in the residence of at least 25% of the infants who died in a sleeping environment. But, when all variables measuring exposure to tobacco smoke were accounted for, including death scene observations, paternal smoking, maternal smoking, and any smoking in the residence, **72 infants (50%) had at least some exposure to tobacco smoke either before or after birth** (Table 10).

In 2017, the proportion of Manitobans who smoke was 14.5% (Ried et al., 2019). **Compared to all smoking in Manitoba, a significantly higher percentage of infant deaths occurred in households where caregivers smoked.**

Because observations concerning tobacco smoking were routinely missing from information sources, the actual number of infants exposed to second- and third-hand tobacco smoke and who died in sleeping environments could be higher. For the same reasons, prenatal and postnatal maternal smoking is also likely underestimated. Improvements in the collection of information during child death investigations will improve our understanding of the relationship between tobacco smoking and sleep-related infant deaths in Manitoba.

Ultimately, findings suggest that smoking cessation interventions are essential to reduce the number of sleep-related infant deaths in Manitoba. Yet, there are currently no specific programs designed to help pregnant women in Manitoba to reduce or quit smoking.

Table 10. *Sleep-related infant deaths by any exposure to tobacco smoking, Manitoba, 2009-2018*

Tobacco smoke (any)	N	%
Yes	72	49.7
No	73	50.3

*“Other than putting babies in a supine sleeping position [on their back], **maternal smoking should be the next most important issue to be considered...**”*

- (Chong et al., 2004)

What Works?

Smoking cessation is challenging, and few types of interventions have been found effective for pregnant women. During pregnancy, some women are fearful and anxious, which may in turn lead to a reluctance to stop smoking (Chamberlain et al., 2017). What works:

- **Counselling** decreases smoking in late pregnancy when compared to usual care (Chamberlain et al., 2017).
- **Incentive-based interventions** are effective at supporting pregnant women in quitting (Chamberlain et al., 2017).
- **Physicians offering pregnant women smoking cessation therapy** (Gould et al., 2017).

Some studies suggest that cannabis smoke increases the risk of sleep-related infant deaths (Scragg et al., 2007; Williams, 2002). However, we were unable to gather reliable and valid information on cannabis use in this study. Ongoing monitoring of sleep-related infant deaths should explore the association between cannabis use and sleep-related infant deaths, particularly since cannabis legalization might improve self-reporting.

Risk Accumulation

Most sleep-related infant deaths have multiple unsafe sleep risk factors (Ostfeld et al., 2010; Trachtenberg et al., 2012). We measured the number of cases with the following seven modifiable risks: sleep position, sleep surface, tobacco smoke exposure, bed-sharing, objects in the sleep environment, swaddling, and overheating.

In the last ten years, there was only one risk-free case of sleep-related infant death. However, this case was missing data on multiple risk factors.

When only cases without missing information on risk factors were analyzed, **there were no risk-free cases** (n=98). This finding supports the abandonment of the use of the SIDS classification in favour of the more inclusive SUID. Further, single risk cases were extremely rare (4%) (Figure 19). Cases of sleep-related infant deaths in which at least four risk factors were present were most frequent (31% of cases), followed by cases where three risk factors were noted (22%). **In the 88% of deaths where information was complete, three or more risk factors were noted.**

These findings support the need for comprehensive risk reduction education and public education materials which focus on multiple risk factors. Importantly, because the risk factors measured are modifiable, they can be changed to reduce the risk of sleep-related infant deaths.

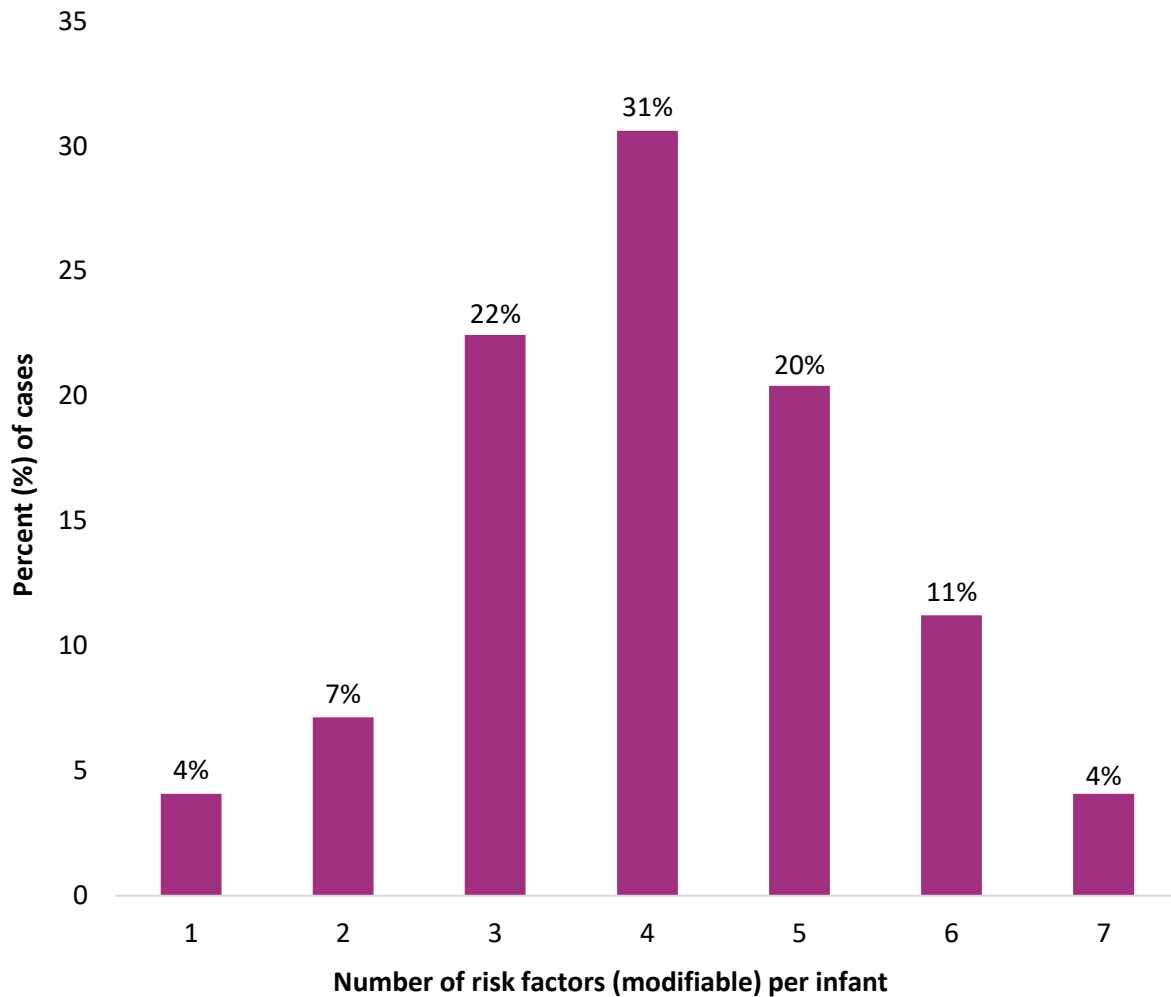


Figure 19. *Number of risk factors per sleep-related infant death, Manitoba, 2009-2018.*

The Government of Canada and Province of Manitoba have committed to fulfilling the rights of children articulated in the UNCRC. A necessary requirement of the right to the highest attainable standard of health is the need to ensure that parents and caregivers have the information they need to ensure child health (Article 24.2(e)). Parents and caregivers in Manitoba are entitled to know and understand information on the risk factors of sleep-related infant deaths.

Case Study: Henry

Henry was an active 11-month old who enjoyed crawling. Henry's parents dropped him off at his auntie's house on a Sunday afternoon so they could run errands. Henry had previously spent lots of time at his auntie's house and had his own playpen to sleep in. At home, Henry slept on his back in a crib with a firm mattress without any other objects in it.

Despite having a playpen, Henry's auntie thought that because he was almost a year old, he would be more comfortable sleeping on an adult mattress. Henry was rocked to sleep by his auntie and then placed on his back in his auntie's own bed for a nap. She placed pillows around Henry's body to prevent him from rolling off the bed.

After an hour, Henry's auntie went to check on him and found that he had rolled onto his stomach and that his face was pressed between a pillow and the soft mattress; Henry was unresponsive. His auntie immediately started CPR and called an ambulance. On arrival, first responders were able to find a pulse, but all further attempts were unsuccessful in helping Henry regain consciousness. Henry died in hospital later that week, surrounded by his family.

Summary: The Sleep Environment

Research on public education to prevent SUID emphasizes that caregivers need to be given information about why things are risky. All of the 145 infants who died had at least one known risk factor for sleep-related deaths, and most had multiple risk factors. Seventy seven per cent of infants were placed to sleep on an unsafe sleeping surface and 54% were found in a position other than on their backs. The most common risk factor was being placed to sleep with objects such as pillows or blankets, and nearly 50% of infants died while bed-sharing.

Research shows that exposure to tobacco smoke can cause sleep-related infant deaths. The fact that at least 50% of infants who died had exposure to tobacco indicates that smoking cessation programs, and particularly smoking cessation programs for pregnant women, are needed. In recognition of the connection between maternal health and children's wellbeing, the *United Nations Convention on the Rights of the Child* (UNCRC) states that in order to implement the right of children to the highest attainable standard of health, governments must take measures to ensure appropriate prenatal and postnatal care for mothers (Article 24.2(d)). Because prenatal smoking cessation programs are essential to the fulfillment of the right to health for children, the Manitoba Advocate is recommending the development of a smoking cessation resource that prenatal healthcare providers can make available specifically to expecting mothers (see Recommendation 7).

CHAPTER 7: THE SOCIAL DETERMINANTS OF HEALTH

The social determinants of health are the social and economic factors that affect people's health. These include: income, housing, employment, education, and other factors that affect people everyday. Low socioeconomic status, such as having little income, is consistently associated with an increased risk of sleep-related infant deaths. Indicators such as residence in a socioeconomically disadvantaged area (Highet & Goldwater, 2013; Mitchell et al., 1992; Sótonyi, 2001), unemployment (Daltveit et al., 1998; Fujita, 2002) and low educational attainment (Daltveit et al., 1998; Schellscheidt et al., 1997; Standfast et al., 1980) are found to be strongly associated with sleep-related infant deaths.

Because of this relationship, it is essential to understand sleep-related infant deaths through the lens of structural inequality and historical trauma (Bartick & Tomori, 2019). The social determinants of health act together with the risk factors discussed in previous chapters to amplify risk. Addressing the social determinants of health requires poverty reduction interventions.

Key Findings

- Sleep-related infant mortality, as with other measures of child health, disproportionately affects households experiencing conditions of poverty. In Manitoba, 58% of sleep-related infant deaths occurred in neighbourhoods where the average household income was less than \$35,000 per year.
- 61% of households had more than two people per bedroom, meeting a definition of overcrowding. In some situations, households had up to ten people per bedroom.
- Being a young mom is associated with a heightened risk of sleep-related infant deaths. The average age of mothers in this study at the birth of first child was 20 years (the average age of mom at birth of her first child in Manitoba is 29).
- 25% of infants who died unexpectedly in their sleep in Manitoba did not have a safe surface available in their home, like a crib.

Average Household Income

In Manitoba, 58% of all sleep-related infant deaths occurred in neighbourhoods where the average household income was less than \$35,000 (Table 11). A further 30% occurred in areas with average incomes between \$35,000 and \$50,000 per year.

In Manitoba, 44 households (30%) that experienced a sleep-related infant death were receiving support from social assistance. Based on the lack of information in this regard included in the cases we reviewed, this number is likely an underestimate.

Table 11. Sleep-related Infant deaths by average household income of neighbourhood, Manitoba, 2009-2018

Average household income of neighbourhood	N	%
Under \$35,000	84	57.9
\$35,001-\$50,000	43	29.7
\$50,001-\$80,000	11	7.6
\$80,001+	1	0.7
Unknown	6	4.1

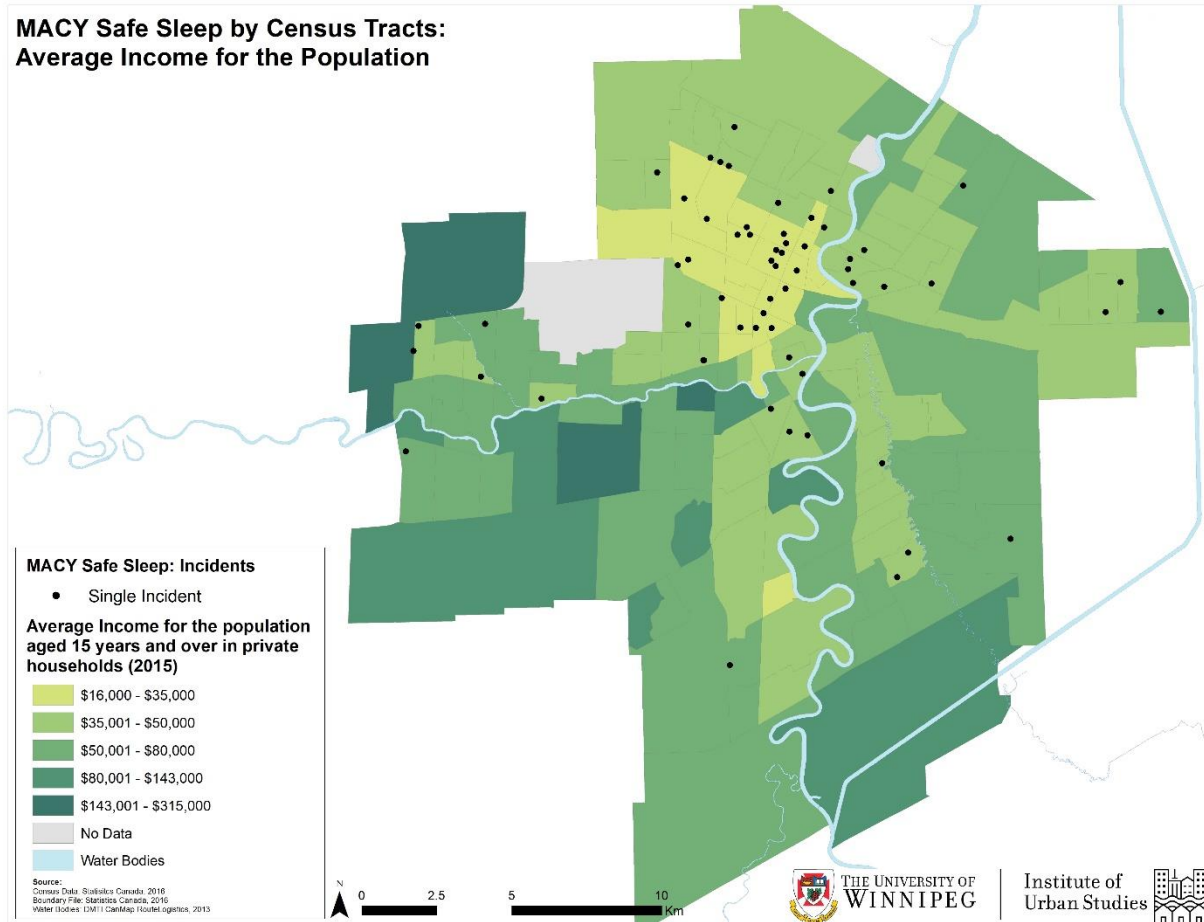


Figure 20. Household income by incidents of sleep-related infant deaths, Winnipeg, 2009-2018

Figure 20 shows the incidents of sleep-related deaths in Winnipeg, compared to average household incomes: the lightest shade of green represents areas of Winnipeg where the average household income is under \$35,000 per year while the shade of green slightly darker than this represents area where the household income is between \$35,001 and \$50,000 per year.

Overcrowding

In this study, overcrowding is calculated as a measure of the number persons living in a residence per the number of bedrooms in the residence (crude rate). According to the National Occupancy Standard (NOS), developed by Canada Mortgage and Housing Corporation (CMHC), if there are more than two people per bedroom, the residence is considered overcrowded (Statistics Canada, 2019).

Overcrowding is a risk factor for sleep-related infant deaths (Duncan & Byard, 2018). Living in an overcrowded house increases the likelihood of bed-sharing (Joyner et al., 2010; Trifunov, 2009; Weimer et al., 2002).

Of the cases where occupancy information was available, 61% of households fit the criteria to be considered overcrowded because they exceeded two residents per bedroom (n=34). Evidence points to the importance of thinking of sleep-related infant deaths through the lens of structural inequality, and the need to address this issue through poverty interventions that increase the availability of adequate housing for families.

Maternal Age

Being a young mom is associated with a heightened risk of sleep-related infant deaths (Alessandri et al., 1996; Chang et al., 2013; Daltveit et al., 1998; Fujita, 2002; Millar & Hill, 1993; Mitchell et al., 1992; Peterson, 1982; Senter et al., 2011; Standfast et al., 1980).

The average age of mothers in this study at the birth of first child was 20 years (n=132), and the most common age (rounded) was 18 years. In total, 42% of mothers were 18 years or younger at the time of their first child. The average age of all mothers in Manitoba (between 2014 and 2018) at the time of their first birth is 29 (Statistics Canada, 2020). Young mothers are overrepresented in the sample of mothers who experienced a sleep-related infant death.

Availability of a Safe Sleep Surface

In Manitoba, 26 infants (26%) who died did not have a safe surface, like a crib, available to them while 76 (75%) did. But, of the 75% of infants who had a safe sleep surface available in the home, 58% died on an unsafe sleeping surface such as an adult bed or couch (Table 12).

Table 12. Number of sleep-related infant deaths by availability of a safe sleeping surface, Manitoba, 2009-2018

Safe sleeping surface available	N	%
No	26	25.5
Yes	76	74.5

While it is essential that all infants across Manitoba have access to safe sleeping surfaces, our findings demonstrate that this alone is not sufficient. Parents and caregivers also need the information and education that encourage them to use safe sleep surfaces in the home when placing their infants to sleep. Manitoba needs to ensure the availability of safe sleep surfaces *and* caregiver education to prevent sleep-related infant deaths.

Summary: The Social Determinants of Health

There is evidence that when families experience low-income conditions and when children live in poverty, this can have an impact on infant death beyond individual risk factors. In Manitoba, between 2009 and 2018, 58% of sleep-related infant deaths occurred in neighbourhoods where the average household income was less than \$35,000 per year, and 61% of households were considered to be overcrowded. Overcrowding can also be used as a proxy measure of poverty. Mothers of infants who died also tended to have their first child nine years earlier than the average Manitoba mother (20 years old versus 29 years old).

The findings in this chapter suggest that governments need to better support low-income families, especially young mothers, and that interventions to reduce sleep-related infant deaths should also focus on eliminating barriers to access safe sleep surfaces and health resources. For example, we found that one in four (25%) infants who died unexpectedly in their sleep did not have a safe sleep surface, like a crib, in their home.

All infants have the inherent right to have a safe place to sleep, regardless of their family's ability to pay for one. This is why the Manitoba Advocate is recommending that the Governments of Canada and Manitoba work with First Nations and Metis governments to ensure that every infant in Manitoba has a crib, bassinette, or culturally appropriate and safe sleep alternative to sleep (see Recommendations 1 and 2).

CHAPTER 8: INDIGENOUS INFANTS

The following chapter presents findings on the 83 First Nations and Metis infants who died unexpectedly in their sleep. In Manitoba, the overrepresentation of Indigenous infants who die in unsafe sleep environments is but another indicator of the painful and persistent legacy of colonization.

Indigenous Peoples have been forcefully separated from their land, culture, language, and their children through governmental policies, which continue to disadvantage families and communities. These structural inequalities persist, even in the face of the determined spirit of Indigenous Peoples, and despite various levels of authentic commitment by non-Indigenous Canadians to the principles of Reconciliation.

Policies articulated in the *Indian Act* have excluded Indigenous Peoples from participation in economic life for generations, leading to intergenerational poverty. In evidence of ongoing systemic racism, many Indigenous families have unequal access to health services, they lack suitable stable housing, and access to clean drinking water. The health gap between Indigenous and non-Indigenous Manitobans is widening (Katz et al. 2019). Indigenous Peoples and Indigenous infants have rights and are entitled to the highest attainable standards of health (UNCRC, Art. 24).

Under the *United Nations Convention on the Rights of the Child* (UNCRC) and the *United Nations Declaration on the Rights of Indigenous Peoples* (UNDRIP), the Governments of Canada and Manitoba have committed to eliminating discrimination and improving the health of Indigenous infants. Canada has committed to implementing the Truth and Reconciliation Commission's *Calls to Action*, and reducing the health gaps, including infant mortality, between Indigenous and non-Indigenous communities.

Key Findings

- First Nations infants make up 55% of sleep-related infant deaths in this study.
- First Nations and Metis families were found to be less likely to have a safe sleep surface, like a crib or bassinette, available in their home. As a result, First Nations and Metis infants were significantly more likely to be placed to sleep in an unsafe sleeping surface than non-Indigenous infants.
- Due to complex social and economic factors, including access to culturally appropriate smoking cessation programs, Indigenous Peoples have higher rates of tobacco smoking. Indigenous infants in this study were significantly more likely to be exposed to tobacco than non-Indigenous infants.

Sleep-Related Infant Deaths by Indigenous Ancestry

Indigenous ancestry refers to whether an infant is First Nations, Metis, or Inuit. In Manitoba, 55% of sleep-related deaths involved First Nations infants and 3% involved Metis infants. According to population projections, Indigenous infants currently make-up approximately 20-30% of live births in Manitoba, but account for 57% of sleep-related infant deaths (Government of Manitoba, n.d.). Ancestry

of 47 infants (32.4%) was unable to be determined as reports reviewed did not routinely collect this information.

Of the 98 infants with complete information, the majority were Indigenous (Figure 21). This is consistent with a study of infant mortality, which reported that First Nations infant deaths by sudden infant death syndrome (SIDS) was 4.5 times higher than non-First Nations infants (Luo et al., 2010).

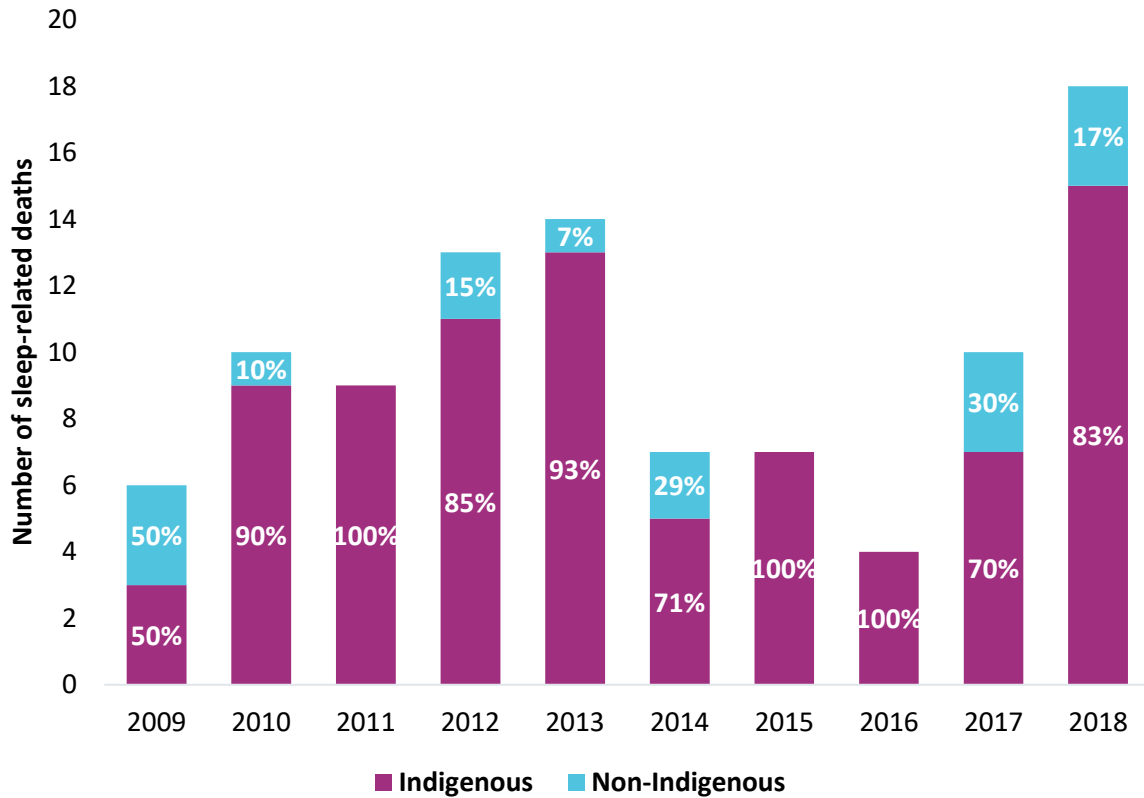


Figure 21. Number and percentage of Indigenous and non-Indigenous sleep-related infant deaths, Manitoba, 2009-2018

Environmental Risk Factors

The percentage of Indigenous infants that did not have a safe sleep surface, like a crib, is higher (35%) than for non-Indigenous infants (14%) ($P>0.05$). When the sleeping environments of Indigenous infants were compared with non-Indigenous infants, we found that Indigenous infants were more often than non-Indigenous infants to be put to sleep on an unsafe sleep surface ($P= 0.006$). This may be a reflection of the lack of availability of a safe sleep surface in the home.

The lack of access to safe sleeping surfaces was notable during our review of infant deaths in remote communities. Due to the cost of flying out cribs, this resource is sometimes inaccessible. In one case, an infant died in an unsafe sleeping surface while awaiting shipment of a crib to a local store.

Smoking rates for Indigenous Peoples far exceed those of non-Indigenous people (McKennitt et al., 2014). High rates of non-traditional tobacco smoking among Indigenous populations can be traced back

to colonization, when non-spiritual use of tobacco was first used in trade (McKennitt et al., 2014). Smoking is also considered a coping mechanism that is used to deal with stressors in people's lives (Walker et al., 2019). As a result of colonization and systemic racism, Indigenous Peoples are more likely to experience stressors such as unemployment, homelessness, and income instability more frequently than the general population (Heris et al., 2019; Walker et al., 2019). Social acceptability of smoking because of high smoking prevalence is also a risk factor for beginning to smoke and smoking at an earlier age (Heris et al., 2019; McKennitt et al., 2014). There are multiple and complex reasons why smoking rates are higher for Indigenous People, most are associated with the social determinants of health and lack of access to effective and culturally appropriate smoking cessation interventions (Heris et al., 2019; Walker et al., 2019).

In Manitoba, Indigenous infants that died unexpectedly in their sleep were significantly more often than non-Indigenous infants to have been exposed to tobacco smoke ($P= 0.047$) (Table 14). Findings are consistent with studies in the United States and New Zealand which also saw the link between the overrepresentation of Indigenous infant deaths and the higher rates of smoking in Indigenous communities (MacFarlane et al., 2018).

Summary: Indigenous Infants

Many Indigenous families in Manitoba experience unequal access to health services and some do not have access to suitable stable housing. Further, Indigenous Peoples have been excluded from participation in economic life for generations, leading to continued structural inequality, evidenced in part through intergenerational poverty. The health gap between Indigenous and non-Indigenous Manitobans is widening. Indeed, according to population projections, Indigenous infants account for between 20-30% of live births in Manitoba during the study period, but represent 57% of sleep-related infant deaths. This gap is also reflected by the fact that Indigenous families in this study were less likely to have a safe sleep surface, like a crib or bassinette, available in their home. As a result, Indigenous infants who died unexpectedly in their sleep were significantly more often than non-Indigenous infants to have been placed to sleep on an unsafe surface.

Findings from this chapter suggests that in order to address the overrepresentation of Indigenous infants in sleep-related deaths, the Governments of Canada and Manitoba must work together to ensure that Indigenous children and their families have access in equal measure to the resources, education, and support available to all other Canadians. This is why the Manitoba Advocate is recommending that Governments of Canada and Manitoba develop a strategy aimed at improving the health of Indigenous infants by expanding maternal health and child programs to all of Manitoba's First Nations communities (see Recommendation 8).

CHAPTER 9: CHILD WELFARE INVOLVEMENT

The following chapter presents data regarding the 84 infants in Manitoba who were receiving services from child and family services (CFS) at the time of the infant's death, or whose family had received CFS services within one year prior to the infant's death. When they are active in the life of a family, child welfare agencies have the opportunity and responsibility to provide education, support, and resources to families.

Key Findings

- Infants with recent family involvement in child welfare, including infants in care of child and family services, are overrepresented in the number of sleep-related infant deaths.
- The child welfare system missed opportunities to identify unsafe sleep environments and to ensure families have the information and resources they need to prevent sleep-related infant deaths.

Infant Demographics

The demographic information for infants involved in the child welfare system who died in sleeping environment is largely similar to those infants with no CFS involvement (Table 13). For instance, most of the infants were male (58%), born at term (77%), and were not underweight (81%). Similarly, the average age was 4.4 months at time of death, while the most common age was one month.

Certain indicators of health, however, were different for the population of infants with CFS involvement. Of the 23 infants admitted to the NICU after birth, 20 (87%) were of families with CFS involvement. Similarly, 15 of the total 23 infants (65%) from the study were diagnosed with a chronic medical illness had CFS involvement. Lastly, it should be noted that 63 of the 84 infants (75%) and/or their families that were involved in the CFS system within a year prior to their death were Indigenous. Indigenous families, impacted by systemic barriers at disproportionate rates when compared to their non-Indigenous peers, continue to be overrepresented in Manitoba in almost all child support serving sectors.

Table 13. *Infant demographics by child welfare involvement, Manitoba, 2009-2018*

Variable	CFS involvement	
	Yes N (%)	No N (%)
Total infants	84 (57.9)	61(42.1)
Manner of death		
Accidental	9 (10.7)	4 (6.6)
Natural	5 (6)	2 (3.3)
Undetermined	70 (83.3)	55 (90.2)
Sex		
Male	49 (58.3)	40 (65.6)
Female	35 (41.7)	21 (34.4)
Indigenous		
Yes	63 (75.0)	20 (32.8)
No	5 (6.0)	10 (16.4)
Unknown	16 (19.0)	31 (50.8)
Age at death		
Mean (SD)	4.4 months	4.4 months
Mode	1 month	2 months
Median	3 months	3 months
Low birthweight (<2400 g)		
Yes	11 (19.0)	10 (20.0)
No	47 (81.0)	40 (80.0)
Prematurity (<37 weeks)		
Yes	16 (23.5)	8 (14.8)
No	52 (76.5)	46 (85.2)
NICU stay after birth		
Yes	20 (27.4)	3 (5.1)
No	53 (72.6)	56 (94.9)
Chronic medical condition		
Yes	15 (17.9)	4 (6.6)
No	69 (82.1)	57 (93.4)
Recent illness (<72 hours)		
Yes	41 (48.8)	29 (47.5)
No	43 (51.2)	32 (52.5)

Unsafe Sleep Risk Factors

The case review of sleep-related deaths shows the same risk factors, with similar ratios, affecting infants with CFS involvement compared to those whose family had no recent CFS involvement (Table 14).

Table 14. *Sleep environment risk factors by CFS Involvement, Manitoba, 2009-2018*

Variable	CFS involvement	
	Yes N (%)	No N (%)
Sleep surface		
Unsafe	68 (81.0)	44 (72.1)
Safe	16 (19.0)	17 (27.9)
Bed-sharing		
Yes	40 (47.6)	32 (52.5)
No	44 (52.4)	29 (47.5)
Sleeping position (found)		
Safe (back/supine)	29 (40.3)	27 (52.9)
Unsafe (stomach/prone, sitting, side, breastfeeding)	43 (59.7)	24 (47.1)
Swaddling		
Yes	23 (33.8)	7 (16.7)
No	45 (66.2)	35 (83.3)
Exposure to tobacco smoke		
Yes	45 (53.6)	27 (44.3)
No	39 (46.4)	34 (55.7)
Overheating indicators		
Yes	45 (53.6)	24 (39.3)
No	39 (46.4)	37 (60.7)
Objects in sleeping environment		
Yes	75 (89.3)	54 (88.5)
No	9 (10.7)	7 (11.5)

Details of CFS Involvement

84 infants (58%) and/or their families were involved in the child welfare system at the time or one year prior to the death (Table 15). Of those 84 infants, 70 (83%) had open cases at the time of their death. Birth alerts – warnings from CFS agencies to hospitals about a mother they consider to be ‘high risk’ – were issued in the cases of 17 infants (ten of whom were subsequently apprehended). The main types of CFS cases opened and which involved the family of the infant who would later die in a sleeping environment, included Protection (57.1%), Intake (23.8%), and Voluntary Family Services (13.1%). Finally, in 84.5% of the cases, the infant resided with their biological mother and/or father.

A careful review of CFS files revealed that in many cases, mothers of families involved in the CFS system at the time of (or within a year prior to) the sleep-related death of their infant had previous involvement with the CFS system. The files show that 47 mothers (81%) were involved with CFS during their own childhoods, including 20 who were once children in care.

Table 15. *Characteristics of CFS involved sleep-related infant deaths, Manitoba, 2009-2018*

Variable	N	%
CFS involvement		
Yes, open CFS case	70	48.2
Yes, CFS case closed in the year prior to infant's death	14	9.7
No CFS involvement in the year prior to infant's death	61	42.1
CFS Authority involved		
General	10	11.9
Metis	9	10.7
Northern	27	32.1
Southern	38	45.2
Type of case		
Expectant Family Services	1	1.2
Family Enhancement	2	2.4
Foster Care Management	1	1.2
Intake	20	23.8
Mother in Care	1	1.2
Protection	48	57.1
Voluntary Family Services	11	13.1
Child in care		
Temporary ward	2	2.4
Permanent ward	2	2.4
Apprehension	10	11.9
Placement type		
Child resided with parents	71	84.5
Licensed foster home	10	11.9
Place of safety	3	3.6
Mother involved with CFS during childhood		
Yes	47	81.0
No	11	19.0
Mother in care of CFS during childhood		
Yes	20	42.6
No	27	57.4

Social Determinants

As mentioned previously, low socioeconomic status is consistently associated with an increased risk of sleep-related infant deaths. In Manitoba, the average age of mothers with CFS involvement at the birth of first child was 19 (n=84). In total, 56% of mothers were 18 years or younger at the time of their first birth (Table 16). The average age of mothers with no CFS involvement at time of their first child was 22, and 25% were 18 years or younger. The biological fathers of 13 infants with CFS involvement (17%) were incarcerated at the time of the sleep-related death. And almost half (45%) of all mothers and/or fathers with CFS involvement were receiving social assistance.

Table 16. *Social determinants of CFS involved sleep-related infant deaths, Manitoba, 2009-2018*

Variable	CFS Involvement	
	Yes, N (%)	No, N (%)
Total number of mothers	84	61
Average maternal age at first birth	19.41	22.3
18 years old or younger at time of first birth	47 (56.0)	12 (25.0)
Family on social assistance	41 (93.2)	3 (6.8)
Paternal incarceration	13 (16.9)	0 (0.0)

In this study, overcrowding was calculated as a measure of persons per bedroom. Using the National Occupancy Standard (NOS), developed by Canada Mortgage and Housing Corporation (CMHC), if there are more than two people per bedroom, the residence is considered overcrowded (Statistics Canada, 2019). Of those families involved with CFS and whose infant died in a sleeping environment, where information is complete, 38% lived in overcrowded conditions. Furthermore, although 43 (71%) of the families had a safe sleep surface available in their residence, the information we reviewed indicated that infants were placed on a safe sleep surface in only 16 (37%) of the deaths. The infants in the remaining 27 (63%) deaths were placed to sleep on an unsafe surface when a safe option was available in the home for them. This finding reinforces that while safe sleep surfaces are necessary, they must be accompanied by information and education that supports their use.

Sleep-Related Deaths of Children in Care

Fourteen infants (10% of all cases and 17% of those with CFS involvement) who died while sleeping or in a sleeping environment were in the care of a mandated child and family services agency at the time of their death. They were permanent wards, temporary wards, or under an order of apprehension. Of these 14 infants, ten (71%) were with foster parents or in a foster placement, three (21%) were in a place of safety, and one (7%) was in care but placed with their biological parents. Sixty four per cent of those infants in care were placed to sleep on an unsafe surface, including two infants on a couch or sofa, two in car seats, and three on an adult mattress. Our case review revealed that not all legal guardians had access to a safe sleep surface and those that had them did not always use them. For example, caregivers in 36% of deaths did not have a safe sleep surface in the home, while those who did, only used it in 50% of the deaths. Finally, the case review revealed that 43% of infants in care were swaddled and 28% were placed to sleep in an unsafe position, including on their stomach, side, and sitting. These data speak to the need for policies that ensure the caregivers for children in care have the resources, the information, and the training they need to ensure safe sleeping environments. At the same time,

however, these data also tell us that 90% of all the infants that died in unsafe sleeping environments were not in care of CFS at the time of their death.

Missed Opportunities

As part of the data collection process, researchers at the Manitoba Advocate for Children and Youth (MACY) office reviewed historical records sent by the CFS agencies and authorities as part of the investigations surrounding the sleep-related deaths of the 84 infants. Our review uncovered a number of missed opportunities to ensure the safety of infants. For instance, only 46% of the infants had a safety assessment on their file. Only 49% of infants had a home visit prior to their death, and during those home visits, only 12% of infant sleep environments were observed by CFS workers.

Furthermore, occasions in which infants had been previously observed in an unsafe sleeping scenario (i.e., prior to their later sleep-related death) were documented in ten cases. In most of these, the CFS worker observed the infant on an unsafe sleep surface (e.g., adult mattress, floor, or couch) and took the opportunity to remind the caregivers about safe sleep and the importance of purchasing a crib.

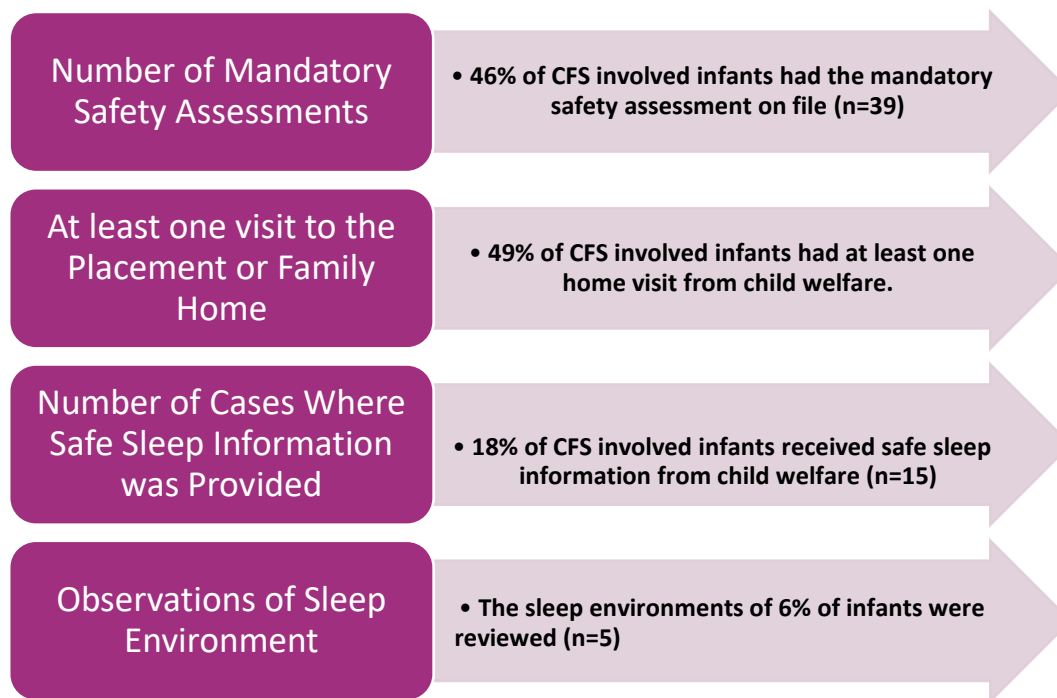


Figure 22. *Child welfare activities and opportunities to intervene*

The review of CFS cases was complicated by several obstacles, including incomplete documentation in many of the CFS records.

We found that even when safety assessments took place, they often excluded infants. Safety assessments used currently do not measure variables with relevance to infant health, such as whether a safe sleeping surface and environment is available.

Child welfare workers and agencies have opportunities to consider infant safety and support families by providing them with the information and resources they need to ensure the safety of their children.

These are missed opportunities because CFS workers, by the very nature of their involvement and mandated responsibility to conduct safety assessments, are uniquely placed to assess infant sleeping environments and provide caregivers with the information, training, and resources they need to keep their children safe.

Case Study: Willow

Tammy was 20 years old when she found out that she was pregnant. She felt like she needed extra support to raise her baby. So, she contacted a child and family services (CFS) agency to request support, and a voluntary service file was opened. Tammy delivered a baby girl a few months later, whom she named Willow. Willow was a healthy and happy baby girl, who was born full-term after a healthy pregnancy and delivery. Willow did not have any history of illness during her short life.

The family's child and family services worker visited Willow and Tammy when Willow was one month old. At the time of the visit, the worker noticed that Willow was napping on Tammy's bed. Tammy told her CFS worker that she thought sleeping with Willow in her bed was the safest place for Willow because she could not afford a crib and had no other sleeping option. The worker spoke to Tammy about the dangers of bed-sharing, especially with such a young infant, and stressed the importance of getting a crib. A month after this home visit, after a feeding and a nap, Tammy woke up to find her baby was unresponsive. Willow had been swaddled and tucked in the nook of her mother's arm. Tammy immediately called emergency services and administered CPR to Willow, which was continued as first responders transported Willow to the hospital, however, ongoing attempts to revive Willow were unsuccessful.

Summary: Child Welfare Involvement

Of the 145 children who died, 84 were receiving services from child and family services (CFS) or had received CFS services in the one year prior to the infant's death ("CFS involved children"). Of the 84 children, most (n=70) had an open case file at the time of their death. Furthermore, although 43 (71%) families had a safe sleep surface available in their residence, only 16 (37%) had been using it for the infant at the time of the infant's death. Fourteen infants (10% of all cases and 17% of those with CFS involvement) who died while sleeping or in a sleeping environment were in care of child and family services at the time of their death. They were permanent wards, temporary wards, or under an order of apprehension. The fact that a case file was open meant that social workers had unique responsibilities and opportunities to educate families about safe infant sleep and model how to use the safe sleep surfaces that were already present in the homes. This was especially true for the 14 infants who were in care at the time of their deaths.

Many missed opportunities for intervention by social workers were uncovered during our review. For instance, only 46% of the infants had a safety assessment on their file. In addition, only 49% of infants had a home visit prior to their death, and during those home visits, only 12% of infant sleep environments were observed and documented. Furthermore, occasions in which infants had been previously observed in an unsafe sleeping scenario (i.e., prior to their later sleep-related death) were documented in ten cases. For all of these reasons, the Manitoba Advocate is recommending that a provincial standard be developed that would require all CFS workers to assess infants' sleep environments as part of prescribed face-to-face contacts for infants and young children in care (see Recommendations 12 and 13).

CHAPTER 10: JURISDICTIONAL SCAN

According to the United Nations Declaration on the Rights of the Child (UNCRC), the Governments of Canada and Manitoba have a duty to ensure that parents and caregivers are informed, have access to education, and are supported in the use of basic knowledge of child health (Article 24.2(e)).

This chapter presents a review of policies, procedures, and public education materials across Canada and evaluates the quality of resources available to caregivers in Manitoba to prevent sleep-related infant deaths.

Key Findings

- Public education resources available to parents in Manitoba have poor adherence to best-practice recommendations for safe sleep.
- Most Canadian resources reviewed (75%) were only available in English. Manitoba has no current resources for parents available in Indigenous languages.
- Resources created by health departments have higher adherence to best-practice recommendations than resources and policies created by child welfare agencies.

Fighting Confusion and Misinformation

Governments play an essential role in the promotion of accurate health information. The internet is a major source of health information and up to 72% of adults trust the health information they read online (Chung et al., 2012).

But information available online can be incorrect or inconsistent with safe sleep practices. A recent study found that only 43% of the 1,300 websites reviewed provided accurate information on safe sleep practices for infants and 28% provided inaccurate information (Chung et al., 2012). Furthermore, over 60% of images in magazines geared to women were inconsistent with safe sleep recommendations, including photographs of infants with objects in their sleep environment, sleeping on their stomachs or bed-sharing (Joyner et al., 2009).

Misinformation may normalize and promote unsafe sleeping practices. As with everything online, the quality of information varies. Websites developed by health and government departments are the most likely to provide accurate information, whereas blogs are the least likely to have accurate information (Chung et al., 2012; Susannah Fox et al., 2002). Given the amount of misinformation found online, governments have an essential role to play in developing accurate resources that support caregivers.

Case Study: Mia

Mia was a happy little four-month-old who enjoyed playing with her sibling and two parents who worked in professional positions. Though Mia was happy and easy to care for during the day, Mia never seemed to be able to sleep for long stretches at night. Mia’s mom heard from a friend that her son had slept better when placed on his stomach.

A quick internet search brought up a blog for parents, which described that sleeping on their stomach can help some infants sleep better – especially if they were gassy.

Mia’s mother was willing to try anything to get Mia to sleep for longer periods at night. Therefore, she put Mia to sleep on her stomach. Mia’s mom also put a thick blanket under a fitted crib-sheet because she thought Mia may be more comfortable than sleeping on a firm mattress.

The night before Mia died, her mother placed her in her crib on her stomach. The next morning, Mia’s mother went to check on her because Mia was sleeping in longer than usual.

When she entered the room, she saw that Mia had her face pressed into the cushioned mattress and was unresponsive. Mia’s mother immediately called emergency services and started CPR on Mia, but despite the best efforts of her parents and first responders, Mia remained unresponsive and was subsequently pronounced deceased.

Quality Resources for Caregivers

Given the misinformation found in many internet sources, it is important that government resources are of high quality and adhere to the latest evidence-based recommendations on safe sleep. Our office conducted an analysis of policies and public health information materials across Canada to understand the quality of information provided to caregivers found in health and child welfare policies, procedures, and public education materials from provinces and territories across Canada.⁴

This analysis had the following purposes:

- (1) Evaluate the resources, policies, and procedures in Manitoba according to best-practice evidence;
- (2) Compare the resources, policies, and procedures in Manitoba with those across Canada; and
- (3) Identify best-practices.

In the end, **35 policies, procedures, and public educational materials from six jurisdictions were reviewed and compared with 26 key recommendations** made by the American Academy of Pediatrics (AAP) to reduce the risk of sleep-related infant deaths in their seminal document “SIDS and Other Sleep-Related Infant Deaths: Evidence Base for 2016 Updated Recommendations for a Safe Infant Sleeping Environment” (Task Force on Sudden Infant Death Syndrome, 2016).⁵

⁴This analysis is based on a sample of materials that was made available to the Manitoba Advocate for Children and Youth through information requests. MACY is unable to assess the completeness of the information provided by each source or the representativeness of the information provided. This is especially the case for materials outside of Manitoba.

⁵See [Appendix C](#) for list of AAP recommendations included.

We also evaluated the cultural competence of the resources to understand whether they were available in Indigenous languages, whether they were adapted to Indigenous communities, and whether resources were evaluated. A full list of policy, procedural, and regulatory documents as well as public education materials across Canada that were analyzed for this jurisdictional scan is found in [Appendix C](#).

Adherence with AAP Recommendations

Manitoba-made resources for parents and caregivers contain few AAP best-practice recommendations regarding safe sleep practices.

- On average, Manitoba-made parent/caregiver resources only included 12-13 of the suggested 26 AAP recommendations (48%).
- The Manitoba-made resource that contains the most AAP recommendations is the *Sacred Babies Survival Guide*, which includes 16 of 26 (61%) recommendations.
- Manitoba's inclusion of AAP recommendations in parent/caregiver resources is lower than the average of all other provincial and federal materials reviewed (45%) and nationally available resources produced by the Public Health Agency of Canada (PHAC) (65%). Some health and child welfare organizations in Manitoba use materials developed by PHAC.
- The *Sleep Well, Sleep Safe* booklet for parents and for all who care for infants, from Newfoundland, has the highest adherence to reporting AAP recommendations out of all Canadian resources reviewed at 81% (21 out of 26 recommendations).

Sacred Babies "Our Children-Sacred Gifts from the Creator" – An Infant Survival Guide

Sacred Babies is an infant survival curriculum developed through partnerships between the Assembly of Manitoba Chiefs (the First Nations Health and Social Secretariat of Manitoba), Cree Nation Tribal Council and Little Black Bear and Associates, and the Strengthening Families Maternal Child Health Program (SF-MCH). It is funded by the First Nations and Inuit Health Branch of Health Canada.

The curriculum is a family-centred education program with the goal of providing families with information on how to keep their babies safe for their first year of life and beyond. The curriculum is delivered through the SF-MCH, which provides pre- and postnatal home visitation to women, fathers, and families. The *Sacred Babies* curriculum is intended to facilitate a guided discussion with families but can also be provided through a group presentation. The SF-MCH program is available in 20 Manitoba First Nations, but the *Sacred Babies* curriculum can be accessed by other organizations.

The *Sacred Babies* curriculum covers eight main topic areas; Introduction to SIDS, SIDS Facts, Sleeping Position, Crib Safety, Tummy Time, Smoking, Bed Sharing, and Breast is Best. Each topic area is structured to include information that combines research and Elders' teachings related to the topic, with the opportunity for participants to voice their knowledge and concerns regarding a topic or to reflect on the information provided to them.

In our office's 2013-2014 annual report, we highlighted the *Sacred Babies* curriculum as an innovative and important resource for protecting the safety of infants, a position we continue to hold.

Manitoba-made policies and procedures used by healthcare professionals and CFS workers include very few AAP best-practice recommendations.

- Infant safe sleep policies and procedures in Manitoba included between 0% and 50% of AAP recommendations (average 23%). One child welfare policy for children who are not in care but who are receiving child welfare services did not contain any of the AAP recommendations to reduce the risks associated with unsafe sleep.

Overall, policies, regulations, and public education information developed by health departments have a higher adherence to AAP best-practice standards than those developed by child welfare agencies.

Cultural Adaptation of Resources

- **The majority (75%) of resources reviewed for this scan were found to be only available in English.** The most common alternative language for resources was French. Only three resources (9% of all resources reviewed), of which one is a policy and two are public education materials, are available in an Indigenous language – Inuktitut and Inuinnaqtun. Manitoba has no resources available in any other Indigenous languages.
- ***Honouring our Babies***, a resource developed by and for Indigenous Peoples in British Columbia, as well as ***Sacred Babies***, a resource developed by the Assembly of Manitoba Chiefs' First Nations Health and Social Secretariat of Manitoba, were both identified as being highly adhered to the AAP Recommendations while also considering the unique and diverse Indigenous cultures in each region. Further, the outreach conducted for *Sacred Babies* wisely built on the way information is accessed in some communities by working with local community radio to spread safe sleep and infant care messages in communities.

Safe Sleep and Harm Reduction Messaging

Harm reduction is a policy, program, and/or educational approach that focuses on reducing the negative consequences of a behaviour (Harm Reduction Coalition, 2019). Harm reduction does not push for total cessation of the behaviour. Pushing for total cessation of a risky behaviour is often referred to as “abstinence-only” messaging (Altfeld et al., 2017).

Harm reduction was first developed in response to a high number of overdoses and the spread of blood borne diseases (e.g., HIV) among injection drug users (Des Jarlais, 2017).

Due to the success of harm reduction approaches in drug use, the principles of harm reduction have recently been applied to cigarette use (Leone et al., 2018), HIV (CATIE, 2020), and pill testing at concerts (Scott & Scott, 2020). The success of harm reduction approaches for cigarette use and pill testing at concerts, however, is questionable, as some studies have shown that it is not effective (Leone et al., 2018). Hence, it is essential to evaluate instances where harm reduction is applied to new areas of public health. Studies are important to know whether a harm reduction approach is successful or does unintended harm.

Harm Reduction Messaging and Risk Factors for Safe Sleep

This jurisdictional scan showed that messaging about risk factors for sleep-related infant deaths in Canada is mixed. Most messaging for sleep position takes an “abstinence only” approach. For example, the Back to Sleep campaign told families to put their infants on their back to sleep every single time. The use of blankets in a crib is sometimes “abstinence-only” (e.g., no blankets in crib ever), or harm-reduction (e.g., light blanket tucked-in on three sides, and not above baby’s chest).

Harm Reduction Messaging and Bed-sharing

Most materials related to bed-sharing take a harm reduction approach. **Yet there is substantial research that shows bed-sharing, no matter how it’s done or what other risk factors are present, is still unsafe** (Carpenter et al., 2013; Fu et al., 2010; Ruys et al., 2007; Tappin et al., 2005; Task Force on Sudden Infant Death Syndrome, 2016). Indeed, in our study we found that one in three bed-sharing cases did not involve smoking or alcohol intoxication of the bed-sharing partner.

In our study, 50% of infants who died unexpectedly in their sleep were bed-sharing. Bed-sharing seems to be on the rise in other jurisdictions, and our data also suggests that the percentage of infant deaths related to bed-sharing might be increasing in Manitoba (Austin et al., 2017; Scragg et al., 1995). Therefore, any educational interventions to reduce infant sleep-related deaths in Manitoba should focus on bed-sharing.

Nonetheless, it remains unclear how to effectively communicate about the risks of bed-sharing to modify caregiver behaviour. England takes a harm-reduction approach to their recommendations on bed-sharing, while the United States recommends to never bed-share (Ball, 2017; Task Force on Sudden Infant Death Syndrome, 2016). Though widely used and sometimes advocated for, there is no research on the effectiveness of harm reduction messaging for bed-sharing (Altfeld et al., 2017). Therefore, we do not know if harm reduction messaging is effective to reduce infant deaths related to bed-sharing. As part of this special report, researchers interviewed world-renowned experts who advised caution when applying harm reduction approaches to bed-sharing information, given the lack of evidence and the potential for harm.

Summary: Jurisdictional Scan

Our jurisdictional scan revealed that Manitoba-made resources for parents and caregivers contain few AAP best-practice recommendations regarding safe sleep practices. In fact, on average, Manitoba-made parent/caregiver resources only included 48% of the suggested AAP recommendations. We also found that Manitoba-made policies and procedures used by healthcare professionals and CFS workers include very few AAP best-practice recommendations.

In order to ensure all professionals in the province working with children are receiving the most accurate and up-to-date information to inform both policy and their interactions with infants, the Manitoba Advocate recommends the development of an accredited online training module on safe infant sleep practices (Recommendation 6). Further, the Manitoba Advocate recommends that in addition to English and French resources, public education materials be produced in the prominent Indigenous languages spoken in our province (Recommendation 5).

CHAPTER 11: RECOMMENDATIONS

A key responsibility of the Manitoba Advocate for Children and Youth is to develop recommendations to increase the effectiveness and responsiveness of provincial services. It is also the role of the Manitoba Advocate for Children and Youth to advise Ministers on any matter that the Manitoba Advocate finds important (ACYA, s.13).

This chapter outlines recommendations the Manitoba Advocate for Children and Youth is issuing today to multiple stakeholders with the goal of increasing infant safety and reducing the number of sleep-related infant deaths in Manitoba. Further, these recommendations were designed to honour the legacies of the 145 previously healthy infants who died in unsafe sleep-related circumstances and whose deaths may have been preventable. Taken together, these evidence-informed recommendations, grounded in the data, offer the Government of Manitoba and other stakeholders, a roadmap that, if implemented, will reduce the number of sleep-related infant deaths in Manitoba. This roadmap is consistent with infants' inherent right to live, to thrive, and to have equal access to the highest attainable standards of health, as articulated in the *United Nations Convention on the Rights of the Child* (UNCRC).

Recommendations were informed by the results of the case file reviews, data analysis, a jurisdictional analysis, and a best-practice literature review on the prevention of sleep-related infant deaths. Additionally, the perspective of stakeholders who hold expertise in addressing the issue and are responsible for providing services to infants was essential in the design of recommendations. A series of meetings, presentations, and consultations took place with dozens of experts in February and March 2020. The recommendations are designed intentionally to be specific and finite and are issued through the lens of children's rights. In accordance with *The Advocate for Children and Youth Act*, the Manitoba Advocate will monitor the government's levels of compliance with the implementation of the following recommendations through a publicly available tool.⁶

Since 2008, when jurisdiction over the review of child deaths was transferred from the Office of the Chief Medical Examiner to the Manitoba Advocate for Children and Youth (then, the Office of the Children's Advocate), 19 recommendations related to sleep-related infant deaths have been made by the Advocate. However, recommendations were previously limited to Manitoba child welfare authorities and child welfare agencies. Recommendation themes included: development of a safe sleep strategy, policy, and/or education strategy, or delivery of safe sleep-related information to caregivers; that CFS agency workers observe infant sleeping environments during home visits; ensuring documentation regarding special medical needs and safe sleep positioning was documented in CFS files; that safe sleep education for CFS involved caregivers; and the need for quality control reviews of current practices.

Child and infant health is everyone's responsibility. In some cases the recommendations detailed below mention consultations with stakeholders working outside of the Government of Manitoba including, the Assembly of Manitoba Chiefs' First Nations Health and Social Secretariat of Manitoba due to their expertise in child and maternal health. We also respect the treaties that were made in Manitoba and the nation-to-nation relationship. Hence, we specify recommendations where consultation with First

⁶ For the Manitoba Advocate's ongoing tracking of government compliance with its recommendations, see our tracking tool here: <https://manitobaadvocate.ca/recommendation-tracking/>

Nations and Metis governments is critical. When we speak of First Nations and Metis governments we include the Assembly of Manitoba Chiefs (AMC), Southern Chief Organization (SCO), Manitoba Keewatinowi Okimakanak Inc. (MKO), Manitoba Metis Federation (MMF), and any other independent First Nations community.

Another stakeholder group mentioned is the Collaborative Inter-departmental Working Group on Infant Mortality. This was a cross-departmental and experts group developed to track, monitor, and respond to infant deaths in Manitoba. However, this group has not been active since October 2018.

The Manitoba Advocate recognizes that it does not have jurisdiction to review, investigate, or make recommendations to the Government of Canada. The Manitoba Advocate, however, is guided by the UNCRC, and is therefore making recommendations for consideration of all parties responsible for its implementation.

Social Determinants of Health

Finding 1. A high percentage of sleep-related infant deaths in Manitoba occurred in families that are living with low incomes. One in four infants who died unexpectedly in their sleep did not have a safe sleep surface, like a crib, available in their homes.

Finding 2. According to population projections, Indigenous infants currently make up approximately 30% of live births in Manitoba, but accounted for 57% of the sleep-related infant deaths. Indigenous infants are overrepresented in the total number of infants who died in an unsafe sleep environment, and in the percentage of families without a safe sleep surface in their home.

RECOMMENDATION 1: The Manitoba Advocate for Children and Youth recommends that the Government of Manitoba develop and implement an action plan, in consultation with First Nations and Metis governments, to ensure that every infant in Manitoba under 24 months has a safe sleep surface (crib, bassinette, or culturally appropriate safe alternative) in which to sleep. The action plan ought to be targeted to both expectant parents and caregivers of infants under 24 months who cannot afford to purchase a safe sleep surface. The action plan will be designed and delivered based on the child-first and substantive equality principles.

RECOMMENDATION 2: The Manitoba Advocate for Children and Youth recommends that the Government of Canada, in consultation with the First Nations governments of Manitoba, develop and implement a plan to ensure that no infant living in Manitoba First Nations communities is without a safe sleeping surface (crib, bassinette, or culturally appropriate safe alternative), in line with Jordan's Principle.

Details for Recommendations 1 and 2:

- An action plan will prioritize the rights of children over jurisdictional or administrative barriers (child-first principle) and achievement of true equality in outcomes (substantive equality).
- The action plan will explore recycling and loan programs, and other cost-effective and innovative approaches.

- Parents or caregivers living with low incomes and needing a safe sleep surface will be identified through multiple systems including the health care system, Employment and Income Assistance, the Manitoba Prenatal Benefit Program, and Child and Family Services.
- Parents or caregivers in need of a safe sleep surface will be able to self-identify.
- As per the principle of non-discrimination detailed in the UNCRC, eligibility criteria will ensure that there is no discrimination of any kind, including national or social origins, or on the basis of race, or residence in a rural or remote community.
- Existing governmental policies in the child welfare and social assistance programs that relate to the distribution of safe sleep surfaces will be reviewed and revised if they do not comply with the child-first principle.
- Barriers to accessing cribs will be identified and mitigated.

Impact of Recommendations 1 and 2 for Infants in Manitoba:

- All infants in Manitoba will have a safe sleep surface as is necessary to realize their inherent rights to the highest attainable standard of health and to live and thrive (UNCRC, Art. 24, 6).
- The Government of Manitoba will ensure that caregivers have the financial and physical resources they need to support child health and wellbeing (UNCRC, Article 27).

Public Education Materials

Finding 3. Although a mail out with safe sleep information took place to service providers through the Child Protection Branch (now the Child and Family Services Division) between 2014 and 2015, the Province of Manitoba has not developed a province-wide public education awareness campaign based on data from Manitoba in the last ten years. Moreover, hospital staff informed us that in January of 2018, safe sleep resources were no longer made available in print format for new parents in Manitoba. No new comprehensive safe sleep resources have been developed to replace the previous ones.

Finding 4. Policies and public health information materials in Manitoba do not provide parents and caregivers with all of the safe sleep information they need to ensure the health and wellbeing of infants. Current resources in Manitoba are not available in Indigenous languages.

Finding 5. Families receive inconsistent messages about infant safe sleep practices from health care providers, community organizations, family members, and the internet.

RECOMMENDATION 3: The Manitoba Advocate for Children and Youth recommends that Manitoba Health, Seniors and Active Living, in partnership with the Assembly of Manitoba Chiefs' First Nations Health and Social Secretariat of Manitoba, and First Nations and Metis governments develop, carry out, and subsequently evaluate, a new public education campaign that raises awareness of the known risk factors associated with sleep-related infant deaths.

RECOMMENDATION 4: The Manitoba Advocate for Children and Youth recommends that the public education campaign be informed by data presented in this report and by evidence on effective risk communication and behaviour modification.

RECOMMENDATION 5: The Manitoba Advocate recommends that public education materials (e.g., books, pamphlets, videos, posters, etc.) developed by the Government of Manitoba, as part of any safe sleep education campaign, be written in accessible language and available in the prominent Indigenous languages of Manitoba.

Details for Recommendations 3, 4, and 5:

- This public education campaign will be targeted to vulnerable families and be culturally appropriate, both in content and delivery.
- Education materials will be developed for different audiences including expectant mothers, other caregivers such as fathers, grandparents, and extended family members.
- Education materials will include multiple risk factors, given that few sleep-related infant deaths involve a single risk factor.
- The public education campaign will recognize barriers to information access by considering various types of media including print, radio, video, public advertisement, internet and social media. In particular, radio has been successfully used by the *Sacred Babies* program to reach remote communities.
- Education campaign materials will be distributed to families during prenatal care, in hospital, at The Birth Centre, and by Public Health Nurses post-partum public health visits. Materials will also be made available to all childcare centres, obstetrician and pediatrician offices in Manitoba, community organizations that deliver prenatal and post-natal education classes, and First Nations community health centres/nursing stations.

Impact of Recommendations 3, 4, and 5 for Infants in Manitoba:

- All infants in Manitoba realize their inherent rights to the highest attainable standard of health by ensuring that all segments of society – including parents – have access to education and are supported in the use of basic knowledge of child health (UNCRC, Article 24).

RECOMMENDATION 6: The Manitoba Advocate for Children and Youth recommends that Manitoba Health, Seniors and Active Living, in partnership with the Assembly of Manitoba Chiefs' First Nations Health and Social Secretariat of Manitoba, develop an accredited online training module on safe infant sleep practices, accessible through the Shared Health Learning Management System (LMS).

Details of Recommendation 6:

- Training will be informed by the best available evidence, including the *AAP Recommendations on Safe Sleep*.
- All Public Health Nurses, child and family services providers, and Families First Home Visitors in Manitoba should complete the online training about safe infant sleep practices.
- Training should become part of mandatory training for newly hired Public Health Nurses, Families First Home Visitors, child welfare providers, and Early Childhood Educators.

- Healthcare providers and child and family services providers across the province will have access and receive accredited training.

Impact of Recommendation 6 for Infants in Manitoba:

- All infants in Manitoba realize their inherent rights to the highest attainable standard of health by ensuring that all segments of society have access to education and are supported in the use of basic knowledge of child health (UNCRC, Article 24).

Prenatal and Maternal Care

Finding 6. Research has demonstrated that smoking during pregnancy and the post-partum period is related to an increased risk of sleep-related infant deaths. Counselling services specific to smoking cessation and incentive-based interventions during pregnancy have been found to be effective in reducing or eliminating smoking during the prenatal and postnatal periods. Manitoba currently has no smoking cessation programs specifically for expecting mothers.

Finding 7. Currently, only 20 of 63 First Nations communities in Manitoba have maternal/child health programs, some of which are ‘pilot’ programs that lack continuous funding.

RECOMMENDATION 7: The Manitoba Advocate for Children and Youth recommends that Manitoba Health, Seniors and Active Living, in consultation with the Assembly of Manitoba Chiefs’ First Nations Health and Social Secretariat of Manitoba, develop a smoking cessation resource that prenatal healthcare providers and child welfare service providers can make available to expectant mothers.

Details for Recommendation 7:

- A Manitoba-made resource will be developed that explains the risks associated with prenatal smoking and sleep-related infant deaths.
- All pregnant women who disclose smoking will be provided with accurate and culturally appropriate information about smoking cessation.
- The resource will be distributed to all prenatal healthcare providers and child welfare service providers across Manitoba.

Impact of Recommendation 7 for Infants in Manitoba:

- All infants in Manitoba realize their inherent rights to the highest attainable standard of health by ensuring appropriate prenatal and postnatal care for mothers (UNCRC, Article 24).

RECOMMENDATION 8: The Manitoba Advocate for Children and Youth recommends that the Government of Canada resource an implementation strategy to expand prenatal and postnatal maternal child health programs, in consultation with First Nations and Metis Governments, into all of Manitoba’s First Nations communities.

Details of Recommendation 8:

- Consideration will be given to the expansion of existing programs such as the Strengthening Families Maternal Child Health Program.
- A long-term funding model will be developed to expand maternal and child health programs to all First Nations communities in Manitoba.

Impact of Recommendation 8 for Infants in Manitoba:

- All infants in Manitoba realize their inherent rights to the highest attainable standard of health by ensuring appropriate prenatal and postnatal care for mothers (UNCRC, Art. 24)

Infant Death Investigations and Classifications

Finding 8. There is currently no international or Canadian standard for the investigation of unsafe sleep-related infant deaths (Canadian Paediatric Society, 2013). Some countries, however, such as the United States, have developed standardized guidelines for investigations (Centers for Disease Control and Prevention, 2007). The Centers for Disease Control and Prevention (CDC) has developed a form called '[The Sudden Unexplained Infant Death Investigation Report Form](#)' (SUIDIRF). The CDC also maintains a SUID electronic Case Registry (*Data Coordinating Center for the Sudden Death in the Young Case Registry*, n.d.). The case registry enables them to look at trends and evaluate the effectiveness of population level interventions.

Finding 9. Many death scene investigation reports completed by the first responders, RCMP, and other police services lack important information regarding risk factors associated with sleep-related infant deaths.

Finding 10. A standardized mechanism to collect and report on sleep-related infant deaths in Manitoba does not exist. The sole mechanism to obtain information on sleep-related infant deaths in Manitoba is retrospective chart reviews, which do not allow for timely reporting of information and rely on the interpretation of investigative reports from police and first responders that do not systematically collect information on risk factors.

RECOMMENDATION 9: The Manitoba Advocate for Children and Youth recommends that Manitoba Justice and the Office of the Chief Medical Examiner work with RCMP and police services across the province to develop (if necessary) and implement a form based on the CDC's SUIDIRF data collection form, to be used by all law enforcement officers in the province who attend the scene of an infant death.

Details of Recommendation 9:

- A form that is appropriate and user friendly to police and RCMP for use during infant death investigations.
- Officers will be trained in the use of this form.

RECOMMENDATION 10: The Manitoba Advocate for Children and Youth recommends that Manitoba Justice provide the resources necessary for the Office of the Chief Medical Examiner to develop an electronic database, in partnership with the Manitoba Advocate for Children and Youth, to collect and report on the incidence of and risk factors associated with all suspected sleep-related infant deaths in Manitoba.

Details of Recommendation 10:

- Data collected in suspected sleep-related infant deaths will be systematically and consistently collected in a database.

RECOMMENDATION 11: The Manitoba Advocate for Children and Youth recommends that the Collaborative Inter-departmental Working Group on Infant Mortality be reinstated and review cases of sleep-related infant deaths quarterly to look at trends and leverage this information to create and implement interventions to prevent future deaths.

Details of Recommendation 11:

- The Collaborative Inter-departmental Working Group on Infant Mortality will meet quarterly in a year.
- Annual reports on trends of sleep-related infant deaths will be produced, detailing suggestions for improvement of programs and initiatives.

Impact of Recommendations 9, 10, and 11:

- Through the systematic collection and analysis of data, gaps in healthcare will be identified to inform and evaluate interventions that reduce infant mortality, in partial fulfillment of the Truth and Reconciliation *Call to Action* No. 19.

Families Involved with Child and Family Services

Finding 11. While a high percentage of sleep-related infant deaths in Manitoba occurred in families who were receiving services from CFS or had received CFS services within one year prior to the infant's death, in only a very small number of these cases were the infants in care of CFS at the time of their deaths. Nonetheless, families involved with CFS may be facing circumstances which could be improved by additional supports to increase their infant's health and wellbeing.

Finding 12. There were numerous cases where CFS workers did not observe an infant's sleeping environment during face-to face visits in the home.

RECOMMENDATION 12: The Manitoba Advocate for Children and Youth recommends that Manitoba Families, as part of the changes to provincial child welfare standards announced to end the use of birth alerts, include an assessment of the infant sleep environment in every safety plan for expectant mothers, and provide mothers and primary caregivers with the safe sleep surfaces and public education information they need to ensure the safety of their child.

RECOMMENDATION 13: The Manitoba Advocate for Children and Youth recommends that Manitoba Families work with child and family services authorities to develop a provincial standard that requires all child and family service providers to assess infants' sleep environments as part of prescribed face-to-face contact with anyone receiving child welfare services, including all infants who are not in care.

Details of Recommendations 12 and 13:

- Child services professionals will assess the safety of infant sleep environments.
- Families receiving child welfare services and requiring resources and/or information on safe sleep practices will be identified.
- Families will be resourced with a crib or other safe sleep surface, if none is available.

Impact of Recommendations 12 and 13 for Infants in Manitoba:

- All infants in Manitoba will have a safe sleep surface as is necessary to realize their inherent rights to the highest attainable standard of health and to live and thrive (UNCRC, Articles 24 and 6).
- The Government of Manitoba will ensure that caregivers have the financial and physical resources they need to support child health and wellbeing (UNCRC, Article 27).

CHAPTER 12: CONCLUSION

All infants have the equal right to live and thrive, and caregivers have the primary responsibility to care for and safeguard their children. However, structural and systemic barriers exist for some families in our province and not all resources or public systems are equally accessible to all families who are caring for infants. Further, long-held beliefs about infant care have been shown in recent studies, including this one, to be associated with increased risks to infants. Simply, what was once believed to be safe for babies is no longer true. Parents and caregivers urgently require updated information so they can make informed choices to increase the safety of the sleeping environments for their babies. In recognition of their legal obligations, the Governments of Canada and Manitoba must ensure that parents have the resources and information they need to keep infants safe, and that all infants have equal access to the highest attainable standards of health.

Every level and branch of government from child welfare, to health, police services, and others share this responsibility. A comprehensive and culturally appropriate approach that involves public education campaigns, targeted smoking cessation interventions, and improvements to the collection of information during infant death investigations is needed to reduce the tragic and unexpected deaths of infants in their sleep or sleeping environments. These efforts are especially required in order to close the health gaps between Indigenous and non-Indigenous infants.

The ultimate goal of this public education special report is to provide reliable information based on a comprehensive investigation to empower all Manitobans to reduce the preventable deaths of infants who die in unsafe sleep environments. This study released today is one we anticipate will make an important contribution to public health research in our province.

Infant safety is an issue about which all Manitobans ought to be concerned. That we have lost 145 infants over ten years in our province is a travesty. That most of those deaths may have been preventable is heartbreaking, and ought to be viewed as unacceptable by all of us.



APPENDIX A: METHODOLOGICAL DETAILS

This is a ten-year population-based retrospective case review of sleep-related infant deaths in Manitoba from 2009 to 2018. The methods included four steps: (1) identifying cases of sleep-related infant deaths; (2) collecting information from the cases; (3) analyzing data, and; (4) developing recommendations. The following section summarizes the methods used.

(1) Identifying Cases of Sleep-Related Infant Deaths

The Manitoba Advocate receives notification of all child deaths in Manitoba from the Office of the Chief Medical Examiner (OCME). The sample (N=1,096) was selected from the Manitoba Advocate's database (Maximizer) of all infants aged 0-24 months (not inclusive) who died between January 1, 2009 and December 31, 2018. This time frame reflects the length of time that the Manitoba Advocate began receiving all child death notifications in the province.

Step 1. Infants who had causes of death identified as "accidental-drowning," "motor vehicle," "homicide," and "natural-premature" were excluded from the review (n=487). Infants who had causes of death that could constitute diagnostic overlap with sleep-related deaths, such as accidental asphyxia were included (n=609). Hence, sleep-related deaths may be classified as undetermined, natural, or accidental.

Step 2. The study was further limited to infants whose deaths were identified as having occurred while they were sleeping or in a sleeping environment, including cribs, playpens, car seats, adult beds, or other surfaces used for sleep (n=162). All other cases where the infant was not sleeping or in a sleeping environment were excluded (n=447).

Step 3. The remaining 162 cases were reviewed by three individuals. Two were researchers at the Manitoba Advocate and the third was the Chief Medical Examiner. Reviewers followed a flow chart for case assessment (Figure 3).

Step 4. Disagreement between reviewers triggered 32 detailed case reviews. This case review resulted in 17 cases being excluded from the study because despite having unsafe sleep risk factors, they also had compelling natural causes of deaths that were, in the opinion of the Chief Medical Examiner, unrelated to the sleep environment. In the end, 145 cases of sleep-related infant deaths were selected for inclusion in this study.

(2) Collecting Information

For possible cases of sleep-related infant deaths, information was gathered from police services, first responders, child welfare agencies, hospital records, and autopsy reports.

A comprehensive literature review of risk and protective factors informed the development of a data collection instrument created using Microsoft Office Access 2016. The data collection instrument was finalized following input from child welfare, public health, and Indigenous health professionals.

Data was collected from records by three researchers at the Manitoba Advocate using this data collection instrument. A data collection protocol and code book were developed to ensure reliability

between abstractors. All cases reviewed and included in the study contained autopsy reports and the vast majority also included police records.

(3) Analyzing Information

The data was described using frequencies and percentages, means and standard deviations, medians, and modes. Bivariate comparisons of categorical variables were analyzed using either a chi square test or Fisher's exact test. Time trends of death rates were analyzed using Poisson regression. Time trends of binary risk factors were analyzed using logistic regression. Potential non-linear time trends were tested by including a polynomial function and comparing results to a model assuming a linear time trend using the Akaike information criterion. The interrater agreement between three raters in rating child death files was measured using Fleiss' Kappa. P-values below 0.05 were considered significant. Analyses were run using R version 3.6.2.

Geomapping was performed by the University of Winnipeg's Institute of Urban Studies (IUS) using ESRI's ArcGIS Desktop 10.5.

This special report is authorized under *The Advocate for Children and Youth Act* and is exempt from review by institutional research ethic boards.

(4) Developing Recommendations

Recommendations were informed by a narrative review of best-practices, a jurisdictional scan, and stakeholder consultations.

Literature Review

A literature review of best-practices used to address sleep-related infant deaths was completed.

Jurisdictional Scan

A jurisdictional scan of safe sleep policies and programs across Manitoba and Canada was conducted. The purpose of this review was to evaluate the quality of information available to parents and caregivers on unsafe sleep risks, as per the internationally recognized recommendations developed by the American Academy of Pediatrics (Moon, 2016).

Stakeholder Consultations

The data analysis and jurisdictional scan informed a consultation process with public health organizations, health professionals, and Indigenous health care specialists in February and March 2020. The purpose of stakeholder consultations was to inform recommendations to improve the effectiveness and responsiveness of services in Manitoba.

Limitations

- (1) This study is descriptive. Associations found between risk factors and infant deaths cannot infer that there is a cause and effect relationship.
- (2) Case reviews occasionally uncovered conflicting or missing/incomplete information among different sources of information. These limitations can be attributed to the fact that at present, there is no

systematic way or single protocol for assessing and collecting information during child death investigations across jurisdictions in Manitoba.

- (3) The study was unable to examine the sleep-related infant deaths that took place in 2019 since many investigations remain ongoing.
- (4) Because we did not compare infant deaths to live infants, we were not able to estimate the relative risk of each factor studied. We could only determine the prevalence of risk factors among deceased infants.

Despite limitations, this study makes an important contribution to public health research in Manitoba. Findings can be used to inform, improve, and evaluate province-wide programs and systems to reduce infant mortality. It is hoped that this study will increase public awareness of unsafe sleep risks across Manitoba.

APPENDIX B: DATA TABLES

Table 17. *Sleep-related infant death risk factors by sex, Manitoba, 2009-2018*

Risk factor		Female N (%)	Male N (%)	Significance
Sleep surface	Unsafe	43 (76.8)	69 (77.5)	p = 1.000
	Safe	13 (23.2)	20 (22.5)	
Bed-sharing	Yes	30 (53.6)	42 (47.2)	p = 0.564
	No	26 (46.4)	47 (52.8)	
Sleep position found	Other	26 (56.5)	41 (53.2)	p = 0.868
	Supine	20 (43.5)	36 (46.8)	
Swaddling	Yes	13 (32.5)	17 (24.3)	p = 0.479
	No	27 (67.5)	53 (75.7)	
Smoking exposure	Yes	29 (51.8)	43 (48.3)	p = 0.813
	No	27 (48.2)	46 (51.7)	
Overheating	Yes	28 (50.0)	41 (46.1)	p = 0.771
	No	28 (50.0)	48 (53.9)	
Objects	Yes	50 (89.3)	79 (88.8)	p = 1.000
	No	6 (10.7)	10 (11.2)	

Table 18. *Sleep-related infant death risk factors by age of death, Manitoba, 2009-2018*

Risk factor		< 12 months N (%)	12-24 months N (%)	Significance
Sleep surface	Unsafe	108 (80.6)	4 (36.4)	p = 0.003
	Safe	26 (19.4)	7 (63.6)	
Bed-sharing	Yes	71 (53.0)	1 (9.1)	p = 0.013
	No	63 (47.0)	10 (90.9)	
Sleep position found	Other	61 (54.0)	6 (60.0)	p = 0.754
	On back	52 (46.0)	4 (40.0)	
Swaddling	Yes	27 (26.5)	3 (37.5)	p = 0.681
	No	75 (73.5)	5 (62.5)	
Smoking exposure	Yes	70 (52.2)	2 (18.2)	p = 0.063
	No	64 (47.8)	9 (81.8)	
Overheating	Yes	65 (48.5)	4 (36.4)	p = 0.645
	No	69 (51.5)	7 (63.6)	
Objects	Yes	118 (88.1)	11 (100.0)	p = 0.611
	No	16 (11.9)	0 (0.0)	

Table 19. Risk factor for sleep-related infant deaths by Indigenous status, Manitoba, 2009-2018

Risk factor		Indigenous		Significance
		No N (%)	Yes N (%)	
Sleep surface	Unsafe	8 (53.3)	72 (86.7)	p = 0.006
	Safe	7 (46.7)	11 (13.3)	
Bed-sharing	Yes	4 (26.7)	45 (54.2)	p = 0.092
	No	11 (73.3)	38 (45.8)	
Sleep position found	Other	8 (61.5)	41 (57.7)	p = 1.000
	Supine	5 (38.5)	30 (42.3)	
Swaddling	Yes	3 (23.1)	20 (33.3)	p = 0.743
	No	10 (76.9)	40 (66.7)	
Smoking exposure	Yes	3 (20.0)	43 (51.8)	p = 0.047
	No	12 (80.0)	40 (48.2)	
Overheating	Yes	9 (60.0)	44 (53.0)	p = 0.827
	No	6 (40.0)	39 (47.0)	
Objects	Yes	15 (100.0)	71 (85.5)	P = 0.203
	No	0 (0.0)	12 (14.5)	
Availability of safe sleep surface	Yes	18 (85.7)	33 (64.7)	p = 0.520
	No	3 (14.3)	18 (35.3)	
Overcrowding	Yes	3 (42.9)	21(67.7)	p = 0.387
	No	4 (57.1)	10 (32.3)	

Table 20. *Sleep-related infant deaths by infant characteristics, Manitoba, 2009-2018*

Variable	N	%
Manner of death		
Accidental	10	6.9
Natural	10	6.9
Undetermined	125	86.2
Sex		
Male	89	61.4
Female	56	38.6
Age at death		
Mean (SD)	4.8 months	-
Mode	1 month	-
Median	3.4 months	-
Low birthweight (<2400 g)		
Yes	14	13.0
No	94	87.0
Prematurity (<37 weeks)		
Yes	24	20.0
No	96	80.0
NICU stay after birth		
Yes	23	17.4
No	109	82.6
Chronic medical condition		
Yes	19	13.1
No	126	86.9
Recent illness (<72 hours)		
Yes	70	48.3
No	75	51.7

APPENDIX C: JURISDICTIONAL SCAN

Recommendations by the American Academy of Pediatrics for a Safe Infant Sleeping Environment

The following recommendations are found in Rachel Moon's (2016) technical report published by the American Academy of Pediatrics, "SIDS and Other Sleep-Related Infant Deaths: Evidence Base for 2016 Updated Recommendations for a Safe Infant Sleeping Environment," and were used as best-practice standards to compare the resources and policies reviewed for the jurisdictional scan. Recommendations in italics were not used in the jurisdictional scan.

1. To reduce the risk of SIDS, infants should be placed for sleep in the supine position (wholly on the back) for every sleep period by every caregiver until one year of age.
2. Side sleeping is not safe and is not advised.
3. The supine sleep position does not increase the risk of choking and aspiration in infants, even in those with gastroesophageal reflux.
4. Preterm infants should be placed supine as soon as possible.
5. As stated in the AAP clinical report, "skin-to-skin care is recommended for all mothers and newborns, regardless of feeding or delivery method, immediately following birth (as soon as the mother is medically stable, awake, and able to respond to her newborn), and to continue for at least an hour" (Feldman-Winter et al., 2016, e2). Thereafter, or when the mother needs to sleep or take care of other needs, infants should be placed supine in a bassinet.
6. Once an infant can roll from supine to prone and from prone to supine, the infant may remain in the sleep position that he or she assumes.
7. Infants should be placed on a firm sleep surface (e.g., a mattress in a safety-approved crib) covered by a fitted sheet with no other bedding or soft objects to reduce the risk of SIDS and suffocation.
8. A crib, bassinet, portable crib, or play yard that conforms to the safety standards of the Consumer Product Safety Commission (CPSC) is recommended.
9. Sitting devices, such as car seats, strollers, swings, infant carriers, and infant slings, are not recommended for routine sleep in the hospital or at home, particularly for young infants.
10. Breastfeeding is associated with a reduced risk of SIDS. The protective effect of breastfeeding increases with exclusivity. Furthermore, any breastfeeding is more protective against SIDS than no breastfeeding.
11. It is recommended that infants sleep in the parents' room, close to the parents' bed, but on a separate surface. The infant's crib, portable crib, play yard, or bassinet should be placed in the parents' bedroom, ideally for the first year of life, but at least for the first six months.
12. *There is insufficient evidence to recommend for or against the use of devices promoted to make bed-sharing "safe."*
13. Infants who are brought into the bed for feeding or comforting should be returned to their own crib or bassinet when the parent is ready to return to sleep.
14. Couches and armchairs are extremely dangerous places for infants.
15. Guidance for parents who fall asleep while feeding their infant.

16. *There are specific circumstances that, in case-control studies and case series, have been shown to substantially increase the risk of SIDS or unintentional injury or death while bed-sharing, and these should be avoided at all times.*
17. *The safety and benefits of cobedding twins and higher-order multiples have not been established. It is prudent to provide separate sleep areas and avoid cobedding (sleeping on the same sleep surface) for twins and higher-order multiples in the hospital and at home.*
18. Keep soft objects, such as pillows, pillow-like toys, quilts, comforters, sheepskins, and loose bedding, such as blankets and nonfitted sheets, away from the infant's sleep area to reduce the risk of SIDS, suffocation, entrapment, and strangulation.
19. Bumper pads are not recommended; they have been implicated in deaths attributable to suffocation, entrapment, and strangulation and, with new safety standards for crib slats, are not necessary for safety against head entrapment.
20. Consider offering a pacifier at naptime and bedtime.
21. *There is insufficient evidence that finger sucking is protective against SIDS.*
22. Pregnant women should obtain regular prenatal care.
23. Smoking during pregnancy, in the pregnant woman's environment, and in the infant's environment should be avoided.
24. Avoid alcohol and illicit drug use during pregnancy and after the infant's birth.
25. Avoid overheating and head covering in infants.
26. Infants should be immunized in accordance with AAP and Centers for Disease Control and Prevention recommendations.
27. Avoid the use of commercial devices that are inconsistent with safe sleep recommendations.
28. *There is no evidence that apparent life-threatening events are precursors to SIDS. Furthermore, infant home cardiorespiratory monitors should not be used as a strategy to reduce the risk of SIDS.*
29. *Supervised, awake tummy time is recommended to facilitate development and to minimize development of positional plagiocephaly.*
30. There is no evidence to recommend swaddling as a strategy to reduce the risk of SIDS.
31. Infants who are swaddled have an increased risk of death if they are placed in or roll to the prone position. If swaddling is used, infants should always be placed on the back.
32. When an infant exhibits signs of attempting to roll, swaddling should no longer be used.
33. *There is no evidence substantiating a causal relationship between various toxicants to SIDS.*
34. *Current data do not support the use of newborn hearing screens as screening tests for SIDS.*
35. *Educational and intervention campaigns are often effective in altering practice.*
36. *Media and manufacturers should follow safe sleep guidelines in their messaging and advertising.*

Adherence with AAP Recommendations: Policies and Procedures

Below is a list of policy, procedural, or regulatory documents across Canada that were analyzed as compared to 26 key recommendations made by the American Academy of Pediatrics (AAP) to reduce the risk of sleep-related infant deaths, in order of most to least compliant/adherent.

Table 21. Accuracy of public information across Canada ⁷

Document	Jurisdiction	Created by	Adherence to AAP (%)
Alberta Health Services Safe Infant Sleep policy	AB	health care	61.5
Saskatoon Health Region's Policy on Safe Sleeping Practices for Infants	SK	health care	53.8
Safe Sleep for Infants policy (Metis Authority)	MB	child welfare	50.0
Guidelines for Completing Well Child Record	NT	health care	50.0
Saskatchewan Health Authority (Regina Qu'Appelle Health Region)'s A Safe Sleep Environment for Baby policy	SK	health care	42.3
Public Health Nursing: Newborn Nursing Care Pathway - Provincial Standards	MB	health care	42.3
SFNNC Safe Sleep Policy	MB	child welfare	30.8
Safe Sleep for Infants in the Agency's Care (Southern Authority)	MB	child welfare	23.1
Check List for Completing A Place of Safety Contract (Metis Authority)	MB	child welfare	23.1
Alberta Child and Family Enhancement Act Policy Manual - section 2.1.3	AB	child welfare	23.1
Alberta Child and Family Enhancement Act Policy Manual - section 2.2	AB	child welfare	19.2
Child, Youth and Family Enhancement Policy Manual - section 3.2.7	AB	child welfare	19.2
Alberta Government Foster Care Handbook	AB	child welfare	19.2
Safe Sleep Policy for Infants not in Care (Metis Authority)	MB	child welfare	19.2
Understanding Nunavut's Child Care Regulations	NT	child welfare	7.7
Kinship / Place of Safety Practice and Procedures Guideline (Metis Authority)	MB	child welfare	7.7
Safe Sleep for Infants not in the Agency's Care policy (Southern Authority)	MB	child welfare	3.8

⁷ Public education documents that are used in Manitoba are in purple. Documents reviewed: (Alberta Health Services, 2016; General Child and Family Services Authority, 2012, 2012; Governemnt of Alberta, 2005; Government of Alberta, 2019b, 2019a; Government of Manitoba, 2019; Metis Child and Family Services Authority, 2014a, 2014b, 2016; Nunavut Department of Health, 2005; Saskatoon Health Region, 2015, 2018; Southern First Nations Network of Care, 2018a, 2018b, 2018c)

Adherence with AAP Recommendations: Public Education

Below is a list of public education materials across Canada that were analyzed as compared to 26 key recommendations made by the American Academy of Pediatrics (AAP) to reduce the risk of sleep-related infant deaths, in order of most to least compliant/adherent.

Table 22. Accuracy of policy, procedural, or regulatory documents across Canada ⁸

Document	Jurisdiction	Created by	Adherence to AAP (%)
Sleep Well, Sleep Safe booklet for parents and for all who care for infants	NL	health care	80.8
Honouring Our Babies website and cards	BC	health care	69.2
pamphlet on safe sleep practices	AB	health care	65.4
Safer Infant Sleep support tool	BC	health care	65.4
Safe Sleeping for Babies handout for new mothers	BC	health care	65.4
Eastern Health NL website info that is shared with new parents	NL	health care	65.4
Health Canada Safe Sleep for Your Baby brochure	multiple	health care	65.4
Sacred Babies: Infant Survival Guide	MB	health care	65.4
Healthy Families BC blog post	BC	health care	61.5
Swaddling Safely and Choosing safer sleep sacks resource	MB	health care	61.5
Safe Sleeping for Babies pamphlet	BC	child welfare	50.0
HealthLinkBC website	BC	health care	42.3
SIDS Fact Sheet	NT	health care	38.5
Safe Sleep, Smart Steps to Safer Breastfeeding	MB	health care	30.8
Baby Bed / Baby Box Program	NT	health care	26.9

⁸ Public education documents that are used in Manitoba are in purple. Documents reviewed: (Alberta Health Services, 2016; General Child and Family Services Authority, 2012, 2012; Government of Alberta, 2005; Government of Alberta, 2019b, 2019a; Government of Manitoba, 2019; Metis Child and Family Services Authority, 2014a, 2014b, 2016; Nunavut Department of Health, 2005; Saskatoon Health Region, 2015, 2018; Southern First Nations Network of Care, 2018a, 2018b, 2018c)

Adherence with AAP Recommendations: Jurisdictions

Table 23. Adherence to AAP recommendations by province of document origin

Jurisdiction	No. Materials Reviewed	Adherence (%)		Provincial Average
		Child Welfare	Health	
Newfoundland	2	-	73.1	73.1
British Columbia	6	38.5	62.5	57.7
Saskatchewan	2	-	48.1	48.1
Alberta	6	27.7	63.5	37.9
Manitoba	13	28.1	46.1	31.1
Nunavut	4	7.7	63.5	22.1
Canada (PHAC)	2	-	65.4	65.4
Total	35	26.4	55.4	38.6

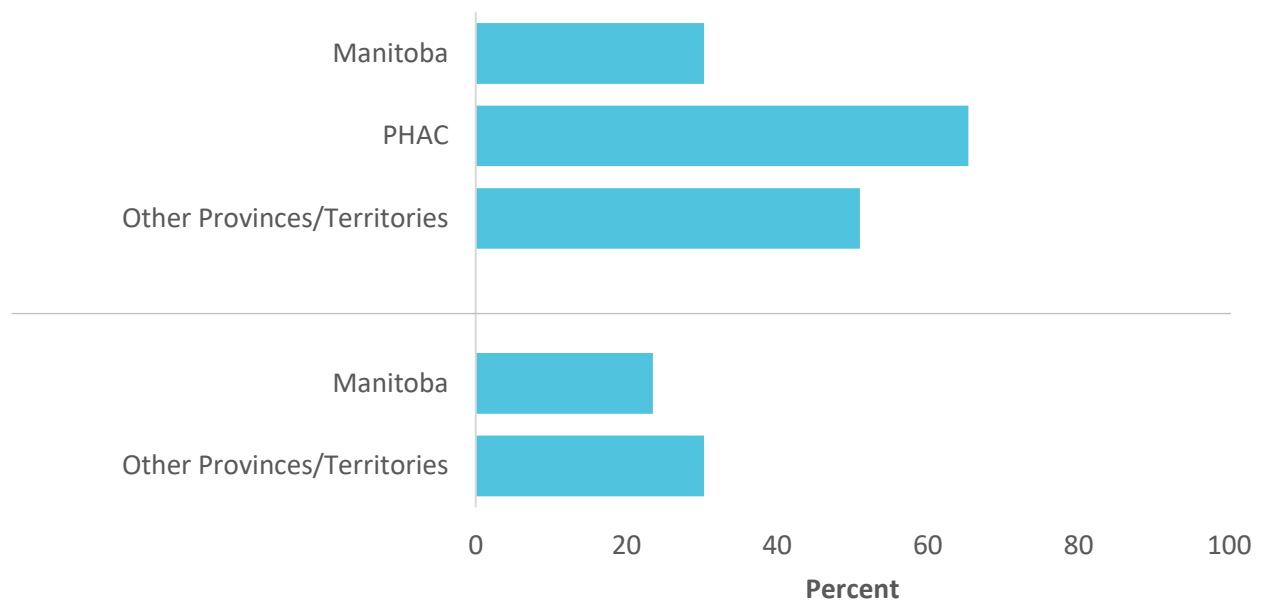


Figure 23. Adherence to AAP recommendations by province of document origin

Table 24. Comparison of Manitoba safe sleep resources

AAP recommendations – risks	Manitoba		Canada PHAC
	Parent N (%)	Policy N (%)	
Sleeping position			
Place to sleep on back	4/4	4/9	2/2
Side sleeping is not safe	2/4	2/9	1/2
Sleeping on back does not increase risk of choking	2/4	2/9	1/2
Preterm infants should be placed on their back as soon as possible	0/4	1/9	0/2
Once infant can roll, they can be left in the position they prefer	1/4	0/9	2/2
Bed-sharing			
Infants brought into bed for feeding or comforting should be placed back into crib or bassinette	1/4	1/9	2/2
Guidance for parents who fall asleep while feeding	1/4	0/9	1/2
Risk of bed-sharing increases if parents smoke, mother smoked during pregnancy, infant is younger than 4 months, infant is preterm	3/4	5/9	2/2
Smoking			
Smoking during pregnancy, in the pregnant woman’s environment and in the infant’s sleep environment should be avoided	3/4	4/9	2/2
Avoid alcohol and illicit drug use during and after pregnancy	3/4	2/9	2/2
Overheating			
Avoid overheating and head covering infants	4/4	4/9	2/2
Sleep Surface			
A crib bassinette that conforms to safety standards is recommended	3/4	6/9	2/2
Sitting devices (car seats) are not recommended for routine sleep	2/4	3/9	2/2
Firm sleep surface, fitted sheet, and no other objects in sleep environment	3/4	2/9	2/2
Couches, sofas, and armchairs are extremely dangerous places for infants	3/4	5/9	2/2
Objects in Sleep Environment			
Keep soft objects away from the sleeping environment	4/4	4/9	2/2
Bumper pads are not recommended and are not necessary	2/4	2/9	2/2
Swaddling			
There is no evidence that swaddling reduces the risk of SIDS	0/4	1/9	0/2
If swaddling, infants should be placed on their backs	1/4	1/9	0/2
If infant exhibits signs of attempting to roll, swaddling should NO longer be used	1/4	0/9	1/2

Green indicates that all documents reviewed (100%) included the specific AAP Recommendation. Orange indicates that between 50-99% of documents reviewed included the specific AAP recommendation. Red indicates that less than 50% of the documents included the specific AAP recommendation. In Manitoba, none of the policy documents adhered consistently to AAP recommendations, none included a single recommendation consistently. Public education materials in Manitoba tended to include the recommendations to place the infant on their back, avoid overheating, and keep soft objects away from the sleep environment consistently. However, recommendations on other key risk factors such as bed-sharing and smoking were not reliably included.

GLOSSARY OF TERMS

Adult mattress: For the purposes of this report, an adult mattress includes any mattress (e.g., King, Queen, Twin, etc.), on a bed or on the floor, that is not an infant’s crib mattress.

Bed-sharing: Sharing the same sleeping surface as another person.

CFS: Child and Family Services

Clutter: Unnecessary items in the sleep environment. Examples include pillows, blankets, and toys.

Gestational age: age of the infant in weeks at time of birth, determined from the time of conception.

Independent risk factor: A factor that increases the risk of an outcome in a statistical model that is maintained even with other known risk factors being present.

Indigenous: Refers to the First Nations, Inuit, and Metis populations in Canada.

Infant: Refers to a child under 24 months of age.

Low birthweight: When an infant is born weighing less than 2,700 grams.

Modifiable risk factor: When a condition that increases the risk of developing a disease can be changed to reduce risk. For example, behaviours like smoking can be changed to reduce the likelihood of disease.

Non-modifiable risk factor: When a condition that increases the risk of developing a disease cannot be changed. For instance, we cannot change someone’s age, sex, or ethnicity.

Overheating: Overheating is identified as a risk factor if one or more of the following circumstances were present at the time of death: (1) temperature of the room exceeded 21° C; (2) infant was found with face covered; (3) infant was heavily swaddled, with more than one blanket; (4) perspiration found.

Prone: Lying on stomach.

Risk factor: A condition that increases risk.

Roomsharing: Sleeping in the same room as another person but on a separate sleeping surface.

Sleep-related infant deaths: The death of an infant younger than 24 months that occurred during sleep or in a sleeping environment. The definition includes the following diagnostic categories: Sudden Infant Death Syndrome (SIDS), Sudden Unexplained Infant Death (SUID), and the Sudden Unexplained Death of Children older than a year (SUDC). It also includes deaths attributed to accidental causes while in a sleeping environment such as accidental suffocation.

Social assistance: Provincial monetary assistance; Employment and Income Assistance (EIA) or welfare.

Sudden Infant Death Syndrome (SIDS): The sudden and unexpected death of an infant under one year of age that remains unexplained after autopsy, an examination of the scene of death and review of the case history. This term was discontinued by Canadian Medical Examiners in the 2000s.

Sudden Unexplained Infant Death (SUID): The sudden, unexpected, and unexplained death of an infant where external risk factors were noted as possibly contributory to the death

Supine: Lying on back.

REFERENCES

- Alberta Health Services. (2016). *Safe infant sleep policy*. Government of Alberta.
- Alberta Health Services. (2017). *Safe sleep for your baby's first year*. Alberta Health Services.
<https://www.albertahealthservices.ca/assets/programs/ps-1029951-safe-sleep-brochure.pdf>
- Alessandri, L. M., Read, A. W., Burton, P. R., & Stanley, F. J. (1996). An analysis of sudden infant death syndrome in Aboriginal infants. *Early Human Development*, 45(3), 235–244. [https://doi.org/10.1016/0378-3782\(96\)01734-3](https://doi.org/10.1016/0378-3782(96)01734-3)
- Alm, B., Milerad, J., Wennergren, G., Skjarven, R., Oyen, N., Norvenius, G., Daltveit, A.-K., Helweg-Larsen, K., Markestad, T., & Irgens, L. M. (1998). A case-control study of smoking and sudden infant death syndrome in the Scandinavian countries, 1992 to 1995. *Archives of Disease in Childhood*, 78(4), 329–334.
<https://doi.org/10.1136/adc.78.4.329>
- Altfeld, S., Peacock, N., Rowe, H. L., Massino, J., Garland, C., Smith, S., & Wishart, M. (2017). Moving beyond “abstinence-only” messaging to reduce sleep-related infant deaths. *The Journal of Pediatrics*, 189, 207–212. <https://doi.org/10.1016/j.jpeds.2017.06.069>
- Anderson, H. R., & Cook, D. G. (1997). Passive smoking and sudden infant death syndrome: Review of the epidemiological evidence. *Thorax*, 52(11), 1003–1009. <https://doi.org/10.1136/thx.52.11.1003>
- Austin, J. E., Nashban, C. J., Doering, J. J., & Davies, W. H. (2017). Prevention messages in parent-infant bed-sharing: message source, credibility, and effectiveness. *Global Pediatric Health*, 4, 2333794X1774340.
<https://doi.org/10.1177/2333794X17743403>
- Baddock, S. A., Tipene-Leach, D., Williams, S. M., Tangiora, A., Jones, R., Mącznik, A. K., & Taylor, B. J. (2018). Physiological stability in an indigenous sleep device: a randomised controlled trial. *Archives of Disease in Childhood*, 103(4), 377–382. <https://doi.org/10.1136/archdischild-2017-313512>
- Ball, H. L. (2017). The Atlantic Divide: Contrasting U.K. and U.S. Recommendations on co-sleeping and bed-sharing. *Journal of Human Lactation*, 33(4), 765–769. <https://doi.org/10.1177/0890334417713943>
- Bartick, M., & Tomori, C. (2019). Sudden infant death and social justice: a syndemics approach. *Maternal & Child Nutrition*, 15(1). <https://doi.org/10.1111/mcn.12652>
- British Columbia Coroners Service. (2019). *Sleeping Safely: A BC coroners service death review panel report examining deaths among infants (2013-2018)*. British Columbia Coroners Service.
https://www2.gov.bc.ca/assets/gov/birth-adoption-death-marriage-and-divorce/deaths/coroners-service/child-death-review-unit/reports-publications/sudden_infant_deaths.pdf
- Byard, RW. (2018). Chapter 24: The autopsy and pathology of Sudden Infant Death Syndrome. In *SIDS Sudden Infant and Early Childhood Death: The Past, the Present and the Future* (1st ed., Vol. 1). University of Adelaide Press.
<https://www.ncbi.nlm.nih.gov/books/NBK513401/>
- Canadian Paediatric Society. (2013). *The importance of child and youth death reviews*. Canadian Paediatric Society.
<https://www.cps.ca/en/documents/position/importance-of-child-and-youth-death-review>
- Canadian Paediatric Society. (2018). *Caring for kids: safe sleep for babies*.
https://www.caringforkids.cpa.ca/handouts/safe_sleep_for_babies
- Carpenter, R., McGarvey, C., Mitchell, E. A., Tappin, D. M., Vennemann, M. M., Smuk, M., & Carpenter, J. R. (2013). Bed sharing when parents do not smoke: Is there a risk of SIDS? An individual level analysis of five major case-control studies. *BMJ Open*, 3(5), e002299. <https://doi.org/10.1136/bmjopen-2012-002299>
- Centers for Disease Control and Prevention. (2007). *Infant death investigation: guidelines for the scene investigator*. 48.
- Centers for Disease Control and Prevention. (2019, November 6). Sudden Unexpected Infant Death and Sudden Infant Death Syndrome: SUID and SDY case registry. <https://www.cdc.gov/sids/case-registry.htm>
- Chamberlain, C., O'Mara-Eves, A., Porter, J., Coleman, T., Perlen, S. M., Thomas, J., & McKenzie, J. E. (2017). Psychosocial interventions for supporting women to stop smoking in pregnancy. *Cochrane Database of Systematic Reviews*. <https://doi.org/10.1002/14651858.CD001055.pub5>
- Chang, H.-P., Li, C.-Y., Chang, Y.-H., Hwang, S.-L., Su, Y.-H., & Chen, C.-W. (2013). Sociodemographic and meteorological correlates of sudden infant death in Taiwan: sudden infant death. *Pediatrics International*, 55(1), 11–16. <https://doi.org/10.1111/j.1442-200X.2012.03723.x>

- Chong, D., Yip, P., & Karlberg, J. (2004). Maternal smoking: An increasing unique risk factor for sudden infant death syndrome in Sweden. *Acta Paediatrica*, *93*(4), 471–478. <https://doi.org/10.1080/08035250310023495>
- Chu, T., Hackett, M., & Kaur, N. (2016). Housing influences among sleep-related infant injury deaths in the USA. *Health Promotion International*, *31*(2), 396–404. <https://doi.org/10.1093/heapro/dav012>
- Chung, M., Oden, R. P., Joyner, B. L., Sims, A., & Moon, R. Y. (2012). Safe infant sleep recommendations on the internet: Let's Google It. *The Journal of Pediatrics*, *161*(6), 1080-1084.e1. <https://doi.org/10.1016/j.jpeds.2012.06.004>
- Daltveit, A., Irgens, L., Øyen, N., Skjaerven, R., Markestad, T., Alm, B., Wennergren, G., Norvenius, G., & Helweg-Larsen, K. (1998). Sociodemographic risk factors for sudden infant death syndrome: associations with other risk factors. *Acta Paediatrica*, *87*(3), 284–290. <https://doi.org/10.1080/08035259850157336>
- Data Coordinating Centre for the Sudden Death in the Young Case Registry. (n.d.). Tools for providers. <https://www.sdyregistry.org/tools-for-providers/>
- Des Jarlais, D. C. (2017). Harm reduction in the USA: The research perspective and an archive to David Purchase. *Harm Reduction Journal*, *14*(1), 51. <https://doi.org/10.1186/s12954-017-0178-6>
- Duncan, J. R., & Byard, R. W. (Eds.). (2018). *Sudden infant and early childhood death: The past, the present and the future*. The University of Adelaide Press.
- Engel, M., Ahlers-Schmidt, C. R., & Suter, B. (2019). Safe sleep knowledge and use of provided cribs in a crib delivery program. *Kansas Journal of Medicine*, *10*(3), 59–61. <https://doi.org/10.17161/kjm.v10i3.8658>
- Feldman-Winter, L., Goldsmith, J. P., & Task Force on Sudden Infant Death Syndrome. (2016). Safe sleep and skin-to-skin care in the neonatal period for healthy term newborns. *Pediatrics*, *138*(3), e20161889.
- Filiano, J. J., & Kinney, H. C. (1994). A perspective on neuropathologic findings in victims of the Sudden Infant Death Syndrome: The Triple-Risk Model. *Neonatology*, *65*(3–4), 194–197. <https://doi.org/10.1159/000244052>
- Fu, L. Y., Moon, R. Y., & Hauck, F. R. (2010). Bed sharing among black infants and Sudden Infant Death Syndrome: interactions with other known risk factors. *Academic Pediatrics*, *10*(6), 376–382. <https://doi.org/10.1016/j.acap.2010.09.001>
- Fujita, T. (2002). Sudden infant death syndrome in Japan 1995–1998. *Forensic Science International*, *130*, 71–77. [https://doi.org/10.1016/S0379-0738\(02\)00143-3](https://doi.org/10.1016/S0379-0738(02)00143-3)
- General Child and Family Services Authority. (2012). *ABCs of safe sleep for baby*. General Child and Family Services Authority.
- Gilbert, N., Fell, D., Joseph, K., Liu, S., León, J., & Sauve, R. (2012). Erratum: Temporal trends in sudden infant death syndrome in Canada from 1991 to 2005: Contribution of changes in cause of death assignment practices and in maternal and infant characteristics (Paediatric & Perinatal Epidemiology (2012) 26 (124-130)). *Paediatric and Perinatal Epidemiology*, *26*, 124–130. <https://doi.org/10.1111/j.1365-3016.2011.01248.x>
- Gilbert, R., Salanti, G., Harden, M., & See, S. (2005). Infant sleeping position and the sudden infant death syndrome: Systematic review of observational studies and historical review of recommendations from 1940 to 2002. *International Journal of Epidemiology*, *34*(4), 874–887. <https://doi.org/10.1093/ije/dyi088>
- Gilmour, H., Ramage-Morin, P. L., & Wong, S. L. (2019). *Infant bed sharing in Canada* (No. 82-003-X). Statistics Canada. https://www.researchgate.net/profile/Heather_Gilmour/publication/334519639_Infant_bed_sharing_in_Canada/links/5d2f180692851cf4408b3d5b/Infant-bed-sharing-in-Canada.pdf
- Gould, G. S., Lim, L. L., & Mattes, J. (2017). Prevention and treatment of smoking and tobacco use during pregnancy in selected Indigenous communities in high-income countries of the United States, Canada, Australia, and New Zealand. *Chest*, *152*(4), 853–866. <https://doi.org/10.1016/j.chest.2017.06.033>
- Government of Alberta. (2005). *Foster care handbook*. Government of Alberta.
- Government of Nunavut. (2017). *How to Reduce the Risk of SIDS: Sudden Infant Death Syndrome*. https://www.gov.nu.ca/sites/default/files/sids_factsheet_english.pdf
- Government of Alberta. (2019a). *Child and family enhancement act policy manual—Section 2.1.3*. Government of Alberta.
- Government of Alberta. (2019b). *Child and family enhancement act policy manual—Section 2.2*. Government of Alberta.
- Government of Canada, Canadian Pediatric Society, Canadian Institute of Child Health, & The Canadian Foundation for the Study of Infant Deaths. (2018). *Joint statement on safe sleep: preventing Sudden Infant Deaths in*

- Canada [Joint Statement]. https://www.canada.ca/content/dam/phac-aspc/migration/phac-aspc/hp-ps/dca-dea/stages-etapes/childhood-enfance_0-2/sids/pdf/jsss-ecss2011-eng.pdf
- Government of Manitoba. (2019). *Public health nursing: newborn nursing care pathway—provincial standards*. Government of Manitoba. https://www.gov.mb.ca/health/publichealth/phnursingstandards/docs/Newborn_Nursing_Care_Pathway.pdf
- Grant, J., Deverix, J., Nottage, C., Sivertsen, N., Spurrier, N., Steeb, A., & Stuart-Butler, D. (2017). *Collaboration and cultural safety: Safe Sleep Space Alternatives with Aboriginal Families. 2*.
- Harm Reduction Coalition. (2019). *Principles of Harm Reduction*. Harm Reduction Coalition. <https://harmreduction.org/about-us/principles-of-harm-reduction/>
- Hauck, F. R., Herman, S. M., Donovan, M., Iyasu, S., Merrick Moore, C., Donoghue, E., Kirschner, R. H., & Willinger, M. (2003). Sleep environment and the risk of sudden infant death syndrome in an urban population: The Chicago Infant Mortality Study. *Pediatrics, 111*(5 Pt 2), 1207–1214.
- Hauck, F. R., Tanabe, K. O., McMurry, T., & Moon, R. Y. (2015). Evaluation of bedtime basics for babies: a national crib distribution program to reduce the risk of sleep-related sudden infant deaths. *Journal of Community Health, 40*(3), 457–463. <https://doi.org/10.1007/s10900-014-9957-0>
- Health Canada. (2014). *Safe sleep for your baby*. Health Canada. https://www.canada.ca/content/dam/phac-aspc/migration/phac-aspc/hp-ps/dca-dea/stages-etapes/childhood-enfance_0-2/sids/pdf/sleep-sommeil-eng.pdf
- Health Link BC. (n.d.). *Safe sleeping for babies: Handout for new mothers*. <https://www.healthlinkbc.ca/healthlinkbc-files/safe-sleeping-babies>
- Healthy Families BC. (2017, October 11). Blog [Government]. *Safer sleep for Your baby*. <https://www.healthyfamiliesbc.ca/home/blog/safer-sleep-your-baby>
- Heris, C. L., Chamberlain, C., Gubhaju, L., Thomas, D. P., & Eades, S. J. (2019). Factors influencing smoking among indigenous adolescents aged 10–24 years living in Australia, New Zealand, Canada, and the United States: a systematic review. *Nicotine & Tobacco Research, ntz219*. <https://doi.org/10.1093/ntr/ntz219>
- Hight, A. R., & Goldwater, P. N. (2013). Maternal and perinatal risk factors for SIDS: a novel analysis utilizing pregnancy outcome data. *European Journal of Pediatrics, 172*(3), 369–372. <https://doi.org/10.1007/s00431-012-1896-0>
- Hilder, A. S. (1994). Ethnic differences in the sudden infant death syndrome: what we can learn from immigrants to the UK. *Early Human Development, 38*(3), 143–149. [https://doi.org/10.1016/0378-3782\(94\)90205-4](https://doi.org/10.1016/0378-3782(94)90205-4)
- Hutchison, B. L., Rea, C., Stewart, A. W., Koelmeyer, T. D., Tipene-Leach, D. C., & Mitchell, E. A. (2011). Sudden unexpected infant death in Auckland: a retrospective case review. *Acta Paediatrica (Oslo, Norway: 1992), 100*(8), 1108–1112. <https://doi.org/10.1111/j.1651-2227.2011.02221.x>
- James, C. (2003). Sudden infant death syndrome: Bed sharing with mothers who smoke. *Archives of Disease in Childhood, 88*(2), 112–113. <https://doi.org/10.1136/ad.88.2.112>
- Joyner, B. L., Oden, R. P., Ajao, T. I., & Moon, R. Y. (2010). Where should my baby sleep: a qualitative study of African American infant sleep location decisions. *Journal of the National Medical Association, 102*(10), 881–889. [https://doi.org/10.1016/S0027-9684\(15\)30706-9](https://doi.org/10.1016/S0027-9684(15)30706-9)
- Kassa, H., Moon, R. Y., & Colvin, J. D. (2016). Risk factors for sleep-related infant deaths in in-home and out-of-home settings. *Pediatrics, 138*(5), e20161124. <https://doi.org/10.1542/peds.2016-1124>
- Katz, A., Avery Kinew, K., Star, L., Taylor, C., Koseva, I., Lavoie, J., Burchill, C., Urquia, M. L., Basham, A., Rajotte, L., Ramayanam, V., Jarmasz, J., & Burchill, S. (2019). *The health status of and access to healthcare by registered First Nations Peoples in Manitoba*. http://umanitoba.ca/faculties/health_sciences/medicine/units/chs/departmental_units/mchp/Landing-FNAtlas.html
- Krugman, S. D., & Cumpsty-Fowler, C. J. (2018). A hospital-based initiative to reduce post discharge Sudden Unexpected Infant Deaths. *Hospital Pediatrics, 8*(8), 443–449. <https://doi.org/10.1542/hpeds.2017-0211>
- La Leche League. (n.d.). *Safe sleep, smart steps to safer bedsharing* [Non-profit]. The Safe Sleep Seven. <https://www.llli.org/the-safe-sleep-seven/>
- Leone, F. T., Carlsen, K.-H., Chooljian, D., Crotty Alexander, L. E., Detterbeck, F. C., Eakin, M. N., Evers-Casey, S., Farber, H. J., Folan, P., Kathuria, H., Latzka, K., McDermott, S., McGrath-Morrow, S., Moazed, F., Munzer, A., Neptune, E., Pakhale, S., Sachs, D. P. L., Samet, J., ... Upson, D. (2018). Recommendations for the

- Appropriate structure, communication, and investigation of tobacco harm reduction claims. An Official American Thoracic Society Policy Statement. *American Journal of Respiratory and Critical Care Medicine*, 198(8), e90–e105. <https://doi.org/10.1164/rccm.201808-1443ST>
- Li, D.-K. (2003). Infant sleeping position and the risk of Sudden Infant Death Syndrome in California, 1997-2000. *American Journal of Epidemiology*, 157(5), 446–455. <https://doi.org/10.1093/aje/kwf226>
- Little Black Bear and Associates. (2013). *Sacred Babies: an infant survival guide*.
- MacDorman, M. F., Cnattingius, S., Hoffman, H. J., Kramer, M. S., & Haglund, B. (1997). Sudden Infant Death Syndrome and smoking in the United States and Sweden. *American Journal of Epidemiology*, 146(3), 249–257. <https://doi.org/10.1093/oxfordjournals.aje.a009260>
- Malloy, M. H. (2013). Prematurity and sudden infant death syndrome: United States 2005–2007. *Journal of Perinatology*, 33(6), 470–475. <https://doi.org/10.1038/jp.2012.158>
- Manitoba First Nations Education Resource Centre Inc. (2015, June 3). *Tikinagan – Moss Bags*. The Arrow Newsletter. <http://mfnerc.org/newsletter/tikinagan-moss-bags/>
- McGarvey, C. M., O'Regan, M., Cryan, J., Treacy, A., Hamilton, K., Devaney, D., & Matthews, T. (2012). Sudden unexplained death in childhood (1–4 years) in Ireland: An epidemiological profile and comparison with SIDS. *Archives of Disease in Childhood*, 97(8), 692–697. <https://doi.org/10.1136/archdischild-2011-301393>
- McKennitt, D., Wardman, D., & McCormick, R. (2014). *Non-traditional tobacco use among Aboriginal Canadians*. (pp. 239–256).
- Metis Child and Family Services Authority. (2014a). *Check list for completing a place of safety contract*. Metis Child and Family Services Authority.
- Metis Child and Family Services Authority. (2014b). *Safe sleep for infants*. Metis Child and Family Services Authority.
- Metis Child and Family Services Authority. (2016). *Kinship/place of safety practice and procedures guideline*. Metis Child and Family Services Authority.
- Middlemiss, W., Brownstein, N. C., Leddy, M., Nelson, S., Manchiraju, S., & Grzywacz, J. G. (2019). Baby Box Distributions: Public Health Benefit or Concern? *Public Health Reports*, 134(4), 328–331. <https://doi.org/10.1177/0033354919847731>
- Millar, W. J., & Hill, G. B. (1993). Prevalence of and risk factors for sudden infant death syndrome in Canada. *CAN MED ASSOC J*, 7.
- Mitchell, E. A., Brunt, J. M., & Everard, C. (1994). Reduction in mortality from sudden infant death syndrome in New Zealand: 1986-92. *Archives of Disease in Childhood*, 70(4), 291–294. <https://doi.org/10.1136/adc.70.4.291>
- Mitchell, E. A., Ford, R. P., Stewart, A. W., Taylor, B. J., Becroft, D. M., Thompson, J. M., Scragg, R., Hassall, I. B., Barry, D. M., & Allen, E. M. (1993). Smoking and the sudden infant death syndrome. *Pediatrics*, 91(5), 893–896.
- Mitchell, E. A., Taylor, B. J., Ford, R. P. K., Stewart, A. W., Becroft, D. M. O., Thompson, J. M. D., Scragg, R., Hassall, I. B., Barry, D. M. J., Allen, E. M., & Roberts, A. P. (1992). Four modifiable and other major risk factors for cot death: The New Zealand study. *Journal of Paediatrics and Child Health*, 28(s1), S3–S8. <https://doi.org/10.1111/j.1440-1754.1992.tb02729.x>
- National Aboriginal Council of Midwives. (2017). *Stories and teachings about infant care* (p. 8). https://canadianmidwives.org/wp-content/uploads/2017/03/NACM_Booklet_InfantCare_2017_MED.pdf
- Newfoundland and Labrador Health. (2017). *Sleep well, sleep safe. A booklet for parents of infants from 0-12 months and for all who care for infants*. Health Nexus Sante. <https://www.gov.nl.ca/cssd/files/publications-pdf-healthy-living-sleep-well.pdf>
- Nunavut Department of Health. (2005). *Guidelines for completing well child record*. Government of Nunavut. https://www.gov.nu.ca/sites/default/files/files/guidelines_for_completing_well_child_record_2016.pdf
- Office of the Chief Medical Examiner. (2014). *Annual Review 2013*.
- Ostfeld, B. M., Esposito, L., Perl, H., & Hegyi, T. (2010). Concurrent risks in Sudden Infant Death Syndrome. *PEDIATRICS*, 125(3), 447–453. <https://doi.org/10.1542/peds.2009-0038>
- Oyen, N., Markestad, T., Irgens, L. M., Helweg-Larsen, K., Alm, B., Norvenius, G., & Wennergren, G. (1997). Combined effects of sleeping position and prenatal risk factors in Sudden Infant Death Syndrome: The Nordic Epidemiological SIDS Study. *PEDIATRICS*, 100(4), 613–621. <https://doi.org/10.1542/peds.100.4.613>

- Paine, S. M., Jacques, T. S., & Sebire, N. J. (2014). Review: Neuropathological features of unexplained sudden unexpected death in infancy: current evidence and controversies: The neuropathology of SIDS. *Neuropathology and Applied Neurobiology*, 40(4), 364–384. <https://doi.org/10.1111/nan.12095>
- Paris, C. A., Remler, R., & Daling, J. R. (2001). Risk factors for sudden infant death syndrome: Changes associated with sleep position recommendations. *The Journal of Pediatrics*, 139(6), 771–777. <https://doi.org/10.1067/mpd.2001.118568>
- Perinatal Services BC, & Government of British Columbia. (2009). *Safer infant sleep support tool*. <http://www.perinatalervicesbc.ca/Documents/Resources/HealthPromotion/Sleep/SaferSleepTool.pdf>
- Peterson, D. R. (1982). Sudden Infant Death Syndrome and maternal age: etiologic implications. *JAMA*, 247(16), 2250. <https://doi.org/10.1001/jama.1982.03320410032025>
- Phillips, D. P., Brewer, K. M., & Wadensweiler, P. (2011). Alcohol as a risk factor for sudden infant death syndrome (SIDS): Alcohol as a risk factor for SIDS. *Addiction*, 106(3), 516–525. <https://doi.org/10.1111/j.1360-0443.2010.03199.x>
- Public Health Agency of Canada. (2008). *Canadian perinatal health report, 2008 Edition*. <http://www.phac-aspc.ca/publicat/2008/cphr-rspc/pdf/cphr-rspc08-eng.pdf>
- Public Health Agency of Canada. (2014). *Safe sleep for your baby*. Health Canada.
- Public Health Agency of Canada. (2017). *Perinatal health indicators for Canada 2017, A report from the Canadian Perinatal Surveillance System*. http://publications.gc.ca/collections/collection_2018/aspc-phac/HP7-1-2017-eng.pdf
- Ried, J. L., Hammond, D., Burkhalter, R., Rynard, V. L., & Douglas, O. (2019). *Tobacco use in Canada: patterns and trends*. University of Waterloo. <https://uwaterloo.ca/tobacco-use-canada/tobacco-use-canada-patterns-and-trends>
- Rusen, I. D., Liu, S., Sauve, R., Joseph, K. S., & Kramer, M. S. (2004). Sudden infant death syndrome in Canada: trends in rates and risk factors, 1985-1998. *Chronic Diseases in Canada*, 25(1), 1–6.
- Ruys, J. H., de Jonge, G. A., Brand, R., Engelberts, A. C., & Semmekrot, B. A. (2007). Bed-sharing in the first four months of life: a risk factor for sudden infant death. *Acta Paediatrica*, 96(10), 1399–1403. <https://doi.org/10.1111/j.1651-2227.2007.00413.x>
- Salm Ward, T. C., McClellan, M. M., Miller, T. J., & Brown, S. (2018). Evaluation of a crib distribution and safe sleep educational program to reduce risk of sleep-related infant death. *Journal of Community Health*, 43(5), 848–855. <https://doi.org/10.1007/s10900-018-0493-1>
- Saskatoon Health Region. (2015). *Polices and procedures: safe sleeping practices for infants*. Saskatoon Health Region.
- Saskatoon Health Region. (2018). *Policy on safe sleeping practices for infants*. Government of Saskatchewan.
- Schellscheidt, J., Ott, A., & Jorch, G. (1997). Epidemiological features of sudden infant death after a German intervention campaign in 1992. *European Journal of Pediatrics*, 156(8), 655–660. <https://doi.org/10.1007/s004310050686>
- Schluter, P., Ford, R., Mitchell, E., & Taylor, B. (1998). Residential mobility and sudden infant death syndrome. *Journal of Paediatrics and Child Health*, 34(5), 432–437. <https://doi.org/10.1046/j.1440-1754.1998.00268.x>
- Schnitzer, P. G., Covington, T. M., & Dykstra, H. K. (2012). Sudden Unexpected Infant Deaths: sleep environment and circumstances. *American Journal of Public Health*, 102(6), 1204–1212. <https://doi.org/10.2105/AJPH.2011.300613>
- Scott, I. A., & Scott, R. J. (2020). Pill testing at music festivals – is it evidence-based harm reduction? *Internal Medicine Journal*, imj.14742. <https://doi.org/10.1111/imj.14742>
- Scragg, R., Stewart, A. W., Mitchell, E. A., Ford, R. P., & Thompson, J. M. (1995). Public health policy on bed sharing and smoking in the sudden infant death syndrome. *The New Zealand Medical Journal*, 108(1001), 218–222.
- Scragg, Rkr, Mitchell, E., Ford, R., Thompson, J., Taylor, B., & Stewart, A. (2007). Maternal cannabis use in the sudden death syndrome. *Acta Paediatrica*, 90(1), 57–60. <https://doi.org/10.1111/j.1651-2227.2001.tb00256.x>
- Senter, L., Sackoff, J., Landi, K., & Boyd, L. (2011). Studying Sudden and Unexpected Infant Deaths in a time of changing death certification and investigation practices: evaluating sleep-related risk factors for infant

- death in New York City. *Maternal and Child Health Journal*, 15(2), 242–248.
<https://doi.org/10.1007/s10995-010-0577-8>
- Shah, T., Sullivan, K., & Carter, J. (2006). Sudden Infant Death Syndrome and reported maternal smoking during pregnancy. *American Journal of Public Health*, 96(10), 1757–1759.
<https://doi.org/10.2105/AJPH.2005.073213>
- Shapiro-Mendoza, C. K., Tomashek, K. M., Kotelchuck, M., Barfield, W., Weiss, J., & Evans, S. (2006). Risk factors for neonatal morbidity and mortality among “healthy,” late preterm newborns. *Seminars in Perinatology*, 30(2), 54–60. <https://doi.org/10.1053/j.semperi.2006.02.002>
- Sótonyi, K. T., Péter. (2001). Distribution of prenatal and postnatal risk factors for sudden infant death in Budapest. *Scandinavian Journal of Primary Health Care*, 19(3), 178–180.
<https://doi.org/10.1080/028134301316982414>
- Southern First Nations Network of Care. (2018a). *Safe sleep policy*. Southern First Nations Network of Care.
- Southern First Nations Network of Care. (2018b). *Safe sleep for infants in the agency’s care*. Southern First Nations Network of Care.
- Southern First Nations Network of Care. (2018c). *Safe sleep for infant’s not in the agency’s care*. Southern First Nations Network of Care.
- Standfast, S. J., Jereb, S., & Janerich, D. T. (1980). The epidemiology of sudden infant death in upstate New York: II: birth characteristics. *American Journal of Public Health*, 70(10), 1061–1067.
<https://doi.org/10.2105/AJPH.70.10.1061>
- Statistics Canada. (2017). *Manitoba [Province] and Canada [Country] (table). Census Profile. 2016 Census. Statistics Canada Catalogue no. 98-316-X2016001*. <https://www12.statcan.gc.ca/census-recensement/2016/dp-pd/prof/index.cfm?Lang=E>
- Statistics Canada. (2019, April 3). *Housing suitability of private household* [Government]. Statistics Canada.
<https://www23.statcan.gc.ca/imdb/p3Var.pl?Function=DEC&Id=100731>
- Statistics Canada. (2019, October 8). *Aboriginal ancestry of person* [Government]. Statistics Canada.
<https://www23.statcan.gc.ca/imdb/p3Var.pl?Function=DEC&Id=42911>
- Statistics Canada. (2020). *Table 13-10-0417-01 Mean age of mother at time of delivery (live births)*.
<https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=1310041701>
- Susannah Fox, Lee Rainie, Pew Internet & American Life Project, & Medical Library Association. (2002). *Vital decisions: how internet users decide what information to trust when they or their loved ones are sick* (1st ed.). Pew Internet & American Life Project.
- Tappin, D., Ecob, R., & Brooke, H. (2005). Bedsharing, roomsharing, and Sudden Infant Death Syndrome in Scotland: a case-control study. *The Journal of Pediatrics*, 147(1), 32–37.
<https://doi.org/10.1016/j.jpeds.2005.01.035>
- Task Force on Sudden Infant Death Syndrome. (2016). SIDS and other sleep-related infant deaths: updated 2016 recommendations for a safe infant sleeping environment. *Pediatrics*, 138(5), e20162938.
<https://doi.org/10.1542/peds.2016-2938>
- Tipene-Leach, D., & Abel, S. (2019). Innovation to prevent sudden infant death: The wahakura as an Indigenous vision for a safe sleep environment. *Australian Journal of Primary Health*.
<https://doi.org/10.1071/PY19033>
- Trachtenberg, F. L., Haas, E. A., Kinney, H. C., Stanley, C., & Krous, H. F. (2012). Risk factor changes for Sudden Infant Death Syndrome after initiation of Back-to-Sleep campaign. *Pediatrics*, 129(4), 630–638.
<https://doi.org/10.1542/peds.2011-1419>
- Trifunov, W. (2009). *The practice of bed sharing: a systematic literature and policy review* [program planning development evaluation]. <https://www.albertahealthservices.ca/ps-1029951-safe-sleep-bed-sharing.pdf>
- Tripartite First Nations and Aboriginal Maternal and Child Health Committee. (2013). *Honouring our babies*. First Nations Health Authority. <https://www.fnha.ca/about/news-and-events/news/new-safe-infant-sleep-toolkit-honouring-our-babies-safe-sleep-cards-and-guide>
- Vennemann, M. M., Hense, H.-W., Bajanowski, T., Blair, P. S., Complojer, C., Moon, R. Y., & Kiechl-Kohlendorfer, U. (2012). Bed sharing and the risk of Sudden Infant Death Syndrome: can we resolve the debate? *The Journal of Pediatrics*, 160(1), 44-48.e2. <https://doi.org/10.1016/j.jpeds.2011.06.052>
- Walker, R. C., Graham, A., Palmer, S. C., Jagroop, A., & Tipene-Leach, D. C. (2019). Understanding the experiences, perspectives and values of Indigenous women around smoking cessation in pregnancy: systematic review

- and thematic synthesis of qualitative studies. *International Journal for Equity in Health*, 18(1), 74. <https://doi.org/10.1186/s12939-019-0981-7>
- Weeks, C. (2017). Undetermined. *Globe and Mail*. <https://www.theglobeandmail.com/life/health-and-fitness/health/canadian-coroners-stop-using-term-sids-to-classify-mysterious-infantdeaths/article34504758/>
- Weimer, S. M., Dise, T. L., Evers, P. B., Ortiz, M. A., Welidaregay, W., & Steinmann, W. C. (2002). Prevalence, predictors, and attitudes toward cosleeping in an urban pediatric center. *Clinical Pediatrics*, 41(6), 433–438. <https://doi.org/10.1177/000992280204100609>
- Williams, S. M. (2002). Are risk factors for sudden infant death syndrome different at night? *Archives of Disease in Childhood*, 87(4), 274–278. <https://doi.org/10.1136/adc.87.4.274>
- Winnipeg Regional Health Authority, & Government of Manitoba. (2016). *Swaddling safely and choosing safer sleep sacks*. <https://www.gov.mb.ca/health/documents/swaddling.pdf>
- Zhang, K., & Wang, X. (2013). Maternal smoking and increased risk of sudden infant death syndrome: a meta-analysis. *Legal Medicine*, 15(3), 115–121. <https://doi.org/10.1016/j.legalmed.2012.10.007>