

## Preventing Sleep-related injuries among Newborns, Babies & Children

### Purpose

The intent of this paper is to provide an overview of the evidence and issues regarding safe sleep practices for newborns, babies and children up to 14 years and to outline best practice recommendations for the prevention of injuries sustained while sleeping and in environments where sleep occurs. This document is not meant to be distributed to parents and caregivers.

### Introduction

Safe sleep for newborns, babies and children and the risk of injury while sleeping and in a sleep-related environment remains high. While Sudden Infant Death Syndrome (SIDS) is a major public health concern among infants at any time within the first year of life <sup>1</sup>, this document will not include further discussion of SIDS. For more detailed information on SIDS, please consult the following links:

Joint Statement on Safe Sleep – Preventing Sudden Infant Deaths in Canada: <https://www.canada.ca/en/public-health/services/health-promotion/childhood-adolescence/stages-childhood/infancy-birth-two-years/safe-sleep/joint-statement-on-safe-sleep.html>

Baby's Breath - <https://www.babysbreathcanada.ca/>

Child Safety Link (CSL) is concerned with promoting safe sleep practices in order to prevent injuries related to sleep, sleep surfaces, and the overall sleep environment. CSL also wants to ensure that best-practice information remains consistent and clear for caregivers of babies and children.

### Definitions

Key terms to describe sleep-related incidents and injuries among children used throughout this document include the following:

**Suffocation** occurs when there is an interruption in breathing as a result of an external object blocking the nose and mouth <sup>2</sup>.

**Mechanical suffocation** includes injuries and deaths from strangulation and suffocation as well as in enclosed or confined areas, from cave-ins, and/or by bed clothes or similar materials <sup>3</sup>.

**Entrapment** occurs when the head and neck are caught in a constricting place or position, interfering with a child's breathing <sup>2</sup>. Hazards associated with an entrapment injury include gaps in play equipment or structures, and bunk-bed barriers.

**Bed sharing** occurs when an infant or toddler sleeps on the same sleeping surface as an adult <sup>1,4</sup>. Another example of this is twin infants/babies/toddlers sleeping together in the same crib.

**Room sharing** is when a baby is sleeping in the same room and near an adult caregiver but does not share the same sleep surface with the adult <sup>1</sup>.

**Co-sleeping** occurs when an adult caregiver is sleeping near their infant/baby/toddler by being in the same bed OR nearby in the same room <sup>1</sup>.

## Sleep-Related Injuries by Age

### *Newborns and Babies (0 - 12 Months)*

In Canada, injuries sustained while sleeping are most common among children less than one year of age<sup>5</sup>. In the United States, unintentional suffocation is a leading cause of injury-related death among infants less than one year old <sup>6</sup>. Risk factors associated with these types of injuries include the presence of soft or loose bedding, using a sleep surface that is not intended for newborn or infant sleep, and newborns or infants sharing a sleep surface with an adult or an older child <sup>1</sup>.

Most sleep-related incidents among babies less than one year old occur because their airway becomes blocked by things like pillows, blankets, couch cushions or adult mattresses <sup>7</sup>.

Sleep positioning among infants is one of the most significant modifiable factors to reduce sleep-related injuries and death <sup>1</sup>. The supine position - lying on the back - is the safest position for an infant to be in for sleep. Once infants can roll from their back to their stomach or sides, it is not necessary to re-position them to their backs <sup>1</sup>.

### *Toddlers (1 - 4 Years)*

Sleep-related injuries among toddlers are often the result of a fall from the bed to the ground. Once a child has outgrown their crib but is not big enough to use a standard size bed, a toddler bed may be used <sup>8</sup>. Toddler beds usually come with guardrails on each side of the mattress. These guardrails do not prevent a child from falling out of bed or climbing over the rail, instead, they remind the child that they are getting close to the edge of the bed. There is a risk of entrapment in cases where portable bedrails or bedside guardrails are being used and significant gap a between the mattress and the guardrails, the headboard or the footboard of the bed exists <sup>8</sup>. Other fall-related injuries among this age group are from bedroom furniture such as changing tables.

Another hazard to consider within this age group is strangulation. This type of injury is more common among older children than infants <sup>3</sup> with window-blind cords and drawstrings on clothing being two common mechanisms associated with these types of injuries.

### *Children (5+ Years)*

Fall injuries are the most common sleep-related injuries for older children. This is in large part due to the use of bunk beds in older children's rooms. In Canada, over 300 children are injured each year due to falls from bunk beds <sup>9</sup> and there are currently no safety standards for bunk beds in Canada.

## Magnitude of the Problem

### *Canada*

Breathing-related injuries, including suffocation, choking, and strangulation are significant causes of unintentional injuries in children, ranking as a leading cause of unintentional injury-related death among infants and toddlers <sup>2</sup>. In Canada, 69% of unintentional deaths among infants under the age of one occur as a result of threats to breathing, with 40% of these injuries resulting from choking or strangulation <sup>2</sup>. For every breathing-related death, there are approximately 110 emergency department visits <sup>2</sup>.

## *Atlantic Canada*<sup>2</sup>

Between 2004 and 2013, the rate of breathing-related hospitalizations for children between ages 0-14 was 3.8 per 100,000 population in Atlantic Canada. Overall, breathing-related hospitalization rates increased an average of 4% annually between 2004-2013, among children ages 0-14. Six percent (6%) of breathing-related hospitalizations were a result of mechanical suffocation.

The rate of hospitalizations among infants younger than one year who experienced a fall-related injury increased 2.3% annually. Falls from furniture including beds, accounted for 700 hospital admissions<sup>2</sup>.

## *Nova Scotia*<sup>5</sup>

Between 2004 and 2013, Nova Scotia ranked the highest of the Atlantic Provinces for breathing-related hospitalizations among children (5.9 per 100,000 population)<sup>10</sup>.

According to the Canadian Hospitals Injury Reporting and Prevention Program (CHIRPP), between 2015-2019, there were a total of 140 recorded unintentional injury cases involving sleep among children less than five years of age in NS. The majority of these cases occurred among babies less than one year old, while the second highest age group was two to four-year old's. From these 140 reported cases, 33 indicated a caregiver was with the child when the injury event occurred. Nursing or feeding the child, the child falling asleep on top of or beside the caregiver, or co-sleeping between the caregiver and the child were indicated most frequently as pre-injury information.

The most common injuries sustained from a sleep-related occurrence included head injuries, superficial injuries (i.e. lacerations), and fractures. Of these total combined injuries, 41% were observed in the Emergency Department, 21% were treated, and 5% were treated before being referred to a specialist for further follow-up.

## **Issues and Challenges**

### *Inconsistent Guidelines and Recommendations for Shared Sleep Surfaces*

Bed sharing is commonly used to refer to the practice of an infant sharing a sleep surface with an adult or another child<sup>4</sup>. In Canada, bed sharing has been identified as a factor associated with unsafe sleep environments, contributing to increased risk of entrapment, suffocation and death<sup>4</sup>. Alternatively, many proponents of bed sharing point to potential physical and psychological benefits of this behavior including the facilitation of breastfeeding and promotion of parental bonding<sup>4</sup>.

Lack of consistency with regards to best practice guidelines and shared sleep surfaces can create confusion for parents and caregivers.

### *Marketing/Availability of Unsafe Sleep Products*

There are several products available to purchase with the intent to aid in sleep for babies and children that are considered unsafe. These products include bumper pads, sleep positioners and portable bed rails.

Bumper pads are not recommended for use by Health Canada as they pose several serious health risks including suffocation and/or entrapment of infants and babies<sup>8</sup>. Once children can pull themselves into an upright position, they can use bumper pads to climb out of and fall from their crib, leading to potentially serious injuries.

Sleep positioners are designed to keep babies on their backs for sleep. They are often constructed of two pieces of foam, attached together by a piece of fabric that the baby sleeps on<sup>8</sup>. Health Canada does not recommend using these or other homemade positioners constructed from rolled up towels, etc. at any time. Once a baby can roll over on their own, forcing them to remain on their backs to sleep is not advised nor necessary<sup>8</sup>.

Portable bed rails are typically used in cases when a toddler transitions from a crib to a standard adult bed for sleep and are meant to prevent a child from falling out of the bed<sup>8</sup>. These rails can cause a child to become trapped if not installed properly and should never be used with a child who is two years old or younger.

#### *Sharing of Safe Sleep Information (Healthcare Provider to Caregiver)*

Health care providers are encouraged to share and discuss safe sleep practices and guidance with parents and caregivers, beginning in pregnancy<sup>1</sup>. However, it can be challenging for health care providers to identify risks in order to successfully communicate safe sleep information and practices to caregivers<sup>11</sup>.

Campaigns focused on safe sleep for newborns and babies provide specific practices that can lead to the overall prevention of injury. These campaigns have the intention of influencing caregivers' sleep practices to be able to weigh what generates risk and what leads to overall protection for newborns and babies during sleep<sup>10</sup>. However, caregivers' knowledge of these recommended practices does not often result in a change in sleep practices. For example, suffocation hazards presented by beds, bedding and pillows continue to be underrecognized by parents and caregivers<sup>11</sup>.

#### *Health Inequities and Cultural Barriers*

Maternal health inequities resulting from structural racism in health care are ubiquitous in communities of colour<sup>12</sup>. This can result in a lack of access to both pre- and post-natal care during which time important information regarding safe sleep practices could be shared with mothers/female caregivers.

Furthermore, mothers with lower levels of formal education are more likely to place their infant in a non-supine (on their back to sleep) position<sup>1</sup>. This is also true among Inuit populations where non-supine infant sleep positioning is a common practice<sup>1</sup>.

#### *General Caregiver Awareness of Safe Sleep Information*

There is an abundance of safe sleep information available for parents and caregivers but, understandably, it can become overwhelming when trying to navigate these resources. General safety messaging focuses on ensuring a safe sleep environment for infants and babies<sup>13</sup>, however, additional recommendations do exist and are prone to change, resulting in confusion or misunderstanding for caregivers. This information includes but is not limited to use of appropriate bedding, modifications to sleep surfaces, use of baby slings, swaddles, or carriers for sleep, and room sharing.

#### **Additional Gaps**

Additional gaps to the prevention of sleep-related injuries in newborns, babies, toddlers, and children do exist, and addressing these would help to reduce injury and death. Some of these gaps include:

- 1. Lack of consistent, reliable safety information on safe sleep practices while away from home.**

Infants require a safe sleep space when sleeping away from home, including in childcare settings, and

when visiting or travelling <sup>1</sup>.

2. **Inconsistent regulatory standards on certain sleep-related products** (i.e. bunk beds, children’s clothing with drawstrings, and window blind cords) <sup>14</sup>.
3. **Absence of data systems designed to capture choking and suffocation injuries and fatalities.** These systems are essential for identifying hazards, monitoring the effectiveness of current strategies, and for implementing new prevention efforts. Currently, this detailed data is only available through specialized surveillance programs (i.e. CHIRPP, National Coroners’ Database) <sup>14</sup>.
4. **Lack of enforcement among some existing legislation and standards of hazardous products** (i.e. bunk beds and toddler bed guardrails) <sup>14</sup>.

### **Best Practices (By E of Injury Prevention)**

Preventing sleep-related injuries among newborns, babies and children can be successful through targeted interventions that include the 3 E’s of injury prevention: Education, Engineering and Enforcement. Suggestions for each category are outlined below.

#### *E: Education*

Safe sleep education, including the identification and mitigation of potential hazards in the sleep environment can result in the prevention of serious and/or fatal injuries among newborns and babies as well as older children<sup>5</sup>. Parents and all caregivers who will be responsible for providing care to newborns, babies and children should have a good understanding of the potential dangers associated with sleep, as well as safety measures in place to mitigate the risk of injury and/or death associated with each age group. Health professionals who work with families with young babies and children should be familiar with ways to deliver education in the area(s) of safe sleep practices.

Several provincial and national medical and injury prevention organizations including the Canadian Paediatric Society, Health Canada, and Parachute have shared their own prevention information and safety messages regarding safe sleep practices. These organizations support the recommendations included in this document.

#### **Federally:**

- Monitor breathing-related injuries to identify new trends and potential hazards <sup>2</sup>.

#### **Provincially:**

- Create a home-visitation program accompanied by an injury prevention toolkit (including simple, action-oriented safety information, incentives, or coupons for safety equipment to use in the home, etc.) and safety in the home counselling about reducing the risk of breathing-and fall-related injuries from sleep <sup>2,14</sup>.

#### **Municipally:**

- Create and distribute choking and other breathing-related injury prevention information to childcare providers by way of community public health programs <sup>14</sup>.

- Conduct public health campaigns and training based on understanding of safe sleep practices and risk of injury<sup>10</sup>.
- Require child-health providers to deliver breathing-related injury prevention counselling.

**Organizationally:**

- Require organizations that work with families of newborns, babies and toddlers to provide them with educational resources to reduce the risk of sleep-related injuries (breathing- and fall-related) in the home<sup>2</sup>.
- Require organizations to provide counselling regarding the prevention of accidental suffocation and strangulation (ASSB) during occur health care visits during the first year of a child’s life<sup>15</sup>.

*E: Enforcement*

Considerations regarding the enforcement of safe sleep standards, education, etc. can and should be taken in the following ways:

**Federally:**

- Ban the sale and use of cribs manufactured prior to 1986<sup>2</sup>.
- Require warning labels on sleep-related products for babies and children that pose a threat to breathing (i.e. choking) beyond the age of recommendation<sup>2,14</sup>.
- Update the Hazardous Products Act to include bunk beds and portable bed rails for toddlers<sup>2</sup>.
- Prohibit the marketing and sale of unsafe, unregulated sleep products including bumper pads and sleep positioners.

**Provincially:**

- Require screening of all newborns born in birthing and children’s hospitals for an appropriate safe sleep environment prior to first discharge<sup>16</sup>.
- Require safety standards for child-care centres that reduce the risk of sleep-related injuries – specifically choking and strangulation – among babies and toddlers<sup>2</sup>.

**Organizationally:**

- Advocate for safety standards and policies that create safe sleep environments in child-care centres and other settings<sup>2</sup>.

*E: Engineering*

**Federally:**

- Create safe sleep environments for children in childcare settings and other public settings where newborns, babies, and children frequent<sup>2</sup>.

## Key messages for caregivers

- Place newborns and babies on their backs to sleep, for every sleep <sup>1</sup>.
- Use a crib, cradle and/or bassinette that is free of soft, loose bedding and toys and meets current Canadian safety regulations <sup>1</sup>.
- Bumper pads can increase the risk of suffocation and/or strangulation and should not be used.
- Room sharing is not the same as bed sharing <sup>13</sup>.
- Playpens do not meet the same safety requirements as cribs, cradles, or bassinets and are not regulated for infant sleep in Canada. If being used as a temporary sleep space while travelling, ensure that the playpen is securely set up following the manufacturer's instructions and that the location of the playpen within the room is appropriate – that there are no additional risks or hazards (i.e. corded window blind coverings) within close proximity <sup>1</sup>.
- Children should be six years old before using the top bunk of a bunk bed <sup>17</sup>.

## Conclusion

Nearly all serious injuries and deaths from breathing-related issues (choking, suffocation and/or strangulation) among children are preventable <sup>14</sup>. However, inconsistencies and lack of access to safety information present a barrier to prevention of sleep-related injuries.

Approaches to preventing breathing- and fall-related injuries during sleep among newborns, babies, toddlers, and children should remain multi-faceted and include a combination of increased education, improved product design with enforced safety standards, and monitored manufacturing and marketing of sleep-related products to parents and caregivers <sup>14</sup>.

Make every sleep a safe sleep for all ages.

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## About Child Safety Link

Child Safety Link (CSL) is an injury prevention program at the IWK Health Centre dedicated to reducing the incidence and severity of unintentional injury to children and youth in the Maritimes. CSL is committed to working with community organizations, governments and other partners to ensure children are as safe as necessary at home, on the road and at play. The team does this through capacity building & partnerships; communication and public relations; advocacy and healthy public policy; and research and evaluation.

## References

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