

## TITLE

**CARE OF THE INFANT AFTER A FALL IN HOSPITAL**SCOPE

Provincial: Maternal and Newborn Acute Care Settings

## DOCUMENT #

PS-96-02

## APPROVAL AUTHORITY

Vice President System Innovations &amp; Programs

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Not applicable

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Not applicable

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**NOTE:** The first appearance of terms in bold in the body of this document (except titles) are defined terms – please refer to the Definitions section.

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**OBJECTIVES**

- To provide direction to **health care providers** for the assessment and management following the **fall** of an infant in labour/delivery/recovery, postpartum/newborn and Neonatal Intensive Care Units (NICU).

**PRINCIPLES**

*Patient and Family Centered Care:* AHS is committed to partnering with patients and family members in the planning and delivery of health care services. In the NICU, health care providers work alongside family members through a process of continuous communication and shared decision-making.

*Prevention and Minimizing of Harm:* Patients, families, and staff should not be exposed to harm where it is reasonably avoidable. Health care providers strive to prevent unnecessary and avoidable harm to patients resulting from delivery of healthcare services.

*Interdisciplinary Teamwork:* A collaborative and coordinated effort across multiple stakeholders is essential to providing exceptional health care services.

*Continuous Quality Improvement:* AHS is committed to the continued development of better means to protect against harm and improve service standards over time, and to learn from adverse events to ensure other patients are not similarly harmed.

*Promoting Clear Communication and Transparency:* AHS operates in a way that creates openness between families and health care providers. When lines of communication are open, and communication is encouraged, honesty, understanding and common ground are easier to achieve.

*Compassion:* Caring for those who are critically ill may be very distressing for families and health care providers alike. AHS supports and treats all stakeholders with empathy and thoughtfulness.

## APPLICABILITY

Compliance with this document is required by all Alberta Health Services employees, members of the medical and midwifery staffs, Students, Volunteers, and other persons acting on behalf of Alberta Health Services (including contracted service providers as necessary).

## ELEMENTS

### 1. Points of Emphasis

- 1.1 All infants are at risk for falls. The falls prevention precautions outlined in the *AHS Maternal and Infant Fall Prevention and Management* Guideline shall be practiced in all maternity and newborn care areas to reduce the risk of infant falls. In the event that an infant falls, this Guideline expands on post-fall care and processes.

### 2. Initial Assessment and Response

- 2.1 The health care provider who responds to the infant fall shall request assistance immediately. The health care provider shall proceed to secure the infant's physical safety, prevent further injury and follow the post-falls process, as applicable.
- 2.2 If an infant falls and is found unconscious or experiences severe trauma, then the first responder shall call a pediatric/neonatal code in accordance with their local unit or hospital protocol and request immediate assistance.
- 2.3 The health care provider shall notify the **most responsible health practitioner (MRHP)** and Charge Nurse immediately. The health care provider shall continue to monitor the infant until the MRHP has arrived.
  - a) The MRHP shall examine the infant as soon as possible.
    - (i) Following the examination of the infant, the MRHP shall consult the Pediatrician or Neonatologist.
    - (ii) If the MRHP is contacted but unavailable to examine the infant, the MRHP shall contact a Pediatrician or Neonatologist to request an urgent consult.
    - (iii) In the event that the MRHP is unreachable, the on-call Physician or delegate shall contact a Pediatrician or Neonatologist to request an urgent consult.
  - b) A complete medical assessment shall be documented by the MRHP in the patient's **health record** post-fall.

- c) The health care provider shall address any factors contributing to the fall.
- 2.4 The health care provider or delegate shall notify the infant's guardian(s) of the fall, health status and planned management strategies as soon as practical in accordance with the AHS *Disclosure of Harm Procedure and Responding to Hazards, Close Calls, and Clinical Adverse Events* policy suite.

### 3. Management

- 3.1 The MRHP, in consultation with a Pediatrician or Neonatologist shall determine the need for transfer from the labour/delivery, recovery or postpartum/infant care area to a NICU for further monitoring and management.
- a) The use of telehealth consultation between rural and urban centers may facilitate the assessment and decision-making related to the need for transfer to a NICU environment.
  - b) A decision to care for the infant post-fall on the originating unit shall be made in collaboration with the Charge Nurse to ensure adequate staffing and resources are available to address the assessment requirements of the infant.
- 3.2 Monitoring of the infant shall include:
- a) continuous cardiac/respiratory monitoring;
  - b) blood pressure and pulse oximetry every four (4) hours or more frequently if clinically indicated;
  - c) monitoring of infant behaviour — loss of consciousness (LOC), cry, irritability, able to settle, sleepy, feeding and repeated vomiting;
  - d) assessment of area of impact/trauma (e.g., hematoma or bruising increasing in size, new bleeding from a laceration, etc.);
  - e) assessment of fontanel;
  - f) measurement of head circumference; and
  - g) pain assessment.
- 3.3 If the infant remains asymptomatic post-fall, a reasonable period of observation is for 12–24 hours.
- 3.4 Following the observation period, if the infant remains asymptomatic, as per the AHS *Maternal and Infant Fall Prevention and Management Guideline*, the infant should remain in hospital for a minimum of 48 hours post-fall. The MRHP shall determine if the infant may return to the postpartum unit/area for the remainder of the minimum hospital observation period.

- 3.5 When an infant fall has occurred, the event can cause significant emotional distress for the family of the infant involved. Consideration should be given, when appropriate, to providing additional support to the family.

#### 4. Background and Considerations

- 4.1 Each infant fall shall be assessed on a case-by-case basis (see Appendix A).
- a) A skull radiograph for diagnostic skull fracture should be performed in the presence of a large boggy hematoma; imaging may be clinically indicated in children younger than two (2) years of age.
  - b) If a skull fracture is noted on skull radiograph, consider neurosurgical consultation for advice on management and further imagining (computed tomography [CT] or magnetic resonance imaging [MRI]) — especially if depressed, basilar, widened or **diastatic skull fracture** greater than four (4) millimetres (mm).
    - (i) In the context of a skull fracture, the incidence for late deterioration in children with a normal CT is negligible.

#### 5. Investigations

- 5.1 When infants present with altered mental status or palpable skull fractures, the MRHP should assess for the six (6) predictors of **clinically important traumatic brain injuries (ciTBI)** (see Appendix A) to determine if further investigations are required. These include:
- a) altered mental status;
  - b) non-frontal scalp hematoma;
  - c) loss of consciousness of five (5) seconds or more;
  - d) severe injury mechanism (includes fall from greater than three [3] feet);
  - e) palpable skull fracture; and/or
  - f) “not acting normally” according to the parent (or irritability).
- 5.2 If at least one predictor from Section 5.1 above is present, a CT scan of the head may be indicated.
- 5.3 If none of the predictors from Section 5.1 above is present then the infant likely does not require a CT scan of the head. Close monitoring for a minimum of 24 hrs is recommended (see Appendix A).
- 5.4 The absolute indications for CT include the following (see Appendix A):
- a) focal neurological deficit(s) on exam; and/or

- b) clinically suspected open or depressed skull fracture, or a widened or diastatic skull fracture on radiograph.
- 5.5 The MRHP shall order a CT scan and take into consideration the following factors:
- a) multiple injuries or isolated findings;
  - b) focal neurologic findings or seizures;
  - c) concerns of increased intracranial pressure (ICP);
  - d) worsening symptoms;
  - e) need for sedation;
  - f) risk of secondary malignancy: one (1) per 1,000–5,000 CT scans;
  - g) Physician comfort; and/or
  - h) parental preference.
- 5.6 Consultation with the Pediatric Neurosurgeon or Neonatologist on call, either by phone or in person, is recommended to discuss the best head imaging modality (e.g., MRI, CT) or need for transfer to a centre with access to neurosurgery.

## 6. Documentation

- 6.1 The health care provider shall document on the patient's health record that teaching has been provided to family on prevention of infant falls.
- 6.2 Any concerns regarding increased fall risk to infant, such as non-compliance with health care provider recommendations, including discussions about the risks and potential consequences, shall be documented.
- 6.3 Health care providers are encouraged to report all infant falls as well as near misses in the **Reporting Learning System (RLS) for Patient Safety** and report to the Charge Nurse and Unit Manager for follow-up (see the AHS *Reporting of Clinical Adverse Events, Close Calls and Hazards Procedure*).
- 6.4 Any infant fall shall be documented on the patient record by the MRHP and/or the health care professional including and not limited to:
- a) location of fall;
  - b) time of fall;
  - c) estimated distance of fall and on what type of surface;
  - d) what was happening at the time of fall;

- e) who reported the fall and at what time;
  - f) complete physical assessment (e.g., detail of injuries);
  - g) who was notified and at what time (e.g., Physician, parent);
  - h) interventions that occurred post-fall; and
  - i) possible contributing factors in the fall (e.g., environment, maternal sedation, fatigue, co-sleeping).
- 6.5 If there is an unexplained mechanism for the injury, then consider non-accidental injury in the differential diagnosis.
- 6.6 The MRHP shall document communication with family as well as the plan for follow-up and management.

## 7. Education

- 7.1 Refer to AHS *Maternal and Newborn Falls Prevention and Management* Guideline and include:
- a) late signs and symptoms of a concern;
  - b) falls prevention at home; and
  - c) communication to Public Health on the Notice of Birth regarding the fall.

## DEFINITIONS

**Clinically important traumatic brain injury (ciTBI)** means death from traumatic brain injury, neurosurgery, and intubation greater than 24 hours, or hospital admission greater than or equal to two nights.

**Diastatic skull fracture** means separation of cranial bones at a suture or fracture with marked separation of bone fragments.

**Fall** means an unplanned descent to the floor (or extension of the floor, such as a trash can or other equipment) with or without injury to the patient, that occurs in an AHS setting.

**Family(-ies)** means one or more individuals identified by the patient as an important support, and who the patient wishes to be included in any encounters with the health care system, including, but not limited to, family members, legal guardians, friends and informal caregivers.

**Health care professional** means an individual who is a member of a regulated health discipline, as defined by the *Health Disciplines Act* (Alberta) or the *Health Professions Act* (Alberta), and who practices within scope and role.

**Health care provider** means any person who provides goods or services to a patient, inclusive of health care professionals, staff, students, volunteers and other persons acting on behalf of or in conjunction with Alberta Health Services.

**Health record** means the Alberta Health Services legal record of the patient's diagnostic, treatment and care information.

**Most Responsible Healthcare Practitioner (MRHP)** means the health practitioner who has responsibility and accountability for the specific treatment/procedure(s) provided to a patient and who is authorized by Alberta Health Services to perform the duties required to fulfill the delivery of such a treatment/procedure(s) within the scope of his/her practice.

## REFERENCES

- Appendix A: *Supporting Literature*
- Appendix B: *Reference List*
- Alberta Health Services Governance Documents:
  - *Disclosure of Harm Procedure (#PS-95-01)*
  - *Maternal and Infant Fall Prevention and Management Guideline (#PS-96-01)*
  - *Recognizing and Responding to Hazards, Close Calls, and Clinical Adverse Events* policy suite.

## VERSION HISTORY

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## APPENDIX A

## Supporting Literature

There is a paucity of literature on management of infant falls. The following information is based on studies of young children:

- In the following prediction model, the risk of ciTBI was 4.4% **in children younger than two (2) years** who had either altered mental status or palpable skull fractures. For those with none of the six (6) predictors stated below, the risk of ciTBI was less than 0.02%.

**Six predictors of ciTBI in children less than 2 years of age are:**

- a) Altered mental status
  - b) Non-frontal scalp hematoma
  - c) Loss of consciousness of five (5) seconds or more
  - d) Severe injury mechanism (includes fall from greater than three (3) feet)
  - e) Palpable skull fracture
  - f) “Not acting normally” according to the parent (or irritability)
- Canadian Pediatric Society’s Position Statement on “Management of the paediatric patient with acute head trauma” states that absolute indications for CT include:
    - a) Focal neurological deficit(s) on exam; and/or
    - b) Clinically suspected open or depressed skull fracture, or a widened or diastatic skull fracture on radiograph.

General principles from available literature are as follows:

- **Principle #1:** There is limited literature and considerable variation in practice. There is no consensus on the type of imaging or duration of observation for this patient population.
- **Principle #2:** Asymptomatic or occult intracranial injury is significantly more prevalent in children less than three (3) to six (6) months of age.
- **Principle #3:** A linear skull fracture (SF) appears to be an independent risk factor for intracranial lesions, but skull radiographs need not be performed routinely in all cases of infant falls. Younger age and scalp hematoma are predictors of a SF. The incidence of a SF following minor head injury (Glasgow Coma Scale 14–15) may be as high as 11% in children under two (2) years of age.
- **Principle #4:** Infants are at highest risk of ciTBI from a fall.

## APPENDIX B

## Reference List

- Brenner DJ., Hall EJ. Computed tomography—an increasing source of radiation exposure. *New England Journal of Medicine* 2007; 357: 2277-84.
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- Greenes De et al. Clinical indicators of intracranial head injury in head-injured infants. *Pediatrics* 1999; 104: 861-867.
- Kuppermann N et al. Identification of children at very low risk of clinically important brain injuries after head trauma: A prospective cohort study. *Lancet* 2009; 374: 1160-1170.
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- Quale KS et al. Diagnostic testing for acute head injury in children: when are head computed tomography and skull radiographs indicated? *Pediatrics* 1997; 99 (5): E11.
- Schutzman, S. et al. Evaluation and management of children younger than two years old with apparently minor head trauma: proposed guidelines. *Pediatrics* 2001; 107 (5): 983-993.

\*References accessed as of January 2019.