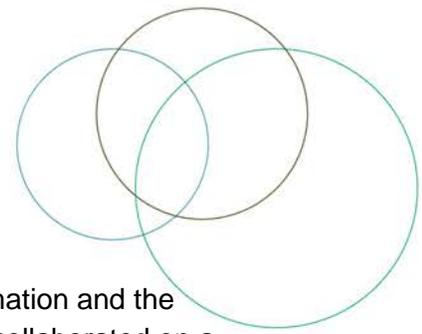


HOSPITAL HARM IMPROVEMENT RESOURCE

Birth Trauma



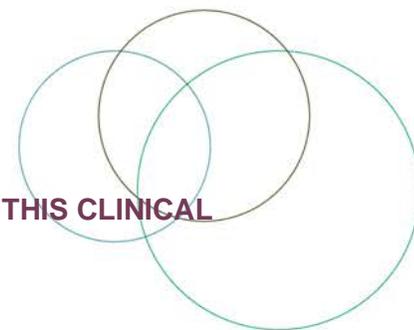
ACKNOWLEDGEMENTS



The Canadian Institute for Health Information and the Canadian Patient Safety Institute have collaborated on a body of work to address gaps in measuring harm and to support patient safety improvement efforts in Canadian hospitals.

The Hospital Harm Improvement Resource was developed by the Canadian Patient Safety Institute to complement the Hospital Harm measure developed by the Canadian Institute for Health Information. It links measurement and improvement by providing resources that will support patient safety improvement efforts.





DISCHARGE ABSTRACT DATABASE (DAD) CODES INCLUDED IN THIS CLINICAL CATEGORY:

A04: Birth Trauma

Concept	Injuries to the newborn during non-instrumented vaginal delivery identified during the birth episode of care.
Notes	Refer to D04: Birth Trauma for injuries during instrument-assisted or Caesarean section delivery.
Selection criteria	
Codes	Code descriptions
P10–P15	Identified as diagnosis type (M), (1), (2), (W), (X) or (Y) AND Entry Code N*
Exclusions	<ol style="list-style-type: none"> 1. Newborns whose mother's abstract has intervention codes for instrument-assisted or Caesarean section delivery,[†] (5.MD.53.^^, 5.MD.54.^^, 5.MD.55.^^, 5.MD.56.NN, 5.MD.56.PC, 5.MD.56.NR, 5.MD.56.PF, 5.MD.56.NW, 5MD.56.PJ or 5.MD.60.^^)[‡] OR 2. Newborn abstracts with brain damage due to birth injury (P10.–, P11.1 or P11.2) as diagnosis type (M) or (1) AND preterm and low birth weight (P07.–) as diagnosis type (M), (1) or (2) OR 3. Newborn abstracts with termination of pregnancy affecting fetuses and newborns (P96.4) OR 4. Newborn abstracts with congenital malformations of the central nervous system (Q00–Q07) as diagnosis type (M) or (1) OR 5. Newborn abstracts with congenital malformations and deformations of the musculoskeletal system (Q65–Q79) as diagnosis type (M) or (1)
Codes	Code descriptions
P10.-	Intracranial laceration and hemorrhage due to birth injury
P11.-	Other birth injuries to central nervous system
P12.-	Birth injury to scalp
P13.-	Birth injury to skeleton
P14.-	Birth injury to peripheral nervous system
P15.-	Other birth injuries
Additional Codes	Exclusions
P07.-	Disorders related to short gestation and low birth weight, not elsewhere classified
P10.–§	Intracranial laceration and hemorrhage due to birth injury
P11.1§	Other specified brain damage due to birth injury
P11.2§	Unspecified brain damage due to birth injury
P96.4	Termination of pregnancy, affecting fetus and newborn
Q00–Q07	Congenital malformations of the nervous system (refer to Appendix A)
Q65–Q79	Congenital malformations and deformations of the musculoskeletal system (refer to Appendix A)
5.CA.20.^^	Pharmacotherapy (in preparation for), termination of pregnancy



HOSPITAL HARM IMPROVEMENT RESOURCE

Birth Trauma

5.CA.24.^	Preparation by dilating cervix (for), termination of pregnancy
5.CA.88.^	Pharmacological termination of pregnancy
5.CA.89.^	Surgical termination of pregnancy
5.CA.93.^	Surgical removal of extrauterine pregnancy
5.MD.53.^	Forceps traction and rotation delivery
5.MD.54.^	Vacuum traction delivery
5.MD.55.^	Combination of vacuum and forceps delivery
5.MD.56.NN	Breech delivery without episiotomy, partial breech extraction [assisted breech delivery] with forceps to aftercoming head
5.MD.56.PC	Breech delivery with episiotomy, partial breech extraction [assisted breech delivery] with forceps to aftercoming head
5.MD.56.NR	Breech delivery without episiotomy, total breech extraction with forceps to aftercoming head
5.MD.56.PF	Breech delivery with episiotomy, total breech extraction with forceps to aftercoming head
5.MD.56.NW	Breech delivery without episiotomy, unspecified breech extraction with forceps to aftercoming head
5.MD.56.PJ	Breech delivery with episiotomy, unspecified breech extraction with forceps to aftercoming head
5.MD.60.^	Caesarean section delivery

*Entry Code N indicates an infant was born alive in the reporting facility.

† Due to the unavailability of chart numbers for Prince Edward Island, birth trauma with and without the assistance of instruments cannot be differentiated; therefore, all birth trauma in P.E.I. is included in this group regardless of the use of instruments or method of delivery.

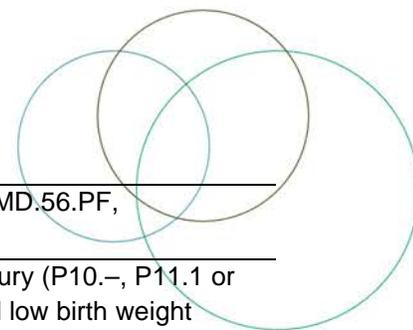
‡ Newborns whose mothers are discharged from acute care facilities in a different fiscal year cannot be linked to the mothers' records; therefore, a few birth trauma cases that belong to D04 could be misclassified to A04 as the linkage is done within a fiscal year. A fiscal year is defined based on discharged date from April 1 of the current year to March 31 of the subsequent year.

§ These codes are part of the selection criteria, except when preterm and low birth weight is also coded. See the exclusion terms in the selection criteria section above.

D04: Birth Trauma

Concept	Injuries to the newborn during an instrument-assisted or Caesarean section delivery
Notes	Refer to A04: Birth Trauma for injuries during vaginal delivery without the assistance of instruments.
Selection criteria	
Codes	Code descriptions
P10–P15	Identified as diagnosis type (M), (1), (2), (W), (X) or (Y) AND Entry Code N* AND Newborns whose mother's abstract has intervention codes for instrument-assisted or Caesarean section delivery, † (5.MD.53.^, 5.MD.54.^,



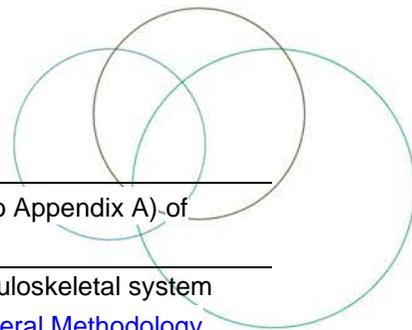


	5.MD.55.^, 5.MD.56.NN, 5.MD.56.PC, 5.MD.56.NR, 5.MD.56.PF, 5.MD.56.NW, 5MD.56.PJ or 5.MD.60.^)‡
Exclusions	<ol style="list-style-type: none"> 1. Newborn abstracts with brain damage due to birth injury (P10.-, P11.1 or P11.2) as diagnosis type (M) or (1) AND preterm and low birth weight (P07.-) as diagnosis type (M), (1) or (2) OR 2. Newborn abstracts with termination of pregnancy affecting fetuses and newborns (P96.4) OR 3. Newborn abstracts with congenital malformations of the central nervous system (Q00–Q07) as diagnosis type (M) or (1) OR 4. Newborn abstracts with congenital malformations and deformations of the musculoskeletal system (Q65–Q79) as diagnosis type (M) or (1)
Codes	Code descriptions
P10.-	Intracranial laceration and hemorrhage due to birth injury
P11.-	Other birth injuries to central nervous system
P12.-	Birth injury to scalp
P13.-	Birth injury to skeleton
P14.-	Birth injury to peripheral nervous system
P15.-	Other birth injuries
Additional Codes	Inclusions
5.MD.53.^	Forceps traction and rotation delivery
5.MD.54.^	Vacuum traction delivery
5.MD.55.^	Combination of vacuum and forceps delivery
5.MD.56.NN	Breech delivery without episiotomy, partial breech extraction [assisted breech delivery] with forceps to aftercoming head
5.MD.56.PC	Breech delivery with episiotomy, partial breech extraction [assisted breech delivery] with forceps to aftercoming head
5.MD.56.NR	Breech delivery without episiotomy, total breech extraction with forceps to aftercoming head
5.MD.56.PF	Breech delivery with episiotomy, total breech extraction with forceps to aftercoming head
5.MD.56.NW	Breech delivery without episiotomy, unspecified breech extraction with forceps to aftercoming head
5.MD.56.PJ	Breech delivery with episiotomy, unspecified breech extraction with forceps to aftercoming head
5.MD.60.^	Caesarean section delivery
Additional Codes	Exclusions
P07.-	Disorders related to short gestation and low birth weight, not elsewhere classified
P10.-§	Intracranial laceration and hemorrhage due to birth injury
P11.1§	Other specified brain damage due to birth injury
P11.2§	Unspecified brain damage due to birth injury
P96.4	Termination of pregnancy, affecting fetus and newborn



HOSPITAL HARM IMPROVEMENT RESOURCE

Birth Trauma



Q00–Q07	Congenital malformations of the nervous system (refer to Appendix A) of the Hospital Harm Indicator General Methodology Notes
Q65–Q79	Congenital malformations and deformations of the musculoskeletal system (refer to Appendix A) of the Hospital Harm Indicator General Methodology Notes

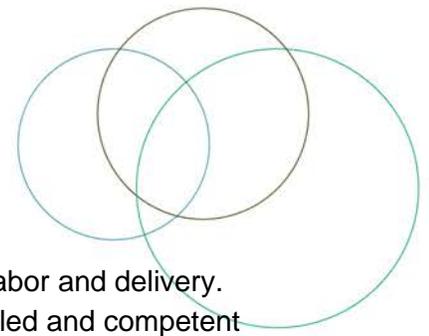
*Entry Code N indicates an infant was born alive in the reporting facility.

† Due to the unavailability of chart numbers for Prince Edward Island, birth trauma with and without the assistance of instruments cannot be differentiated; therefore, all birth trauma in P.E.I. is included in this group regardless of the use of instruments or method of delivery.

‡ Newborns whose mothers are discharged from acute care facilities in a different fiscal year cannot be linked to the mothers' records; therefore, a few birth trauma cases that belong to D04 could be misclassified to A04 as the linkage is done within a fiscal year. A fiscal year is defined based on discharged date from April 1 of the current year to March 31 of the subsequent year.

§ These codes are part of the selection criteria, except when preterm and low birth weight is also coded. See the exclusion terms in the selection criteria section above.





OVERVIEW AND IMPLICATIONS

Birth injuries are those sustained during the birth process, which includes labor and delivery. They may be avoidable, or they may be unavoidable and occur despite skilled and competent obstetric care, as in an especially hard or prolonged labor or with an abnormal presentation (Prazad et al., 2019).

Since 1981, because of refinements in obstetric techniques and the increased use of cesarean deliveries over difficult vaginal deliveries, a dramatic decline has occurred in birth injuries as a cause of neonatal death. Statistics reported for 2013-2014 did not cite birth injury as one of the 10 leading causes of postnatal death. Despite a reduction in related mortality rates, birth injuries still represent an important source of neonatal morbidity and neonatal intensive care unit admissions. Of particular concern are severe intracranial injuries after vacuum-assisted and forceps vaginal delivery and failed attempts at instrument-assisted vaginal delivery. Although many injuries are mild and self-limited, others are serious and potentially lethal (Prazad et al., 2019).

The incidence of neonatal injury resulting from difficult or traumatic deliveries is decreasing due to increasing use of cesarean delivery in place of difficult versions, vacuum extractions, or mid- or high-forceps deliveries. There is an increased risk of trauma when the infant is large for gestational age which is sometimes associated with maternal diabetes, or when there is a breech or other abnormal presentation, especially in a primipara (Stavis, 2019).

On the basis of frequencies alone, some of the major findings of Pressler's research, *Classification of major newborn birth injuries*, can be highlighted. For example, of the 20 major categories of neonatal injuries cited, eight (40 per cent) involve blood vessels and some type of hemorrhage. Nerves or the nervous system is involved in six (30 per cent) of the injuries, and a major organ is also involved in six (30 per cent) of the injuries. Only five (24 per cent) of the injuries are the result of some type of bone fracture. The cause of injuries is thought to be associated with the occurrence of shoulder dystocia in six (30 per cent) of the cases. Use of instrumental techniques (e.g., forceps or vacuum extractors) is stated as being involved in at least 11 (55 per cent) of the injuries. Six (30 per cent) of the birth injuries were reported as leading to a potentially fatal prognosis (Pressler, 2008).

Categories and related sub-categories of common birth injuries include (Stavis, 2019):

- **Head injury** is the most common birth-related injury and is usually minor, but serious injuries sometimes occur.
 - Head molding
 - Scalp abrasions
 - Caput succedaneum
 - Subgaleal hemorrhage*
 - Cephalhematoma*
 - Depressed skull fractures



Birth Trauma

- **Facial Nerve Injury*** - The facial nerve is injured most often. Although forceps pressure is a common cause, some injuries probably result from pressure on the nerve in utero.
- **Brachial Plexus Injuries*** - frequently follow lateral stretching of the neck during delivery caused by shoulder dystocia, breech extraction, or hyperabduction of the neck in cephalic presentations.
 - Erb palsy
 - Klumpke palsy
 - Involvement of the entire plexus
- **Phrenic Nerve Injuries*** - Most phrenic nerve injuries (about 75 per cent) are associated with brachial plexus injury. Injury is usually unilateral and caused by a traction injury of the head and neck.
- **Spinal Cord Injury*** - Trauma usually occurs in breech deliveries after excess longitudinal traction to the spine.
- **Intracranial Hemorrhage** - Hemorrhage in or around the brain can occur in any neonate but is particularly common among those born prematurely; about 25 per cent of premature infants < 1500 g have intracranial hemorrhage.
- **Fractures*** - Midclavicular fracture, the most common fracture during birth, occurs with shoulder dystocia and with normal, nontraumatic deliveries.
- **Soft -Tissue Injuries** - All soft tissues are susceptible to injury during birth if they have been the presenting part or the fulcrum for the forces of uterine contraction.

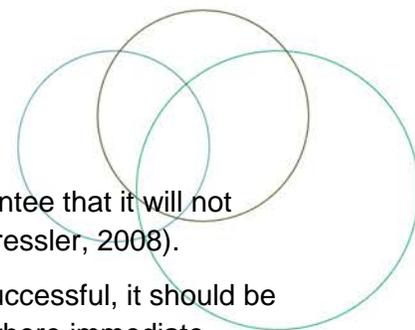
*related to instrument-assisted delivery.

The incidence of birth injuries has dramatically decreased in the last two decades. Macrosomia and instrumental deliveries are major risk factors for birth injuries. Forceps use is the most common cause of facial nerve injury and is usually self-limited. Erb palsy is the most common brachial plexus injury. Shoulder dystocia is a major risk factor for brachial plexus injury. Planned cesarean delivery for breech presentation decreases mortality and morbidity. Posterior fossa hematoma can cause brain stem compression, leading to respiratory compromise (Akangire & Carter, 2016).

Now that forceps are used less frequently (e.g., especially use of mid- and high forceps), many of the injuries that were common before 1966 (e.g., skull fractures, facial bone fractures, femur fractures, facial) palsy, and cervical spine injuries are rarely seen in the United States today. Breech deliveries are less likely to be completed vaginally, and cesarean deliveries can be performed using a transverse incision instead of a midline incision approach. Nearly half of major birth injuries and serious negative outcomes are potentially avoidable with early detection and intervention. To avoid specific negative outcomes, various evaluative techniques, such as perinatal history, physical examination, radiographs, paracentesis, ultrasonography, computerized tomography scans, and magnetic resonance imaging, can be used to predict more accurately the abnormalities that place the fetus at high risk for major birth injuries.



Birth Trauma



However, predicting the likelihood of an injury's occurrence does not guarantee that it will not happen, but instead may help lessen the severity of the injury approach (Pressler, 2008).

When assisted vaginal birth is deemed to have a higher risk of not being successful, it should be considered a trial of assisted vaginal birth and be conducted in a location where immediate recourse to Caesarean delivery is available (Hobson et al., 2019).

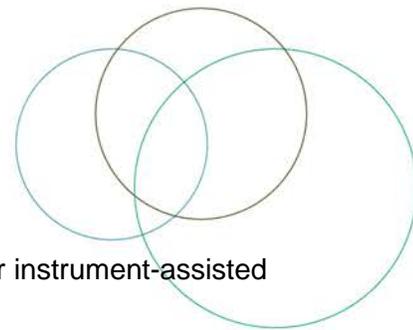
Performing a Caesarean section with extraction of a deeply impacted fetal head out of the maternal pelvis is technically challenging even for experienced obstetricians. The difficulty for the surgeon is to disengage the impacted head by hand due to a lack of space between the muscular and bony maternal pelvis and the deeply impacted fetal head. This procedure is associated with serious neonatal complications, for instance skull injuries causing cerebral haemorrhage and newborn hypoxia that result in higher neonatal admission rates. Head pushing is the most commonly practiced technique. However, reverse breech extraction has gradually been given higher priority. Recently assessed neonatal outcome show less morbidity after reverse breech extraction compared to the head pushing method for obstructed labour. The beneficial maternal-fetal results of performing the reverse breech procedure indicate that it is a reliable alternative to the standard head pushing method and should preferably be used in deeply impacted fetal head situations during Caesarean section in advanced labour (Lenz et al., 2019).

Risk Factors and Related Injuries

Factors predisposing the infant to birth injury and their related injuries include (Akangire, 2016):

Risk Factors	Related Injuries
Forceps delivery	Facial nerve injuries
Vacuum extraction	Depressed skull fracture, subgaleal hemorrhage
Forceps/vacuum/forceps + vacuum	Cephalohematoma, intracranial hemorrhage, shoulder dystocia, retinal hemorrhages
Breech presentation	Brachial plexus palsy, intracranial hemorrhage, gluteal lacerations, long bone fractures
Macrosomia	Shoulder dystocia, clavicle, and rib fractures, cephalohematoma, caput succedaneum
Abnormal presentation (face, brow, transverse, compound)	Excessive bruising, retinal hemorrhage, lacerations
Prematurity	Bruising, intracranial, and extracranial hemorrhage
Precipitous delivery	Bruising, intracranial, and extracranial hemorrhage, retinal hemorrhage





GOAL

Reduce the incidence of injuries to the newborn during non-instrumented or instrument-assisted vaginal delivery, or Caesarean section.

IMPORTANCE TO PATIENTS AND FAMILIES

Birth injury is damage that occurs as a result of physical pressure during the birthing process, usually during transit through the birth canal. Birth injuries are most commonly due to the natural forces of labor and delivery. In the past, when risks of Caesarean delivery were high, doctors did difficult deliveries by pulling the fetus out using forceps (a surgical instrument with rounded edges that fit around the fetus's head). However, bringing the fetus down from high in the birth canal with forceps had a high risk of causing birth injury. Today, forceps are used only in the final stages of delivery and rarely cause injury. Overall, the rate of birth injuries is much lower now than in previous decades because of improved prenatal assessment with ultrasonography, the limited use of forceps, and because doctors often do Caesarean delivery if they foresee an increased risk of birth injury (Stavis, 2019).

Patient Story

'I can't forget the horror of my son's birth'

Despite medical advancements, childbirth is a major cause of post-traumatic stress disorder – and yet nobody talks about it. Leah McLaren tells the harrowing story of the arrival of her second child – and her fight for treatment and support (McLaren, 2017).

<https://www.theguardian.com/lifeandstyle/2017/may/07/i-cant-forget-the-horror-of-my-sons-birth-post-traumatic-stress-disorder-childbirth>

CLINICAL AND SYSTEM REVIEWS, INCIDENT ANALYSES

Given the broad range of potential causes of Birth Trauma, clinical and system reviews should be conducted to identify latent causes and determine appropriate recommendations.

Occurrences of harm are often complex with many contributing factors. Organizations need to:

1. Measure and monitor the types and frequency of these occurrences.
2. Use appropriate analytical methods to understand the contributing factors.
3. Identify and implement solutions or interventions that are designed to prevent recurrence and reduce risk of harm.
4. Have mechanisms in place to mitigate consequences of harm when it occurs.

To develop a more in-depth understanding of the care delivered to patients, chart audits, incident analyses and prospective analyses can be helpful in identifying quality improvement opportunities. Links to key resources for [conducting chart audits](#) and [analysis methods](#) are included in the [Hospital Harm Improvement Resource Introduction](#).



HOSPITAL HARM IMPROVEMENT RESOURCE

Birth Trauma

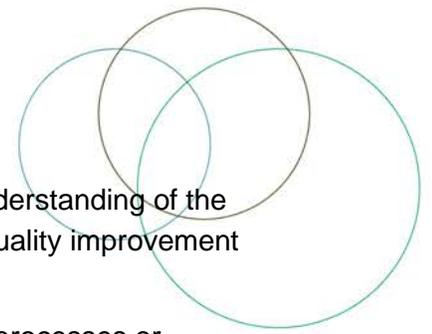
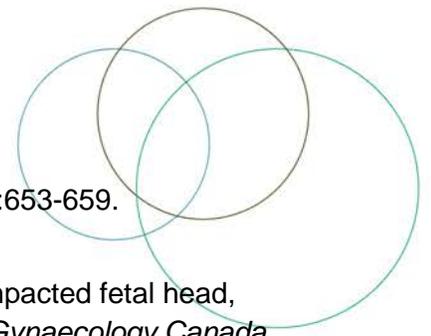


Chart audits are recommended as a means to develop a more in-depth understanding of the care delivered to patients identified by the HHI. Chart audits help identify quality improvement opportunities.

If your review reveals that your cases of birth trauma are linked to specific processes or procedures, you may find these resources helpful:

- Association of Ontario Midwives www.ontariomidwives.ca
 - Corey J, MacDonald T. *Management of the Uncomplicated Pregnancy Beyond 41+0 Weeks Gestation*. Association of Ontario Midwives; 2010.
<https://www.ontariomidwives.ca/sites/default/files/CPG%20full%20guidelines/CPG-Management-of-pregnancy-beyond-41-weeks-gestation-PUB.pdf>
- British Medical Journal Open <https://bmjopen.bmj.com/>
 - Coroneos CJ, Voineskos SH, Christakis MK, Thoma A, Bain JR, Brouwers MC. Obstetrical brachial plexus injury (OBPI): Canada's national clinical practice guideline. *BMJ Open*. 2017;7(1):e014141. doi:10.1136/bmjopen-2016-014141
- Cureus Journal of Medical Science <https://www.cureus.com/>
 - Ojumah N, Ramdhan RC, Wilson C, Loukas M, Oskouian RJ, Tubbs RS. Neurological Neonatal Birth Injuries: A Literature Review. *Cureus*. 2017;9(12):e1938. doi:10.7759/cureus.1938
- Fanaroff & Martin's Neonatal-Perinatal Medicine Eleventh Edition
 - Prazad PA, Rajpal MN, Mangurten HH, Puppala BL. Birth Injuries. In: *Fanaroff and Martin's Neonatal-Perinatal Medicine*. 11th ed. Chapter 29. Elsevier; 2020:458-488
- HIROC www.hiroc.com
 - Healthcare Insurance Reciprocal of Canada. Assisted Vaginal Deliveries. HIROC Risk Reference Sheets. Published September 2020.
<https://www.hiroc.com/resources/risk-reference-sheets/assisted-vaginal-deliveries>
 - Healthcare Insurance Reciprocal of Canada. Shoulder Dystocia. HIROC Risk Reference Sheets. Published 2020. <https://www.hiroc.com/resources/risk-reference-sheets/shoulder-dystocia>
- Journal of Obstetrics and Gynecology of Canada www.jogc.ca
 - Hobson S, Cassell K, Windrim R, Cargill Y. No. 381-Assisted Vaginal Birth. *Journal of Obstetrics and Gynaecology Canada*. 2019;41(6):870-882. doi:10.1016/j.jogc.2018.10.020
 - Kotaska A, Menticoglou S. No. 384-Management of breech presentation at term. *J Obstet Gynaecol Can*. 2019;41(8):1193-1205. doi:10.1016/j.jogc.2018.12.018
 - Lefebvre G, Calder LA, De Gorter R, Bowman CL, Bell D, Bow M. Recommendations from a national panel on quality improvement in obstetrics.





Journal of Obstetrics and Gynaecology Canada. 2019;41(5):653-659.
doi:[10.1016/j.jogc.2019.02.011](https://doi.org/10.1016/j.jogc.2019.02.011)

- Bloch C, Dore S, Hobson S. Committee Opinion No. 415: Impacted fetal head, second-stage cesarean delivery. *Journal of Obstetrics and Gynaecology Canada*. 2021;43(3):406-413. doi:[10.1016/j.jogc.2021.01.005](https://doi.org/10.1016/j.jogc.2021.01.005)
- Berger H, Gagnon R, Sermer M. Guideline No. 393-Diabetes in pregnancy. *Journal of Obstetrics and Gynaecology Canada*. 2019;41(12):1814-1825.e1. doi:[10.1016/j.jogc.2019.03.008](https://doi.org/10.1016/j.jogc.2019.03.008)
- Journal of Perinatal and Neonatal Nursing
 - Pressler JL. Classification of Major Newborn Birth Injuries. *The Journal of Perinatal & Neonatal Nursing*. 2008;22(1).
https://journals.lww.com/jpnnjournal/Fulltext/2008/01000/Classification_of_Major_Newborn_Birth_Injuries.13.aspx
- Merck Manual
 - Stavis RL. Birth Injuries. Merck Manuals Professional Edition. Published July 2019. Accessed March 2021. <https://www.merckmanuals.com/en-ca/professional/pediatrics/perinatal-problems/birth-injuries>
- MORE^{OB} www.moreob.com
- Pediatrics in Review <https://pedsinreview.aappublications.org/>
 - Akangire G, Carter B. Birth Injuries in Neonates. *Pediatr Rev*. 2016;37(11):451. doi:[10.1542/pir.2015-0125](https://doi.org/10.1542/pir.2015-0125)
- Salus Global www.salusglobal.com
- Society of Obstetricians and Gynecologists of Canada www.sogc.org

MEASURES

Vital to quality improvement is measurement, and this applies specifically to implementation of interventions. The chosen measures will help to determine whether an impact is being made (primary outcome), whether the intervention is being carried out (process measures), and whether any unintended consequences ensue (balancing measures).

In selecting your measures, consider the following:

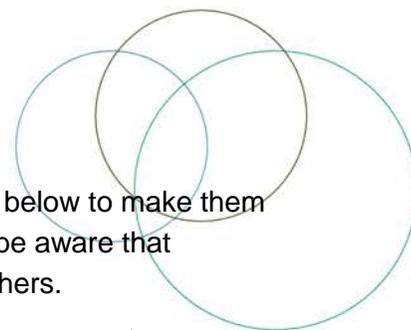
- Whenever possible, use measures you are already collecting for other programs.
- Evaluate your choice of measures in terms of the usefulness of the final results and the resources required to obtain them; try to maximize the former while minimizing the latter.
- Try to include both process and outcome measures in your measurement scheme.



HOSPITAL HARM IMPROVEMENT RESOURCE

Birth Trauma

- You may use different measures or modify the measures described below to make them more appropriate and/or useful to your particular setting. However, be aware that modifying measures may limit the comparability of your results to others.
- Posting your measure results within your hospital is a great way to keep your teams motivated and aware of progress. Try to include measures that your team will find meaningful and exciting (IHI, 2012).



GLOBAL PATIENT SAFETY ALERTS

[Global Patient Safety Alerts](#) provides access and the opportunity to learn from other organizations about specific patient safety incidents including alerts, advisories, recommendations, and solutions for improving care and preventing incidents. Learning from the experience of other organizations can accelerate improvement (CPSI, n.d.).

Recommended search terms:

- Birth injury
- Newborn
- Delivery
- Birth trauma
- Fracture

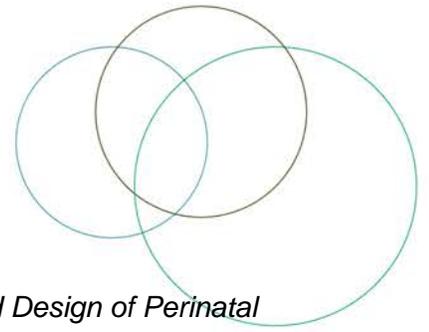
SUCCESS STORIES

The Salus Global Corporation has its roots in the successful launch of the MORE^{OB} (Managing Obstetrical Risk Efficiently) Program, created by Dr. J. Kenneth Milne and his team during his tenure as acting Executive Vice President of the Patient Safety Division of the Society of Obstetricians and Gynaecologists of Canada (SOGC). The program was successfully piloted in 2002 to hospital obstetrical units in Canada and demand grew rapidly over the next few years. In 2007, seeking a strategic partner to help with geographic expansion and to bring the underlying principles embedded in the MORE^{OB} Program to other clinical areas, the SOGC approached the Healthcare Insurance Reciprocal of Canada (HIROC). The two entities acted upon their common interest of improving patient safety and formed Salus Global Corporation (Salus Global) in July of that year (Salus Global, n.d.).

The MORE^{OB} program is a comprehensive patient safety and performance improvement program for interprofessional obstetrical teams. The program has now been delivered in over 300 hospitals in Canada and the US and to more than 16,000 participants in the past 12 plus years. It has made a significant difference in clinical outcomes for mother and baby and in the way healthcare teams function together. The primary focus of the MORE^{OB} Program is improving clinical outcomes. To date, there has been a 10 per cent reduction in severe infant mortality; 24 per cent reduction in infant morbidity; 33 per cent reduction in Hypoxic Ischemic Encephalopathy; and 77 per cent reduction in the number of newborns transferred to another hospital after a low-risk pregnancy and elective birth (MORE^{OB}, n.d.).



HOSPITAL HARM IMPROVEMENT RESOURCE
Birth Trauma



Institute for Healthcare Improvement (www.ihl.org)

Idealized design of perinatal care White Paper (2005)

Cherouny PH, Federico FA, Haraden C, Leavitt Gullo S, Resar R. *Idealized Design of Perinatal Care*. IHI; 2005.

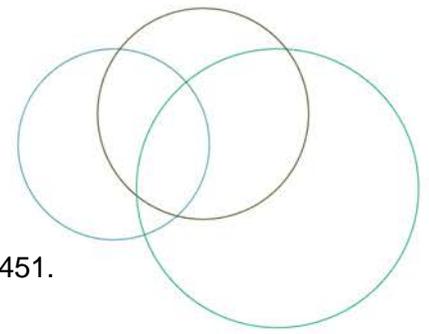
<http://www.ihl.org/resources/Pages/IHIWhitePapers/IdealizedDesignofPerinatalCareWhitePaper.aspx>

ECRI Institute

ECRI Institute. Right On Time: Safe and Timely Delivery of Neonates. Presented at the: FTCA Risk Management Conference; August 7-8, 2012. Accessed March, 2021.

<https://www.youtube.com/watch?v=95v7osmALG4>



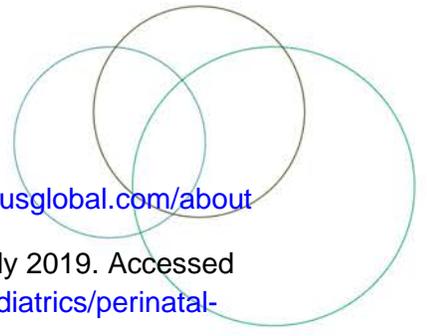


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