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 prepared by the Canadian Institute for Health Information. It links measurement and improvement by providing evidence-informed resources that will support patient safety improvement efforts.

The Canadian Patient Safety Institute acknowledges and appreciates the key contributions of Dr. Jon Barrett (Sunnybrook Hospital, Toronto, ON), Dr. Marie-Andree Harvey (Kingston General Hospital, Kingston, ON) and Dr. Marianne Pierce (IWK Hospital, Halifax, NS) for the review and approval of this Improvement Resource.
**DISCHARGE ABSTRACT DATABASE (DAD) CODES INCLUDED IN THIS CLINICAL CATEGORY:**

<table>
<thead>
<tr>
<th>A03: Obstetric Trauma</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Concept</strong></td>
</tr>
<tr>
<td><strong>Notes</strong></td>
</tr>
<tr>
<td><strong>Selection criteria</strong></td>
</tr>
<tr>
<td><strong>Codes</strong></td>
</tr>
<tr>
<td>O70.201</td>
</tr>
<tr>
<td>O70.301</td>
</tr>
<tr>
<td>O71.181</td>
</tr>
<tr>
<td>O71.301</td>
</tr>
<tr>
<td>O71.401</td>
</tr>
<tr>
<td>Code</td>
</tr>
<tr>
<td>--------</td>
</tr>
<tr>
<td>O71.501</td>
</tr>
<tr>
<td>O71.601</td>
</tr>
<tr>
<td>5.PC.80.JH</td>
</tr>
<tr>
<td>5.PC.80.JJ</td>
</tr>
<tr>
<td>5.PC.80.JR</td>
</tr>
<tr>
<td>5.PC.80.JQ</td>
</tr>
<tr>
<td>5.PC.80.JU</td>
</tr>
<tr>
<td>5.PC.80.JL</td>
</tr>
</tbody>
</table>

**Additional Codes:**

**INCLUSIONS**

O04.– Caesarean section delivery

**EXCLUSIONS**

O04.– Caesarean section delivery

5.CA.20.^^ Outcome of delivery (refer to Appendix A)

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
Breech delivery with episiotomy, partial breech extraction [assisted breech delivery] with forceps to aftercoming head

Breech delivery without episiotomy, total breech extraction with forceps to aftercoming head

Breech delivery with episiotomy, total breech extraction with forceps to aftercoming head

Breech delivery without episiotomy, unspecified breech extraction with forceps to aftercoming head

Breech delivery with episiotomy, unspecified breech extraction with forceps to aftercoming head

Caesarean section delivery

**D03: Obstetric Trauma**

**Concept**
Lacerations of third degree or greater severity, or other obstetric injury to pelvic organs during an instrument-assisted vaginal delivery.

**Notes**
1. Refer to A03: Obstetric Trauma for obstetric trauma during a non-instrumented vaginal delivery.
2. This clinical group does not include obstetric trauma during Caesarean section delivery.

**Selection criteria**

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>O70.201</td>
<td>Third degree perineal laceration during delivery; delivered with or without mention of antepartum condition</td>
</tr>
</tbody>
</table>

**Exclusions**

1. Abstracts with intervention codes for Caesarean section delivery (5.MD.60.^^)

**Codes**

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>O70.201</td>
<td>Third degree perineal laceration during delivery; delivered with or without mention of antepartum condition</td>
</tr>
<tr>
<td>Code</td>
<td>Description</td>
</tr>
<tr>
<td>-----------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>O70.301</td>
<td>Fourth degree perineal laceration during delivery; delivered with or without</td>
</tr>
<tr>
<td></td>
<td>mention of antepartum condition</td>
</tr>
<tr>
<td>O71.181</td>
<td>Other rupture of uterus during labour; delivered with or without mention of</td>
</tr>
<tr>
<td></td>
<td>antepartum condition</td>
</tr>
<tr>
<td>O71.301</td>
<td>Obstetric laceration of cervix; delivered with or without mention of</td>
</tr>
<tr>
<td></td>
<td>antepartum condition</td>
</tr>
<tr>
<td>O71.401</td>
<td>Obstetric high vaginal laceration; delivered with or without mention of</td>
</tr>
<tr>
<td></td>
<td>antepartum condition</td>
</tr>
<tr>
<td>O71.501</td>
<td>Other obstetric injury to pelvic organs; delivered with or without mention</td>
</tr>
<tr>
<td></td>
<td>of antepartum condition</td>
</tr>
<tr>
<td>O71.601</td>
<td>Obstetric damage to pelvic joints and ligaments; delivered with or without</td>
</tr>
<tr>
<td></td>
<td>mention of antepartum condition</td>
</tr>
<tr>
<td>5.PC.80.JH</td>
<td>Surgical repair, postpartum of obstetric laceration of corpus uteri [body of</td>
</tr>
<tr>
<td></td>
<td>uterus]</td>
</tr>
<tr>
<td>5.PC.80.JJ</td>
<td>Surgical repair, postpartum of current obstetric laceration of cervix</td>
</tr>
<tr>
<td></td>
<td>occurring at vaginal delivery</td>
</tr>
<tr>
<td>5.PC.80.JR</td>
<td>Surgical repair, postpartum of current obstetric laceration of bladder and</td>
</tr>
<tr>
<td></td>
<td>urethra</td>
</tr>
<tr>
<td>5.PC.80.JQ</td>
<td>Surgical repair, postpartum of current obstetric laceration of rectum and</td>
</tr>
<tr>
<td></td>
<td>sphincter ani</td>
</tr>
<tr>
<td>5.PC.80.JU</td>
<td>Surgical repair, postpartum of current obstetric high vaginal laceration</td>
</tr>
<tr>
<td>5.PC.80.JL</td>
<td>Surgical repair, postpartum of current obstetric laceration of broad</td>
</tr>
<tr>
<td></td>
<td>ligament(s) of uterus</td>
</tr>
</tbody>
</table>

**Additional Codes: INCLUSIONS**

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.MD.53.^^</td>
<td>Forceps traction and rotation delivery</td>
</tr>
<tr>
<td>5.MD.54.^^</td>
<td>Vacuum traction delivery</td>
</tr>
<tr>
<td>5.MD.55.^^</td>
<td>Combination of vacuum and forceps delivery</td>
</tr>
<tr>
<td>5.MD.56.NN</td>
<td>Breech delivery without episiotomy, partial breech extraction [assisted breech</td>
</tr>
<tr>
<td></td>
<td>delivery] with forceps to aftercoming head</td>
</tr>
</tbody>
</table>

**Additional Codes: EXCLUSIONS**

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.MD.60.^^</td>
<td>Caesarean section delivery</td>
</tr>
<tr>
<td>O10–O16</td>
<td>Outcome of delivery (refer to Appendix A of the Hospital Harm Indicator</td>
</tr>
<tr>
<td>O21–O26</td>
<td>General Methodology Notes)</td>
</tr>
<tr>
<td>O28–O37</td>
<td></td>
</tr>
<tr>
<td>O40–O46</td>
<td></td>
</tr>
<tr>
<td>O48.–</td>
<td></td>
</tr>
<tr>
<td>O60–O75</td>
<td></td>
</tr>
<tr>
<td>O85–O92</td>
<td></td>
</tr>
<tr>
<td>O95.–</td>
<td></td>
</tr>
<tr>
<td>O98–O99</td>
<td></td>
</tr>
<tr>
<td>Z37.–</td>
<td></td>
</tr>
</tbody>
</table>
OVERVIEW AND IMPLICATIONS

Obstetric Trauma

Perineal trauma occurs either spontaneously with vaginal delivery or secondarily as an extension to an episiotomy. Severe perineal trauma can involve damage to the anal sphincters and anal mucosa. Obstetric anal sphincter injuries (OASIS) include third and fourth degree perineal tears. Third degree tears involve a partial or complete disruption of the anal sphincter complex which includes the external anal sphincter and the internal anal sphincter. Fourth degree tears involve disruption of the anal mucosa in addition to division of the anal sphincter complex (Aascheim et al, 2011; SOGC, 2015). Please see the table below for the classification of OASIS from first to fourth degree:

<table>
<thead>
<tr>
<th>Classification of OASIS (RCOG, 2015 &amp; SOGC, 2015)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>First degree</strong></td>
</tr>
<tr>
<td><strong>Second degree</strong></td>
</tr>
<tr>
<td><strong>Third degree</strong></td>
</tr>
<tr>
<td>3a</td>
</tr>
<tr>
<td>3b</td>
</tr>
<tr>
<td>3c</td>
</tr>
<tr>
<td><strong>Fourth degree</strong></td>
</tr>
</tbody>
</table>

Obstetric anal sphincter injuries can have a significant impact on women by impairing their quality of life in both the short and long term. One of the most distressing immediate complications of perineal injury is perineal pain. Short-term perineal pain is associated with edema and bruising, which can be the result of tight sutures, infection, or wound breakdown. Perineal pain can lead to urinary retention and defecation problems in the immediate postpartum period. In the long term, women with perineal pain may have dyspareunia and altered sexual function. Additionally, complications of severe perineal tears include abscess formation, wound breakdown, anal incontinence and rectovaginal fistulae (SOGC, 2015).

Although the true prevalence of anal incontinence related to obstetric anal sphincter injuries may be underestimated, it has been determined that it ranges between 15 and 61 per cent, with a mean of 39 per cent (SOGC, 2015; Sultan & Kettle, 2009).

The incidence of obstetric and sphincter injuries varies widely between countries and within hospitals in the same country. In 2011, Canada’s crude rate of obstetric and sphincter injuries in vaginal deliveries with instrument assistance was 17 per 100 deliveries, and in vaginal deliveries without instrument assistance, it was 3.1 per 100 (OECD, 2013). This is higher than rates in the United Kingdom, Europe and Asia, however, there is likely to be significant variation in incidence reporting in addition to differences in obstetric practices (Dickinson, 2013; Hirayam et al, 2012).
Instrumental deliveries increase the risk of significant perineal trauma. Obstetrical anal sphincter injuries are more commonly associated with forceps deliveries than with vacuum-assisted vaginal deliveries, however the use of the vacuum extractor may also produce anal sphincter injury either directly or through the concomitant use of an episiotomy (Dickinson, 2013; Lacker, 2012; OECD, 2013; SOGC, 2015). Other risk factors include; Asian ethnicity, primiparity, birth weight greater than four kg, shoulder dystocia, occipito-posterior position, and prolonged second stage labour (RCOG, 2015; SOGC, 2015).

Cervical laceration
Intrapartum cervical lacerations are traditionally thought of as occurring due to the delivery of the fetus through the cervix at the time of vaginal birth. However, cervical lacerations may also be noted at the time of cesarean delivery (CD), particularly when the cesarean is performed during the second stage of labor (either due to second-stage arrest or for fetal indications) (Wong, et al. 2016), from an extension of the hysterotomy incision.

Although many studies have been published on vaginal and perineal lacerations, data on the incidence, clinical characteristics, and risk factors of intrapartum cervical lacerations is sparse (Melamed, et al. 2009). Based on the limited literature, it has been reported that intrapartum cervical lacerations are common, with an overall incidence that ranges from 25 to 90 per cent in different reports. However, most cases are asymptomatic and are noted only on routine examination of the cervix (Melamed, et al. 2009). Parikh et al, (2007) reported that while cervical lacerations occur in more than half of vaginal deliveries, they are less and 0.5 cm in length and rarely require repair.

Clinically significant cervical lacerations have been reported to complicate 0.2 to 4.8 per cent of all vaginal deliveries. Clinically significant cervical lacerations have been defined as lacerations that were associated with abnormal vaginal bleeding, those requiring cervical suturing or those lacerations that extend to involve the lower uterine segment or the vaginal wall (Melamed, et al. 2009).

There is consensus across three studies that cervical cerclage is a risk factors for cervical lacerations (Landy et al. 2011; Melamed, et al. 2009; Parikh et al, 2007). Other risk factors identified but lacking consensus across the three studies are precipitous labor, episiotomy (Melamed, et al. 2009) vacuum extraction (Landy et al 2011; Melamed, et al. 2009) and labor induction (Landy et al. 2011; Parikh et al, 2007).

Uterine rupture
Uterine rupture during labour, a rare but severe obstetric complication (Andersen et al, 2016), is defined as complete separation of the myometrium with or without extrusion of the fetal parts into the maternal peritoneal cavity and requires emergency Caesarean section or postpartum laparotomy (SOGC, 2018). The most common circumstance in which uterine rupture occurs is in women attempting vaginal birth after caesarean (VBAC) (Lang 2010). Evidence continues to suggest that women who plan a Trial of Labour (TOL) after caesarean birth, experience a greater risk of uterine rupture than women planning elective repeat Caesarean section (ERCS) (VBAC CPG Working Group, 2011).
Despite the risk of uterine rupture that comes with a TOL after caesarean, it is important to note that a VBAC is associated with decreased maternal morbidity and a decreased risk of complications in future pregnancies (American College of Obstetricians and Gynecologists, 2017). A TOL after caesarean should be considered in women who present for prenatal care with a history of previous caesarean birth. In certain situations, a TOL after caesarean will be contraindicated and a repeat Caesarean section will be advised, but in most cases, successful vaginal birth can be safely achieved for both mother and infant. Women and their healthcare providers will need to discuss the risks and benefits of VBAC when planning the birth (SOGC, 2018).

Risk of Uterine Rupture
The type and location of the previous uterine incision helps to determine the risk of uterine rupture. The incidence of uterine rupture is 0.2 to 1.5 per cent in women who attempt labour after a transverse lower uterine segment incision and 1 to 1.6 per cent in women who have had a vertical incision in the lower uterine segment. The risk is 4 to 9 per cent with a classical or “T” incision (SOGC, 2018).

Additional risk factors for uterine rupture with TOL after Caesarean:

- Those who had more than one Caesarean section (SOGC, 2018)
- The use of medication to induce labour (SOGC, 2018, American College of Obstetricians and Gynecologists, 2017; Ophir 2012).
- Prolonged labour with augmentation (SOGC, 2018)
- Delivery interval less than 18 months (SOGC, 2018)

Although, it has been reported that these factors may increase the chance of uterine rupture with TOL after Caesarean section, limited data and varying results suggests these factors require more study (SOGC, 2018; American College of Obstetricians and Gynecologists, 2017).

Protective Factors of Uterine Rupture with VBAC:

- Prior vaginal delivery. It has been found that the risk of uterine rupture decreases after the first successful VBAC. (SOGC, 2018; American College of Obstetricians and Gynecologists 2017; VBAC CPG Working Group, 2011).
- Delivery intervals greater than 24 months (VBAC CPG Working Group, 2011).

Contraindications to TOL after Caesarean: (SOGC, 2018; VBAC CPG Working Group, 2011)

- Previous classical or inverted T uterine scar.
- Previous hysterotomy or myomectomy entering the uterine cavity.
- Previous uterine rupture.
- Presence of a contraindication to labour such as placenta previa or transverse lie.
- A woman declining TOL after Caesarean and requesting an ERCS.
It has been reported that 50 to 88 per cent of women who have had a previous caesarean delivery can successfully deliver vaginally (SOGC, 2018; VBAC CPG Working Group, 2011, Kuehn 2012; Scott, 2013). Among women receiving care from Ontario midwives in 2006 to 2008, 71 per cent of women with a history of CS who opted for VBAC ultimately delivered vaginally (VBAC CPG Working Group, 2011). Despite the relative success in vaginal delivers after previous CS, the threat of uterine rupture has often dissuaded women and their physicians from attempting a trial of labor (Kuehn, 2012; Scott, 2013).

Though rare, uterine rupture is a significant risk associated with having had a previous CS (VBAC CPG Working Group, 2011) and when they do occur, physicians must intervene quickly to prevent death or severe injury to the child and the mother (Kuehn, 2012; Scott, 2013).

**GOAL**

Reduce the incidence of obstetric trauma captured in this clinical group.

**IMPORTANCE FOR PATIENTS AND FAMILIES**

In Canada, there are close to 390,000 births each year (Statistics Canada, 2017). Although many births may appear to be ‘normal’ and uneventful, data portray a different scenario. According to data from the Organisation for Economic Co-operation and Development (OECD), of the 21 reporting countries in 2015, Canada had the highest reported rate of obstetric trauma for both vaginal delivers with and without instruments (16.9 and 3.1 per cent, respectively) (OECD, 2015).

Obstetric trauma is among the most common adverse events in Canada. Obstetric trauma, including third degree and greater lacerations which may result in longer lengths of stay for mothers, as well as chronic complications such as fecal incontinence, dyspareunia, perineal pain and other pelvic floor disorders (Canadian Institute for Health Information, 2018). The immediate and long term psychological and physical impact of these complications on the mother and family are difficult to calculate. Many of the adverse events that occur are the result of system failures, rather than individual failures. It is now known that by creating a more reliable system of care we will be able to prevent, mitigate, and identify opportunities to prevent harm (IHI, 2012).

**Patient Story**

**Uterine Rupture Survival Story** (Allen, 2014)

Hi, my name is Jessica Allen …. I have three children, two boys who were delivered via C-section, and my daughter, who I tried unsuccessfully for a VBAC (vaginal birth after cesarean). She is who this story is about. Well, both her and me, I suppose. I decided on trying for a VBAC when I found out I was pregnant with her because there was a huge part of me that desired to have a 'normal' childbirth experience. I searched all over for a doctor who would let me attempt a VBA2C (vaginal birth after two caesarians), even debating home birth, because I so desperately wanted to have my last baby be how I wanted….
...I almost did it. I was probably an hour or so away from holding my baby girl. I was pushing and she was crowning! Then it got terrifying. I started having the most intense, sharp pains in my entire abdomen. I was crying and telling them that something was wrong because I should not be feeling pains like this with my epidural in place! Then my doctor saw blood in my catheter and told everyone that I needed to get into the OR right now. My uterus had ruptured.

We knew there was a chance of uterine rupture... The thought had crossed my mind, when discussing the risks of trying for a VBAC with my doctor, but it exited as quickly as it came... I never dreamed this would become my birth experience.

EVIDENCE INFORMED PRACTICE

Interventions to prevent Obstetric anal sphincter injuries (third and fourth degree perineal tears)

Risk factors for OASIS often become apparent late in labour and the degree to which these factors can potentially be modified during labour is yet to be determined. However, some methods of performing the delivery may show evidence of protection.

1. Head Control:
   In women having a spontaneous vaginal delivery, the rate of obstetrical anal sphincter injury is decreased when the obstetrical care provider slows the fetal head at crowning (SOGC, 2015).

2. Episiotomy:
   a. At the time of either a spontaneous vaginal or instrumental delivery, the obstetrical care provider should follow a policy of “restricted” episiotomy (i.e., only if indicated), rather than “liberal” use (i.e. routine), for the prevention of obstetrical anal sphincter injuries (SOGC, 2015).
   b. If an episiotomy is deemed indicated, preference for a mediolateral over a midline should be considered. The optimal cutting angle appears to be no less than 45 degrees, ideally around 60 degrees (SOGC, 2015).

3. Perineal Support:
   a. Use warm compresses to prevent perineal tears (Aasheim et al, 2017)
   b. Use antenatal perineal massage (Aasheim et al, 2017; Beckmann et al, 2013)

Prevention of Uterine Rupture: Guidelines for Vaginal Birth After previous Caesarean Birth (SOGC, 2018)

1. Provided there are no contraindications, a woman with one previous transverse low-segment Caesarean section should be offered a trial of labour (TOL) with appropriate discussion of maternal and perinatal risks and benefits. The process of informed consent with appropriate documentation should be an important part of the birth plan in a woman with a previous Caesarean section (II-2B).
2. The intention of a woman undergoing a TOL after Caesarean section should be clearly stated, and documentation of the previous uterine scar should be clearly marked on the prenatal record (II-2B).

3. For a safe labour after Caesarean section, a woman should deliver in a hospital where a timely Caesarean section is available. The woman and her healthcare provider must be aware of the hospital resources and the availability of obstetric, anesthetic, pediatric, and operating-room staff (II-2A).

4. Each hospital should have a written policy in place regarding the notification and (or) consultation for the physicians responsible for a possible timely Caesarean section (III-B).

5. In the case of a TOL after caesarean, an urgent laparotomy should be set-up immediately to facilitate delivery as quickly as possible (III-C).

6. Continuous electronic fetal monitoring of women attempting a TOL after Caesarean section is recommended (II-2A).

7. Suspected uterine rupture requires urgent attention and expedited laparotomy to attempt to decrease maternal and perinatal morbidity and mortality (II-2A).

8. Oxytocin augmentation is not contraindicated in women undergoing a TOL after Caesarean section (II-2A).

9. Medical induction of labour with oxytocin may be associated with an increased risk of uterine rupture and should be used carefully after appropriate counselling (II-2B).

10. Medical induction of labour with prostaglandin E2 (dinoprostone) is associated with an increased risk of uterine rupture and should not be used except in rare circumstances and after appropriate counselling (II-2B).

11. Prostaglandin E1 (misoprostol) is associated with a high risk of uterine rupture and should not be used as part of a TOL after Caesarean section (II-2A).

12. A Foley catheter may be safely used to ripen the cervix in a woman planning a TOL after Caesarean section (II-2A).

13. The available data suggest that a trial of labour in women with more than one previous Caesarean section is likely to be successful but is associated with a higher risk of uterine rupture (II-2B).

14. Multiple gestation is not a contraindication to TOL after Caesarean section (II-2B).

15. Diabetes mellitus is not a contraindication to TOL after Caesarean section (II-2B).

16. Suspected fetal macrosomia is not a contraindication to TOL after Caesarean section (II-2B).

17. Women delivering within 18 months of a Caesarean section should be counselled about an increased risk of uterine rupture in labour (II-2B).

18. Postdatism is not a contraindication to a TOL after Caesarean section (II-2B).
19. Every effort should be made to obtain the previous Caesarean section operative report to determine the type of uterine incision used. In situations where the scar is unknown, information concerning the circumstances of the previous delivery is helpful in determining the likelihood of a low transverse incision. If the likelihood of a lower transverse incision is high, a TOL after Caesarean section can be offered (II-2B).

Vaginal Birth after Previous Low-Segment Caesarean Section: Recommendations from Association of Ontario Midwives (VBAC CPG Working Group, 2011)

1. The risks and benefits of VBAC compared with ERCS should be discussed with women who have a history of CS. This discussion, including the woman’s decision, should be appropriately documented in the woman’s chart.

2. Recommend planned VBAC as a means to achieve the benefits of normal childbirth, while being sensitive to each woman’s concerns and values and respecting her informed decision.

3. Recommend planned VBAC for women intending to have more than one child after the previous CS. Increased maternal and perinatal morbidity associated with ERCS and multiple CS has long-term health implications.

Recommendations 1-3 presuppose an absence of contraindications to vaginal birth/VBAC.

4. Midwives should discuss the relevant factors which may influence the likelihood of success or risk of VBAC with their clients. Inform clients that such factors are not contraindications to VBAC but may be considerations in their care during labour.

5. In developing the plan for care of a woman planning a VBAC, request and review a copy of the operative record from the previous caesarean section(s). Inability to obtain the previous record should be documented in the woman’s chart.

6. For women planning VBAC, induction of labour should be avoided unless the benefits outweigh the risks. When necessary, midwives should consult obstetrics and review the risks and benefits of methods of induction with the woman and the consultant. As with any clinical situation in which midwives manage care, a clear plan for ongoing communication with the consultant about progress in labour and maternal and fetal well-being is recommended when midwives are primary care providers for induction of VBAC labour.

7. When augmentation or induction of labour is required during a VBAC labour and the midwife is the primary care provider, the midwife should take into account how quickly the obstetrical and pediatric team will be available in the event that emergency assistance is required. This may include ongoing communication with the team about progress in labour and maternal and fetal well-being.

8. Fetal heart monitoring may occur by:
   a. intermittent auscultation q 15 minutes in active labour and q 5 minutes in the second stage; or
   b. using continuous EFM per current protocols.
The relative and absolute risks of severe adverse events in the absence of continuous electronic fetal monitoring are unknown.

9. Continuous EFM should be used if labour is prolonged or if any fetal heart rate abnormalities are noted with intermittent auscultation.

10. For women with a prior history of CS it is important for midwives to diagnose and document the onset of active labour accurately and to be vigilant for prolonged labour.

11. For women with a prior history of CS in whom prolonged labour has been identified, obstetric consultation should be requested and IV access and continuous EFM monitoring should be initiated, if not already in place, while awaiting obstetric consultation.

12. Prompt consultation should be initiated if the woman labouring after a previous CS experiences any unusual pain or if epidural anaesthesia is being used and is not effective.

13. An informed choice discussion regarding the risks and benefits of VBAC and choice of birth place should be comprehensive and well documented. Documentation of this discussion should include: an outline of risks and benefits discussed, the woman’s values and preferences, and any recommendations made by the midwife, if applicable.

14. Women should be informed that there is little published evidence on the outcomes, including safety, of VBAC in the out-of-hospital setting. While the quality of these studies varies, they do not demonstrate increased risk.

15. For clients planning VBAC, describe the VBAC policies in place at the hospital(s) where the attending midwives have hospital privileges. Women’s informed choices to accept or decline recommended interventions in hospital should be respected.

16. For women who have undergone a CS, discuss the association between delivery interval and risk of uterine rupture and considerations for family planning prior to discharge from midwifery care.

**Conduct Clinical and System Reviews**

Given the broad range of potential causes of complications from obstetric trauma, in addition to the recommendations listed above, we recommend conducting clinical and system reviews to identify latent causes and determine appropriate recommendations.

If your review reveals that the healthcare facility’s obstetric trauma cases are linked to specific processes or procedures, you may find guidelines related to the specific procedure here:

- The American Congress of Obstetricians and Gynecologists: [www.acog.org](http://www.acog.org)
CLINICAL AND SYSTEM REVIEWS, INCIDENT ANALYSES

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 analysis methods are included in Resources for Conducting Incident and/or Prospective Analyses section of the Introduction to the Hospital Harm Improvement Resource.

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

Useful resources for conducting clinical and system reviews:

- Chart Audit Review Process (see Introduction to the Improvement Resource)
- Canadian Incident Analysis Framework
- Canadian Patient Safety Institute Patient Safety and Incident Management Toolkit
- HIROC Critical Incident & Multi-Patient Events Risk Resource Guide
- Institute for the Safe Medication Practices Canadian Failure Mode and Effects Analysis Framework
- Institute for Healthcare Improvement Failure Mode and Effects Analysis Tool

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 actually being carried out (process measures), and whether any unintended consequences ensue (balancing measures).

Below are some recommended measures to use, as appropriate, to track your progress. 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.

• 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).

For more information on measuring for improvement contact the Canadian Patient Safety Institute Central Measurement Team at measurement@cpsi-icsp.ca

Outcome Measures

1. Per cent of patients with vaginal delivery (with and/or without instrumentation) with an obstetric anal sphincter injury (third and fourth degree perineal tears).

2. Per cent of deliveries resulting in uterine rupture:
   • Single parity
   • Previous vaginal delivery with no history of uterine scar
   • VBAC or previous uterine incision
   • Those with more than one caesarean section

Process Improvement Measures

Obstetric anal sphincter injuries (third and fourth degree perineal tears)

1. Percentage of vaginal deliveries in which the obstetrical care provider slows the fetal head at crowning.

2. Percentage of vaginal deliveries in which an episiotomy was performed? (low is better)

3. Percentage of episiotomies performed using a mediolateral incision with a cutting angle between 45 degrees-60 degrees.

4. Percentage of vaginal deliveries in which warm compresses were applied and antenatal perineal massage was performed.

Uterine rupture

1. Per cent of women with no contraindications to a TOL and one or more previous transverse low-segment Caesarean section that are offered a trial of labour (TOL).

2. Per cent of women who are undergoing a TOL after Caesarean who have all of the following completed:
   a. Informed consent
   b. Counselling on risks / benefits associated with ERCS vs TOL (i.e. increased risk of uterine rupture for those delivering within months of Caesarean section)
c. Documentation of the location of previous uterine scar is recorded.
d. In hospital delivery with obstetric, anesthetic, pediatric, and operating-room staff available and notified.
e. Urgent laparotomy set-up is completed to facilitate rapid delivery if necessary.
f. Continuous electronic fetal monitoring

STANDARDS AND REQUIRED ORGANIZATIONAL PRACTICES

Health Standards Organization (HSO)

While there are no standards specific to obstetrical trauma, the standards set most applicable to this resource is Obstetrics Services.

GLOBAL PATIENT SAFETY ALERTS

Global Patient Safety Alerts (GPSA) 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.

Recommended search terms:

- Obstetric trauma
- Vaginal birth after Caesarean section (VBAC)
- Uterine Rupture
- Third degree perineal tear
- Fourth degree perineal tear
- Obstetric anal sphincter injuries

OBSTETRIC TRAUMA SUCCESS STORIES

Managing Obstetrical Risk Efficiently (MORE\textsuperscript{OB}) in British Columbia

The MORE\textsuperscript{OB} program is an interprofessional patient safety program that aims to decrease the number of adverse events and errors in obstetrics. The program is designed to help create a working environment in the birthing unit that eliminates professional autonomous silos, organizational hierarchy, communication gaps, uncoordinated teamwork, and culture of blame.

The program is able to accomplish this goal by bringing together the obstetrical team for regular training, practise, and case review. Activities within the program include environmental scans, patient satisfaction surveys, staying current with new evidence and best practices, participating in workshops, and competency drills.

The structure of MORE\textsuperscript{OB} is based on the high-reliability organizations principles:

1. Patient safety is the priority and everyone’s responsibility.
2. Communication is highly valued.
3. Operations are a team effort.
4. Hierarchy disappears in an emergency.
5. Emergencies are rehearsed.
6. Interprofessional reviews are held routinely.

The MORE\textsuperscript{OB} program was initially created by the Patient Safety Division of the Society of Obstetrics and Gynaecology of Canada (SOGC) in 2002. In 2006, Northern Health Authority in British Columbia adopted the MORE\textsuperscript{OB} program in its clinical sites.

**IMPACT**

Evaluation of the program in 2009 indicated that 93 per cent of Northern Health obstetrical healthcare providers, including physicians, midwives, nurses, and administrators, have been participating in the program. Upon evaluating the outcomes, the Patient Safety and Quality Council stated that the health region experienced a growth in leadership capacity towards safer patient care. Surveys have indicated that care providers have an improved sense of work culture, resulting in improved retention and recruitment in all sectors. There is a greater sense of teamwork and, since participants work more cohesively, there is a growing pride in the team in which they are part. There has been steady growth and improvement with self-reported culture change as per the Culture Change Assessment tool. Knowledge enhancement results have improved; specifically, all disciplines demonstrate a common knowledge base. Participants are getting the value of audits and tracking no-harm events on a regular basis as well as participating in routine skills/emergency drills in many sites. Statistical information from the BC Perinatal Health Program database also shows improvements in the number of labour inductions, Caesarean section deliveries, and newborns with cord blood gases after delivery.

Since Northern Health Authority’s implementation of MORE\textsuperscript{OB}, the program has been implemented across Canada and the United States with positive results. It has expanded to include more than 260 hospitals and 13,000 participants.

In over 10 years of North American MORE\textsuperscript{OB} activity, participating hospitals indicate that it has:

- improved outcomes and reduced harm to mothers and babies;
- decreased liability incurred costs and average cost per claim;
- improved standardization and consistency of care practices;
- improved and sustained patient safety culture;
- increased core clinical knowledge for participants in all hospital care levels; and
- created an environment in which participants want to stay engaged.

In addition, independent study data found that the MORE\textsuperscript{OB} program had significant and lasting positive effects, such as:

- length of stay greater than two days reduced by 12 per cent;
• infants on ventilators reduced by 31 per cent;
• severe infant morbidity reduced by 24 per cent; and
• infant mortality reduced by 18 per cent.

In British Columbia, MOREDB was implemented in Kamloops and Kelowna in 2012 and 2013, respectively. Evaluation at these sites has not been undertaken to date.
REFERENCES


Canadian Institute for Health Information. *Indicator library: Obstetric trauma (with instrument).* Available at: http://indicatorlibrary.cihi.ca/pages/viewpage.action?pageId=5111843


Statistics Canada. Table 17-10-0016-01. Estimates of births, by sex, annual. Ottawa, ON: Statistics Canada. Available at: https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=171001601&pickMembers%5B0%5D=1.1


**SELECTED OBSTETRIC TRAUMA RESOURCES**

**Professional Associations and Helpful Websites**

- American College of Obstetricians and Gynecologists. www.acog.org
- Association of Women’s Health, Obstetric and Neonatal Nurses. www.awhonn.org
- Ontario Midwives. www.ontariomidwives.ca
- Royal College of Obstetricians & Gynaecologists (UK). www.rcog.org.uk
- Society of Obstetricians and Gynaecologists of Canada. www.sogc.org

**Clinical Practice Guidelines**


### Additional Resources for Obstetric Trauma


