



# Perinatal Services BC

An agency of the Provincial Health Services Authority

## **Validation of the indications for cesarean delivery in the British Columbia Perinatal Data Registry**

**A Perinatal Services BC Surveillance Special Report**

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## Surveillance Special Report

**Validation of the indications for cesarean delivery in the British Columbia Perinatal Data Registry** is Volume 1 Issue No. 5, 2012 of the Perinatal Services BC's Surveillance Special Reporting Series. The goal of this publication is to provide information on the accuracy of the primary indication for cesarean delivery field in the BC Perinatal Data Registry compared to the documentation in the patient medical record.

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### About Perinatal Services British Columbia

Perinatal Services BC (PSBC) is an agency of the Provincial Health Services Authority (PHSA) and replaces its predecessors, the BC Reproductive Care Program and the BC Perinatal Health Program. PSBC provides strategic leadership on the full continuum of perinatal care throughout the province focusing on perinatal care planning, service delivery and quality improvement. PSBC is committed to work collaboratively with local health authorities and stakeholders to improve perinatal health outcomes and enhance the quality of perinatal services in BC.

Perinatal Services BC's mandate is directly supported through the BC Perinatal Data Registry (PDR). A quality-controlled database, the PDR contains data abstracted from obstetrical and neonatal medical records on 99% of births in the province (either in obstetrical facilities or occurring at home attended by BC Registered Midwives). The PDR provides comprehensive provincial-wide data that serves the purpose of collecting, summarizing, interpreting and reporting on perinatal events, outcomes and care processes at a community, regional and provincial level.

## Abstract

**Background:** Information on the primary indication for cesarean delivery is required for understanding health care processes and cesarean delivery rates. The purpose of this study was to validate the accuracy of the primary indication for cesarean delivery in the British Columbia Perinatal Data Registry (PDR) compared to documentation in the medical record.

**Methods:** The medical records of 405 women who had a cesarean delivery at one major tertiary centre in British Columbia between March 16, 2008 and March 28, 2009, were selected for the study. Charts were reviewed from May to July 2010 by an experienced abstractor from Perinatal Services BC. The indication for cesarean delivery was abstracted from up to 12 documents in the medical chart. We compared the indication for cesarean delivery in the PDR to the documentation in the Doctor's Progress Notes, the Operative Report, and the Labour and Birth Summary.

**Results:** This paper focused on singleton, cesarean deliveries only. Among 366 cesarean deliveries of singleton fetus, an indication for cesarean delivery was found most often on the Operative Report, followed by the Progress Notes, and the Labour and Birth Summary. For charts with at least one indication on each of these documents, 91% had the same indication on all sources. Overall agreement between the indication for cesarean in the chart and the PDR was 82.5%. Indication-specific concordance was lowest for VBAC declined/Maternal request (33%) and malposition/malpresentation (53%).

**Conclusions:** Indications for cesarean delivery were consistently documented in the Operative Report, Progress Notes, and the Labour and Birth Summary. The primary indication for cesarean delivery as recorded in the PDR was consistent with documentation from the medical record for 83% of the charts assessed. Indication-specific concordance was at least 80% for most indications, but was low for malposition/malpresentation and VBAC declined/Maternal request. Several factors contribute to the disagreement between the PDR and the medical chart, including the absence of a specific place in the chart where the indication for cesarean delivery is consistently noted and ambiguity of several of the PDR indications. It is recommended that consultation with health care providers be undertaken and a comprehensive list of indications developed and implemented across the province. Concurrent efforts to remove ambiguity from problematic indications such as malposition/malpresentation and VBAC declined/Maternal request are highly recommended.

## Introduction

Cesarean delivery (CD) rates have increased in British Columbia from 26.6 per 100 deliveries in 2000/2001 to 30.8 per 100 deliveries in 2010/2011.<sup>1</sup> This has led to the concerns about the appropriateness of using this obstetric intervention.<sup>2</sup> One crucial piece of information required for investigating the appropriateness of CD relates to the indication for cesarean delivery. This information is required to understand the underlying factors in increasing CD rate and to identify strategies to ensure operative delivery is used appropriately.

Indications for cesarean delivery are recorded in medical charts and abstracted into the BC Perinatal Data Registry (PDR) and therefore available for analysis. As part of its data quality activities, Perinatal Services BC undertook a validation project aimed at ascertaining the accuracy of the indications for cesarean delivery in the PDR.

## Methods

A convenience sample of charts from one major tertiary centre in British Columbia was reviewed for this study. The validation study was performed by comparing the primary indication for cesarean delivery in the PDR with the indication(s) for cesarean delivery documented in the medical chart.

We selected the charts of 405 women who delivered by cesarean between March 16, 2008 and March 28, 2009. Chart reabstraction was performed by an experienced abstractor from May to July 2010. Information on the indication for cesarean delivery was abstracted from up to 12 source documents from the woman's medical record. Since the Doctor's Progress Notes, the Labour and Birth Summary<sup>3</sup>, and the Operative Report are key sections of the medical record where information on the indication for cesarean are thought to be recorded, our analyses focussed on these three sources. The list of indications for cesarean delivery available in the PDR is shown below.

Indication for caesarean delivery	Description
Dystocia / CPD <sup>1</sup>	An abnormal or difficult childbirth or labour.
Malposition or malpresentation	Abnormal position of the baby at birth making normal delivery difficult or impossible.
Breech	The position of the baby in the uterus such that the buttocks will be delivered first as opposed to the normal head-first position.
Fetal distress	Increased or decreased fetal heart rate (tachycardia or bradycardia) especially during and after a contraction. Decreased variability in the fetal heart rate.
Repeat cesarean	Mother had a previous cesarean and is not a candidate for vaginal birth (a medical decision).
VBAC declined / Maternal request	<u>VBAC declined</u> : Mother had a previous cesarean and is eligible for a vaginal birth but declines a VBAC attempt. <u>Maternal request</u> : Mother requests a cesarean in the absence of an absolute medical indication.
Abruptio placenta	Premature separation of the placenta from the uterus.
Placenta previa	The placenta lies low in the uterus and partially or completely covers the cervix.
Active herpes	A common and highly infectious disease that is transmitted from one person to another during sexual activity.
"Other"	Other reasons not included in the list.

We compared the cesarean delivery indication recorded in the PDR with the indication(s) documented in the medical chart. We also compared information from different parts of the medical record – with a focus on the Doctor's Progress Notes, the Labour and Birth Summary, and the Operative Report – in order to determine which of these three documents served as the most common source for abstracting indications in the PDR. Since the PDR allows for one indication compared to multiple indications possible in the chart, all indications from the chart were

<sup>1</sup> Cephalo-pelvic disproportion

compared to the primary cesarean delivery indication in PDR. Additional analyses were carried out for large discrepancies between chart sources and the PDR.

This study was carried out as a data quality improvement project and ethics approval was not required.

## Results

Data was abstracted from 12 specific sections of 405 medical records with analysis limited to 366 records of women who delivered singleton infants by cesarean.

### Indication for cesarean delivery recorded in the patient medical record

The indications for cesarean delivery noted in the Doctor's Progress Notes, Labour and Birth Summary, and Operative Report of singleton deliveries are presented in Table 1. From all three sources, the most commonly noted indications were repeat cesarean, dystocia/CPD, fetal distress, and "other". An indication for cesarean was not found on six Operative Reports, 17 Progress Notes, and 54 Labour and Birth Summaries. Fifteen percent of charts had more than one indication for cesarean delivery recorded on either the Progress Notes or the Labour and Birth Summary, and 26% of charts had more than one indication noted on the Operative Report.

**Table 1. Indication for cesarean delivery by chart source**

Indication for cesarean delivery	Indication in Progress Notes n (%)	Indication in Labour and Birth Summary n (%)	Indication in Operative Report n(%)
Dystocia/CPD	93 (25.4)	75 (20.5)	108 (29.5)
Malposition/ malpresentation	14 (3.8)	14 (3.8)	21 (5.7)
Breech	40 (10.9)	38 (10.4)	41 (11.2)
Fetal distress	70 (19.1)	54 (14.8)	70 (19.1)
Repeat cesarean	103 (28.1)	108 (29.5)	113 (30.9)
VBAC declined/Maternal request	11 (3.0)	7 (1.9)	20 (5.5)
Abruptio placenta	4 (1.1)	5 (1.4)	5 (1.4)
Placenta previa	12 (3.3)	14 (3.8)	13 (3.6)
Active herpes	1 (0.3)	1 (0.3)	1 (0.3)
"Other"	56 (15.3)	46 (12.6)	68 (18.6)
<b>No indication documented</b>	<b>17 (4.6)</b>	<b>54 (14.8)</b>	<b>6 (1.6)</b>

### Agreement across chart documents regarding the indication for cesarean delivery

Most records had an indication for cesarean noted on all three chart sources (295/366, 80.6%). Among records with indications noted on all sources, the same indication was noted 91% of the time (Table 2).

Across these three chart documents, herpes (100%), breech presentation (81%) and placental problems (previa 85.7%, abruption 67%) had the highest percent agreement while VBAC declined/Maternal request (8.3%) and malposition/ malpresentation (24%) had the lowest agreement (Table 2).

**Table 2. Agreement between chart sources regarding indication for cesarean delivery for records with an indication noted on all three documents**

Indication for cesarean delivery	Indication noted on all sources n (%)
Dystocia/CPD	66 (59.5)
Malposition/malpresentation	6 (24)
Breech	35 (81.4)
Fetal distress	45 (57.0)
Repeat cesarean	83 (65.9)
VBAC declined/Maternal request	2 (8.3)
Abruptio placenta	4 (66.7)
Placenta previa	12 (85.7)
Active herpes	1 (100)
“Other”	28 (35)
<b>Total</b>	<b>269 (91.2)</b>

Agreement between the PDR and chart documents

Agreement between the indication for cesarean delivery recorded in the PDR and indication(s) recorded in the patient chart was high (82.5%): the indication in the PDR was found on at least one of the three primary chart sources for 302 of 366 patients (Table 3).

**Table 3. Agreement between the PDR and chart documentation regarding the primary indication for cesarean delivery**

Indication for cesarean delivery	Overall PDR Distribution n (%)	Matches at least one chart source n (%)	Matches no chart source n (%)
Dystocia/CPD	63 (17.2)	63 (100)	0 (0)
Malposition/malpresentation	30 (8.2)	16 (53)	14 (47)
Breech	35 (9.6)	34 (97)	1 (3)
Fetal distress	61 (16.7)	60 (98)	1 (2)
Repeat cesarean	65 (17.8)	65 (100)	0 (0)
VBAC declined/Maternal request	57 (15.6)	19 (33)	38 (67)
Abruptio placenta	5 (1.4)	4 (80)	1 (20)
Placenta previa	14 (3.8)	12 (86)	2 (14)
Active herpes	0 (0)	0 (0)	0 (0)
“Other”	36 (9.8)	29 (81)	7 (19)
<b>Total</b>	<b>366 (100)</b>	<b>302 (82.5)</b>	<b>64 (17.5)</b>

Agreement between the PDR and the patient chart exceeded 95% for four indications (dystocia/CPD, repeat cesarean, fetal distress, and breech) and was at least 80% for three more (placenta previa, abruption placenta, and “other”). The lowest agreement was observed for records where the PDR indicated malposition/malpresentation (53%) or VBAC declined/Maternal request (33%).

Chart information for highly discordant indications

Labour and delivery position and presentation were examined for the 14 records with malposition/malpresentation recorded in the PDR but not documented on any of the chart sources. For three charts (21.4%) all three documents listed breech as the indication for cesarean; delivery presentation was also breech. For 10 charts (71.4%), at least one chart source was reabstracted with dystocia/CPD as the primary indication; nine of these women laboured in occipito-posterior or occipito-transverse position.

Among the 38 records classified as VBAC declined/Maternal request in the PDR but not documented on any of the three main chart sources, 22 (57.9%) were reabstracted as repeat cesarean, six (15.8%) were reabstracted as “other”, and one (2.6%) as abruptio placenta from all three primary chart sources. Where comments were available, several of the “other” indications were “maternal anxiety” or “previous difficult delivery”.

## Discussion

A validation study was conducted between the PDR and information reabstracted from the charts of 366 women who delivered singleton infants via cesarean section at one major tertiary centre in British Columbia. Of the three primary chart sources assessed, an indication for cesarean delivery was most often present on the Operative Report, followed by the Progress Notes, and the Labour and Birth Summary. Most charts (81%) had an indication recorded on all three documents, and up to a quarter of charts had multiple indications noted on a given document.

While agreement between documents in a chart was high – the same indication was noted on all three sources 91% of the time – the indication for cesarean recorded in the PDR was found on at least one of these chart sources 82.5% of the time. Indications such as dystocia/CPD, breech, fetal distress, and repeat cesarean had the highest concordance (> 95%), but was low for malpresentation/malposition and VBAC declined/Maternal request.

With the exception of malpresentation/malposition and VBAC declined/Maternal request indications, the PDR accurately reflects the indication for cesarean delivery noted on the patient chart. The problems with these indications; however, compromise the accuracy of the information on cesarean indications. Addressing this problem will require both improvements to the options for and definitions of indications for cesarean delivery, and standardization of medical records so there is one authoritative place where the indication for cesarean is documented. These actions will improve the accuracy and consistency of chart abstraction and minimize the need to reconcile ambiguous indications. Clarifying definitions of confounding variables such as dystocia/CPD, malpresentation/malposition, repeat cesarean and VBAC declined/Maternal request are also highly recommended.

## Recommendations

Based on this review, we recommend the following actions:

1. Perinatal Services BC establish a schedule of regular data quality assessment activities
2. In conjunction with health care providers and health information staff, Perinatal Services BC review the list of CD indications available in the PDR, addressing indications that are ambiguous and problematic
3. Redesign provincial perinatal forms to include a standardized area to note the indication for cesarean
4. Perinatal Services BC share the results of this and future reabstraction studies with appropriate stakeholders, including health care providers and health information personnel.

## Limitations

Our objective in this data validation study was to obtain insight into documentation and abstraction processes, we did not attempt to estimate agreement statistics (such as the kappa statistic) which exclude chance agreement. Nevertheless, it should be noted that an experienced abstractor collected information from the medical charts. Another key limitation of our study was sample size. Despite abstracting over 400 charts, we limited the analysis to singleton deliveries and examined only a handful of charts. Finally, our study was restricted to a single hospital, thus limiting the generalizability of our findings.

## **Conclusions**

The primary indication for cesarean delivery is most often recorded on the Operative Report, followed by the Progress Notes, and the Labour and Birth Summary. There is strong agreement across these three primary chart sources with respect to the indication for delivery. With the exception of malposition/malpresentation and VBAC declined/Maternal request, the indication for cesarean noted in the PDR shows strong agreement with the medical chart.

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