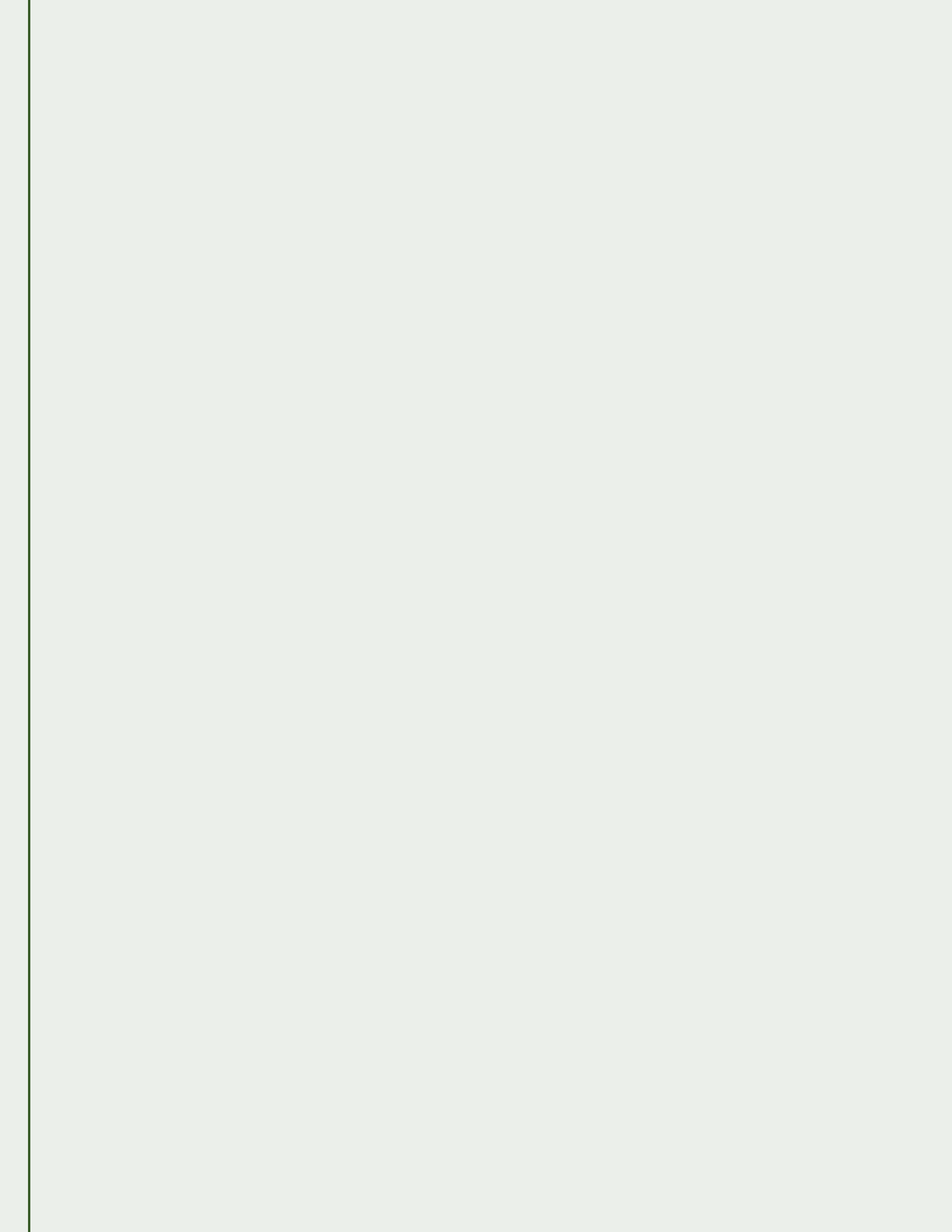


SECTION ONE

Normal Births



*Optimizing Neonatal, Maternal
and Fetal Health*



Section One: Normal Births

Professional associations in Canada and other industrialized countries have become increasingly concerned about the evident rise in medical intervention in labour and delivery. For example, the Society of Obstetricians and Gynaecologists of Canada (SOGC) issued a statement in 2008 highlighting the increasing caesarean section rates in Canada.¹ Their Joint Policy Statement on Normal Childbirth expressed concern about the trend towards increasing intervention rates, and called for a focus on promoting the natural birthing process using minimal interventions while ensuring the safety of both mother and baby. Of equal concern is the fact that “social and cultural changes have fostered insecurity in women with regard to their ability to give birth without technological intervention”.¹

In order to determine when medical intervention may be necessary during labour and delivery, the SOGC distinguished between normal birth and births requiring intervention. Normal birth includes both normal labour and normal delivery. According to the Joint Policy Statement, normal labour is either spontaneous and occurs between 37 and 41 completed weeks’ gestation or induced after 41 weeks’ gestation, and proceeds routinely through the third stage. Normal delivery is unassisted (although the use of augmentation in established labour is not precluded), requires that the infant presents in vertex position, and includes the opportunity for skin-to-skin contact and breastfeeding within an hour after birth. This definition also includes some medical interventions such as labour augmentation after spontaneous onset of labour, artificial rupture of membranes outside of labour induction, and pharmacological use of pain relief, including epidurals.

Normal birth has been similarly defined by the Royal College of Obstetricians and Gynaecologists (RCOG) in Britain.² The RCOG, however, places no restrictions on gestational age or fetal presentation. Induction of labour (regardless of gestational age) and use of epidural anesthesia are excluded from the category of normal deliveries. While comprehensive, the SOGC and RCOG concepts of normal birth cannot measure the very thing that is of primary concern – the increased use of medical intervention, particularly in low-risk populations. This is because the use of medical interventions, such as assisted vaginal delivery or caesarean section, automatically excludes a woman from the category of normal birth. Therefore, the designation of “normal birth” is given in retrospect.

For the purposes of this analysis on “normal birth”, BCPHP has identified a category of pregnant women with the following criteria:

- Spontaneous onset of labour
- Term delivery (37+0 to 41+6 weeks’ gestation)
- Singleton pregnancy
- Baby is in vertex presentation
- No previous history of caesarean delivery

While it is understood that such a definition will result in the inclusion of some women with underlying medical issues as well as some with problems of pregnancy, such as preeclampsia or diabetes, exclusion of women who were induced implies that, if present, these conditions were mild or moderate.

Reviewing birth outcomes among “normal birth” women by parity provides information on the likelihood of such women encountering intervention during labour for some reason. Such an approach can illuminate practice variance across the province.

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In 2007/2008, **53.2%** of all women delivering in British Columbia were normal at the onset of labour using the BCPHP definition described above (n=23,016). Of these women, **76.4%** had a spontaneous vaginal delivery, leaving almost one quarter (**23.7%**) who had either an assisted vaginal delivery or a caesarean section. Table 1.1.0 shows that women of parity ≥ 1 were considerably more likely to have a spontaneous vaginal delivery compared

to nulliparous women (**92.6%** compared to **60.2%**). Assisted vaginal deliveries (involving the use of forceps and/or vacuum extraction) were more common among nulliparous women (**19.9%**) than women of parity ≥ 1 (**4.8%**). As well, nulliparous women were significantly more likely to experience caesarean section deliveries (**19.9%**) in comparison to women of parity ≥ 1 (**2.6%**).

Table 1.1.0 Method of delivery by parity for “normal birth” women, British Columbia, 2007/2008

Parity	Delivery Method						Total Deliveries
	Spontaneous Vaginal		Assisted Vaginal		Caesarean Section		
	#	%	#	%	#	%	
Nulliparous	6,934	60.2	2,291	19.9	2,295	19.9	11,520
Parity ≥ 1	10,643	92.6	554	4.8	299	2.6	11,496
Total	17,577	76.4	2,845	12.4	2,594	11.3	23,016

Source: BC Perinatal Database Registry

Notes: Indicator definitions are listed in Appendix 1.

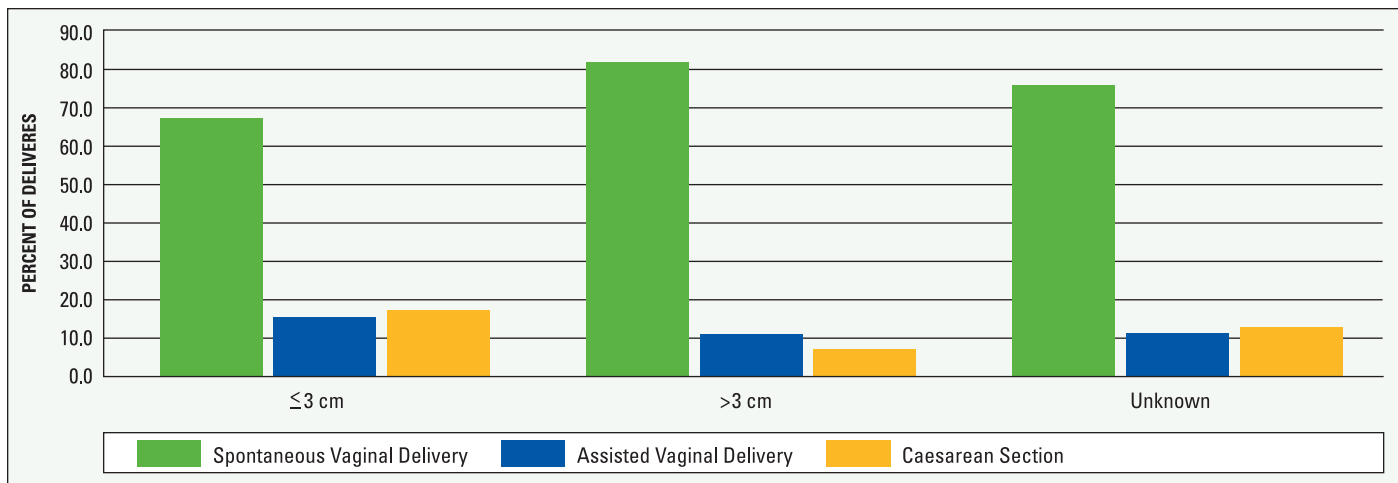
BCPHP “normal” at the onset of labour definition was used for this analysis.

Cervical dilation on admission is a crude marker for likelihood of achieving a spontaneous vaginal delivery. Among women who presented later in labour (cervical dilation >3 centimetres on admission), **82%** achieved a spontaneous vaginal delivery, while among those with a cervical dilation of ≤ 3 centimetres on admission, **67.3%** went onto spontaneous

vaginal delivery. Women who presented to hospital in more advanced labour are less likely to have a caesarean section than those who presented earlier in labour (**7.1%** versus **17.2%**, Figure 1.1.0).

Not surprisingly, duration of labour and mode of delivery were related (Table 1.1.1).

Figure 1.1.0 Cervical dilation on admission by method of delivery for “normal birth” women, British Columbia, 2007/2008



Source: BC Perinatal Database Registry

Notes: Indicator definitions are listed in Appendix 1.

BCPHP “normal” at the onset of labour definition was used for this analysis.

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Table 1.1.1 Labour characteristics by method of delivery and parity for “normal birth” women, British Columbia, 2007/2008

	Delivery Method		
	Spontaneous Vaginal	Assisted Vaginal	Caesarean Section
Nulliparous			
Average duration of first stage of labour (hours)	8.9	11.0	12.6
Average duration of second stage of labour (hours)	1.3	2.4	3.9
Percentage with labour augmentation	50.9	68.2	70.1
Percentage with external electronic fetal monitoring	66.5	85.4	90.3
Parity ≥1			
Average duration of first stage of labour (hours)	5.2	6.9	8.5
Average duration of second stage of labour (hours)	0.3	1.0	3.3
Percentage with labour augmentation	48.1	58.5	57.5
Percentage with external electronic fetal monitoring	50.9	75.1	83.3

Source: BC Perinatal Database Registry

Notes: Indicator definitions are listed in Appendix 1.

BCPHP “normal” at the onset of labour definition was used for this analysis.

The logic used to develop the care provider indicator does not fully describe the multiple types of care providers potentially involved in a women’s delivery admission nor does it describe the care provider types seen during pregnancy for antenatal care (and thus does not necessarily reflect the influence of an antenatal care provider on a woman’s preparation and counseling for labour and birth). Furthermore, the population served by the diverse groups of providers is disparate as some will self select by request and others will be assigned by referral on the basis of risk. As such, an algorithm³ previously developed by the BCPHP which describes care provider type during delivery admission was used to account for the various care providers feasibly involved in a women’s delivery admission, which may differ from the ‘most responsible care provider’ field and the ‘care provider at delivery’ field, both of which only describe one care provider type.

Using this algorithm, of the women defined as “normal birth” delivering in British Columbia in 2007/2008 with a registered midwife involved during their delivery admission, **84.3%** had a spontaneous vaginal delivery, while **9.0%** had a caesarean section (Table 1.1.2). With an obstetrician as care provider (without a family physician or midwife), these women had a spontaneous vaginal delivery rate of **68.3%** and a caesarean section rate of **15.6%**. (Table 1.1.2). It is important to note that the selection of a care provider in pregnancy is dependent on many factors, and there is a selection bias for women who choose certain care provider types.

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Table 1.1.2 Method of delivery by care provider for “normal birth” women, British Columbia, 2007/2008

Care Provider	Delivery Method						Total Deliveries
	Spontaneous Vaginal		Assisted Vaginal		Caesarean Section		
	#	%	#	%	#	%	
Midwife	2,251	84.3	180	6.7	239	9.0	2,670
Family Physician/General Physician	11,580	77.9	1,785	12.0	1,498	10.1	14,863
Obstetrician/Gynecologist	3,734	68.3	880	16.1	854	15.6	5,468

Source: BC Perinatal Database Registry

Notes: Indicator definitions are listed in Appendix 1.

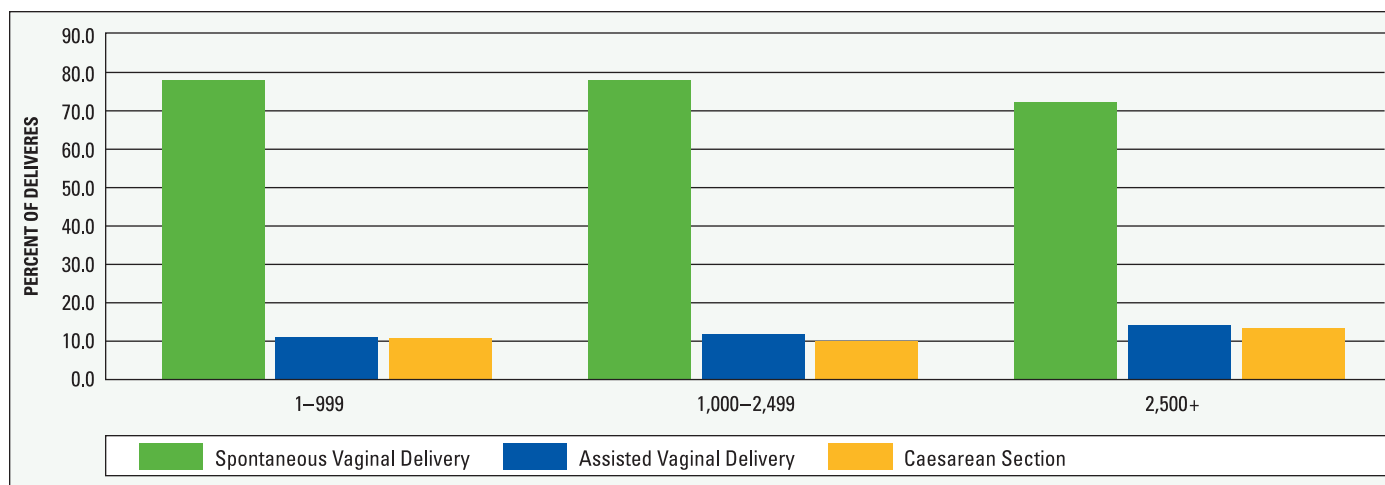
BCPHP “normal” at the onset of labour definition used in this analysis

Please refer to BCPHP Caesarean Section Task Force Report 2008 for a description of algorithm used to develop this indicator.

Figure 1.1.1 depicts rates of delivery methods according to hospital size for all women defined as “normal”. Such women delivering in hospitals with between 1 and 999 births per year have similar delivery outcomes (i.e. method of delivery) as those women delivering in hospitals with between 1,000 and 2,499 births per year. Women delivering in a large hospital (2,500+ deliveries per year) are slightly more likely to have a birth with an intervention (assisted vaginal delivery or caesarean

section) than those women delivering in smaller hospitals. However, since it is also more likely that women who experience complicated labour and delivery will be transferred to larger hospitals with more specialized care, this information must be interpreted with caution: the higher rates in larger hospitals may potentially be due to the transfer of women requiring assisted vaginal or caesarean delivery out of smaller hospitals, which would affect the rates in both settings.

Figure 1.1.1 Method of delivery by hospital size for “normal birth” women, British Columbia, 2007/2008



Source: BC Perinatal Database Registry

Notes: Indicator definitions are listed in Appendix 1.

BCPHP “normal” at the onset of labour definition used in this analysis.

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Table 1.1.3 shows neonatal outcomes by delivery method for all “normal birth” women in British Columbia in 2007/2008. In total, there were 23,004 live newborns born to these women. When compared to babies born via spontaneous vaginal delivery, babies born via caesarean section were more likely to require initial resuscitation (which includes use of oxygen, IPPV via mask/endotracheal tube, chest compressions, and/or drugs given in the first hour of life) (11.71% vs 22.35%)

and NICU admission (2.45% vs 7.76%). As well, the percentage of small-for-gestational-age babies was slightly larger in the spontaneous vaginally delivered group of babies when compared to those babies delivered by caesarean section (6.61% vs. 5.94%). Finally, 1.62% of babies born via spontaneous vaginal delivery were macrosomic compared to 3.78% of those born via caesarean section.

Table 1.1.3 Neonatal outcomes by method of delivery for “normal birth” women, British Columbia, 2007/2008

Neonatal Outcomes	Delivery Method						Total Deliveries	
	Spontaneous Vaginal		Assisted Vaginal		Caesarean Section			
	#	%	#	%	#	%	#	%
All Newborns	17,577		2,845		2,594		23,016	
Stillbirths	8		1		3		12	
Live Newborns	17,569		2,844		2,591		23,004	
5 minute Apgar <7	157	0.89	46	1.62	36	1.39	239	1.04
Initial resuscitation	2,058	11.71	502	17.65	579	22.35	3,139	13.65
NICU admission	431	2.45	147	5.17	201	7.76	779	3.39
Small-for-gestational-age	1,162	6.61	249	8.76	154	5.94	1,565	6.80
Macrosomic (≥ 4,500 grams)	285	1.62	37	1.30	98	3.78	420	1.83
Perinatal death	3	0.02	0	0.00	1	0.04	4	0.02

Source: BC Perinatal Database Registry

Notes: BCPHP “normal” at the onset of labour definition used in this analysis.

Initial resuscitation includes oxygen, intermittent positive pressure via mask/ endotracheal tube, chest compressions, and/or drugs given during the first hour of life.

NICU Admission = newborn was admitted to a Neonatal Intensive Care Unit (Level II and/or Level III)

Perinatal death = newborn was born alive and was discharged to ‘death’ during the newborn episode of care.

Summary

Use of medical interventions during labour and delivery have proven to benefit numerous mothers and infants, however, there can be an 'over-reliance' on these interventions. Due to the increasing concerns of rising intervention rates, an analysis of this 'low-risk' population was undertaken.

This high-level descriptive analysis showed that just over half of women delivering in British Columbia in 2007/2008 were 'normal' and healthy at the onset of labour and of these women, almost one-quarter had a birth that required some form of medical intervention, either through an assisted vaginal delivery or a caesarean section. It is to be expected that parity and age would significantly influence the outcome, but delineation of the other factors that differentiate which women will or will not safely achieve a vaginal delivery requires further analysis.

As this was a cross-sectional descriptive analysis, no cause and effect can be implied. For example, it cannot be stated from this study that women who seek care from certain types of providers have distinctly different attitudes about normal birth or that choosing a certain type of care provider will ensure a normal birth, or that an action or intervention used in delivery promotes or detracts from the outcome of normal birth.

This type of study does, nevertheless, direct attention to the need to support women in promoting 'normal' childbirth. It highlights that the "normal" population is not a homogenous group; there are differences between those who deliver via spontaneous vaginal delivery and those requiring intervention. Further analysis of these differences are required, including an analysis of factors that affect a woman's decision of when to seek care during labour; level of and ability to cope with pain, labour progression; distance to travel to seek care; family and/or care provider support; and other circumstances surrounding the initiation and course of labour. It is also important to note that delivering via caesarean section does not imply sub-optimal care and it is an inaccurate assumption that all "normal" women will inevitably end labour with a spontaneous vaginal delivery. Finally, the "normal" population only comprises approximately half of the entire delivering population, and many women who are excluded may potentially deliver via spontaneous vaginal delivery with little or no adverse outcome.

The increasing use of medical intervention in low-risk pregnancies emphasizes the importance of promoting normal childbirth during the antenatal period. The natural process of childbirth should be encouraged and supported through discussion and education such that all pregnant women and their families are able to make informed choices regarding the birthing process.¹ However, the most important outcome with any birth is a healthy mother and neonate.