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BORN Ontario

Reporting using the Robson Cesarean Section Classification

BORN Provincial Rounds
November 1, 2012

Overview

1. What is the Robson cesarean section classification?
2. Results of Robson classification in 5 Canadian provinces and worldwide
3. Robson reporting in the BORN Information System

What is Robson?

- Robson is a standard classification systems of **10** mutually exclusive and totally inclusive **classification categories for cesarean section (CS)**.
- *‘Need to adopt standard classification systems so that comparisons and improvement of care can take place.’*

Robson, 2001

Robson classification - 2001

Dr Michael Robson

OBGYN, National Maternity Hospital, Dublin, Ireland

Clinical Obstetrics and Gynecology, 2001

‘Caesarean section rates should no longer be thought of as being too high or too low, but rather whether they are appropriate or not, after taking into consideration all the relevant information.’

Robson groups

1. Nulliparous, singleton, cephalic, term, spontaneous labour
2. Nulliparous, singleton, cephalic, term, induced labour or CS before labour
3. Multiparous, singleton, cephalic, term, without a previous CS, spontaneous labour
4. Multiparous, singleton, cephalic, term, without a previous uterine scar, induced labour or by CS before labour
5. Multiparous, singleton, cephalic, term, with a previous CS
6. Nulliparous, singleton, breech
7. Multiparous, singleton, breech
8. Multiple pregnancy (twins or higher-order multiples)
9. Singleton, transverse or oblique lie
10. Singleton, cephalic, pre-term

All remaining records that could not be classified due to missing information on one or more of the following variables: presentation, parity, gestational age, type of labour or previous cesarean.

Why are CS rates of concern?

- Cesarean section (CS) rates have been increasing worldwide over the last few decades
- Most countries exceed the WHO recommended rate of **15%** for all deliveries, keeping in mind the obstetric populations specific to Canada and Ontario
- In **2010**, the CS rate in **Canada** reached **26.9%** up from 17.6% in 1995.

Adoption of Robson classification

- United Kingdom, Ireland, Scandinavia, and many centers worldwide

In Canada

- Child Health Network (GTA): 2010 birth review focused on Robson Groups 1 & 2
- BC Perinatal Health: 2001/2 and 2010/11 focused on Robson Groups 1, 2, 5, and 99

Examining CS rates in Canada using the Robson classification system

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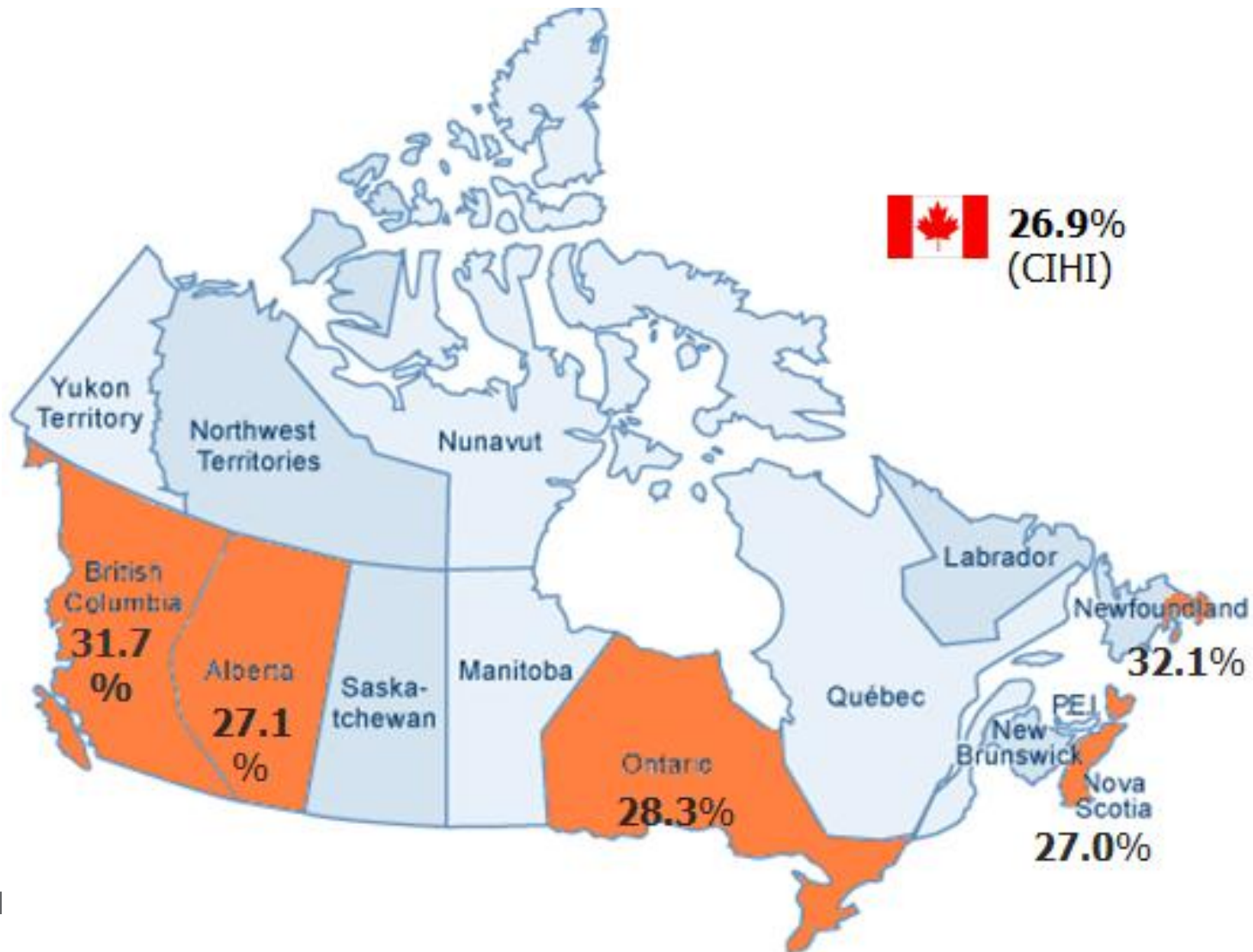
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Accepted in the JOGC

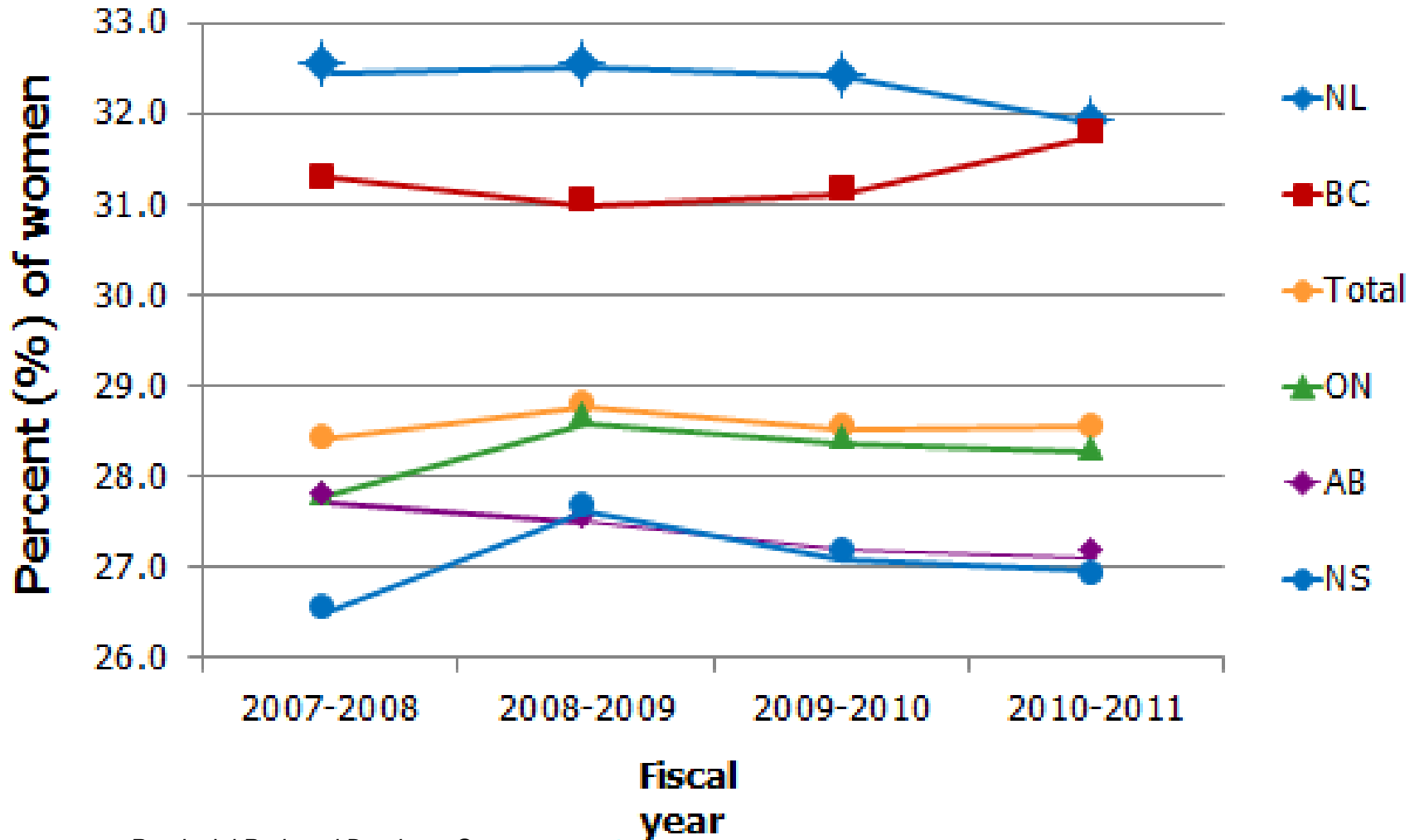
Rate of CS using Robson classification

- BC, AB, ON, NS, NL (EHA 70% of NL births)
- 2007-08 to 2010-11
- 965,499 women who gave birth
- ~64% of births in Canada

Rate of cesarean section by province, 2010-2011



Rate of cesarean section by province, 2007-2008 to 2010-2011



Rank contribution of Robson groups to overall CS rate – 5 provinces

1. Nulliparous, singleton, cephalic, term, spontaneous labour **#3**
2. Nulliparous, singleton, cephalic, term, induced or CS before labour **#2**
3. Multiparous, singleton, cephalic, term, without a previous CS, spontaneous labour
4. Multiparous, singleton, cephalic, term, without a previous uterine scar, induced labour or by CS before labour
5. Multiparous, singleton, cephalic, term, with a previous CS **#1**
6. Nulliparous, singleton, breech
7. Multiparous, singleton, breech
8. Multiple pregnancy (twins or higher-order multiples)
9. Singleton, transverse or oblique lie
10. Singleton, cephalic, pre-term

All remaining records that could not be classified due to missing information on one or more of the following variables: presentation, parity, gestational age, type of labour or previous cesarean.

#1 Largest contribution to CS rate

Robson Group 5 - previous CS and a term, singleton, cephalic pregnancy

CS rate

- 2010-11: 76.1% in AB to 89.9% in NL
- 2007-8 to 2010-11: decreased slightly other than in ON showed slight increase
- Accounting for 11.3% of all deliveries

#2 Largest contribution to CS rate

Robson Group 2 - nulliparous women with a term, singleton, cephalic pregnancy who were induced labour or CS before labour

- CS rates: 34.4% in NS to 44.6% in BC in 2010-11
- Accounting for 13.1% of all deliveries

#3 Largest contribution to CS rate

Robson Group 1 - nulliparous women with a term, singleton, cephalic pregnancy with spontaneous labour

- CS rates: 14.5-20.3% in 2010-2011
- Accounting for 23.6% of all deliveries

Note: Group 1 and 2 reversed for contribution in BC

Implementation & Contribution

- **Easily implemented** across different countries, hospitals and systems
 - studies in Latin America (120 hospitals in 8 countries) and North America, Europe, Australia, and New Zealand (9 hospitals in 9 countries)
- **Robust and useful tool for ongoing surveillance**
- **Group 5** (previous CS, term, singleton, cephalic) makes the **largest contribution** to the overall CS is consistent with the results from Robson's studies and international findings

Targeting reduction of CS

Repeat CS - Robson Group 5

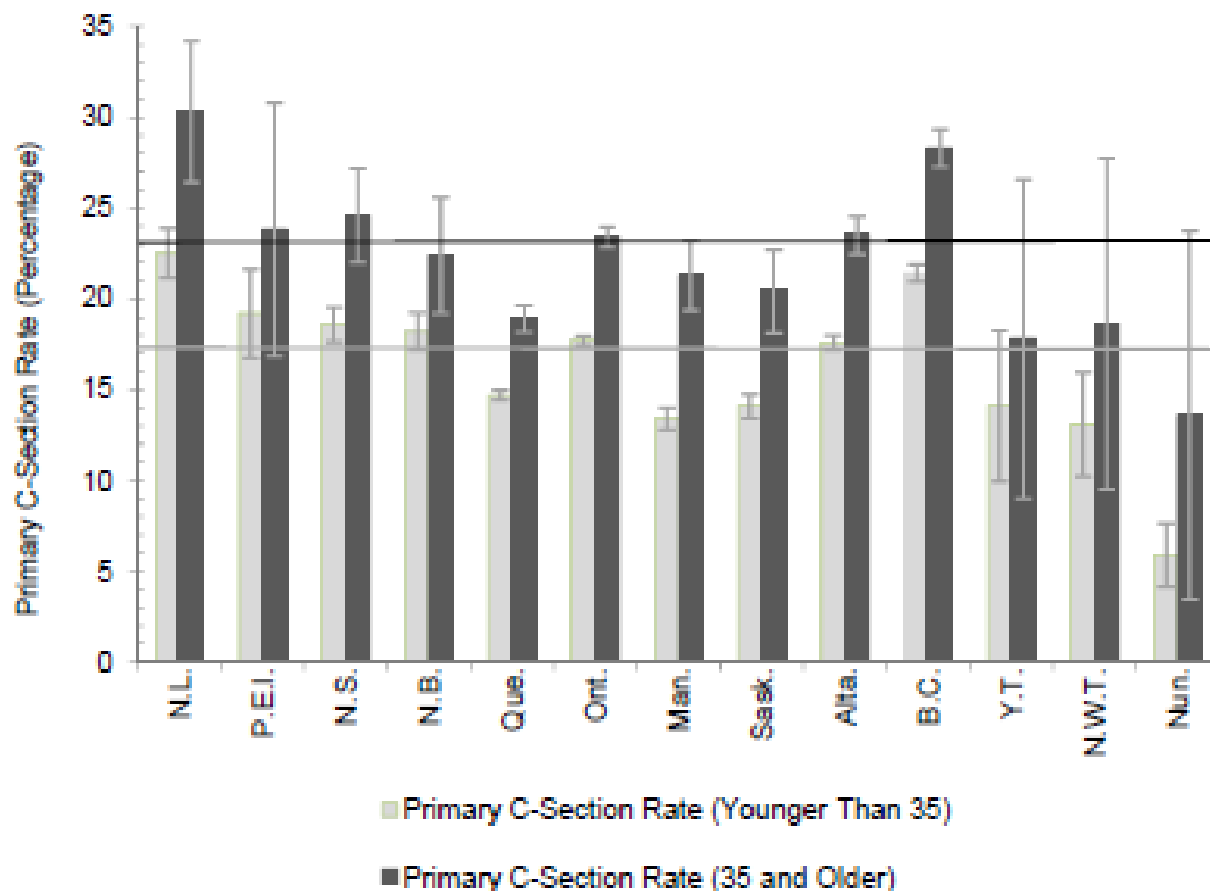
Best way to reduce the overall CS rate is by preventing the first CS

Primary CS - Robson Groups 1 & 2

- medical factors: increases in maternal age & pre-pregnancy BMI, changes in obstetric practice - increased use of electronic fetal monitoring, labour induction, epidural anesthesia - reduced use of midpelvic forceps
- non-medical factors: CS requested by mother, fear of litigation among caregivers, and inappropriate organization of maternity care

Other: support VBAC and breech vaginal birth where feasible and appropriate

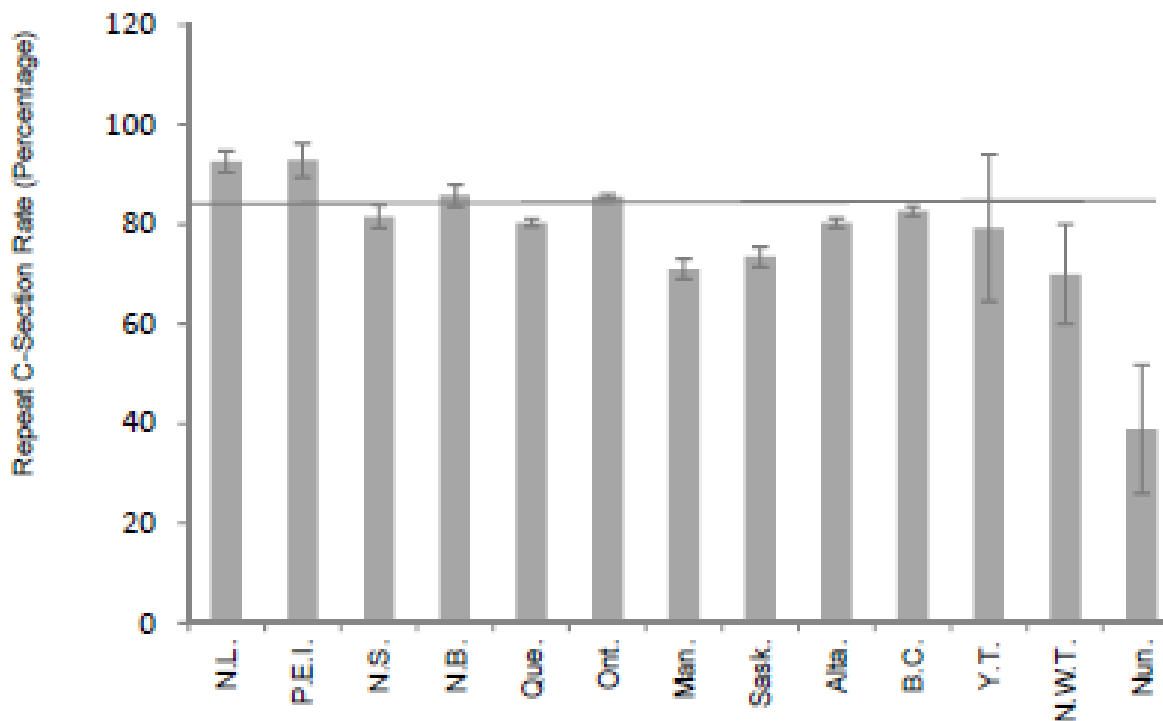
Primary Caesarean Section Rates, by Age Group in Canada, 2010–2011



Notes
 Data represents the province or territory the patient was from (excluding non-residents of Canada).
 I represents the 95% confidence interval.
 The solid grey line is the Canadian primary C-section rate for women younger than age 35; the solid black line is the Canadian primary C-section rate for women age 35 and older.

Coverage issues:
 Two small acute care facilities in Ontario did not submit data to CIHI in 2010–2011.

Repeat Caesarean Section Rate in Canada, 2010–2011



Notes

Data represents the province or territory the patient was from (excluding non-residents of Canada).
I represents the 95% confidence interval.

The solid grey line is the Canadian repeat C-section rate for all ages.

Coverage issues:

Two small acute care facilities in Ontario did not submit data to CIHI in 2010–2011.

1 Source

Hospital Morbidity Database, Canadian Institute for Health Information.

Limitation of 5 province study

- >5,000 CSs could not be classified due to **missing data** (CS rate 56.6% in 2010-11, would be 4th largest contributor)
- Imperative to document in BIS:
 - type of presentation
 - parity
 - gestational age
 - type of labour
 - whether there was a previous CS

Limitations of Robson

- Purpose is to identify contributors to differences in CS rates across subgroups, but does **not provide an explanation** for these differences, **nor look at the specific reason** for performing the CS, e.g. indication
 - Clinical audit is the next important step
- Institution-specific quality improvement initiatives are needed to address this issue.

Conclusion of study

- All hospitals and health authorities can use the Robson classification system as part of a quality improvement initiative to monitor CS.
 - New SOGC Guidelines
- Identifies target areas for interventions and resources to reduce CS.

Strategies for reduction of CS

- Implement customized targeted **quality improvement** strategies with rapid “plan/do/study/act” cycles to quickly effect change
 - Audit & feedback
 - Second opinion
 - Guideline implementation: team agreement with mothers, HCPs and stakeholders
- Re-consider VBAC deliveries and breech VBs where feasible and appropriate

Classification of Caesarean Sections in Canada: The Modified Robson Criteria

This committee opinion has been prepared by the Maternal Fetal Medicine Committee, reviewed by the Clinical Practice Obstetrics Committee, and approved by the Executive and Council of the Society of Obstetricians and Gynaecologists of Canada.

SPECIAL CONTRIBUTOR

Michael Robson, MD, Dublin, Ireland

Abstract

Objective: To advocate for the use of a common classification system for Caesarean section across Canada.

Recommendation

Modified Robson criteria should be used to enable comparison of Caesarean section rates and indications. (III-B)

Modified Robson criteria

1. Nullipara, singleton cephalic, ≥ 37 weeks, spontaneous labour
2. Nullipara, singleton cephalic, ≥ 37 weeks
 - A: Induced
 - B: Caesarean section before labour
3. Multipara, singleton cephalic, ≥ 37 weeks, spontaneous labour
4. Multipara, singleton cephalic, ≥ 37 weeks
 - A: Induced
 - B: Caesarean section before labour
5. Previous Caesarean section, singleton cephalic, ≥ 37 weeks
 - A: Spontaneous labour
 - B: Induced labour
 - C: Caesarean section before labour
6. All nulliparous breeches
 - A: Spontaneous labour
 - B: Induced labour
 - C: Caesarean section before labour
7. All multiparous breeches (including previous Caesarean section)
 - A: Spontaneous labour
 - B: Induced labour
 - C: Caesarean section before labour
8. All multiple pregnancies (including previous Caesarean section)
 - A: Spontaneous labour
 - B: Induced labour
 - C: Caesarean section before labour
9. All abnormal lies (including previous Caesarean section but excluding breech)
 - A: Spontaneous labour
 - B: Induced labour
 - C: Caesarean Section before labour
10. All singleton cephalic, ≤ 36 weeks (including previous Caesarean section)
 - A: Spontaneous labour
 - B: Induced labour
 - C: Caesarean section before labour

SOGC Summary

- Common classification of CS rates and indications allows evaluation and **comparison of the contributors** to the CS rate and **their impact**.
- Allows comparison between institutions, regions, and countries.

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2009-10 LHIN report

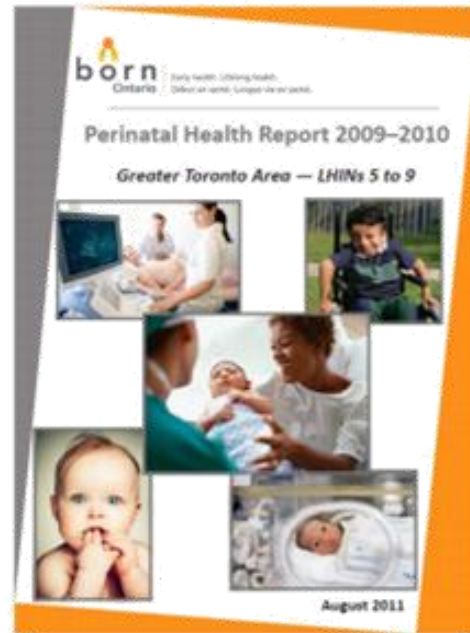


Figure 4.15. Rate of cesarean delivery,
by Robson classification groups

BORN Information System report to

Rate of cesarean section, by Robson classification groups

Hospital 1, April 1, 2008 to March 31, 2010

		A	B	C	D	E
		# of cesarean sections	Total # of deliveries	Rate of cesarean (A/B) x 100	Relative size of group (B/Total obstetrical population) x 100	Contribution to overall rate (A/Total obstetrical population) x 100
Robson classification group		n	n	%	%	%
1	Nulliparous, singleton, cephalic, ≥37 weeks, spontaneous labour	2,692	16,925	15.9	24.7	3.9
(1a)	Augmentation	2,000	10,000	20.0	14.6	2.9
(1b)	No Augmentation	692	6,925	10.0	10.1	1.0
2	Nulliparous, singleton, cephalic, ≥37 weeks, induced labour or cesarean before labour	3,037	7,839	38.7	11.4	4.4
(2a)	Induced labour	2,000	6,000	33.3	8.7	3.7
(2b)	Cesarean before labour	1,037	1,839	56.4	2.7	1.1
3	Multiparous, singleton, cephalic, ≥37 weeks, no previous cesarean, spontaneous labour	489	16,404	3.0	23.9	0.7
(3a)	Augmentation	400	6,404	6.2	9.3	0.6
(3b)	No Augmentation	89	10,000	0.9	14.6	0.1
...						
6	Nulliparous, singleton, breech	1,361	1,456	93.5	2.1	2.0
7	Multiparous, singleton, breech	1,017	1,126	90.3	1.6	1.5
8	Multifetal pregnancy	714	1,151	62.0	1.7	1.0
9	Singleton, transverse or oblique lie	404	479	84.3	0.7	0.6
10	Singleton, cephalic, <37 weeks	931	3,364	27.7	4.9	1.4
All others with missing information on presentation, parity, gestational age, type of labour or previous cesarean		2,513	7,640	32.9	11.1	3.7
TOTAL POPULATION		19,305	68,581	28.1	100.0	28.1

Conclusion

- Reducing CS rates can seem daunting because there are so many contributing factors
- Determining the most important contributors for CS rates, gives you a place to begin
- Target your quality improvement strategies where you will see the biggest impact
 - Clinically meaningful
 - Feasible to measure
 - Actionable

Questions?



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