

Severe Maternal Morbidity in Canada

Summary of Results (excludes Quebec)

- In 2009/10, the rate of severe maternal morbidity in Canada was 14.5 (95% CI: 14.1-15.0) per 1,000 deliveries. The overall rates of severe maternal morbidity remained stable between 2003/04 and 2009/10 (Table 1).
- Over the six-year time period (2003/04-2009/10), the most common severe maternal morbidities (see definition) included: blood transfusion; postpartum hemorrhage and blood transfusion; cardiac arrest/failure, myocardial infarction or pulmonary edema; hysterectomy; puerperal sepsis; eclampsia; uterine rupture during labour; and repair of bladder, urethra, or intestine (Figure 1, Table 2).
- The maternal morbidities with the highest case fatality rates included: cerebrovascular diseases, dialysis, obstetric embolism, disseminated intravascular coagulation and assisted ventilation.
- Regional comparisons showed that overall rates of severe maternal morbidity varied across provinces and territories. Rates were significantly higher in Newfoundland and Labrador, Saskatchewan, Alberta, Northwest Territories, and Yukon (Table 3).

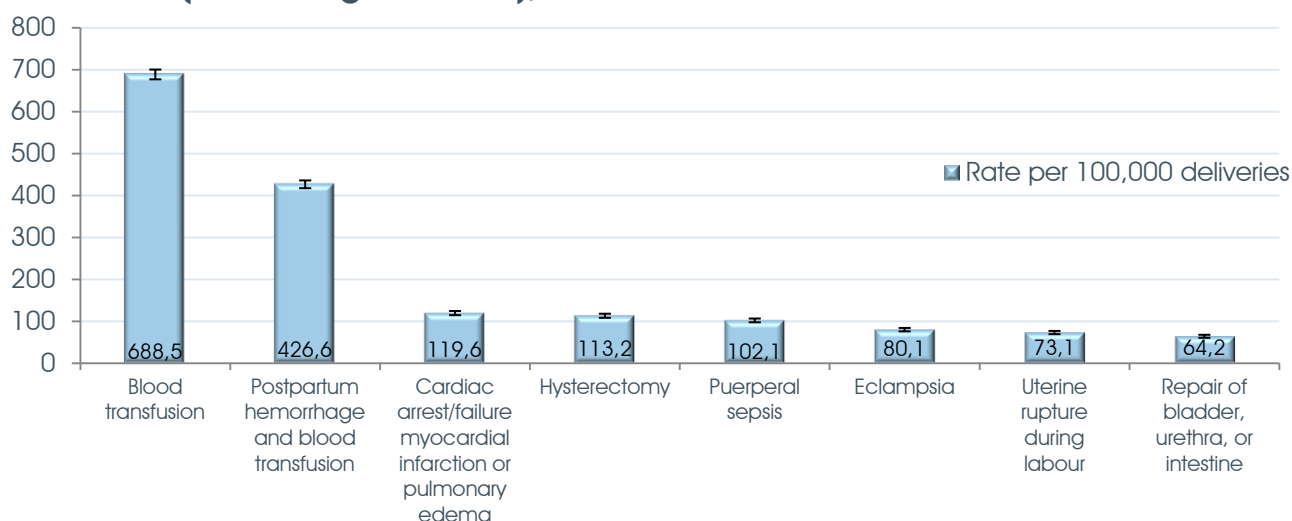
Table 1: Temporal trends in severe maternal morbidity, Canada (excluding Quebec), 2003/04-2009/10

	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10
Total deliveries	248,496	262,673	266,172	274,090	284,925	286,432	287,942
Maternal morbidity (N)	3,519	3,672	3,723	3,607	3,966	4,255	4,188
Rate (95% CI) per 1,000 deliveries	14.2 (13.7-14.6)	14.0 (13.5-14.4)	14.0 (13.5-14.4)	13.2 (12.7-13.6)	13.9 (13.5-14.4)	14.9 (14.4-15.3)	14.5 (14.1-15.0)

Source: Canadian Institute for Health Information, Discharge Abstract Database

Note: Manitoba data were incomplete for 2003/04.

Figure 1: Rates of the most common severe maternal morbidities, Canada (excluding Quebec), 2003/04-2009/10



Source: Canadian Institute for Health Information, Discharge Abstract Database

Note: Manitoba data were incomplete for 2003/04.

Data Tables

Table 2: Rates of the most common severe maternal morbidities, Canada (excluding Quebec), 2003/04-2009/10

Cause	N	Rate per 100,000 deliveries	95% CI
Blood transfusion	13,156	688.5	676.9 - 700.3
Postpartum hemorrhage and blood transfusion	8,151	426.6	417.4 - 435.9
Cardiac arrest/failure, myocardial infarction or pulmonary edema	2,285	119.6	114.7 - 124.6
Hysterectomy	2,162	113.2	108.4 - 118.1
Puerperal sepsis	1,951	102.1	97.7 - 106.7
Eclampsia	1,530	80.1	76.1 - 84.2
Uterine rupture during labour	1,397	73.1	69.4 - 77.1
Repair of bladder, urethra, or intestine	1,227	64.2	60.7 - 67.9

Source: Canadian Institute for Health Information, Discharge Abstract Database

Note: Manitoba data were incomplete for 2003/04.

Table 3: Rates of severe maternal morbidity, by province and territory, Canada (excluding Quebec), 2003/04-2009/10

Province/Territory	N	Rate per 1,000 deliveries	95% CI
Newfoundland and Labrador	645	20.0	18.5 - 21.6
Prince Edward Island	131	13.7	11.4 - 16.2
Nova Scotia	782	12.9	12.0 - 13.8
New Brunswick	630	12.7	11.7 - 13.7
Ontario	12,756	13.2	13.0 - 13.4
Manitoba	1,321	14.6	13.9 - 15.4
Saskatchewan	1,554	17.3	16.4 - 18.2
Alberta	5,001	16.0	15.5 - 16.4
British Columbia	3,903	13.6	13.2 - 14.0
Yukon	48	20.0	14.8 - 26.4
Northwest Territories	110	19.9	16.4 - 23.9
Nunavut	49	18.9	14.0 - 24.9
Canada	26,930	14.1	13.9 - 14.3

Source: Canadian Institute for Health Information, Discharge Abstract Database

Note: Manitoba data were incomplete for 2003/04.

Definition

The Canadian Perinatal Surveillance System uses a pragmatic definition for severe maternal morbidity which includes disease-specific (e.g., eclampsia), intervention specific (e.g., blood transfusion) and organ dysfunction-based (e.g., acute renal failure) criteria. The severe morbidity rate is expressed per 1,000 deliveries in a given place and time. The rate of severe maternal morbidity is an important index that supplements the maternal mortality rate and represents the population burden of illness and disability that occurs as a consequence of these life-threatening events.

Data Source

Rates of severe maternal morbidity were calculated using data from the Discharge Abstract Database of the Canadian Institute for Health Information for the period 2003/04-2009/10. This database contains information on all hospital discharges in Canada (except Quebec). Diagnoses and procedures in the database are coded using the International Statistical Classification of Diseases, Tenth Revision (ICD-10CA) and the Canadian Classification of Health Interventions (CCI), respectively.

The rates are calculated based on fiscal years (i.e., April 1 to March 31).

Limitations

Severe maternal morbidity such as severe preeclampsia could not be identified due to limitations of the ICD-10CA codes. Severe maternal morbidity rates in Quebec could not be estimated because this province's data were not part of the Discharge Abstract Database.

Additional Information

The Canadian Perinatal Surveillance System recently published two papers examining the temporal trends and causes of severe maternal morbidity in Canada.^{1,2} These papers provide more detailed information which complements this report.

References

1. Joseph KS, Liu S, Rouleau J, Kirby RS, Kramer MS, Sauve R, Fraser WD, Young DC, Liston RM; for the Maternal Health Study Group of the Canadian Perinatal Surveillance System. Severe Maternal Morbidity in Canada, 2003 to 2007: Surveillance Using Routine Hospitalization Data and ICD-10CA Codes. *J Obstet Gynaecol Can* 2010 Sep;32(9):837-46.
2. Liu S, Joseph KS, Bartholomew S, Fahey J, Lee L, Allen AC, Kramer MS, Sauve R, Young DC, Liston RM; for the Maternal Health Study Group of the Canadian Perinatal Surveillance System. Temporal trends and regional variations in severe maternal morbidity in Canada, 2003 to 2007. *J Obstet Gynaecol Can* 2010 Sep;32(9):847-55.

The Public Health Agency of Canada's Canadian Perinatal Surveillance System monitors and reports on key indicators of maternal, fetal and infant health in Canada. For more information visit: <http://www.phac-aspc.gc.ca/rhs-ssg/>