

SURVEILLANCE PERINATAL INDICATORS: QUARTERLY REPORT

Indicator	2009/10	2010/11	2011/12	2012/13	2013/14					2014/15*				
	YTD	YTD	YTD	YTD	Q1	Q2	Q3	Q4	YTD	Q1	Q2	Q3	Q4	YTD
Deliveries (Mothers): Number	44,376	43,360	43,595	43,906	10,844	11,370	10,416	10,518	43,148	10,888	11,443	10,627	10,087	43,045
Labour Induction (rate per 100 deliveries)	20.9	21.4	21.2	20.4	21.6	20.7	22.0	20.5	21.2	21.3	21.1	21.5	22.3	21.5
Cesarean Delivery (rate per 100 deliveries)	30.2	30.7	30.9	31.2	30.9	32.0	31.3	31.9	31.5	32.7	31.7	32.2	33.5	32.5
Pre-Pregnancy Body Mass Index Category (rate per 100 mothers with known BMI)														
Underweight	6.0	5.5	5.7	6.1	5.9	5.4	5.6	6.1	5.7	5.7	6.2	6.3	5.8	6.0
Normal	60.3	60.1	60.1	60.5	60.9	60.2	59.9	58.8	60.0	60.6	61.0	59.7	59.8	60.3
Overweight	20.9	21.1	21.2	20.1	20.1	20.5	20.8	21.2	20.7	20.6	19.8	21.1	20.5	20.5
Obese	12.9	13.3	12.9	13.0	13.1	13.9	13.7	13.9	13.7	13.1	13.0	12.9	14.0	13.2
Pre-Pregnancy Body Mass Index Unknown (rate per 100 mothers)	33.9	29.6	26.8	24.8	23.2	24.5	25.0	23.8	24.1	23.2	23.9	24.6	24.0	23.5
Maternal Transfers to Higher Level of Care Following Delivery [§] (rate per 1,000 deliveries)	4.1	5.1	5.7	5.2	6.5	4.7	6.7	5.7	5.9	5.7	7.1	8.5	7.4	7.2
Births (Babies)[†]: Number	45,131	44,049	44,340	44,633	11,043	11,585	10,574	10,690	43,892	11,080	11,650	10,819	10,255	43,804
Stillbirth Rate (rate per 1,000 total births)	10.5	10.3	9.8	9.4	10.9	10.4	10.0	10.6	10.5	12.4	11.1	10.2	11.6	11.3
Antepartum	7.9	8.2	8.1	7.9	9.3	9.1	9.0	9.5	9.2	11.1	9.8	9.1	9.6	9.9
Intrapartum	0.6	0.6	0.6	0.5	0.5	0.5	0.4	0.2	0.4	0.5	0.4	0.6	0.2	0.4
Unknown	2.1	1.5	1.1	1.0	1.0	0.8	0.7	0.8	0.8	0.8	0.9	0.6	1.9	1.0
Live Births by Gestational Age, Weeks (%) [¶]														
<34	2.4	2.3	2.4	2.4	2.4	2.4	2.5	2.4	2.4	2.4	2.4	2.6	2.1	2.4
34-36	7.3	7.1	7.2	7.6	8.0	7.4	7.5	8.0	7.7	8.2	7.4	7.6	8.3	7.9
37-40	79.0	79.6	80.1	80.2	80.3	81.2	80.0	80.7	80.6	80.3	81.3	80.6	81.0	80.8
41+	11.4	11.0	10.3	9.7	9.3	9.0	10.0	9.0	9.3	9.1	9.0	9.1	8.6	9.0
Unknown	0.2	0.03	0.04	0.01	0.01	0.02	0.02	0.02	0.02	0.01	0.01	0.02	0.02	0.01
Preterm NICU admissions (rate per 1000 live births)	43.8	38.0	34.2	35.7	40.1	32.9	34.5	32.7	35.0	36.5	31.2	34.3	32.2	33.5
>2 day stay	33.5	29.8	25.5	25.6	28.1	17.2	21.2	17.7	21.0	29.1	22.5	26.4	23.6	25.4
Sepsis	1.8	1.6	1.0	1.4	2.1	1.7	2.3	0.6	1.7	1.3	2.1	1.5	0.7	1.4
Ventilatory support	8.2	7.7	6.8	6.7	8.0	7.2	6.9	7.4	7.4	6.8	5.6	6.0	4.3	5.7
Term NICU admissions (rate per 1000 live births)	40.5	34.4	23.1	24.6	26.5	28.0	27.5	24.7	26.7	30.6	28.2	27.2	32.0	29.4
>2 day stay	13.0	9.8	6.3	6.1	8.1	8.0	8.7	7.1	8.0	11.5	10.4	11.2	12.6	11.4
Sepsis	1.3	0.9	0.6	0.3	0.6	1.0	1.2	1.4	1.1	0.5	0.9	0.7	1.2	0.8
Ventilatory support	2.1	2.1	1.9	2.4	2.9	2.7	2.4	1.4	2.4	3.0	2.6	2.0	3.0	2.6
Term Infants Receiving Exclusive Breast Milk During Birth Admission (rate per 100 live term births)	72.4	71.5	72.7	72.3	73.8	73.9	71.5	72.8	73.0	73.3	74.3	71.9	70.6	72.8
Neonatal Transfers to Higher Level of Care Following Birth (rate per 1,000 live births)	8.5	10.5	11.4	11.2	11.6	10.2	11.3	11.6	11.2	10.8	13.0	13.4	15.6	13.1
Neonatal Deaths (rate per 1,000 live births)	2.4	2.7	3.0	2.8	3.0	2.0	2.5	3.2	2.7	2.7	3.2	2.4	1.9	2.6

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*Data for 2014/15 are preliminary.

§Maternal transfers to higher level of care - added Surrey Memorial Hospital to 2nd Tier Hospitals effective April 1, 2013 discharges.

¶Gestational Age Calculation - revised effective April 1, 2013.

Please see the Summary of Changes on Page 2 for changes to the indicators since the last report.

Please see Technical Notes on Page 3 for methodology, limitations, and descriptions of indicators.

Data Source: BC Perinatal Data Registry

Report Data Generated: August 6, 2015

Surveillance Perinatal Indicators: Quarterly Report 2014/15

Summary of Changes

August 6, 2015

The PSBC Surveillance Team reviewed the Quarterly Report indicators that were introduced in the 2011/12 fiscal year. Some changes and/or modifications have been made to update the indicators for future years, beginning with the 2014/15 fiscal year.

The changes/modifications are as follows:

1. Deliveries (Mothers)

Indicators removed due to low incidences

- Postpartum Hemorrhage + Transfusion (rate per 1,000 deliveries)
- Postpartum Hemorrhage + Hysterectomy (rate per 1,000 deliveries)
- Eclampsia (rate per 1,000 deliveries)
- Puerperal Sepsis (rate per 1,000 deliveries)

Indicators added:

- Pre-Pregnancy Body Mass Index (BMI) Category (rate per 100 mothers with known BMI)
- Pre-Pregnancy Body Mass Index (BMI) Unknown (rate per 100 mothers)

2. Births (Babies)

Indicator categories modified:

- Live births by Gestational Age (Weeks)
From: <30, 30-31, 32-33, 34-36, >=37, Unknown
To: <34, 34-36, 37-40, 41+, Unknown

Indicator added:

- Term infants receiving exclusive breast milk during birth admission (rate per 100 live term births)

Please feel free to contact the Surveillance Team at Perinatal Services BC if you have any questions or comments.

Technical Notes

The Surveillance Perinatal Indicators: Quarterly Report includes perinatal data for BC residents for six fiscal years (April 1 to March 31): 2009/10 to 2014/15. The focus of this report is to provide a summary of selected indicators on maternal and neonatal morbidity for British Columbia overall. The appendix lists the description of indicators and calculation methods used in this report.

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Quarters and Date Range

Q1: April 1 to June 30

Q2: July 1 to September 30

Q3: October 1 to December 31

Q4: January 1 to March 31

Methodology and Limitations

Inclusions

- Data on all births (singletons, twins, and multiples) for BC residents only.
- Linked mothers and newborns for each fiscal year (<0.02% of records are not linked).

Exclusions

- Deliveries and births of BC residents occurring outside of BC.

Notes

- Mother-newborn assigned fiscal year is based on maternal discharge date.
- Resident level of geography is based on the postal code recorded during the delivery admission.
- The reader should use caution when interpreting rates of neonatal and maternal adverse outcomes because these rates are based on a very small number of events.
- 2014/15 is provisional data and subject to revision.
- Gestational Age calculation: a change has been made to reflect current adopted SOGC calculation (see [Table 3](#)).
- Maternal Transfer to Higher Level of Care: Surrey Memorial Hospital has been added to the 2nd Tier hospital group, effective April 1, 2013 discharges.

Appendix

Table 1. Definitions

Indicator	Description
Labour Induction	Instrumental or pharmacological assistance to initiate labour, prior to the onset of the first stage of labour.
Cesarean Delivery	A delivery involving the surgical incision of the abdomen and uterine walls.
Last Menstrual Period (LMP)	The first day of a woman's last menses before conception. Used to calculate gestational age and duration of pregnancy.
Body Mass Index (BMI)	Ratio of weight to height, as measured pre-pregnancy or up to 12 weeks gestation. Formula: BMI = pre-pregnancy weight (kg)/height (m) ² .
Body Mass Index (BMI) Group	Pre-pregnancy BMI categorized according to the Canadian Guidelines for Body Weight Classification. Underweight = < 18.50 Normal Weight = 18.50 - 24.99 Overweight = 25.00 - 29.99 Obese = >= 30.00 Unknown = pre-pregnancy weight and/or height are missing
Mother Transferred to Higher Level of Care Following Delivery	Maternal transfer to a hospital with higher level of care following delivery. Transfers from 1 st tier to 2 nd , or 2 nd to 3 rd , or 1 st to 3 rd are included. Criteria for higher level of care: 3 rd tier: BC Women's Hospital & Health Centre Royal Columbian Hospital Victoria General Hospital St Paul's Hospital 2 nd tier: Kelowna General Hospital Royal Inland Hospital University Hospital of Northern BC Nanaimo Regional General Hospital Surrey Memorial Hospital (added April 1, 2013) 1 st tier: Hospitals not identified as 3 rd or 2 nd tier. Excludes: Transfers to lower level of care facilities (3 rd to 2 nd or 2 nd to 1 st).
Stillbirth	The complete expulsion or extraction from the maternal body after at least 20 weeks gestation, or after attaining a weight of at least 500 grams, of a fetus, in which at birth there is no breathing, beating heart, pulsation of the umbilical cord, or unmistakable movement of voluntary muscle (ref: BC Vital Statistics).
Stillbirth Type	Stillbirth can occur: <ul style="list-style-type: none"> • Antepartum: stillbirth or intrauterine death reported prior to onset of first stage of labour. • Intrapartum: stillbirth or intrauterine death reported after onset of first stage of labour. • Unknown: stillbirth or intrauterine death reported, but unknown if prior to or after onset of first stage of labour.
Gestational Age	The number of completed weeks a fetus has developed since the beginning of the pregnancy.
Live Births by Gestational Age	Live born categorized into gestational age groups.
Term Infants Receiving Exclusive Breast Milk	Term Infants (≥37 completed weeks gestation) receiving exclusive breast milk (including expressed breast milk) during birth admission. No food or liquid (not even water) was given. Undiluted drops of syrup consisting of vitamins, mineral supplements or medicine may have been given to the baby.

Indicator	Description
Newborn Transferred to Higher Level of Care	<p>Live born transferred to a hospital with higher level of care. Transfers from nursery to a Level II NICU and transfers from Level II to Level III NICU are included.</p> <p>Criteria for higher level of care:</p> <p>NICU 2 & 3: BC Women's Hospital & Health Centre Royal Columbian Hospital Victoria General Hospital Surrey Memorial Hospital</p> <p>NICU 2: St. Paul's Hospital Burnaby General Hospital The Richmond Hospital Lions Gate Hospital Abbotsford Regional Hospital Kelowna General Hospital Royal Inland Hospital University Hospital of Northern BC Nanaimo Regional General Hospital</p> <p>Excludes: Transfers to hospital not identified as Level 2 or Level 3.</p>
Neonatal Deaths	<p>In-hospital baby deaths.</p> <p>Excludes: Transfers out-of-province and transfers out-of-country.</p>
Term Infants (A birth >= 37 completed weeks gestation.)	
NICU Admissions	<p>2009/10: Term infants admitted to a Level 2 and/or 3 NICU (based on bed that the infant occupies).</p> <p>2010/11 forward: Term infants receiving Level 2 and/or 3 care, based on the Neonatal Daily Classification.</p> <p>The NICU level of care provided must be determined by the care providers and documented on the infant's health record.</p>
NICU Admissions >2 days	Term infants receiving Level 2 and/or 3 care with a length of stay greater than 2 days.
NICU Admissions with Sepsis	Term infants receiving Level 2 and/or 3 care with a diagnosis of sepsis. See Table 4 for list of codes.
NICU Admissions with Ventilatory Support	Term infants receiving to Level 2 and/or 3 care with ventilatory support. See Table 4 for list of procedures that indicate ventilatory support.
Preterm Infants (A birth before 37 completed weeks gestation.)	
NICU Admissions	<p>2009/10: Preterm infants admitted to Level 2 and/or 3 NICU (based on bed that the infant occupies).</p> <p>2010/11 forward: Preterm infants receiving Level 2 and/or 3 care, based on the Neonatal Daily Classification.</p> <p>The NICU level of care provided must be determined by the care providers and documented on the infant's health record.</p>
NICU Admissions >2 days	Preterm infants receiving Level 2 and/or 3 care with a length of stay greater than 2 days.
NICU Admissions with Sepsis	Preterm infants receiving Level 2 and/or 3 care with a diagnosis of sepsis. See Table 4 for list of codes.
NICU Admissions with Ventilatory Support	Preterm infants receiving Level 2 and/or 3 care with ventilatory support. See Table 4 for list of procedures that indicate ventilatory support.

Table 2. Methods of Calculation for Selected Indicators

Indicator	Method
Labour Induction	$\frac{\text{Number of mothers with labour induction}}{\text{Total deliveries}} \times 100$
Cesarean Delivery	$\frac{\text{Number of mothers with cesarean delivery}}{\text{Total deliveries}} \times 100$
Pre-Pregnancy Body Mass Index (BMI)	$\frac{\text{Weight (kg)}}{\text{height (m)}^2}$
Body Mass Index (BMI) Group	$\frac{\text{Number of mothers by pre-pregnancy BMI group}}{\text{Total deliveries with known pre-pregnancy BMI}} \times 100$
Body Mass Index (BMI) Unknown	$\frac{\text{Number of mothers with unknown BMI}}{\text{Total deliveries}} \times 100$
Mothers Transferred to Higher Level of Care Following Delivery	$\frac{\text{Number of mothers transferred to higher level of care following delivery}}{\text{Total deliveries}} \times 1,000$
Stillbirth Rate	$\frac{\text{Number of stillbirths}}{\text{Total births}} \times 1,000$
Stillbirth Rate by Type	$\frac{\text{Number of stillbirths by type}}{\text{Total number of births}} \times 1,000$
Live Births by Gestational Age	$\frac{\text{Number of live births by gestational age group}}{\text{Total live births}} \times 1,000$
Term Infants Receiving Exclusive Breast Milk	$\frac{\text{Number of live term newborns with exclusive breast milk}}{\text{Total term live births}} \times 100$
Newborn Transferred to Higher Level of Care	$\frac{\text{Number of live newborns transferred to higher level of care hospital}}{\text{Total live births}} \times 1,000$
Neonatal Deaths	$\frac{\text{Number of live newborn deaths} + \text{baby transfer deaths}}{\text{Total live births}} \times 1,000$
Term Infants (A birth \geq 37 completed weeks gestation.)	
NICU Admissions	$\frac{\text{Number of term births with NICU admission}}{\text{Total live births}} \times 1,000$
NICU Admissions >2 days	$\frac{\text{Number of term births with NICU admission} >2 \text{ days}}{\text{Total live births}} \times 1,000$
NICU Admissions with Sepsis	$\frac{\text{Number of term births with NICU admission with sepsis}}{\text{Total live births}} \times 1,000$
NICU Admissions with Ventilatory Support	$\frac{\text{Number of term births with NICU admission with ventilatory support}}{\text{Total live births}} \times 1,000$
Preterm Infants (A birth before 37 completed weeks gestation.)	
NICU Admissions >2 days	$\frac{\text{Number of preterm births with NICU admission} >2 \text{ days}}{\text{Total live births}} \times 1,000$
NICU Admissions with Sepsis	$\frac{\text{Number of preterm births with NICU admission with sepsis}}{\text{Total live births}} \times 1,000$
NICU Admissions with Ventilatory Support	$\frac{\text{Number of preterm births with NICU admission with ventilatory support}}{\text{Total live births}} \times 1,000$

Table 3. Final Gestational Age (GA)

Gestational age at delivery is calculated using an algorithm consistent with that recommended by the Society of Obstetricians and Gynaecologists of Canada (SOGC).

Hierarchy used for calculating the final gestational age is determined by the following preferential order:
Use the GA calculated from the last menstrual period (LMP)
Exception: Use the GA based on the first ultrasound if: GA based on menstrual dating differs from GA at first ultrasound by ≥ 2 weeks GA based on menstrual dating differs from GA at first ultrasound (done at <14 weeks gestation) by 1 week
Use GA from first ultrasound if GA from LMP is not available.
Use newborn clinical estimate from physical examination if GA from LMP and GA from first ultrasound are unavailable. Use newborn clinical estimate from physical examination if GA from LMP is ≥ 3 weeks different and no GA at first ultrasound is unavailable.
Use obstetrical clinical estimate of gestational age if GA from LMP, GA at first ultrasound and GA from newborn clinical estimate are not available.

Table 4. Codes for Selected Indicators

Indicator	ICD-10 and/or CCI Codes
NICU Admissions with Sepsis	<p>P36 Bacterial sepsis of newborn Includes: congenital septicaemia P36.0 Sepsis of newborn due to streptococcus, group B P36.1 Sepsis of newborn due to other and unspecified streptococci P36.2 Sepsis of newborn due to Staphylococcus aureus P36.3 Sepsis of newborn due to other and unspecified staphylococci P36.4 Sepsis of newborn due to Escherichia coli P36.5 Sepsis of newborn due to anaerobes P36.8 Other bacterial sepsis of newborn P36.9 Bacterial sepsis of newborn, unspecified</p> <p>Includes: Diagnosis codes with a prefix of (Q) – query diagnoses</p> <p>And nicu_ii>0 and/or nicu_iii>0</p>
NICU Admissions with Ventilatory Support	<p>1.GZ.31.^ Ventilation, respiratory system NEC positive pressure (e.g. CPAP, BIPAP) 1.GZ.31.CB.ND Non-invasive approach positive pressure (e.g., CPAP, BIPAP) 1.GZ.31.CA-ND Invasive per orifice approach by endotracheal intubation positive pressure (e.g., CPAP, BIPAP) 1.GZ.31.CR-ND Invasive per orifice with incision approach for intubation through tracheostomy</p> <p>AND/OR</p> <p>BCPDR Ventilator Days field ≥1: Total number of days recorded in field.</p> <p>And nicu_ii>0 and/or nicu_iii>0</p>