

New Zealand Maternity Clinical Indicators 2011

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MANATŪ HAUORA



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Executive summary

The New Zealand Maternity Clinical Indicators are the result of a collaborative process involving the Ministry of Health and maternity stakeholders representing consumer, midwifery, obstetric, general practice, paediatric and anaesthetic perspectives. Building on previous work undertaken across Australasia, an expert working group has established a set of 12 maternity clinical indicators that are relevant to the New Zealand setting and can be measured using available data collections.

For this report, as for previous reports in this series, the 'standard primipara' definition (see 'Overview' on p2) was used to identify a group of women for whom interventions and outcomes should be similar. Of the 12 indicators covered in this report, eight apply to standard primiparae, three apply to all women giving birth in hospital and one applies to all babies born in hospital. Other indicators will be added over time as improved data become available.

The release of this report provides an opportunity for district health boards (DHBs) and maternity stakeholders to use national, benchmarked data in their local maternity quality and safety programmes and to identify areas warranting further investigation at a local level. DHBs and local maternity stakeholders can undertake early time series and trend analysis using this third full year of data.

As the two previous reports demonstrated, maternity statistics for standard primiparae vary between DHBs and between individual secondary and tertiary facilities. This variation needs to be investigated. These findings merit further investigation of data quality and integrity as well as the local clinical practice management reasons for these variations.

Introduction

What are the New Zealand Maternity Clinical Indicators?

The New Zealand Maternity Clinical Indicators show key maternity outcomes for each DHB region and secondary/tertiary maternity facility. Their purpose is to increase the visibility of the quality of maternity services and to highlight areas where quality can be improved. The benchmarked data are used to support local clinical review of maternity services.

The New Zealand Maternity Clinical Indicators are evidence-based and cover a range of procedures and outcomes for mothers and their babies. This initial set of indicators is deliberately small, and is focused on the labour and birth period. As the sector grows more confident in the accuracy of the data used in the indicators, the set will be increased.

Background

In 2010 the Minister of Health asked the Ministry of Health to develop a national quality and safety programme for maternity services, encompassing standards and clinical indicators. The Ministry of Health initiated conversations with key professional colleges to discuss the scope of potential indicators and how they might be used as part of a national quality and safety programme.

These discussions established that clinical indicators would:

- improve national consistency in reporting maternity data
- support clinical quality improvement by helping DHBs to identify focus areas for their local clinical reviews
- provide a broader picture of maternity outcomes in New Zealand than that obtainable from maternal and perinatal mortality data alone
- provide standardised (benchmarked) data allowing DHBs to evaluate their maternity services over time and against the national average.

The Ministry of Health convened an expert working group to develop the initial set of indicators, comprising representatives from midwifery, obstetric, paediatric, general practice, epidemiology, service management and consumer backgrounds. As a starting point, the group used the existing Australasian maternity indicators developed by the Australian Council on Healthcare Standards (2008, 2011), as well as the work undertaken by Women's Hospitals Australasia on a core set of maternity indicators for Australia (Women's Hospitals Australasia 2007).

The group decided on the set of 12 indicators presented in this document because the data used are:

- considered reliable
- readily available without placing an additional administrative burden on DHBs
- relevant for local clinical review.

This publication is the third annual report on these indicators. It presents data for the 2011 calendar year, using the same definitions and data as the 2009 and 2010 reports; it can therefore be compared to these reports.

The aim of the clinical indicators is to inform a programme of ongoing, systematic review by local multidisciplinary teams involved in maternity care. The review process will identify potential for service improvement and recommend changes accordingly. At the DHB level, the review programme will be collaboratively driven by local leaders from midwifery, general practice and obstetrics. It will include practitioners working in community- and hospital-based maternity services and maternity consumer representatives.

Overview

Table 1 lists numerators and denominators for the maternity indicators covered in this publication. Indicators 1–8 cover standard primiparae giving birth in hospital, indicators 9–11 cover all women giving birth in hospital and indicator 12 covers all babies born in hospital.

For this report, a 'standard primipara' is defined as a woman aged between 20 and 34 years at the time of birth gives birth in a hospital or birthing unit, with no record of any previous birth event in a New Zealand hospital, whose birth is at term (from 37 weeks 0 days to 41 weeks 6 days gestation), where the outcome of the birth is a singleton baby, the presentation is cephalic and there have been no recorded obstetric complications that are indications for specific obstetric intervention.

The standard primipara represents a woman expected to have an uncomplicated pregnancy; intervention and complication rates for such women should be low and consistent across hospitals. Compiling data from only standard primiparae (rather than all women giving birth) controls for differences in case mix and increases the validity of inter-hospital comparisons of maternity care (adapted from Australian Council on Healthcare Standards 2008, p 29). Standard primiparae account for approximately 17 percent of all births nationally; this proportion varies across DHBs.¹ See 'Appendix 1: Technical notes' for more information on definitions.

¹ Primiparae – women giving birth for the first time – account for approximately 41 percent of all births nationally; the proportion ranges from 30 to 50 percent between DHBs.

Table 1: New Zealand Maternity Clinical Indicators

	Indicator	Numerator	Denominator
1	Standard primiparae who have a spontaneous vaginal birth	Total number of standard primiparae who have a spontaneous vaginal birth	Total number of standard primiparae who give birth
2	Standard primiparae who undergo an instrumental vaginal birth	Total number of standard primiparae who undergo an instrumental vaginal birth	Total number of standard primiparae who give birth
3	Standard primiparae who undergo Caesarean section	Total number of standard primiparae who undergo Caesarean section	Total number of standard primiparae who give birth
4	Standard primiparae who undergo induction of labour	Total number of standard primiparae who undergo induction of labour	Total number of standard primiparae who give birth
5	Standard primiparae with an intact lower genital tract (no 1st–4th-degree tear or episiotomy)	Total number of standard primiparae with an intact lower genital tract with vaginal birth	Total number of standard primiparae who give birth vaginally
6	Standard primiparae undergoing episiotomy and no 3rd- or 4th-degree perineal tear	Total number of standard primiparae undergoing episiotomy and no 3rd- or 4th-degree perineal tear with vaginal birth	Total number of standard primiparae who give birth vaginally
7	Standard primiparae sustaining a 3rd- or 4th-degree perineal tear and no episiotomy	Total number of standard primiparae sustaining a 3rd- or 4th-degree perineal tear and no episiotomy with vaginal birth	Total number of standard primiparae who give birth vaginally
8	Standard primiparae undergoing episiotomy and sustaining a 3rd- or 4th-degree perineal tear	Total number of standard primiparae undergoing episiotomy and sustaining a 3rd- or 4th-degree perineal tear with vaginal birth	Total number of standard primiparae who give birth vaginally
9	Women having a general anaesthetic for Caesarean section	Total number of women having a general anaesthetic for Caesarean section	Total number of women having a Caesarean section
10	Women requiring a blood transfusion with Caesarean section	Total number of women requiring a blood transfusion with Caesarean section	Total number of women having a Caesarean section
11	Women requiring a blood transfusion with vaginal birth	Total number of women requiring a blood transfusion with vaginal birth	Total number of women who give birth vaginally
12	Premature births (between 32 and 36 weeks gestation)	Total number of babies born at between 32 weeks 0 days and 36 weeks 6 days gestation	Total number of babies born in hospital

Data sources

Data for these indicators was sourced from publicly funded hospital events reported to the National Minimum Dataset (NMDS). The NMDS holds information collected routinely on all publicly funded events in which a patient is discharged from a hospital in New Zealand. It comprises a substantial amount of clinical information, including health conditions and procedures, which are coded using the appropriate International Statistical Classification of Diseases and Related Health Problems, Tenth revision, Australian Modification, Sixth Edition (ICD-10-AM-v6) clinical codes. The NMDS records births that occur in a publicly funded hospital, and publicly funded births that occur in a private hospital or birthing unit.

This report presents data from the NMDS on all women discharged following a publicly funded hospital birth occurring in 2011 and all babies live-born in hospital in 2011. Specific conditions and procedures (including birth type) were identified using ICD-10-AM-v6 clinical codes.

The standard primiparae were identified using clinical codes and demographic information sourced from the current birth event, from antenatal events corresponding to the pregnancy and from a search of historical maternity events held in the NMDS to determine primiparity. See 'Appendix 1: Technical notes' for more detail on definitions and code ranges.

The definitions and data source used in this report are consistent with the 2009 and 2010 reports. Data for subsequent reports will hereafter be sourced from the National Maternity Collection, which integrates different sources of maternity data. This will improve the quality and completeness of the data presented, and will enable additional indicators to be included, broadening the scope of this publication. The National Maternity Monitoring Group will advise the Ministry of Health on recommended changes to the indicators set, indicator definitions and source data.

Data integrity

This report has been compiled from data supplied by DHBs. DHBs are individually responsible for ensuring the quality of data they supply to national collections. No independent parity measure and no antenatal primary care information are available currently for reporting, and so the definition of standard primipara for the purposes of this publication is approximate.

Numbers and rates

Data are presented in this report in two ways:

- by DHB of domicile: these data are intended to provide DHBs with information relevant to their usually resident population
- by facility: these data are intended to allow monitoring of trends over time at the facility level. Data for births in secondary and tertiary facilities are presented graphically in the body of this document, and data for births in primary and private facilities are presented in tables in the appendices.

Rates are presented as raw percentages. Rates have not been standardised by age or ethnicity; the choice of denominator (standard primiparae) is intended to group women into clinically similar cohorts that would be expected to experience similar birth outcomes. Differences in rates by ethnicity or socioeconomic group could be an area of focus for analysis at the DHB level. Due to the design of the indicators, some rates are based on small numbers of events and should therefore be treated with caution.

Indicators 1–4: Type of birth

Rationale and purpose

Indicators 1–4 present data on types of birth among standard primiparae. They compare rates of spontaneous vaginal birth and rates of medical interventions in a pre-risk-adjusted population.² Their purpose is to encourage maternity service providers to review the appropriateness of these interventions, with the long-term aim of reducing maternal and perinatal morbidity, thereby improving maternal satisfaction with the process of giving birth, infant bonding and establishment of breastfeeding (adapted from *Women's Hospitals Australasia 2007*, p 88–9). The following sections describe the rationale and purpose of the specific indicators.

Spontaneous vaginal birth (indicator 1)

This indicator measures the proportion of women having a spontaneous (non-instrumental) vaginal birth, using a pre-risk-adjusted population. Maternity service providers are encouraged to review, evaluate and make necessary changes to clinical practice aimed at supporting women to achieve a spontaneous vaginal birth (adapted from *Women's Hospitals Australasia 2007*, p 89). This measure includes births for which labour was augmented or induced.

Instrumental vaginal birth (indicator 2)

This indicator helps maternity service providers to evaluate their use of instrumental interventions, including vacuum (ventouse) and forceps. If a provider's rates of intervention are significantly higher than its peer group at a national level, it should examine the results of other indicators that may be affected by instrumental birth, including maternal and perinatal morbidity.

Caesarean section (indicator 3)

The purpose of this indicator is to encourage maternity service providers to evaluate whether Caesarean sections were performed on the right women at the right place and at the right time. If a provider's Caesarean section rates are significantly different from their peer group at a national level, it should examine the results of other indicators that can be affected by Caesarean section (such as postpartum haemorrhage, and maternal and neonatal morbidity and mortality rates) to ascertain whether there is any correlation (adapted from *Women's Hospitals Australasia 2007*, p 74). The longer-term aim is to reduce the risks associated with an unnecessary Caesarean section, reduce the number of women at risk of a subsequent Caesarean section and reduce the number of women who experience difficulties with their second and subsequent births as a consequence of a primary Caesarean section (adapted from *Women's Hospitals Australasia 2007*, p 75).

² Some indicators do not sum to 100 percent due to missing data codes for some events.

Induction of labour (indicator 4)

The purpose of this indicator is to benchmark rates of induction of labour within a pre-risk-adjusted population. Maternity service providers can use this indicator in further investigation of their policies and practices with respect to inducing labour in low-risk women. If a provider's rates of induction of labour are significantly higher than its peer group at a national level, it should examine the results of other indicators that can be affected by induction, such as Caesarean section, postpartum haemorrhage and episiotomy, to ascertain whether there is any correlation (adapted from Women's Hospitals Australasia 2007, p 68).

Notes on 2011 data

Rates of spontaneous vaginal birth vary between DHBs and between secondary and tertiary facilities; DHB rates range from 59.6 to 81.0 percent and facility rates range from 54.0 to 81.5 percent. This variation merits further investigation. Rates of intervention in some secondary or tertiary facilities could be influenced by transfers from primary facilities. Individual DHBs could compare rates of intervention according to where labour was initiated.

Rates of instrumental vaginal birth range from 2.2 to 25.1 percent between facilities. Caesarean section rates also vary by facility, from 6.2 to 22.7 percent. These variations indicate a need for detailed review.

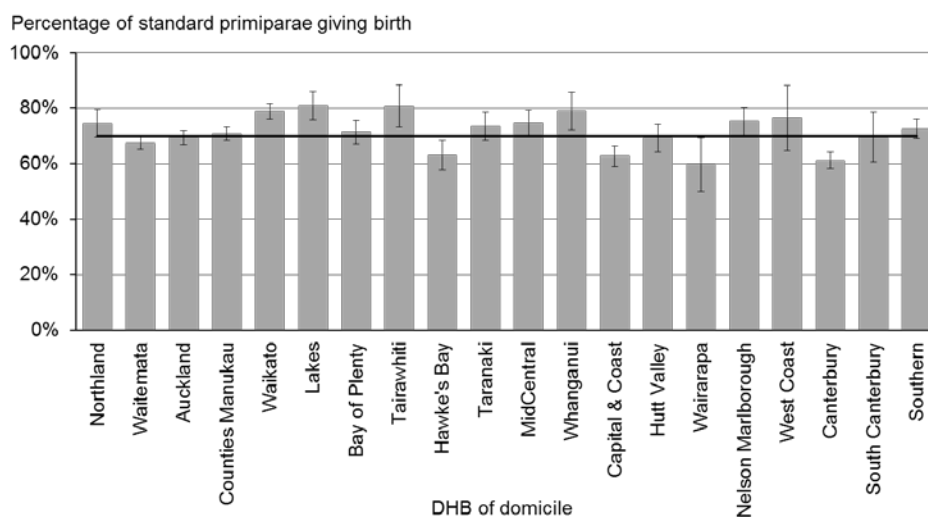
Standard primiparae are unlikely to have indications for induction of labour, so rates of induction for this group should be low. Providers with rates significantly above the national average should investigate reasons for high induction rates.

Indicator 1: Spontaneous vaginal birth among standard primiparae, 2011

Table 2: Number and percentage of spontaneous vaginal births among standard primiparae, by DHB of domicile, 2011

DHB of domicile	Spontaneous vaginal births	Standard primiparae	Rate (%)
Northland	216	290	74.5
Waitemata	1018	1509	67.5
Auckland	845	1216	69.5
Counties Manukau	979	1382	70.8
Waikato	637	808	78.8
Lakes	187	231	81.0
Bay of Plenty	311	435	71.5
Tairāwhiti	84	104	80.8
Hawke's Bay	198	314	63.1
Taranaki	211	287	73.5
MidCentral	268	359	74.7
Whanganui	113	143	79.0
Capital & Coast	406	647	62.8
Hutt Valley	234	338	69.2
Wairarapa	59	99	59.6
Nelson Marlborough	219	291	75.3
West Coast	39	51	76.5
Canterbury	596	974	61.2
South Canterbury	71	102	69.6
Southern	455	627	72.6
Unspecified	3	3	100.0
New Zealand	7149	10,210	70.0

Figure 1: Percentage of spontaneous vaginal births among standard primiparae, by DHB of domicile, 2011

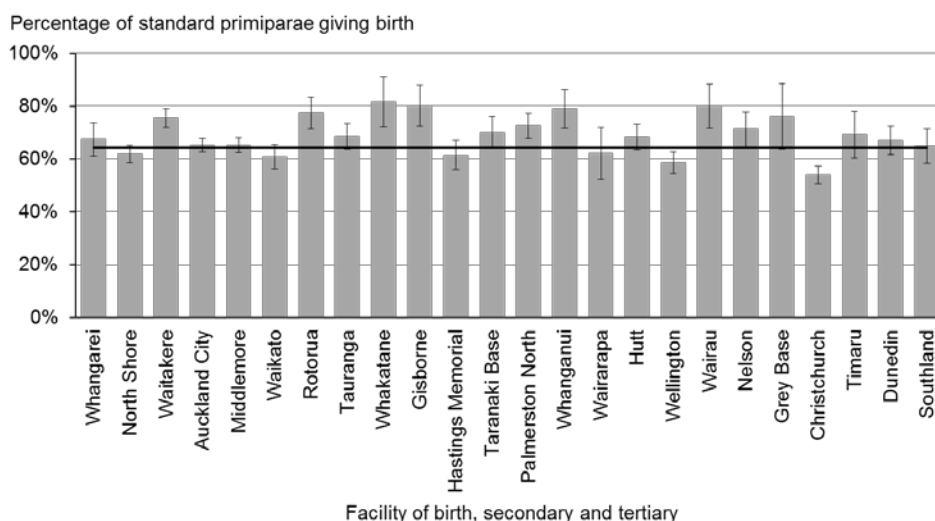


Black line represents national average.
Error bars represent 95% confidence intervals.

Table 3: Number and percentage of spontaneous vaginal births among standard primiparae, by facility of birth (secondary and tertiary facilities), 2011

Facility	Spontaneous vaginal births	Standard primiparae	Rate (%)
Whangarei	147	218	67.4
North Shore	512	826	62.0
Waitakere	428	567	75.5
Auckland City	846	1299	65.1
Middlemore	673	1032	65.2
Waikato	259	426	60.8
Rotorua	144	186	77.4
Tauranga	246	359	68.5
Whakatane	53	65	81.5
Gisborne	81	101	80.2
Hastings Memorial	190	309	61.5
Taranaki Base	169	241	70.1
Palmerston North	251	346	72.5
Whanganui	94	119	79.0
Wairarapa	59	95	62.1
Hutt	240	351	68.4
Wellington	336	574	58.5
Wairau	72	90	80.0
Nelson	134	188	71.3
Grey Base	35	46	76.1
Christchurch	436	808	54.0
Timaru	72	104	69.2
Dunedin	199	297	67.0
Southland	133	205	64.9
All secondary and tertiary facilities	5809	8852	65.6

Figure 2: Percentage of spontaneous vaginal births among standard primiparae, by facility of birth (secondary and tertiary facilities), 2011



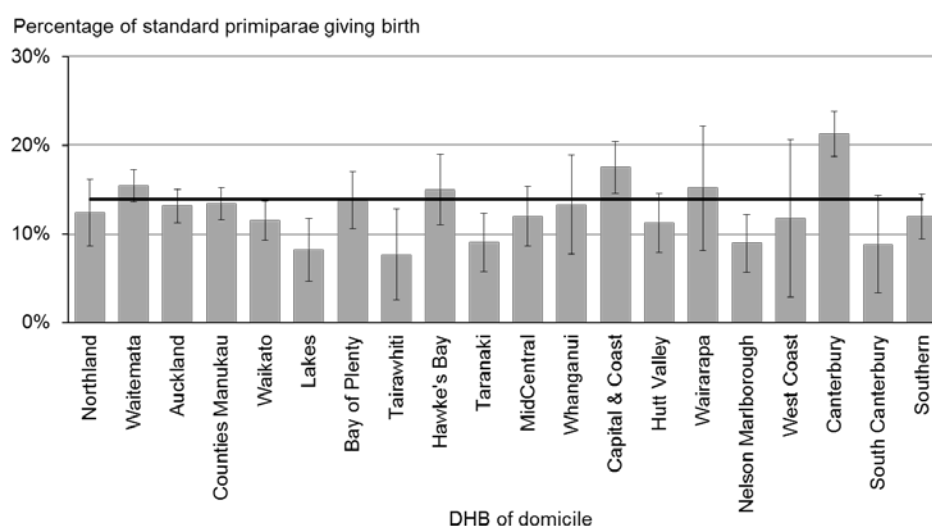
Black line represents average for all secondary and tertiary facilities.
Error bars represent 95% confidence intervals.

Indicator 2: Instrumental vaginal birth among standard primiparae, 2011

Table 4: Number and percentage of instrumental vaginal births among standard primiparae, by DHB of domicile, 2011

DHB of domicile	Instrumental vaginal births	Standard primiparae	Rate (%)
Northland	36	290	12.4
Waitemata	233	1509	15.4
Auckland	160	1216	13.2
Counties Manukau	185	1382	13.4
Waikato	93	808	11.5
Lakes	19	231	8.2
Bay of Plenty	60	435	13.8
Tairāwhiti	8	104	7.7
Hawke's Bay	47	314	15.0
Taranaki	26	287	9.1
MidCentral	43	359	12.0
Whanganui	19	143	13.3
Capital & Coast	113	647	17.5
Hutt Valley	38	338	11.2
Wairarapa	15	99	15.2
Nelson Marlborough	26	291	8.9
West Coast	6	51	11.8
Canterbury	207	974	21.3
South Canterbury	9	102	8.8
Southern	75	627	12.0
Unspecified	0	3	
New Zealand	1418	10,210	13.9

Figure 3: Percentage of instrumental vaginal births among standard primiparae, by DHB of domicile, 2011

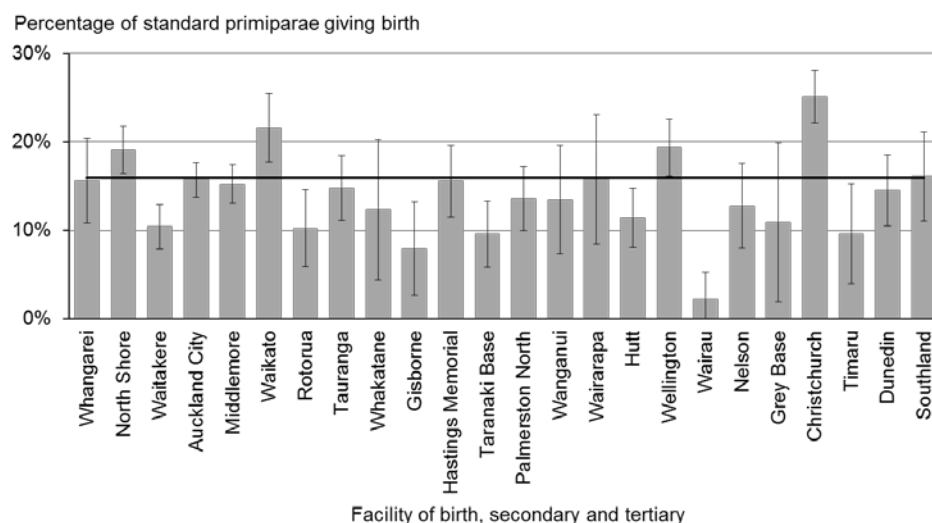


Black line represents national average.
Error bars represent 95% confidence intervals.

Table 5: Number and percentage of instrumental vaginal births among standard primiparae, by facility of birth (secondary and tertiary facilities), 2011

Facility	Instrumental vaginal births	Standard primiparae	Rate (%)
Whangarei	34	218	15.6
North Shore	158	826	19.1
Waitakere	59	567	10.4
Auckland City	204	1299	15.7
Middlemore	157	1032	15.2
Waikato	92	426	21.6
Rotorua	19	186	10.2
Tauranga	53	359	14.8
Whakatane	8	65	12.3
Gisborne	8	101	7.9
Hastings Memorial	48	309	15.5
Taranaki Base	23	241	9.5
Palmerston North	47	346	13.6
Whanganui	16	119	13.4
Wairarapa	15	95	15.8
Hutt	40	351	11.4
Wellington	111	574	19.3
Wairau	2	90	2.2
Nelson	24	188	12.8
Grey Base	5	46	10.9
Christchurch	203	808	25.1
Timaru	10	104	9.6
Dunedin	43	297	14.5
Southland	33	205	16.1
All secondary and tertiary facilities	1412	8852	16.0

Figure 4: Percentage of instrumental vaginal births among standard primiparae, by facility of birth (secondary and tertiary facilities), 2011



Black line represents average for all secondary and tertiary facilities.

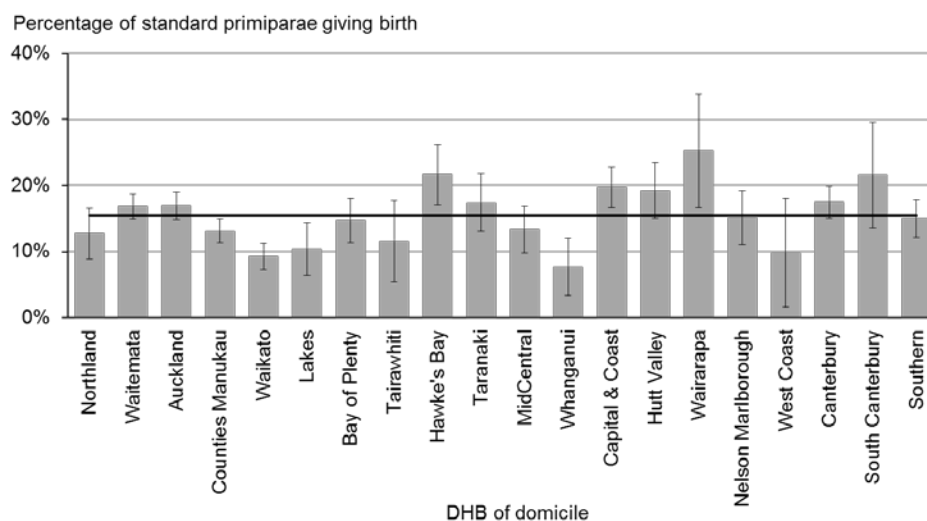
Error bars represent 95% confidence intervals.

Indicator 3: Caesarean section among standard primiparae, 2011

Table 6: Number and percentage of Caesarean section births among standard primiparae, by DHB of domicile, 2011

DHB of domiciles	Caesarean sections	Standard primiparae	Rate (%)
Northland	37	290	12.8
Waitemata	254	1509	16.8
Auckland	206	1216	16.9
Counties Manukau	181	1382	13.1
Waikato	75	808	9.3
Lakes	24	231	10.4
Bay of Plenty	64	435	14.7
Tairāwhiti	12	104	11.5
Hawke's Bay	68	314	21.7
Taranaki	50	287	17.4
MidCentral	48	359	13.4
Whanganui	11	143	7.7
Capital & Coast	128	647	19.8
Hutt Valley	65	338	19.2
Wairarapa	25	99	25.3
Nelson Marlborough	44	291	15.1
West Coast	5	51	9.8
Canterbury	170	974	17.5
South Canterbury	22	102	21.6
Southern	94	627	15.0
Unspecified	0	3	
New Zealand	1583	10,210	15.5

Figure 5: Percentage of Caesarean section births among standard primiparae, by DHB of domicile, 2011

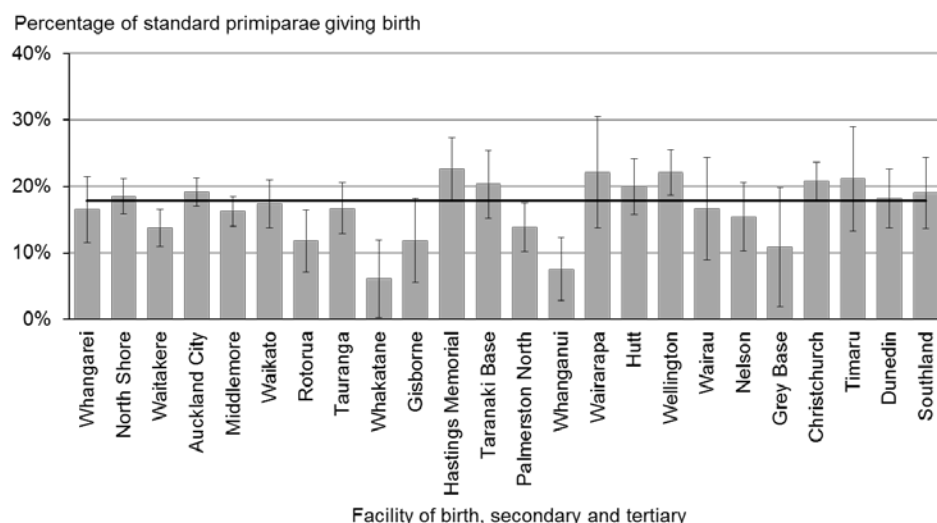


Black line represents national average.
Error bars represent 95% confidence intervals.

Table 7: Number and percentage of Caesarean section births among standard primiparae, by facility of birth (secondary and tertiary facilities), 2011

Facility	Caesarean sections	Standard primiparae	Rate (%)
Whangarei	36	218	16.5
North Shore	153	826	18.5
Waitakere	78	567	13.8
Auckland City	249	1299	19.2
Middlemore	168	1032	16.3
Waikato	74	426	17.4
Rotorua	22	186	11.8
Tauranga	60	359	16.7
Whakatane	4	65	6.2
Gisborne	12	101	11.9
Hastings Memorial	70	309	22.7
Taranaki Base	49	241	20.3
Palmerston North	48	346	13.9
Whanganui	9	119	7.6
Wairarapa	21	95	22.1
Hutt	70	351	19.9
Wellington	127	574	22.1
Wairau	15	90	16.7
Nelson	29	188	15.4
Grey Base	5	46	10.9
Christchurch	168	808	20.8
Timaru	22	104	21.2
Dunedin	54	297	18.2
Southland	39	205	19.0
All secondary and tertiary facilities	1582	8852	17.9

Figure 6: Percentage of Caesarean section births among standard primiparae, by facility of birth (secondary and tertiary facilities), 2011



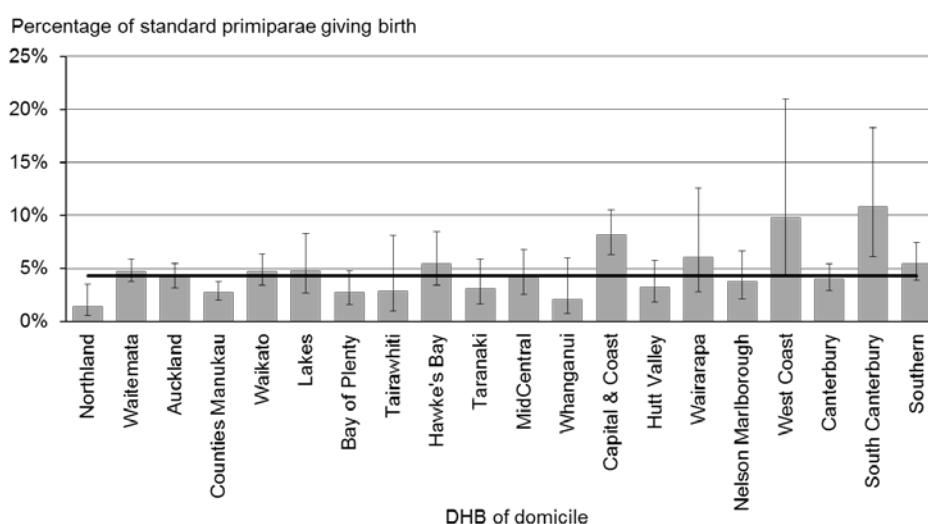
Black line represents average for all secondary and tertiary facilities.
 Error bars represent 95% confidence intervals.

Indicator 4: Induction of labour among standard primiparae, 2011

Table 8: Number and percentage of inductions of labour among standard primiparae, by DHB of domicile, 2011

DHB of domicile	Inductions of labour	Standard primiparae	Rate (%)
Northland	4	290	1.4
Waitemata	71	1509	4.7
Auckland	51	1216	4.2
Counties Manukau	38	1382	2.7
Waikato	38	808	4.7
Lakes	11	231	4.8
Bay of Plenty	12	435	2.8
Tairāwhiti	3	104	2.9
Hawke's Bay	17	314	5.4
Taranaki	9	287	3.1
MidCentral	15	359	4.2
Whanganui	3	143	2.1
Capital & Coast	53	647	8.2
Hutt Valley	11	338	3.3
Wairarapa	6	99	6.1
Nelson Marlborough	11	291	3.8
West Coast	5	51	9.8
Canterbury	39	974	4.0
South Canterbury	11	102	10.8
Southern	34	627	5.4
Unspecified	0	3	
New Zealand	442	10,210	4.3

Figure 7: Percentage of inductions of labour among standard primiparae, by DHB of domicile, 2011

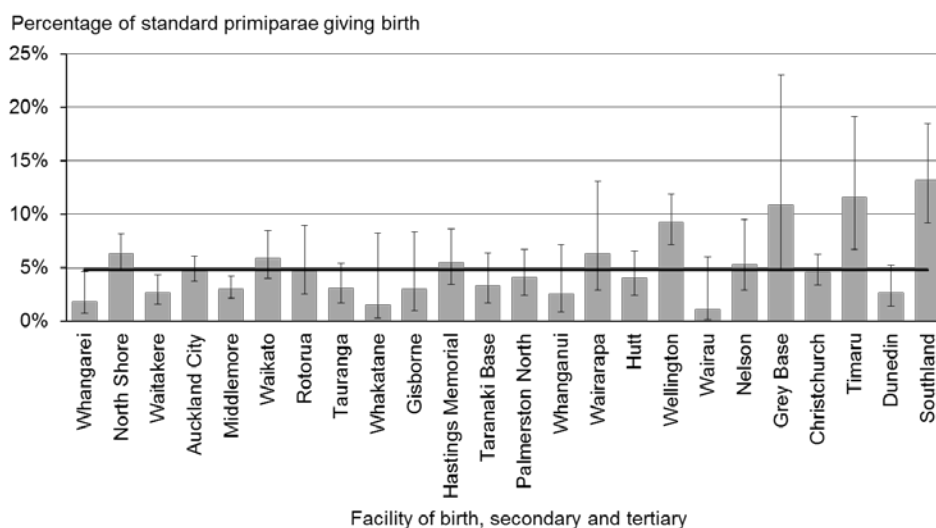


Black line represents national average.
Error bars represent 95% confidence intervals.

Table 9: Number and percentage of inductions of labour among standard primiparae, by facility of birth (secondary and tertiary facilities), 2011

Facility	Induction of labour	Standard primiparae	Rate (%)
Whangarei	4	218	1.8
North Shore	52	826	6.3
Waitakere	15	567	2.6
Auckland City	62	1299	4.8
Middlemore	31	1032	3.0
Waikato	25	426	5.9
Rotorua	9	186	4.8
Tauranga	11	359	3.1
Whakatane	1	65	1.5
Gisborne	3	101	3.0
Hastings Memorial	17	309	5.5
Taranaki Base	8	241	3.3
Palmerston North	14	346	4.0
Whanganui	3	119	2.5
Wairarapa	6	95	6.3
Hutt	14	351	4.0
Wellington	53	574	9.2
Wairau	1	90	1.1
Nelson	10	188	5.3
Grey Base	5	46	10.9
Christchurch	37	808	4.6
Timaru	12	104	11.5
Dunedin	8	297	2.7
Southland	27	205	13.2
All secondary and tertiary facilities	428	8852	4.8

Figure 8: Percentage of inductions of labour among standard primiparae, by facility of birth (secondary and tertiary facilities), 2011



Black line represents average for all secondary and tertiary facilities.
Error bars represent 95% confidence intervals.

Indicators 5–8: Degree of damage to the lower genital tract

Rationale and purpose

Indicators 5–8 cover the degree of damage to the lower genital tract from vaginal birth among standard primiparae. Perineal trauma remains one of the most common complications of childbirth, and is thought to affect between 60 and 85 percent of women who give birth vaginally. Reasons for perineal trauma are varied, and may reflect either maternal or neonatal issues. Perineal damage can cause women pain and longer-term morbidity. The long-term aim of these indicators is to reduce such trauma and its associated maternal morbidity, improving maternal satisfaction and mother–infant bonding by reducing maternal exposure to pain and discomfort (adapted from *Women’s Hospitals Australasia 2007*, p 78–9). The following sections describe the rationale and purpose of the specific indicators.

Intact lower genital tract (indicator 5)

The four categories of perineal tear classification enable a standardised description of perineal damage. Assessing and identifying degrees of lower genital tract damage remains a complex process. A classification of first- or second-degree does not necessarily reflect the level of pain or longer-term morbidity a woman experiences. Measuring the number of women who are not affected by perineal trauma (that is, those who have an intact perineum after birth) provides a more concise measure than that which could presently be achieved by reviewing reported rates of first- or second-degree tears. This indicator therefore provides a measure that can encourage further investigation to determine how maternity service providers can improve rates of intact lower genital tract.

Episiotomy (indicator 6)

This indicator aims to encourage further investigation among maternity service providers to ensure that they appropriately assess risks to the mother as well as the infant before undertaking an episiotomy. If a provider’s rates are significantly higher than its peer group at a national level, it should examine the results of other indicators that can be affected by episiotomies, such as bleeding, infection and maternal morbidity rates, to ascertain whether there is any correlation (adapted from *Women’s Hospitals Australasia 2007*, p 79).

Third- and fourth-degree tears (with or without episiotomy) (indicators 7 and 8)

The aim of these indicators is to encourage maternity service providers to consider the rate of tears in conjunction with episiotomy rates, and to undertake further investigation of labour management if rates are significantly different from their peer group at a national level. Labour management may include the use of induction, instrumental delivery and management of second-stage labour (adapted from *Women’s Hospitals Australasia 2007*, p 82–83).

Notes on 2011 data

Rates of intact lower genital tract after birth among standard primiparae range from 20.3 to 57.6 percent across DHBs and 16.5 to 57.3 percent across secondary and tertiary facilities. This regional variation suggests that investigation of data integrity and of local clinical practice is required.

Rates of episiotomy without third- or fourth-degree tear also vary (from 1.1 to 30.3 percent across DHBs and 1.1 to 34.5 percent across secondary and tertiary facilities). Outlier DHBs and facilities should investigate the reasons for these differences, which could include the clinical indications given in specific cases and the discipline and number of practitioners performing episiotomies.

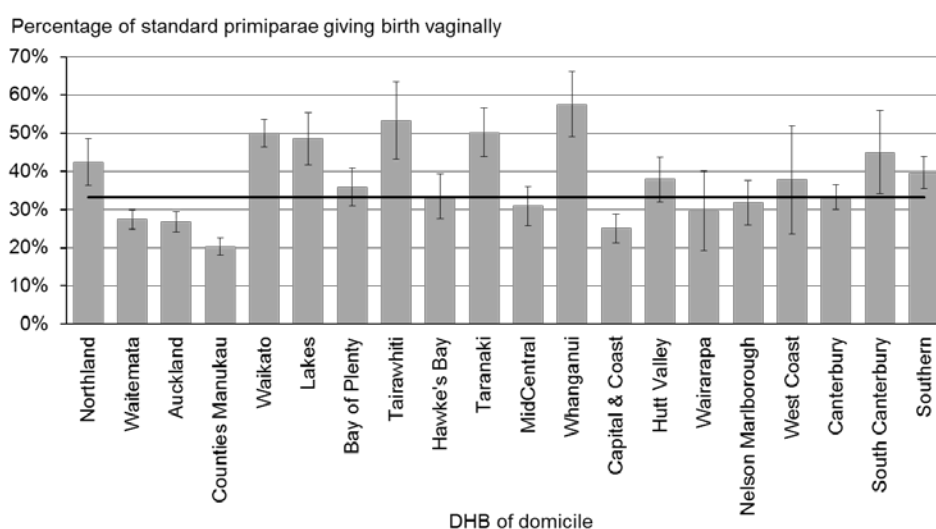
National data does not show a systematic correlation between episiotomy rates and rates of third- and fourth-degree tears. DHBs should undertake more detailed analysis of the relationship between rates of intact perineum, episiotomies and third- and fourth-degree tears.

Indicator 5: Intact lower genital tract among standard primiparae giving birth vaginally, 2011

Table 10: Number and percentage of standard primiparae giving birth vaginally with intact lower genital tract, by DHB of domicile, 2011

DHB of domicile	Intact lower genital tracts	Standard primiparae giving birth vaginally	Rate (%)
Northland	107	252	42.5
Waitemata	342	1251	27.3
Auckland	270	1005	26.9
Counties Manukau	236	1164	20.3
Waikato	365	730	50.0
Lakes	100	206	48.5
Bay of Plenty	133	371	35.8
Tairāwhiti	49	92	53.3
Hawke's Bay	82	245	33.5
Taranaki	119	237	50.2
MidCentral	96	311	30.9
Whanganui	76	132	57.6
Capital & Coast	130	519	25.0
Hutt Valley	103	272	37.9
Wairarapa	22	74	29.7
Nelson Marlborough	78	245	31.8
West Coast	17	45	37.8
Canterbury	267	803	33.3
South Canterbury	36	80	45.0
Southern	210	530	39.6
Unspecified	1	3	33.3
New Zealand	2839	8567	33.1

Figure 9: Percentage of standard primiparae giving birth vaginally with intact lower genital tract, by DHB of domicile, 2011

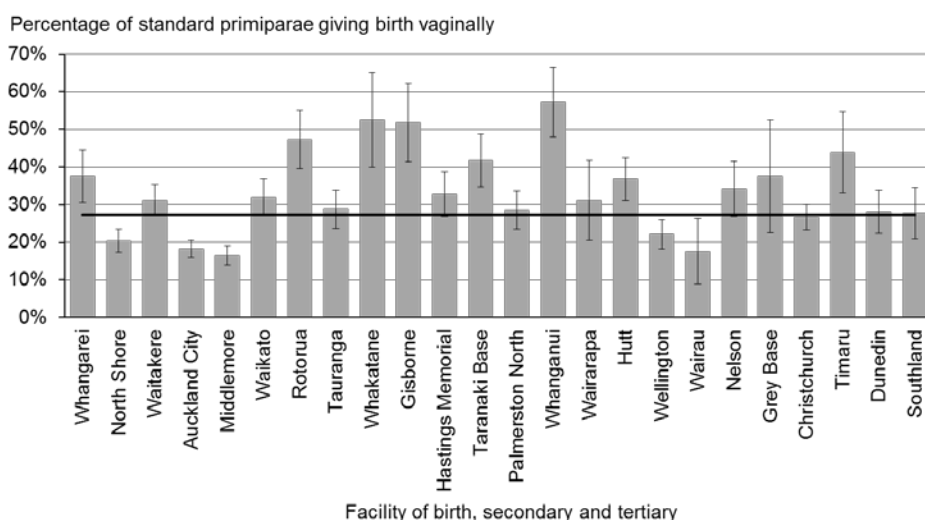


Black line represents national average.
Error bars represent 95% confidence intervals.

Table 11: Number and percentage of standard primiparae giving birth vaginally with intact lower genital tract, by facility of birth (secondary and tertiary facilities), 2011

Facility	Intact lower genital tracts	Standard primiparae giving birth vaginally	Rate (%)
Whangarei	68	181	37.6
North Shore	136	670	20.3
Waitakere	152	487	31.2
Auckland City	191	1050	18.2
Middlemore	137	830	16.5
Waikato	112	351	31.9
Rotorua	77	163	47.2
Tauranga	86	299	28.8
Whakatane	32	61	52.5
Gisborne	46	89	51.7
Hastings Memorial	78	238	32.8
Taranaki Base	80	192	41.7
Palmerston North	85	298	28.5
Whanganui	63	110	57.3
Wairarapa	23	74	31.1
Hutt	103	280	36.8
Wellington	99	447	22.1
Wairau	13	74	17.6
Nelson	54	158	34.2
Grey Base	15	40	37.5
Christchurch	170	639	26.6
Timaru	36	82	43.9
Dunedin	68	242	28.1
Southland	46	166	27.7
All secondary and tertiary facilities	1970	7221	27.3

Figure 10: Percentage of standard primiparae giving birth vaginally with intact lower genital tract, by facility of birth (secondary and tertiary facilities), 2011



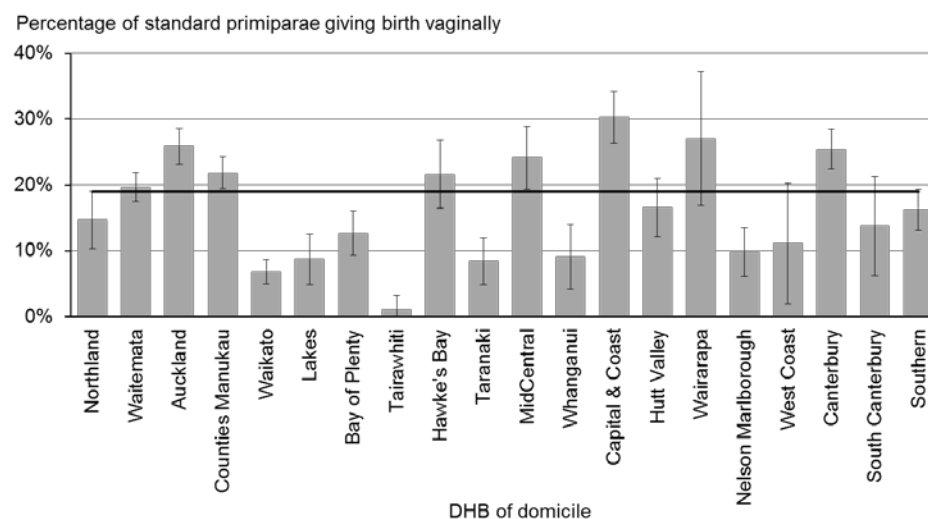
Black line represents average for all secondary and tertiary facilities.
Error bars represent 95% confidence intervals.

Indicator 6: Episiotomy and no third- or fourth-degree tear among standard primiparae giving birth vaginally, 2011

Table 12: Number and percentage of standard primiparae giving birth vaginally and undergoing episiotomy without mention of third- or fourth-degree tear, by DHB of domicile, 2011

DHB of domicile	Episiotomies without 3rd- or 4th-degree tear	Standard primiparae giving birth vaginally	Rate (%)
Northland	37	252	14.7
Waitemata	246	1251	19.7
Auckland	260	1005	25.9
Counties Manukau	254	1164	21.8
Waikato	50	730	6.8
Lakes	18	206	8.7
Bay of Plenty	47	371	12.7
Tairāwhiti	1	92	1.1
Hawke's Bay	53	245	21.6
Taranaki	20	237	8.4
MidCentral	75	311	24.1
Whanganui	12	132	9.1
Capital & Coast	157	519	30.3
Hutt Valley	45	272	16.5
Wairarapa	20	74	27.0
Nelson Marlborough	24	245	9.8
West Coast	5	45	11.1
Canterbury	204	803	25.4
South Canterbury	11	80	13.8
Southern	86	530	16.2
Unspecified	0	3	
New Zealand	1625	8567	19.0

Figure 11: Percentage of standard primiparae giving birth vaginally and undergoing episiotomy without mention of third- or fourth-degree tear, by DHB of domicile, 2011

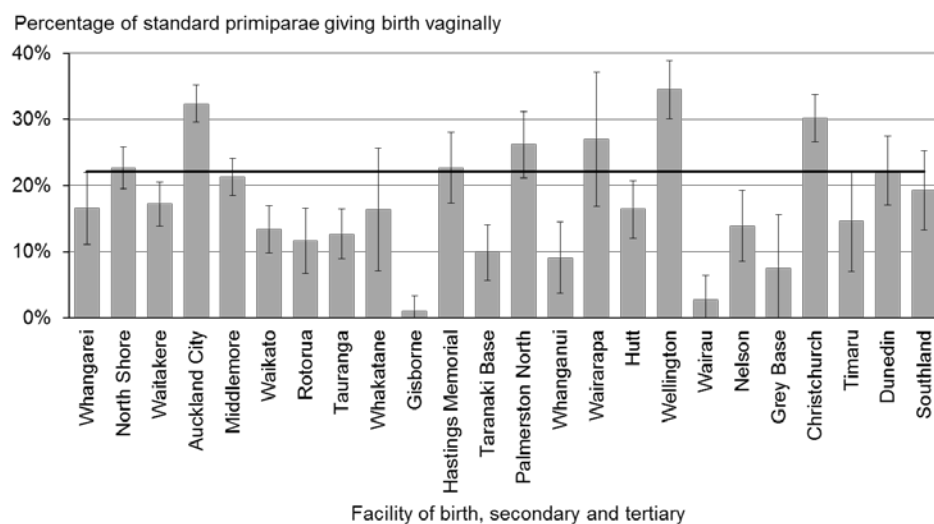


Black line represents national average.
Error bars represent 95% confidence intervals.

Table 13: Number and percentage of standard primiparae giving birth vaginally and undergoing episiotomy without mention of third- or fourth-degree tear, by facility of birth (secondary and tertiary facilities), 2011

Facility	Episiotomies without 3rd- or 4th-degree tear	Standard primiparae giving birth vaginally	Rate (%)
Whangarei	30	181	16.6
North Shore	152	670	22.7
Waitakere	84	487	17.2
Auckland City	340	1050	32.4
Middlemore	177	830	21.3
Waikato	47	351	13.4
Rotorua	19	163	11.7
Tauranga	38	299	12.7
Whakatane	10	61	16.4
Gisborne	1	89	1.1
Hastings Memorial	54	238	22.7
Taranaki Base	19	192	9.9
Palmerston North	78	298	26.2
Whanganui	10	110	9.1
Wairarapa	20	74	27.0
Hutt	46	280	16.4
Wellington	154	447	34.5
Wairau	2	74	2.7
Nelson	22	158	13.9
Grey Base	3	40	7.5
Christchurch	193	639	30.2
Timaru	12	82	14.6
Dunedin	54	242	22.3
Southland	32	166	19.3
All secondary and tertiary facilities	1597	7221	22.1

Figure 12: Percentage of standard primiparae giving birth vaginally and undergoing episiotomy without mention of third- or fourth-degree tear, by facility of birth (secondary and tertiary facilities), 2011



Black line represents average for all secondary and tertiary facilities.

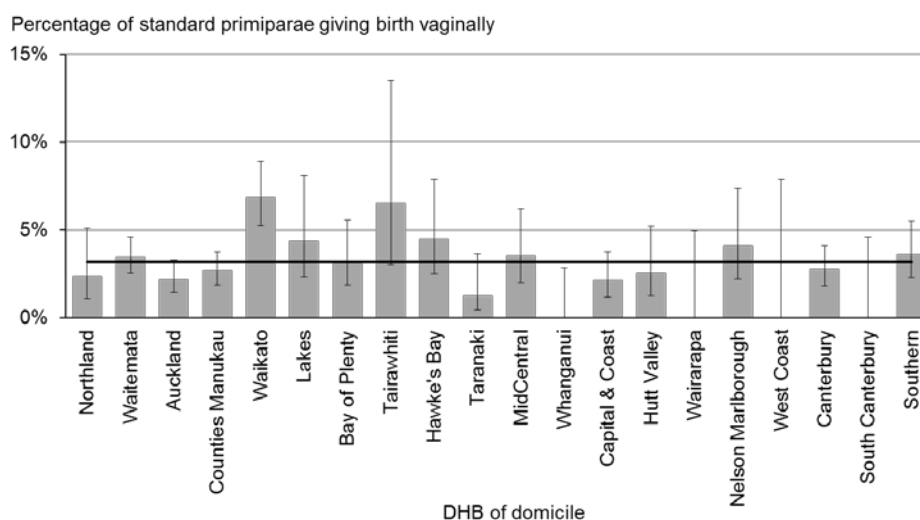
Error bars represent 95% confidence intervals.

Indicator 7: Third- or fourth-degree tear and no episiotomy among standard primiparae giving birth vaginally, 2011

Table 14: Number and percentage of standard primiparae giving birth vaginally sustaining a third- or fourth-degree tear and not undergoing episiotomy, by DHB of domicile, 2011

DHB of domicile	3rd- or 4th-degree tears without episiotomy	Standard primiparae giving birth vaginally	Rate (%)
Northland	6	252	2.4
Waitemata	43	1251	3.4
Auckland	22	1005	2.2
Counties Manukau	31	1164	2.7
Waikato	50	730	6.8
Lakes	9	206	4.4
Bay of Plenty	12	371	3.2
Tairāwhiti	6	92	6.5
Hawke's Bay	11	245	4.5
Taranaki	3	237	1.3
MidCentral	11	311	3.5
Whanganui	0	132	
Capital & Coast	11	519	2.1
Hutt Valley	7	272	2.6
Wairarapa	0	74	
Nelson Marlborough	10	245	4.1
West Coast	0	45	
Canterbury	22	803	2.7
South Canterbury	0	80	
Southern	19	530	3.6
Unspecified	0	3	
New Zealand	273	8567	3.2

Figure 13: Percentage of standard primiparae giving birth vaginally sustaining a third- or fourth-degree tear and not undergoing episiotomy, by DHB of domicile, 2011



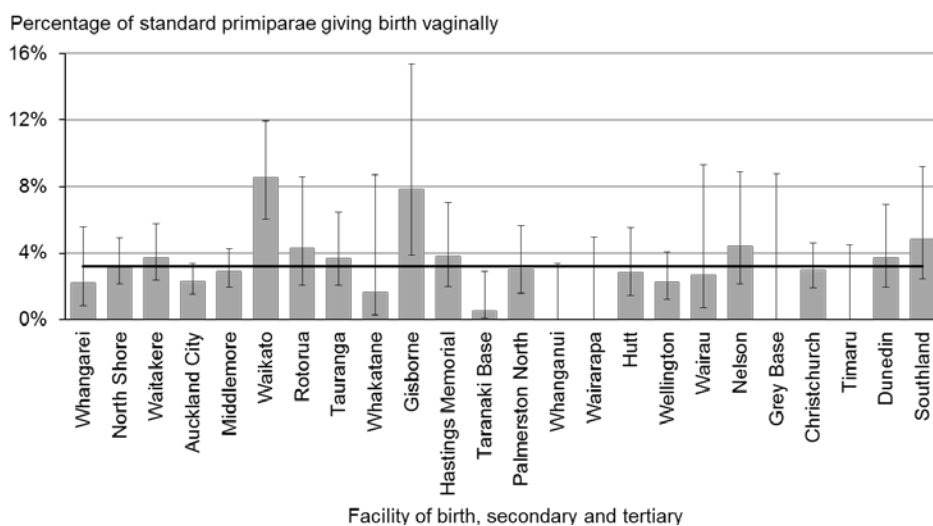
Black line represents national average.

Error bars represent 95% confidence intervals.

Table 15: Number and percentage of standard primiparae giving birth vaginally sustaining a third- or fourth-degree tear and not undergoing episiotomy, by facility of birth (secondary and tertiary facilities), 2011

Facility	3rd- or 4th-degree tears without episiotomy	Standard primiparae giving birth vaginally	Rate (%)
Whangarei	4	181	2.2
North Shore	22	670	3.3
Waitakere	18	487	3.7
Auckland City	24	1050	2.3
Middlemore	24	830	2.9
Waikato	30	351	8.5
Rotorua	7	163	4.3
Tauranga	11	299	3.7
Whakatane	1	61	1.6
Gisborne	7	89	7.9
Hastings Memorial	9	238	3.8
Taranaki Base	1	192	0.5
Palmerston North	9	298	3.0
Whanganui	0	110	
Wairarapa	0	74	
Hutt	8	280	2.9
Wellington	10	447	2.2
Wairau	2	74	2.7
Nelson	7	158	4.4
Grey Base	0	40	
Christchurch	19	639	3.0
Timaru	0	82	
Dunedin	9	242	3.7
Southland	8	166	4.8
All secondary and tertiary facilities	230	7221	3.2

Figure 14: Percentage of standard primiparae giving birth vaginally sustaining a third- or fourth-degree tear and not undergoing episiotomy, by facility of birth (secondary and tertiary facilities), 2011



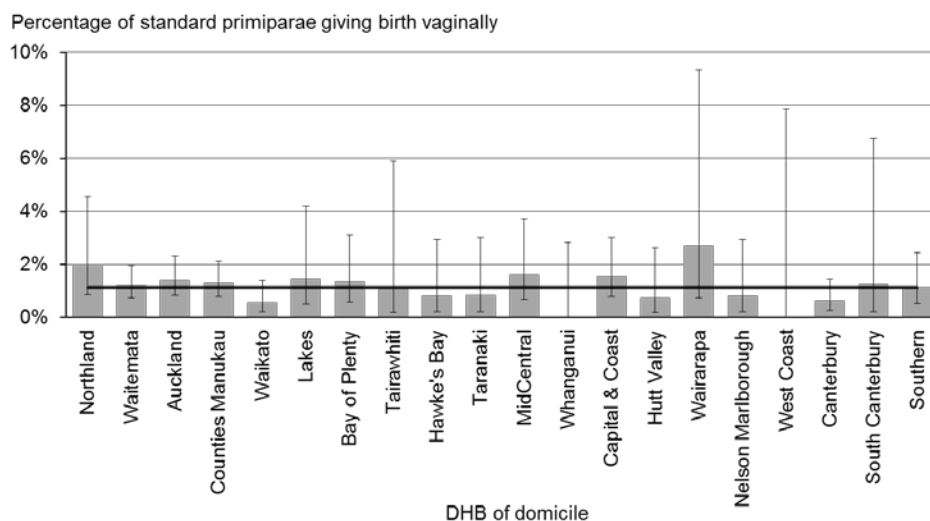
Black line represents average for all secondary and tertiary facilities.
Error bars represent 95% confidence intervals.

Indicator 8: Episiotomy and third- or fourth-degree tear among standard primiparae giving birth vaginally, 2011

Table 16: Number and percentage of standard primiparae giving birth vaginally undergoing episiotomy and sustaining a third- or fourth-degree tear, by DHB of domicile, 2011

DHB of domicile	Episiotomies with 3rd- or 4th-degree tear	Standard primiparae giving birth vaginally	Rate (%)
Northland	5	252	2.0
Waitemata	15	1251	1.2
Auckland	14	1005	1.4
Counties Manukau	15	1164	1.3
Waikato	4	730	0.5
Lakes	3	206	1.5
Bay of Plenty	5	371	1.3
Tairāwhiti	1	92	1.1
Hawke's Bay	2	245	0.8
Taranaki	2	237	0.8
MidCentral	5	311	1.6
Whanganui	0	132	
Capital & Coast	8	519	1.5
Hutt Valley	2	272	0.7
Wairarapa	2	74	2.7
Nelson Marlborough	2	245	0.8
West Coast	0	45	
Canterbury	5	803	0.6
South Canterbury	1	80	1.3
Southern	6	530	1.1
Unspecified	0	3	
New Zealand	97	8567	1.1

Figure 15: Percentage of standard primiparae giving birth vaginally undergoing episiotomy and sustaining a third- or fourth-degree tear, by DHB of domicile, 2011



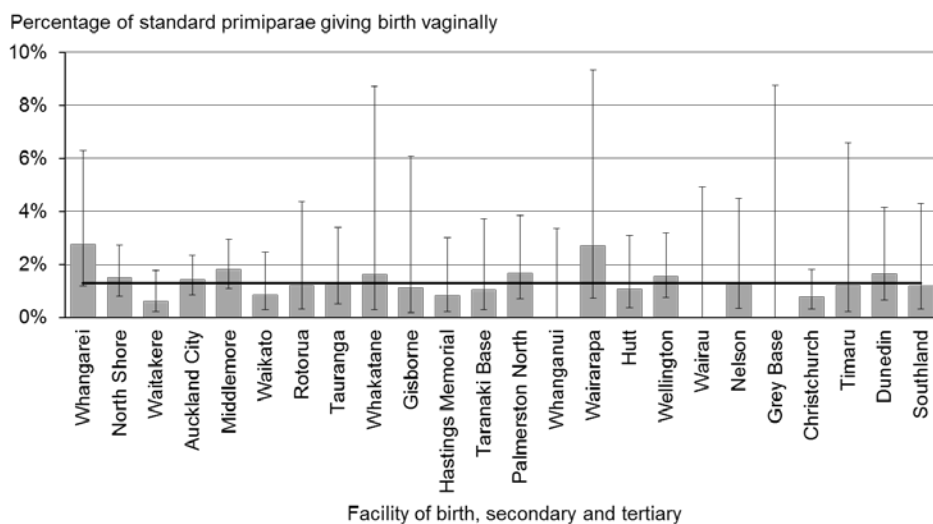
Black line represents national average.

Error bars represent 95% confidence intervals.

Table 17: Number and percentage of standard primiparae giving birth vaginally undergoing episiotomy and sustaining a third- or fourth-degree tear, by facility of birth (secondary and tertiary facilities), 2011

Facility	Episiotomies with 3rd- or 4th- degree tear	Standard primiparae giving birth vaginally	Rate (%)
Whangarei	5	181	2.8
North Shore	10	670	1.5
Waitakere	3	487	0.6
Auckland City	15	1050	1.4
Middlemore	15	830	1.8
Waikato	3	351	0.9
Rotorua	2	163	1.2
Tauranga	4	299	1.3
Whakatane	1	61	1.6
Gisborne	1	89	1.1
Hastings Memorial	2	238	0.8
Taranaki Base	2	192	1.0
Palmerston North	5	298	1.7
Whanganui	0	110	
Wairarapa	2	74	2.7
Hutt	3	280	1.1
Wellington	7	447	1.6
Wairau	0	74	
Nelson	2	158	1.3
Grey Base	0	40	
Christchurch	5	639	0.8
Timaru	1	82	1.2
Dunedin	4	242	1.7
Southland	2	166	1.2
All secondary and tertiary facilities	94	7221	1.3

Figure 16: Percentage of standard primiparae giving birth vaginally undergoing episiotomy and sustaining a third- or fourth-degree tear, by facility of birth (secondary and tertiary facilities), 2011



Black line represents average for all secondary and tertiary facilities.
Error bars represent 95% confidence intervals.

Indicator 9: General anaesthetic for women giving birth by Caesarean section

Rationale and purpose

Although the risks of general anaesthetic for Caesarean section have reduced greatly in recent decades, regional anaesthetic is still safer than general anaesthetic because it results in less maternal and neonatal morbidity (Australian Council on Healthcare Standards 2008, p 474). A proportion of Caesarean sections will continue to be done under general anaesthetic because of factors such as patient preference, as well as in some high-risk cases (such as where a woman has pre-eclampsia) where only general anaesthetic can be used. General anaesthetic is more likely to be used when Caesarean sections are done urgently; factors affecting this can include the configuration and organisation of obstetric and anaesthetic services (for example, whether a specialist anaesthetist is on site) and the level of antenatal care a woman has received.

The objective of this indicator is to encourage services that have higher-than-average rates of general anaesthetic for Caesarean sections to undertake further investigation to determine the causes of these higher rates and evaluate whether they are justified.

Notes on 2011 data

Rates of general anaesthetic use in Caesarean section deliveries ranged from 1.9 to 13.9 percent across DHBs and 0 to 22.0 percent across secondary and tertiary facilities. These rates are based on small numbers, so caution must be used when making comparisons.

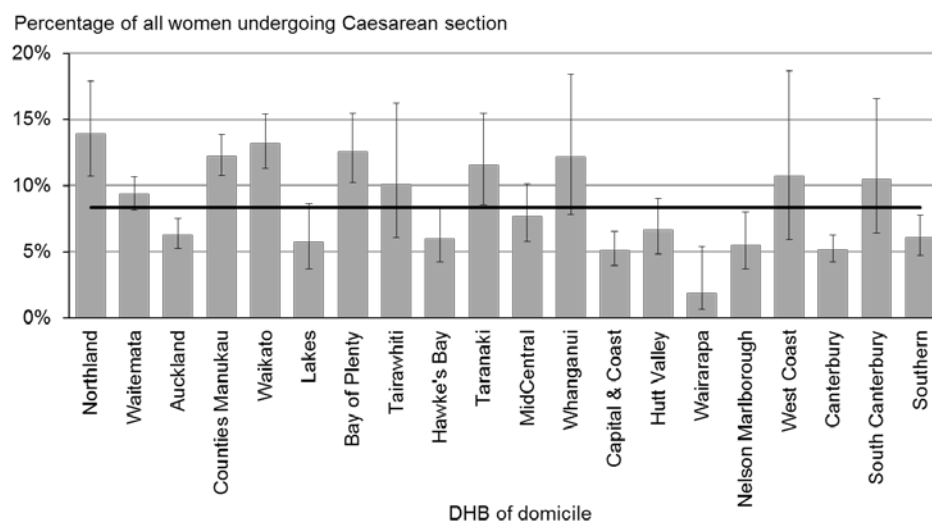
All maternity service providers should review their rates of general anaesthetic for Caesarean sections and consider the impact of the ratio between acute and elective Caesarean section rates. Providers should further investigate the reasons for higher rates of general anaesthetic for acute Caesarean sections.

Indicator 9: General anaesthetic for women giving birth by Caesarean section, 2011

Table 18: Number and percentage of women undergoing a Caesarean section under general anaesthetic, by DHB of domicile, 2011

DHB of domicile	Caesarean sections under general anaesthetic	All Caesarean sections	Rate (%)
Northland	50	359	13.9
Waitemata	191	2044	9.3
Auckland	113	1798	6.3
Counties Manukau	211	1724	12.2
Waikato	141	1067	13.2
Lakes	20	350	5.7
Bay of Plenty	77	611	12.6
Tairāwhiti	14	139	10.1
Hawke's Bay	30	500	6.0
Taranaki	38	329	11.6
MidCentral	44	574	7.7
Whanganui	18	148	12.2
Capital & Coast	57	1118	5.1
Hutt Valley	36	543	6.6
Wairarapa	3	158	1.9
Nelson Marlborough	24	437	5.5
West Coast	10	93	10.8
Canterbury	90	1744	5.2
South Canterbury	15	143	10.5
Southern	60	983	6.1
Unspecified	0	6	
New Zealand	1242	14,868	8.4

Figure 17: Percentage of women undergoing a Caesarean section under general anaesthetic, by DHB of domicile, 2011



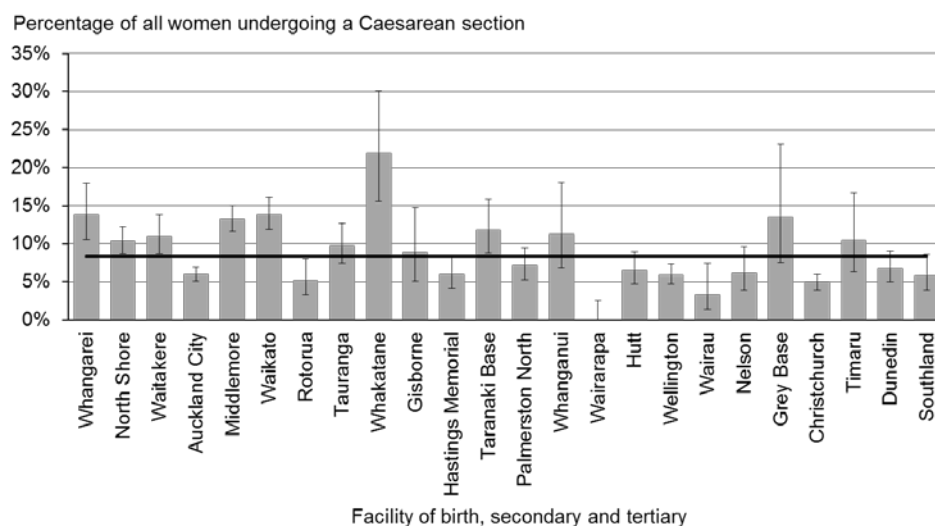
Black line represents national average.

Error bars represent 95% confidence intervals.

Table 19: Number and percentage of women undergoing a Caesarean section under general anaesthetic, by facility of birth (secondary and tertiary facilities), 2011

Facility	Caesarean sections under general anaesthetic	All Caesarean sections	Rate (%)
Whangarei	47	339	13.9
North Shore	113	1094	10.3
Waitakere	63	573	11.0
Auckland City	146	2443	6.0
Middlemore	201	1517	13.2
Waikato	145	1044	13.9
Rotorua	18	346	5.2
Tauranga	48	493	9.7
Whakatane	27	123	22.0
Gisborne	12	136	8.8
Hastings Memorial	29	487	6.0
Taranaki Base	38	321	11.8
Palmerston North	41	577	7.1
Whanganui	14	124	11.3
Wairarapa	0	147	
Hutt	34	523	6.5
Wellington	71	1206	5.9
Wairau	5	154	3.2
Nelson	17	275	6.2
Grey Base	10	74	13.5
Christchurch	85	1746	4.9
Timaru	14	134	10.4
Dunedin	40	593	6.7
Southland	23	396	5.8
All secondary and tertiary facilities	1241	14,865	8.3

Figure 18: Percentage of women undergoing a Caesarean section under general anaesthetic, by facility of birth (secondary and tertiary facilities), 2011



Black line represents average for all secondary and tertiary facilities.
Error bars represent 95% confidence intervals.

Indicators 10 and 11: Blood transfusion during birth admission

Rationale and purpose

According to the Australian Council on Healthcare Standards (2008), 'postpartum haemorrhage (PPH) is a potentially life-threatening complication of birth that occurs in about 3–5 percent of vaginal births [and] remains a leading cause of maternal morbidity and mortality' (p 480). Excessive blood loss is often defined as an amount in excess of 1000 mL, although accuracy of measurement at this level is questionable, especially as the blood loss is often cumulative. A different and (some suggest) more objective measure is whether there is a requirement for blood transfusion due to excessive blood loss during or following birth. This measurement is also not without difficulties; for example, decisions to perform blood transfusions depend on individual levels of patient tolerance, and some patients refuse a transfusion for religious or other beliefs. However, as a broad measure of excessive blood loss and potential long-term morbidity due to that blood loss, many consider this indicator to be a useful measure of severe, life-threatening PPH.

This indicator aims to provide maternity service providers with an indicator of significant blood loss that will stimulate further investigation of risk-screening strategies and clinical management of the birth process (adapted from Women's Hospitals Australasia 2007, p 104).

Notes on 2011 data

Overall, rates of blood transfusion are low and do not vary widely, although the rate and range is greater in the case of Caesarean section deliveries than in the case of vaginal births. These rates are based on small numbers, so caution must be used when making comparisons.

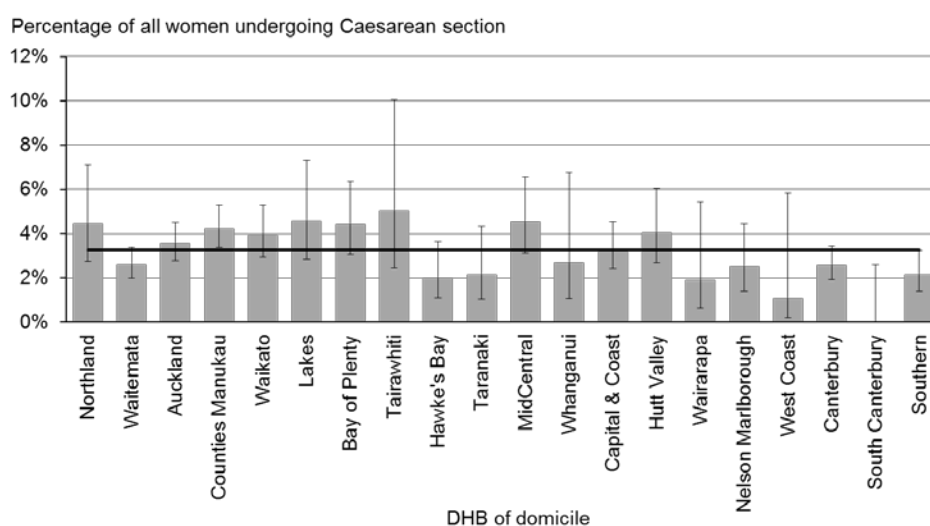
DHBs should investigate the reasons behind the greater variation in rates of blood transfusion with Caesarean sections. Because this indicator is a marker for PPH, the focus should be on understanding and addressing underlying causes, rather than addressing the indicator in isolation.

Indicator 10: Blood transfusion during birth admission for Caesarean section delivery, 2011

Table 20: Number and percentage of women giving birth by Caesarean section and undergoing blood transfusion during birth admission, by DHB of domicile, 2011

DHB of domicile	Blood transfusions	All Caesarean sections	Rate (%)
Northland	16	359	4.5
Waitemata	53	2044	2.6
Auckland	64	1798	3.6
Counties Manukau	73	1724	4.2
Waikato	42	1067	3.9
Lakes	16	350	4.6
Bay of Plenty	27	611	4.4
Tairāwhiti	7	139	5.0
Hawke's Bay	10	500	2.0
Taranaki	7	329	2.1
MidCentral	26	574	4.5
Whanganui	4	148	2.7
Capital & Coast	37	1118	3.3
Hutt Valley	22	543	4.1
Wairarapa	3	158	1.9
Nelson Marlborough	11	437	2.5
West Coast	1	93	1.1
Canterbury	45	1744	2.6
South Canterbury	0	143	
Southern	21	983	2.1
Unspecified	0	6	
New Zealand	485	14,868	3.3

Figure 19: Percentage of women giving birth by Caesarean section and undergoing blood transfusion during birth admission, by DHB of domicile, 2011

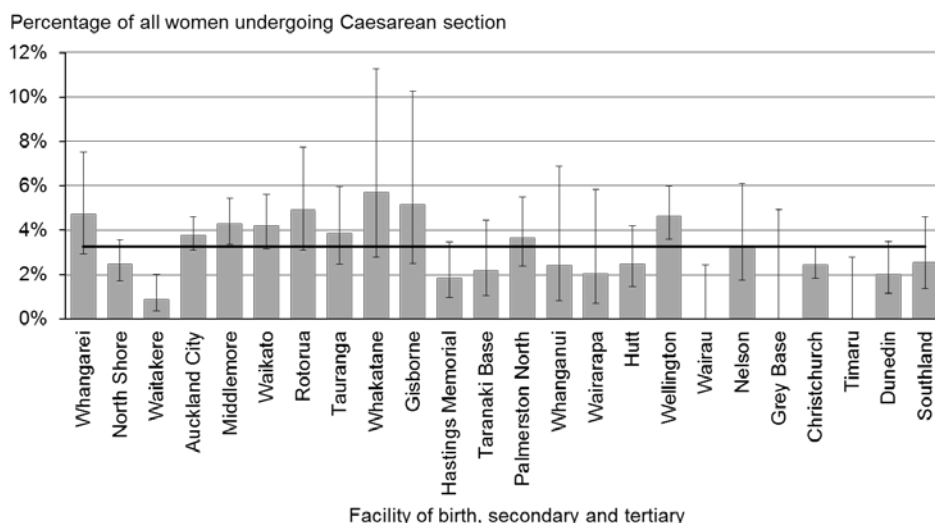


Black line represents national average.
Error bars represent 95% confidence intervals.

Table 21: Number and percentage of women giving birth by Caesarean section and undergoing blood transfusion during birth admission, by facility of birth (secondary and tertiary facilities), 2011

Facility	Blood transfusions	All Caesarean sections	Rate (%)
Whangarei	16	339	4.7
North Shore	27	1094	2.5
Waitakere	5	573	0.9
Auckland City	92	2443	3.8
Middlemore	65	1517	4.3
Waikato	44	1044	4.2
Rotorua	17	346	4.9
Tauranga	19	493	3.9
Whakatane	7	123	5.7
Gisborne	7	136	5.1
Hastings Memorial	9	487	1.8
Taranaki Base	7	321	2.2
Palmerston North	21	577	3.6
Whanganui	3	124	2.4
Wairarapa	3	147	2.0
Hutt	13	523	2.5
Wellington	56	1206	4.6
Wairau	0	154	
Nelson	9	275	3.3
Grey Base	0	74	
Christchurch	43	1746	2.5
Timaru	0	134	
Dunedin	12	593	2.0
Southland	10	396	2.5
All secondary and tertiary facilities	485	14,865	3.3

Figure 20: Percentage of women giving birth by Caesarean section and undergoing blood transfusion during birth admission, by facility of birth (secondary and tertiary facilities), 2011



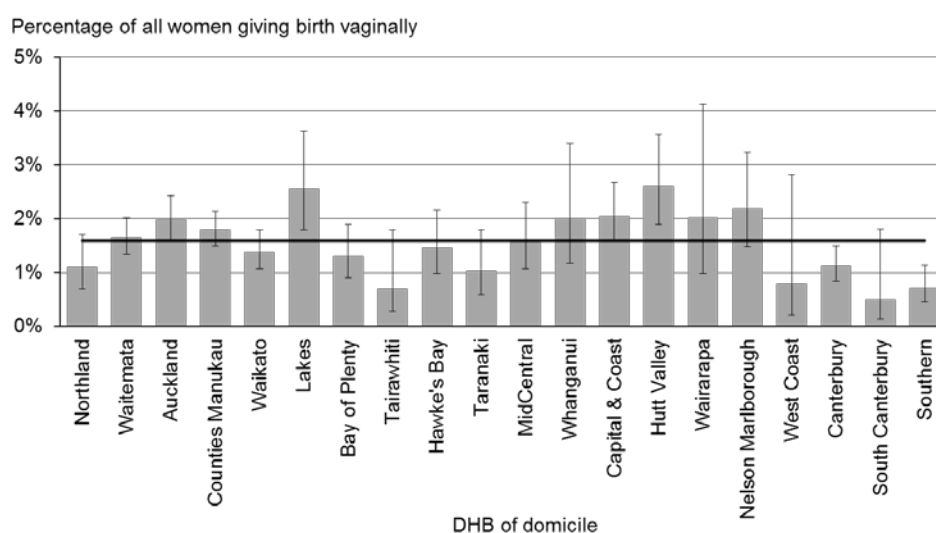
Black line represents average for all secondary and tertiary facilities.
Error bars represent 95% confidence intervals.

Indicator 11: Blood transfusion during birth admission for vaginal birth, 2011

Table 22: Number and percentage of women giving birth vaginally and undergoing blood transfusion during birth admission, by DHB of domicile, 2011

DHB of domicile	Blood transfusions	All vaginal births	Rate (%)
Northland	19	1731	1.1
Waitemata	91	5535	1.6
Auckland	90	4541	2.0
Counties Manukau	118	6609	1.8
Waikato	56	4045	1.4
Lakes	30	1176	2.6
Bay of Plenty	27	2066	1.3
Tairāwhiti	4	569	0.7
Hawke's Bay	24	1651	1.5
Taranaki	12	1164	1.0
MidCentral	25	1593	1.6
Whanganui	13	648	2.0
Capital & Coast	53	2591	2.0
Hutt Valley	37	1423	2.6
Wairarapa	7	346	2.0
Nelson Marlborough	24	1096	2.2
West Coast	2	255	0.8
Canterbury	45	4011	1.1
South Canterbury	2	402	0.5
Southern	18	2511	0.7
Unspecified	0	19	
New Zealand	697	43,982	1.6

Figure 21: Percentage of women giving birth vaginally and undergoing blood transfusion during birth admission, by DHB of domicile, 2011

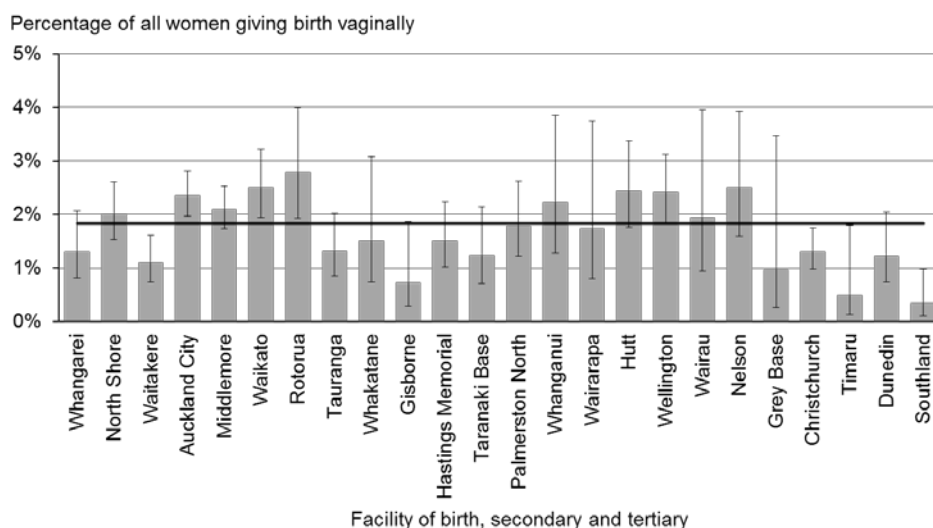


Black line represents national average.
Error bars represent 95% confidence intervals.

Table 23: Number and percentage of women giving birth vaginally and undergoing blood transfusion during birth admission, by facility of birth (secondary and tertiary facilities), 2011

Facility	Blood transfusions	All vaginal births	Rate (%)
Whangarei	17	1309	1.3
North Shore	52	2600	2.0
Waitakere	25	2287	1.1
Auckland City	117	4980	2.3
Middlemore	107	5101	2.1
Waikato	58	2319	2.5
Rotorua	28	1006	2.8
Tauranga	20	1527	1.3
Whakatane	7	464	1.5
Gisborne	4	548	0.7
Hastings Memorial	24	1592	1.5
Taranaki Base	12	971	1.2
Palmerston North	26	1449	1.8
Whanganui	12	539	2.2
Wairarapa	6	345	1.7
Hutt	35	1431	2.4
Wellington	55	2280	2.4
Wairau	7	361	1.9
Nelson	18	717	2.5
Grey Base	2	206	1.0
Christchurch	44	3365	1.3
Timaru	2	401	0.5
Dunedin	14	1141	1.2
Southland	3	889	0.3
All secondary and tertiary facilities	695	37,828	1.8

Figure 22: Percentage of women giving birth vaginally and undergoing blood transfusion during birth admission, by facility of birth (secondary and tertiary facilities), 2011



Black line represents average for all secondary and tertiary facilities.
Error bars represent 95% confidence intervals.

Indicator 12: Premature birth

Rationale and purpose

Premature birth is a significant contributor to perinatal mortality and neonatal morbidity, especially for babies born under 32 weeks' gestation. Moderate prematurity (from 32 to 36 weeks gestation) accounts for between 5 and 7 percent of births, and may be under-recognised as a contributor to neonatal morbidity. Spontaneous preterm birth, premature rupture of membranes, multiple pregnancy and pregnancy-induced hypertension are the most common causes for premature birth in this group. Reporting on premature births between 32 and 36 weeks of pregnancy provides a baseline for further reporting on perinatal and neonatal infant outcomes.

Notes on 2011 data

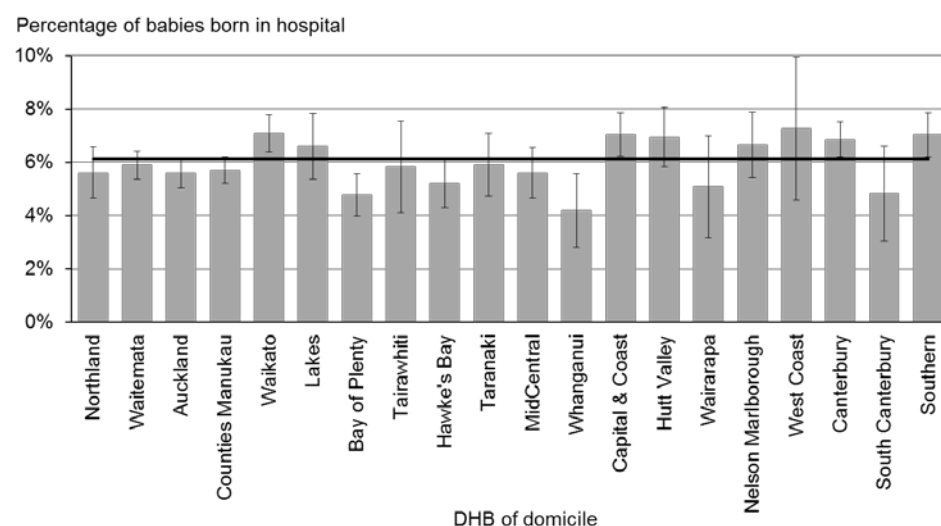
Rates of moderate premature birth (between 32 and 36 weeks' gestation) vary slightly between DHBs, ranging from 4.2 to 7.3 percent, and vary more widely between secondary and tertiary facilities, ranging from 2.2 to 10.0 percent. All DHBs should consider their rates in the context of their population demographics.

Indicator 12: Premature birth (at 32–36 weeks gestation), 2011

Table 24: Number and percentage of premature births, by DHB of domicile, 2011

DHB of domicile	Babies born at 32–36 weeks gestation	All babies born in hospital	Rate (%)
Northland	121	2156	5.6
Waitemata	456	7730	5.9
Auckland	364	6514	5.6
Counties Manukau	497	8709	5.7
Waikato	371	5235	7.1
Lakes	104	1574	6.6
Bay of Plenty	132	2758	4.8
Tairāwhiti	42	721	5.8
Hawke's Bay	116	2220	5.2
Taranaki	91	1540	5.9
MidCentral	125	2235	5.6
Whanganui	34	810	4.2
Capital & Coast	267	3792	7.0
Hutt Valley	140	2017	6.9
Wairarapa	26	512	5.1
Nelson Marlborough	105	1579	6.6
West Coast	26	358	7.3
Canterbury	388	5659	6.9
South Canterbury	27	560	4.8
Southern	251	3572	7.0
Unspecified	2	32	6.3
New Zealand	3685	60,283	6.1

Figure 23: Percentage of premature births, by DHB of domicile, 2011



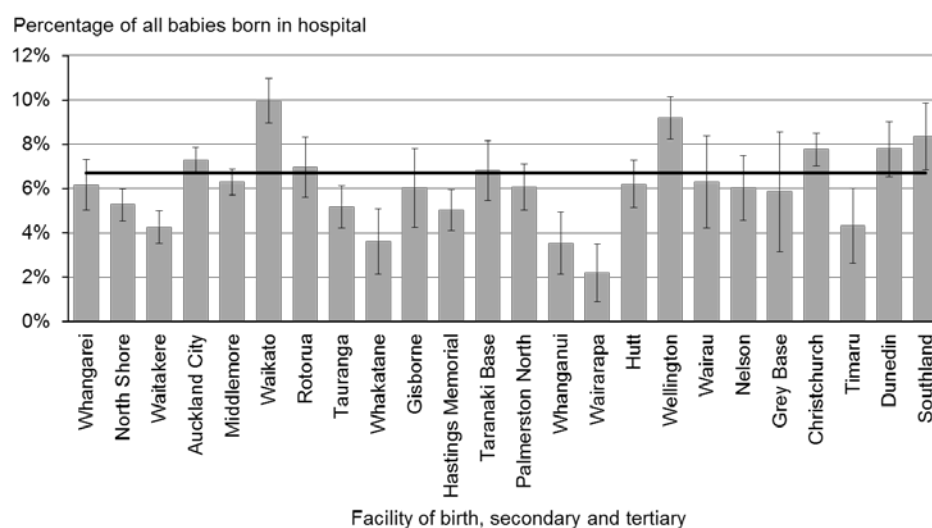
Black line represents national average.

Error bars represent 95% confidence intervals.

Table 25: Number and percentage of premature births, by facility of birth (secondary and tertiary facilities), 2011

Facility	Babies born at 32–36 weeks gestation	All babies born in hospital	Rate (%)
Whangarei	105	1704	6.2
North Shore	198	3761	5.3
Waitakere	124	2904	4.3
Auckland City	552	7587	7.3
Middlemore	437	6945	6.3
Waikato	345	3465	10.0
Rotorua	96	1378	7.0
Tauranga	108	2081	5.2
Whakatane	22	608	3.6
Gisborne	42	696	6.0
Hastings Memorial	108	2152	5.0
Taranaki Base	91	1334	6.8
Palmerston North	125	2058	6.1
Whanganui	24	679	3.5
Wairarapa	11	501	2.2
Hutt	124	1996	6.2
Wellington	329	3584	9.2
Wairau	33	524	6.3
Nelson	62	1027	6.0
Grey Base	17	290	5.9
Christchurch	391	5037	7.8
Timaru	24	554	4.3
Dunedin	139	1786	7.8
Southland	109	1306	8.3
All secondary and tertiary facilities	3616	53,957	6.7

Figure 24: Percentage of premature births, by facility of birth (secondary and tertiary facilities), 2011



Black line represents average for all secondary and tertiary facilities.
Error bars represent 95% confidence intervals.

References

Australian Council on Healthcare Standards. 2008. *Australasian Clinical Indicator Report: 2001–2008: Determining the potential to improve quality of care: 10th edition*. Ultimo, NSW: Australian Council on Healthcare Standards.

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Women's Hospitals Australasia. 2007. *Findings from the Core Maternity Indicators Project Funded by the Australian Council on Safety and Quality in Health Care and Sponsored by the Department of Health, Western Australia*. Turner, ACT: Women's Hospitals Australasia.

Appendices

Appendix 1: Technical notes

Clinical codes and definitions

Standard primiparae: a group of mothers considered to be clinically comparable and expected to require low levels of obstetric intervention. Standard primiparae are defined in this report as women recorded in the National Minimum Dataset who meet all of the following inclusions:

- are aged between 20 and 34 (inclusive) at delivery
- are pregnant with a single baby presenting in labour in cephalic position (see Tables A1, A2)
- have no known prior pregnancy of 20-plus weeks gestation
- have no recorded obstetric complications in the present pregnancy that are indications for specific obstetric interventions (see Table A4)
- deliver a live or stillborn baby at term gestation: 37 to 41 weeks inclusive (see Table A3).

Table A1: Cephalic presentation exclusion criteria

Clinical code (ICD-10-AM)	Description
9047000	Spontaneous breech delivery
9047001	Assisted breech delivery
9047002	Assisted breech delivery with forceps to after-coming head
9047003	Breech extraction
9047004	Breech extraction with forceps to after-coming head
O640–O649	Labour and delivery affected by malposition and malpresentation of fetus

Table A2: Singleton birth exclusion criteria

Clinical code (ICD-10-AM)	Description
O300–O309	Multiple gestation
O632	Delayed delivery of second twin, triplet, etc
Z372–Z377	Outcome of delivery – twins or multiple

Table A3: Duration of pregnancy (gestation exclusion criteria)

Clinical code (ICD-10-AM)	Description
O090–O095	Duration of pregnancy under 37 weeks
O48	Prolonged pregnancy
O60	Preterm labour and delivery

Table A4: Obstetric complications exclusion criteria

Clinical code (ICD-10-AM)	Description
O100–O16	Hypertension, proteinuria, pre-eclampsia, eclampsia
O240–O249	Diabetes mellitus in pregnancy
O360, O361, O363, O364, O365	Known or suspected fetal problems
O411, O420–O429	Infection of the amniotic sac/membranes or premature rupture of membranes
O450, O458, O459, O460–O469, O48	Premature separation of placenta, antepartum haemorrhage, prolonged pregnancy

Spontaneous vaginal birth: the birth of a baby without obstetric intervention (ie, without Caesarean section, forceps or vacuum (ventouse)), identified by the presence of a spontaneous vaginal birth clinical code with no concurrent instrumental/Caesarean section code (see Table A5). Spontaneous vaginal births may include births where labour has been induced or augmented.

Table A5: Delivery type codes

Clinical code (ICD-10-AM)	Description
O80	Single spontaneous delivery
O81	Single delivery by forceps and vacuum extractor
O82	Single delivery by Caesarean section
9046700	Spontaneous vertex delivery
9046800–9046804	Forceps delivery
9046900	Vacuum extraction with delivery
1652000–1652003	Caesarean section

Instrumental vaginal birth: a vaginal birth requiring instrumental assistance with no concurrent clinical code indicating a Caesarean section. Interventions include forceps and/or vacuum (ventouse) extraction (see Table A5). ‘Instrumental vaginal births’ do not include failed attempts at forceps or vacuum extraction (see Table A6).

Table A6: Excluded delivery procedure codes

Clinical code (ICD-10-AM)	Description
9046805	Failed forceps
9046901	Failed vacuum extraction

Caesarean section: an operative birth through an abdominal incision. This definition includes emergency and elective, lower segment and classical Caesarean sections, and it is identified by the presence of any Caesarean section clinical code (see Table A5).

Induction of labour: an intervention to stimulate the onset of labour by pharmacological or other means, identified by induction of labour clinical codes (see Table A7).

Table A7: Induction procedure codes

Clinical code (ICD-10-AM)	Description
9046500	Medical induction of labour, oxytocin
9046501	Medical induction of labour, prostaglandin
9046502	Other medical induction of labour
9046503	Surgical induction of labour by artificial rupture of membranes
9046504	Other surgical induction of labour
9046505	Medical and surgical induction of labour

Intact lower genital tract: identified by an absence of clinical codes indicating an episiotomy or a tear of any degree (first to fourth, and including unspecified degree) (see Table A8).

Episiotomy: an incision of the perineal tissue surrounding the vagina at the time of birth to facilitate delivery, identified by the presence of an episiotomy clinical code (see Table A8).

Third- and fourth-degree tear: a third- or fourth-degree perineal laceration during birth, identified by the presence of a third- or fourth-degree of tear clinical code (see Table A8).

Table A8: Episiotomy and/or perineal tear codes

Clinical code (ICD-10-AM)	Description
9047200	Episiotomy
O700	First-degree perineal laceration during delivery
O701	Second-degree perineal laceration during delivery
O702	Third-degree perineal laceration during delivery
O703	Fourth-degree perineal laceration during delivery
O709	Perineal laceration during delivery, unspecified

General anaesthetic for a Caesarean section birth: identified by the presence of a general anaesthetic clinical code (see Table A9) and a Caesarean section clinical code (see Table A5).

Table A9: General anaesthetic procedure code

Clinical code (ICD-10-AM)	Description
92514XX	General anaesthesia

Blood transfusion during birth admission: identified by clinical codes for selected blood transfusion procedures.

Premature birth: the birth of a baby born between 32 weeks 0 days and 36 weeks 6 days gestation.

Other technical notes

Facility graphs: all facility graphs in this report present maternity events occurring in secondary and tertiary hospitals only. The aim of this is to enable the comparison of deliveries or births for which clinicians have access to similar clinical facilities and interventions. Indicators for DHBs include data for all facilities, including primary facilities. (Data for individual primary facilities are provided in Appendix 3.) Care should be taken when making comparisons, because many primary units deal with only a small number of maternity events, meaning that in many cases differences between rates will not be statistically significant.

Presentation of confidence intervals: the error bars on the charts in this document represent 95 percent confidence intervals for the sample proportion, which have been calculated using the Wilson score (see Newcombe RG, 1998, Two-sided confidence intervals for the single proportion: Comparison of seven methods, *Statistics in Medicine* 17: 857–72).

Southern DHB data: in May 2010, Otago and Southland DHBs were merged into a single entity, Southern DHB, which began reporting to the Ministry of Health National Collections in 2011. All relevant data are therefore reported in this report under 'Southern DHB'.

Christchurch and Christchurch Women's data merge: from 1 July 2009 maternity events that had previously been reported as occurring in Christchurch Women's Hospital were reported as occurring in Christchurch Hospital. This change represents a change in the way the data are reported, rather than a change in patient care. For the purposes of this report, Christchurch Women's Hospital and Christchurch Hospital events have been summed.

Appendix 2: Numbers for the Maternity Clinical Indicators, by facility of birth (secondary and tertiary facilities), 2011

Facility	All vaginal births (N)	Standard primiparae (N)	Standard primiparae giving birth vaginally (spontaneous or instrumental) (N)	All Caesarean sections	Spontaneous vaginal birth among standard primiparae	Induction of labour among standard primiparae	Instrumental vaginal births among standard primiparae	Standard primiparae giving birth by Caesarean section	Standard primiparae giving birth vaginally with an intact lower genital tract	Standard primiparae giving birth vaginally and undergoing an episiotomy with no third- or fourth-degree tear	Standard primiparae giving birth vaginally experiencing a tear with no episiotomy	Standard primiparae giving birth vaginally experiencing a third- or fourth-degree tear and undergoing an episiotomy	Women giving birth by Caesarean section and undergoing general anaesthetic	Women giving birth vaginally and receiving a blood transfusion during birth admission	Women giving birth by Caesarean section and receiving a blood transfusion during birth admission	All babies born in hospital	Babies born between 32 weeks and 36 weeks 6 days
Whangarei	1309	218	181	339	147	4	34	36	68	30	4	5	47	16	17	1704	105
North Shore	2600	826	670	1094	512	52	158	153	136	152	22	10	113	27	52	3761	198
Waitakere	2287	567	487	573	428	15	59	78	152	84	18	3	63	5	25	2904	124
Auckland City	4980	1299	1050	2443	846	62	204	249	191	340	24	15	146	92	117	7587	552
Middlemore	5101	1032	830	1517	673	31	157	168	137	177	24	15	201	65	107	6945	437
Waikato	2319	426	351	1044	259	25	92	74	112	47	30	3	145	44	58	3465	345
Rotorua	1006	186	163	346	144	9	19	22	77	19	7	2	18	17	28	1378	96
Tauranga	1527	359	299	493	246	11	53	60	86	38	11	4	48	19	20	2081	108
Whakatane	464	65	61	123	53	1	8	4	32	10	1	1	27	7	7	608	22
Gisborne	548	101	89	136	81	3	8	12	46	1	7	1	12	7	4	696	42
Hastings Memorial	1592	309	238	487	190	17	48	70	78	54	9	2	29	9	24	2152	108
Taranaki Base	971	241	192	321	169	8	23	49	80	19	1	2	38	7	12	1334	91
Palmerston North	1449	346	298	577	251	14	47	48	85	78	9	5	41	21	26	2058	125
Wanganui	539	119	110	124	94	3	16	9	63	10	0	0	14	3	12	679	24
Wairarapa	345	95	74	147	59	6	15	21	23	20	0	2	0	3	6	501	11
Hutt	1431	351	280	523	240	14	40	70	103	46	8	3	34	13	35	1996	124
Wellington	2280	574	447	1206	336	53	111	127	99	154	10	7	71	56	55	3584	329
Wairau	361	90	74	154	72	1	2	15	13	2	2	0	5	0	7	524	33
Nelson	717	188	158	275	134	10	24	29	54	22	7	2	17	9	18	1027	62
Grey Base	206	46	40	74	35	5	5	5	15	3	0	0	10	0	2	290	17
Christchurch	3365	808	639	1746	436	37	203	168	170	193	19	5	85	43	44	5037	391
Timaru	401	104	82	134	72	12	10	22	36	12	0	1	14	0	2	554	24
Dunedin	1141	297	242	593	199	8	43	54	68	54	9	4	40	12	14	1786	139
Southland	889	205	166	396	133	27	33	39	46	32	8	2	23	10	3	1306	109

Appendix 3: Numbers for the Maternity Clinical Indicators, by facility of birth (primary facilities), 2011

Facility	All vaginal births (N)	Standard primiparae (N)	Standard primiparae giving birth vaginally (spontaneous or instrumental) (N)	All Caesarean sections	Spontaneous vaginal birth among standard primiparae	Induction of labour among standard primiparae	Instrumental vaginal births among standard primiparae	Standard primiparae giving birth by Caesarean section	Standard primiparae giving birth vaginally with an intact lower genital tract	Standard primiparae giving birth vaginally and undergoing an episiotomy with no third- or fourth-degree tear	Standard primiparae giving birth vaginally experiencing a tear with no episiotomy	Standard primiparae giving birth vaginally experiencing a third- or fourth-degree tear and undergoing an episiotomy	Women giving birth by Caesarean section and undergoing general anaesthetic	Women giving birth vaginally and receiving a blood transfusion during birth admission	Women giving birth by Caesarean section and receiving a blood transfusion during birth admission	All babies born in hospital	Babies born between 32 weeks and 36 weeks 6 days
Akaroa Community	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
Ashburton	133	28	28	0	28	0	0	0	19	1	0	0	0	0	0	135	3
Bay of Islands	168	29	29	0	29	0	0	0	13	1	1	0	0	0	0	175	4
Birthcare Huntly	152	24	24	0	24	0	0	0	24	0	0	0	0	0	0	151	2
Birthcare Auckland	418	121	121	0	121	0	0	0	118	0	1	0	0	0	0	469	0
Botany Downs Maternity Hospital	395	94	91	0	90	0	1	0	27	6	1	0	0	0	0	426	5
Buller	18	2	2	0	2	0	0	0	1	1	0	0	0	0	0	19	0
Burwood	196	48	48	0	48	0	0	0	28	1	2	0	0	0	0	183	0
Charlotte Jean Maternity Unit	95	32	32	0	32	0	0	0	32	0	0	0	0	0	0	94	0
Clutha Health First	22	6	5	0	5	0	0	0	3	0	1	0	0	0	0	22	0
Dannevirke Community	45	5	5	0	5	0	0	0	0	0	2	0	0	0	0	45	1
Darfield	20	8	8	0	8	0	0	0	4	0	0	0	0	0	0	19	0
Dargaville	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	0
Elizabeth R Hospital and Rest Home	91	21	21	0	21	0	0	0	21	0	0	0	0	0	0	90	1
Golden Bay Community Hospital	9	4	4	0	4	0	0	0	1	0	0	0	0	0	0	9	0
Gore Health Centre	89	17	17	0	17	0	0	0	5	0	0	0	0	0	0	92	1
Hawera	100	19	19	0	18	0	1	0	14	0	2	0	0	0	0	103	0
Helensville Birthing Unit	52	14	14	0	14	0	0	0	14	0	0	0	0	0	0	57	0
Hokianga	34	7	7	0	7	0	0	0	7	0	0	0	0	0	0	33	0

Facility	All vaginal births (N)	Standard primiparae (N)	Standard primiparae giving birth vaginally (spontaneous or instrumental) (N)	All Caesarean sections	Spontaneous vaginal birth among standard primiparae	Induction of labour among standard primiparae	Instrumental vaginal births among standard primiparae	Standard primiparae giving birth by Caesarean section	Standard primiparae giving birth vaginally with an intact lower genital tract	Standard primiparae giving birth vaginally and undergoing an episiotomy with no third- or fourth-degree tear	Standard primiparae giving birth vaginally experiencing a tear with no episiotomy	Standard primiparae giving birth vaginally experiencing a third- or fourth-degree tear and undergoing an episiotomy	Women giving birth by Caesarean section and undergoing general anaesthetic	Women giving birth vaginally and receiving a blood transfusion during birth admission	Women giving birth by Caesarean section and receiving a blood transfusion during birth admission	All babies born in hospital	Babies born between 32 weeks and 36 weeks 6 days
Horowhenua	143	25	25	0	24	0	1	0	17	0	1	0	0	0	0	145	3
Kaikoura	9	4	4	0	4	0	0	0	3	0	0	0	0	0	0	9	0
Kaitia	170	22	22	0	22	0	0	0	12	3	1	0	0	0	0	171	5
Kapiti Health Centre	128	26	25	1	25	0	0	1	9	1	0	0	0	0	0	129	0
Kenepuru	244	42	42	1	42	0	0	0	21	2	0	0	1	1	0	252	1
Lakes District	54	12	11	0	11	0	0	0	5	0	1	0	0	0	0	56	1
Lincoln	110	28	28	0	28	0	0	0	16	2	1	0	0	0	0	105	0
Maniototo Health Services	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
Matariki	82	14	14	0	14	0	0	0	9	0	1	0	0	0	0	84	0
Maternity Services	22	11	11	0	11	0	0	0	10	0	1	0	0	0	0	22	0
Murupara	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0
Northern Southland Birthing Centre	45	12	12	0	12	0	0	0	12	0	0	0	0	0	0	46	1
Oamaru	118	25	25	0	25	0	0	0	20	0	0	0	0	0	0	119	0
Opotiki	58	5	5	0	5	0	0	0	4	0	0	0	0	0	0	60	0
Papakura Obstetric	384	66	64	1	64	0	0	0	21	4	5	0	0	0	0	408	6
Pohlen Trust	106	31	31	0	30	0	1	0	31	0	0	0	0	0	0	109	0
Pukekohe	378	61	59	0	58	0	1	0	28	1	1	1	0	0	0	387	5
Rangiora	120	33	33	0	33	0	0	0	22	2	0	0	0	0	0	115	0
Rhoda Read	66	18	18	0	18	0	0	0	11	0	1	1	0	0	0	68	0
River Ridge East Birth Centre	520	119	119	0	119	14	0	0	81	0	9	0	0	0	0	529	0
St Georges	46	10	10	0	9	0	1	0	5	2	0	0	0	0	0	48	1
Taihape	29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	29	0
Taumarunui	58	7	7	0	7	0	0	0	7	0	0	0	0	1	0	63	2
Taupo General	184	44	44	0	44	0	0	0	26	0	2	1	0	0	0	195	5

Facility	All vaginal births (N)	Standard primiparae (N)	Standard primiparae giving birth vaginally (spontaneous or instrumental) (N)	All Caesarean sections	Spontaneous vaginal birth among standard primiparae	Induction of labour among standard primiparae	Instrumental vaginal births among standard primiparae	Standard primiparae giving birth by Caesarean section	Standard primiparae giving birth vaginally with an intact lower genital tract	Standard primiparae giving birth vaginally and undergoing an episiotomy with no third- or fourth-degree tear	Standard primiparae giving birth vaginally experiencing a tear with no episiotomy	Standard primiparae giving birth vaginally experiencing a third- or fourth-degree tear and undergoing an episiotomy	Women giving birth by Caesarean section and undergoing general anaesthetic	Women giving birth vaginally and receiving a blood transfusion during birth admission	Women giving birth by Caesarean section and receiving a blood transfusion during birth admission	All babies born in hospital	Babies born between 32 weeks and 36 weeks 6 days
Te Kuiti	43	8	8	0	8	0	0	0	5	1	1	0	0	0	0	45	0
Te Whare Hauora O Ngati Porou	23	4	4	0	4	0	0	0	3	0	0	0	0	0	0	25	0
Thames	81	15	15	0	15	0	0	0	11	0	0	0	0	0	0	86	0
Tokoroa	100	15	15	0	15	0	0	0	2	0	1	0	0	0	0	102	2
Tuatapere Maternity	15	7	7	0	7	0	0	0	7	0	0	0	0	0	0	15	0
Waihi	54	15	15	0	15	0	0	0	15	0	0	0	0	0	0	53	1
Waikari	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Waimarino Rural Health Centre	11	1	1	0	1	0	0	0	1	0	0	0	0	0	0	11	0
Wairoa	47	7	7	0	7	0	0	0	4	0	1	0	0	0	0	48	2
Warkworth Birthing Centre	134	41	41	0	41	0	0	0	24	0	0	0	0	0	0	133	2
Waterford Birth Centre	446	117	115	0	115	0	0	0	64	0	6	0	0	0	0	447	6
Wellsford Birthing Unit	33	10	10	0	10	0	0	0	10	0	0	0	0	0	0	34	0
Winton Birthing Centre	42	14	14	0	14	0	0	0	12	0	0	0	0	0	0	42	0