

Report on

MMPO MIDWIVES

Care activities and outcomes



2005



Report prepared by



Midwifery and Maternity
PROVIDERS ORGANISATION

MMPO MIDWIVES 2005 ANNUAL REPORT ON CARE ACTIVITIES AND OUTCOMES

In 1997, the Midwifery and Maternity Providers Organisation (MMPO) was established by the New Zealand College of Midwives (NZCOM). The main purpose was to provide midwife members with a supportive practice management and quality assurance infrastructure, thereby supporting the provision of high quality continuity of care for women by midwives throughout Aotearoa, New Zealand

The key objectives of the MMPO are to:

- To ensure midwives continue to have an environment where they can provide maternity care to women within the midwifery model of care as articulated in the NZCOM Standards for Practice, by providing information, management systems, and support to midwives
- To collect relevant maternity outcome data to ensure midwives can review their work against the standards of the profession, and to guide the achievement of high quality outcomes from midwifery led maternity care
- To ensure that all midwife members take part in quality assurance activities and are members of their national recognised professional body, the NZCOM
- To support the professional role of the NZCOM to position, develop, and service the profession of midwifery in New Zealand
- To provide aggregated clinical information to member midwives and the New Zealand College of Midwives

From small beginnings the MMPO has grown, with the support of the NZCOM, to become the largest maternity provider organisation in New Zealand. The MMPO is located in Christchurch, New Zealand, where a small team of data entry staff manage both hard copy and electronic data related to midwifery activities and care outcomes. The data is gathered in a standardised manner through the use of a specifically designed set of maternity notes. These notes function as both a clinical record for the woman and midwife during care, in addition to being a mechanism for recording the data required to generate clinical outcomes reports, and for claiming service payment from HealthPac.

Over time, MMPO has worked with 'Solutions Plus' (our Maternity Practice Management System (MPMS)) designers to refine our data management and reporting frameworks. This course of action has given midwife members and the NZCOM confidence in the reliability of data that is available from 2004 onwards.

The MMPO would like to take the opportunity to thank all the midwives and women who have contributed to this annual MMPO Midwives' Report 2005. A report on midwives' outcomes has been promised for a number of years, and we are delighted that at last this is now available. We plan to have the 2006 and 2007 reports available sequentially over the next four months.

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The purpose of this publication is to inform discussion and guide midwives and the profession in decision making on issues surrounding the provision of maternity care. The authors have taken great care to ensure the information supplied within the project timeframe is accurate. However, neither the MMPO, NZCOM, nor the contributors involved can accept responsibility for any errors or omissions. All responsibility for action based on any information in this report rests with the reader. The authors accept no liability for any loss of whatever kind, or damage, arising from reliance in whole or part, by any person, corporate or natural, on the contents of this report. The views expressed in this report are those of the authors and do not necessarily represent those of the MMPO or NZCOM.

The NZCOM and the MMPO welcome comments and suggestions about this publication.

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LIST OF TERMS¹

Apgar score

Numerical score used to evaluate the infant's condition at one and five minutes after birth. Five variables are scored: colour, breathing, heart rate, reactivity to stimulation, and muscle tone. A baby may be able to be resuscitated after an initial one-minute score of zero, but a five-minute score of zero usually means that the infant cannot be resuscitated. If no heart rate had been heard before or during resuscitation, then this would be documented as a stillbirth. If a heart rate had been heard, but the baby could not be fully resuscitated, this would be called a live birth and neonatal death.

Birth

The birth of a baby (or babies for a multiple birth) after a minimum of 20.0 weeks gestation and/or with a birth weight of more than 400 grams.

Birthing unit

A facility that has a contract for labour and birth, but not for inpatient postnatal care.

Birth weight

The first weight of the baby obtained after birth (usually measured to the nearest five grams and obtained within one hour of birth).

Low = < 2500 grams

Very low = < 1500 grams

Extremely low = < 1000 grams

Breastfeeding, exclusive

The infant has never, to the mother's knowledge, had any water, formula, or other liquid or solid food. Only breast milk from the breast or expressed and prescribed medicines defined as per the Medicines Act 1981 have been given to the baby from birth.

Breastfeeding, fully

The infant has taken breast milk only. No other liquids or solids except for a minimal amount of water or prescribed medicines in the previous 48 hours.

Breastfeeding, partial

The infant has taken some breast milk and some infant formula or other solid food in the past 48 hours.

Feeding, Artificial

The infant has had no breast milk, but has had alternative liquid such as infant formula with or without solid food in the past 48 hours.

Caesarean section

Operative birth through an abdominal incision.

Caesarean section, emergency (acute)

Caesarean section performed urgently for clinical reasons (such as the health of the mother or baby is endangered) once labour has started.

Caesarean section, elective

Caesarean section performed as a planned procedure before or following the onset of labour when the decision was made before labour commenced.

District Health Board (DHB)

An organisation established as a District Health Board by or under Section 19 of the New Zealand Public Health and Disability Act 2000.

Domicile code

A code representing the mother's usual residential address.

Epidural

Injection of analgesic agent outside the dura mater that covers the spinal canal; includes lumbar, spinal and epidural anaesthetics.

Episiotomy

An incision of the perineal tissue of the vagina at the time of birth.

Ethnic code

The code that defines the mother's ethnic group.

Facility

The place that mothers attend or are resident in for the primary purpose of receiving maternity care.

Fetal death

The death of a baby born at 20 weeks or beyond or weighing at least 400g if gestation is unknown. Fetal death includes stillbirth and termination of pregnancy

Full-term birth/labour

Birth / labour at 37 or more gestational weeks.

Gestational age

The duration of pregnancy in completed weeks, calculated from the date of the first day of a woman's last menstrual period and her infant's date of birth, or derived from clinical assessment during pregnancy, or from examination of the infant after birth.

1 Adapted from: Ministry of Health, 2007 Report on Maternity Maternal and Newborn Information 2004

Gravida

The total number of pregnancies the woman has experienced, including the current one. For example, a woman who has one previous pregnancy and is currently pregnant is designated as 'gravida 2'.

Home birth

A birth that takes place in a person's home and not in a maternity facility or birthing unit, or a birth where management of the labour commences at home and there is a documented plan to give birth at home.

Induction of labour

An intervention undertaken to stimulate the onset of labour by pharmacological or other means.

Lead maternity carer (LMC)

An authorised practitioner who is a midwife or an obstetrician or a general practitioner with a Diploma of Obstetrics (or equivalent, as determined by the NZ College of General Practitioners), who has been selected by the women to provide her lead maternity care.

Live birth

The birth of a baby, irrespective of duration of pregnancy; which, breathes or shows evidence of life such as beating of the heart, pulsation of the umbilical cord, or definitive movement of voluntary muscles, whether or not the umbilical cord has been cut or the placenta is attached.

Maternity facility

A facility that provides both labour and birth services as well as inpatient postnatal care, as described in the relevant service specification issued by the Ministry of Health.

MMPO

Midwifery and Maternity Provider Organisation; a practice management system provider for Lead Maternity Carer (LMC) midwives.

Neonatal death

The death of a baby that has occurred up to 27 days after birth.

Early neonatal death = death before 7 days.

Late neonatal death = death between 7 – 27 days.

Normal birth

The spontaneous birth of a live baby born vaginally in a vertex position

NZCOM

New Zealand College of Midwives.

Operative vaginal birth

A vaginal birth that includes assistance using operative procedures.

Operative vaginal birth, vaginal breech birth

Vaginal birth of a baby by the buttocks first, rather than the head, with assistance using operative procedures.

Operative vaginal birth, forceps

An assisted birth using a metallic obstetric instrument (obstetric forceps).

Operative vaginal birth, Ventouse

An assisted birth using a suction cup applied to the baby's head; a vacuum extraction.

Parity

The number of previous pregnancies resulting in live births or stillbirths.

Nulliparous

A woman who has never given birth to a viable infant.

Primiparous

A woman who has given birth only once.

Multiparous

A woman who has had subsequent births.

Perinatal death

A category that includes fetal deaths of more than 20 weeks' gestation or 400g birth weight (stillbirth) plus infant deaths within less than 168 completed hours (seven days) after birth (early neonatal death).

Plurality

The number of births resulting from a pregnancy.

Postnatal

All pregnancy-related events following birth.

Registration

The documentation showing that a woman has selected a lead maternity carer; this includes the forwarding of this information to HealthPAC.

Reproductive age

Women aged 15-44 years.

Rural area

An area is defined as rural if the census area unit (domicile) is located in an area of fewer than 10,000 people.

Stillbirth

Death prior to the complete expulsion or extraction from its mother of a baby of 20 or more completed weeks of gestation, or of 400 grams or more birth weight. Death is indicated after separation either when the foetus does not breathe or show any other evidence of life.

Urban area

An area is defined as urban if the census area unit (domicile) is located in an area of more than 10,000 people.

Vacuum extraction (Ventouse)

Assisted birth using a suction cup applied to the baby's head.

Vaginal breech birth

Birth in which the baby's buttocks or lower limbs are the presenting parts, rather than the head.

WHO

World Health Organisation.

EXECUTIVE SUMMARY

All Lead Maternity Carer (LMC) midwives in New Zealand have the opportunity to join the MMPO, which is a nationwide organisation that offers a practice management service for community based LMC midwives. In return for free membership, the midwives contribute to a national midwifery activities and outcomes database, namely the NZCOM database. The information obtained by MMPO LMC midwife registrations of expectant mothers is entered into the database, which is supported by an independent software vendor. This report, produced by a biostatistician (Lynn Fletcher) and the MMPO, with advice from midwifery advisors of the New Zealand College of Midwives, is an objective descriptive summary of the data collation from the 2005 cohort of birthing mothers from the MMPO registrations.

In 2005, 402 registered MMPO midwives throughout New Zealand contributed data, with the largest proportion coming from the Canterbury and Otago regions of the South Island, where the MMPO had a longer establishment base. From these midwives:

- 14,540 mothers who gave birth between 01 January and 31 December 2005 had been registered into the system
- 14,666 babies were born to these women

This report summarises the outcomes for mothers and babies who had midwives providing their LMC care. It provides data on place of birth, type of birth, personal information such as age and ethnicity, parity, and types of third stage of labour procedures. It also includes information about maternal smoking status before and after giving birth.

HIGHLIGHTS

Mothers and pregnancy

- The majority of women (81 per cent) registered with a MMPO midwife prior to 20 weeks.
- Nearly 42 per cent of the women were giving birth for the first time
- More than half of the women who registered with MMPO midwives were aged between 25 and 34 years old with 16.3 per cent over the age of 35 years.
- The majority of women identified their ethnicity as NZ European/Pakeha (73.3 per cent), followed by Maori (17 per cent) and Pacific Island (3.4 per cent).
- Smoking rates during pregnancy were higher in younger mothers (46.1% for those under 20 years of age), whereas women over 30 years were more likely to be smokefree during pregnancy (87 per cent)

Labour and births

- The majority of women (72 per cent) had a normal vaginal birth.
- The combined caesarean section (elective and emergency) rate was 21% for this cohort.
- A further 6.9 per cent of babies were instrumental vaginal births (forceps and ventouse).
- The largest proportion of births (47.9 per cent) occurred in secondary facilities although 6.3 per cent of babies were born at home.
- Only 6.2 per cent of mothers in this cohort had an episiotomy.
- Water was used as a labour pain management technique for 34.4 per cent with one in ten of these women giving birth to their babies in water.
- Women who had active management of the third stage of labour experienced greater blood loss (more than 500mls) than those who had a physiological pathway for the third stage (12.4 per cent versus 5 per cent).

Primiparous women

When compared to multiparous women, primiparous women had lower rates of normal vaginal births (61 per cent versus 79.4 per cent) and were more likely to have:

- A labour lasting more than eight hours (47.1 per cent compared to 16 per cent)
- Labour induction (21.6 per cent versus 14.3 per cent);
- Epidural for analgesia (34.7 per cent versus 14.5 per cent);
- Higher rates of instrumental and emergency caesarean procedures (35 per cent compared to 11.7 per cent)
- An episiotomy during the birth (11.4 per cent versus 2.4 per cent);
- Active management of the third stage of labour (75.9 per cent versus 63.5 per cent).

Babies

- The majority of babies were born after 37 weeks of pregnancy with only 7.3% born prematurely.
- The majority of babies weighed between 2999gm and 3999 gm (64.7%)
- Babies born to woman who identified as Maori were more likely to be a normal vaginal birth (82.2 per cent), whereas babies born to mothers in the 'Other' ethnic category had higher rates of caesarean sections (23.8 per cent).
- Babies born to younger mothers (up to 24 years of age) also had higher normal vaginal birth rates (78 per cent), with the rates of caesareans increasing as the mothers' ages increased (peaking at 29.1 per cent at 40+ years of age).
- Babies born to primiparous mothers, as compared to multiparous mothers, tended to weigh slightly less (54.6 per cent under 3500gm versus 47 per cent).

Postnatal period

- The majority of women (78 per cent) were fully or exclusively breastfeeding at 2 weeks of age.
- Babies born at home had higher rates of exclusive or fully breastfeeding at two weeks of age (90.6 per cent).
- Asian women had the lowest breastfeeding rate (71 per cent) at 2 weeks of age.
- Overall smoking rates decreased postnatally compared with antenatal smoking rates except for those mothers over 40 years of age.

1 INTRODUCTION

Continuity of care is a key aspect of maternity care in New Zealand. It is a concept that is written into the philosophy and competencies of practice for midwives (NZCOM 2005) as well as the maternity services specifications for Lead Maternity Carers (Section 88, MOH 2002). The New Zealand College of Midwives support the establishment of a partnership relationship with women which is enhanced by continuity of carer from the beginning of pregnancy, through the birth and into the postnatal period. When midwives work with women they provide care in many different settings and remain accountable for the care that they provide. In New Zealand the majority of primary maternity care is provided by midwives who work as Lead Maternity Carers and provide care from early pregnancy, labour and birth and for up to six weeks during the postnatal period. The majority of LMC's are self employed and enter into a contractual arrangement with the Ministry of Health (Section 88) under which they claim payment for services provided to women. All LMC midwives have the opportunity to join the Midwifery and Maternity Provider Organisation (MMPO).

1.1 THE MIDWIFERY AND MATERNITY PROVIDER ORGANISATION (MMPO)

The MMPO was established by the New Zealand College of Midwives (NZCOM) in 1997 to provide a practice management system for Lead Maternity Carer (LMC) midwives. The MMPO, a registered company with charitable status, is co-located with the NZCOM National Office in Christchurch. MMPO personnel include a part-time Executive Director, a National Manager, and data entry staff who process claims and provide data management services for midwives. The organisation also has a representative board comprised of midwives and consumers.

Through the organisation's partnership with NZCOM, a number of initiatives were implemented to enhance the development of LMC services, particularly for self-employed midwives. In 2002, the MMPO (which was previously restricted to the provision of services to South Island midwives) extended membership to midwives throughout the country. Their services are free to NZCOM members, with operational costs met by the sale of MMPO Maternity Notes and a stand-alone version

of the database. This allows midwives to enter their own data and have an electronic interface with the MMPO.

The MMPO provides a practice management service to midwife members, which includes claiming payment for maternity services on the schedule specified in the Primary Maternity Services Notice pursuant to Section 88 of the Public Health and Disability Act 2000 (Ministry of Health, 2002). A 'national midwifery activities and outcomes database' was developed in 2003 to extract relevant midwifery care and outcome data out of this process. This data is used to provide individual midwives with personalised care outcome reports and is aggregated into regional and national midwifery outcome reports. This data provides a benchmark for:

- Individual midwife LMCs: against which they can measure their own activities and care outcomes
- The midwifery profession: to guide education, planning and to improve care outcomes
- Maternity service founders and providers
- Midwifery researchers

A Biostatistician was contracted by the MMPO to provide an objective analysis of data collated from the 402 MMPO midwife members throughout New Zealand in 2005. The independent software vendor collated the data provided by the midwives following provision of care. The data was then aggregated and analysed for this report.

1.2 PURPOSE OF THIS REPORT

The MMPO Midwives care activities and outcomes report is the final analysis of the data collected by LMC midwives about the women to whom they provided care during the year 2005. It is important to note it is not a technical report with statistically significant analysis, but rather, an annual report of the data analysed from the 2005 database. It can be seen as an annual report for 2005 of women who had their maternity care provided by midwives who worked as LMC's and were members of the MMPO.

1.3 REPORT STRUCTURE

Chapter 1 - Introduction

This chapter provides the background information about the MMPO along with the demographics of the registered midwives. It describes the data collation and analysis processes.

Chapter 2 – Mothers and Pregnancies

This section provides information about pregnancy as obtained from women by the MMPO LMC midwives in 2005. The information collected provides a description of maternal age, ethnicity and gestation at the time of registration and at the time of labour onset along with maternal health status.

Chapter 3 – Labour Details

The third chapter provides information about the woman's labour and includes details on the length of labour, labour procedures such as induction and anaesthetic use and transfers during labour.

Chapter 4 – Births

This chapter provides information about the type of birth along with the place of birth. Maternal age, ethnicity and parity are described along with the type of birth and birth place setting. Third stage of labour care and outcomes are discussed along with perineal trauma following birth.

Chapter 5 – Babies

This chapter is based on the number of babies born in 2005. It provides information on gestational age at time of birth, apgar scores, birth weight and neonatal transfers following birth.

Chapter 6 - Postnatal

The postnatal period is covered in this chapter which provides information on babies feeding behaviour at two weeks post partum along with maternal postnatal smoking status.

Appendix

The appendix describes the MMPO Maternity Notes dataset.

1.4 'THE MMPO MATERNITY NOTES' DATASET

The data in this report is obtained from data collected by the midwives, via the MMPO maternity notes, which is either captured in hard copy or electronically.

The process of data collection includes:

1. MMPO midwife members purchase a set of MMPO Maternity Notes to be used with each woman who registers with that midwife for lead maternity care. The notes are the woman's and midwives record of all the woman's clinical care and outcomes at every visit. They contain pink carbonated forms (which are situated beneath each page of clinical notes the midwife uses for her assessment), and care documentation. The forms are generally set out as optional tick boxes or as blank boxes for midwives to fill in, and include information such as: dates; times; and specified aspects of care or outcomes. They also include information required for Health Payments Agreements & Compliance (HealthPAC)² to process Section 88 claims.
2. Once completed by the midwife, the pink carbonated copy is sent to the MMPO by post. Unique codes are used on these forms to de-identify the woman, thereby retaining her confidentiality.
3. On receipt of the forms, MMPO data professionals enter the midwives' handwritten clinical data into electronic format and submit the required claiming component to HealthPAC for payment electronically. This claiming data, plus additional clinical data submitted in the forms is retained and aggregated electronically to form a series of midwifery activities and outcomes reports within the MMPO database.
4. Midwives also have the option of submitting their data electronically through a replica of the master database on their own computer. Data accuracy and database sophistication ensures an overall HealthPAC claim rejection rate (following registration) of less than 1.6 per cent in both systems.

2 Health Payments Agreements and Compliance (HealthPAC) is a business unit of the Ministry of Health and is responsible for making and monitoring payments to various health providers. (Ministry of Health)

5. MMPO staff deal with HealthPAC claim rejections and data queries, in addition to managing inadequate and inaccurate data prior to submission for midwives. This ensures that only the most accurate and complete data is entered into the MMPO database.
6. Midwife members are regularly informed of Section 88 compliance responsibilities and the need to submit 'clean' data (a list of definitions is provided in the back of each set of notes to ensure data consistency).

1.5 DATA QUALITY AND LIMITATIONS

The MMPO midwifery practice management system has a number of inbuilt features that reduce the risk of data entry error. The system is also continually being improved. The data used in this report was able to be cross-checked and audited using a number of processes, namely:

1. Individual Lead Maternity Carer reports are produced using the same data. Midwives use these reports for their NZCOM Midwifery Standards Review process (MSR)³. Midwives check their individual reports for gaps in data, which can then be followed up by MMPO data entry staff.
2. The MMPO manager audits the data entry quality by generating random reports and then checking for data accuracy.
3. Group reports are run to identify data gaps.
4. Midwives are not paid until their claim (with the additional clinical data) has been successfully accepted by our database; therefore, midwives are motivated to submit a complete set of data.

3 MSR is a quality assurance process that LMC midwives undertake annually. It includes reviewing statistical outcome data about their practice. Individualised reports for MSR are generated from the data submitted by midwives through the MMPO maternity notes dataset.

1.6 KEY DATA SOURCES

The data for this report was sourced from all pregnant women who registered with MMPO LMC midwives during their pregnancy and who gave birth between 01 January and 31 December 2005. Therefore, the information in this report does not include any data relating to pregnancies ending in terminations or miscarriages. The data was generated using a Microsoft Access database split into two separate sections that each had the same date and cohort parameters. Actual cohort numbers vary between the two sections. The reasons for this are firstly, the exclusion of elective caesarean sections for particular aspects such as labour management, and secondly, multiple births, which increase the cohort of babies in the 'births and babies' section of this report.

1.6.1 REGIONAL PROFILE OF DATA CONTRIBUTORS

In 2002, the MMPO opened membership to midwives nationally. Prior to this point, membership was restricted by contract with the Ministry of Health to the South Island. This accounts for the disproportionately high numbers of midwife members in the South Island at this time. The following tables (tables 1.1 and 1.2) show the distribution of MMPO LMC throughout the country in 2005 based on District Health Board (DHB) and NZCOM regions respectively.

Erratum

Waitemata DHB was omitted from Table 1.1. No midwives identified this DHB as their prim locality in 2005, but 609 (5%) of the cohort of MMPO women lived in the region.

Table 1.1: Number and percentage of data contributors, by DHB region; 2005.

DHB region	Number and percentage of MMPO member LMC midwives contributing data	
	Number (n)	Percentage (%)
Northland	28	7.0
Auckland	19	4.7
Counties Manakau	5	1.2
Waikato	14	3.5
Bay of Plenty	23	5.7
Lakes	14	3.5
Taranaki	9	2.2
Tairāwhiti	18	4.5
Hawkes Bay	15	3.7
Wairarapa	5	1.2
Wanganui	2	0.5
Midcentral	22	5.5
Hutt	12	3.0
Capital and Coast	39	9.7
Nelson/Marlborough	16	4.0
Canterbury	81	20.1
West Coast	2	0.5
South Canterbury	4	1.0
Otago	53	13.2
Southland	19	4.7
Missing	2	0.5
TOTAL	402	100.0

Table 1.2: Number and percentage of data contributors, by NZCOM region, 2005.

NZCOM region	Number and percentage of MMPO member LMC midwives contributing data	
	Number (n)	Percentage (%)
Northland	29	7.2
Auckland	22	5.5
Waikato	13	3.2
Bay of Plenty	60	14.9
Central North Island	36	9.0
Taranaki	8	2.0
Wellington	55	13.7
Nelson / Marlborough	16	4.0
Canterbury / West Coast / South Canterbury	87	21.6
Otago	52	12.9
Southland	20	5.0
Missing	4	1.0
TOTAL	402	100.0

Tables 1.1 and 1.2 show that the highest proportion of midwives came from the Canterbury region, whereas Auckland and Waikato had relatively low proportions. However, approximately 60 per cent of MMPO LMC visits were located in the North Island, and this number has been steadily increasing since 2004.

1.6.2 PROFESSIONAL PROFILE OF DATA CONTRIBUTORS

The following table (1.3) summarises the MMPO midwives' professional experience as at 2005, reported as the number of years experience as a 'Continuity of Care' midwife.

NOTE: The term 'Continuity of Care' midwife is used here as opposed to a 'Lead Maternity Carer' (LMC) midwife,

because the LMC term was not introduced until 1996 and 12.1 per cent of MMPO midwives reported having professional experience prior to this date.

This table shows that during 2005, the largest group of midwives were those who had between one and four years professional experience as a 'Continuity of Care'

Table 1.3: Number and percentage of years as 'Continuity of Care' midwives by data source.

Years as 'Continuity of Care' midwife	Number (n)	Percentage (%)	Cumulative Percentage (%)
Not stated	28	7.0	0.0
Less than 1 year	16	4.0	11.0
1-4 years	122	30.3	41.3
5-9 years	80	19.9	61.2
10-14 years	46	11.4	72.6
15-19 years	35	8.7	81.7
20-24 years	35	8.7	90.0
More than 24 years	40	10.0	100.0
TOTAL	402	100.0	

midwife (30.3 per cent) followed by midwives with between five and nine years experience as a continuity of care midwife (19.9 per cent). Midwives with more than fifteen years of experiences as a continuity of care midwife comprised 27.3 per cent of the total group.

2 MOTHERS AND PREGNANCY

2.1 DEMOGRAPHIC PROFILE

This chapter provides demographic information for the women who were registered with an MMPO LMC midwife during their pregnancy and birth for 2005. It discusses the number of pregnant women in the 2005 MMPO database who were registered during their pregnancy and gave birth, the gestational age at registration with the midwife LMC, maternal age, maternal ethnicity and antenatal history along with the gestation at commencement of labour.

2.1.1 REGISTERED BIRTHS

In 2005, there were 57,916 liveborn babies registered in New Zealand (Ministry of Health, 2007). This same year, 14,666 of these babies (including 14,565 liveborn babies) were captured in the MMPO database. They represent 25 per cent of the New Zealand registered liveborn babies in 2005. The number of mothers registered with MMPO LMC midwives was 14,540 which indicates there were one hundred and twenty-six more babies than there were mothers (multiple births).

2.1.2 GESTATION AT REGISTRATION

In 2002 the Ministry of Health Section 88 regulations stipulated that a woman must be at least 14 weeks gestation before she could be registered with an LMC midwife (Ministry of Health, 2002). Whilst a woman could receive midwifery care prior to this time she could not register until she was 14 weeks gestation or over. Not surprisingly therefore, as Table 2.1 demonstrates, the majority of registrations occurred (60.5 per cent) after 15 weeks of pregnancy and prior to 20 weeks of pregnancy with only 20.5 per cent at less than 15 weeks. This has resulted in the majority of women in our cohort registering with their midwife in the second trimester of pregnancy. Only 9.8 per cent of registrations occurred in the third trimester of pregnancy - after week 28.

Table 2.1: Number and percentage of women, by weeks of gestation at registration; 2005.

Weeks gestation	Number (n)	Percentage (%)
<15 weeks	2,983	20.5
15-20 weeks	8,803	60.5
21-27 weeks	1,332	9.2
28-34 weeks	766	5.3
35-39 weeks	427	2.9
>=40 weeks	229	1.6
TOTAL	14,540	100.0

2.1.3 MATERNAL AGE

The woman's age at registration of pregnancy (Figure 2.1) indicates that 56.3 per cent of the women in the MMPO dataset for 2005 were aged between 25 to 34 years. Nine per cent were under 20 years of age and 16.2 per cent were over 35 years of age, with only 2.5 per cent over the age of 40 years.

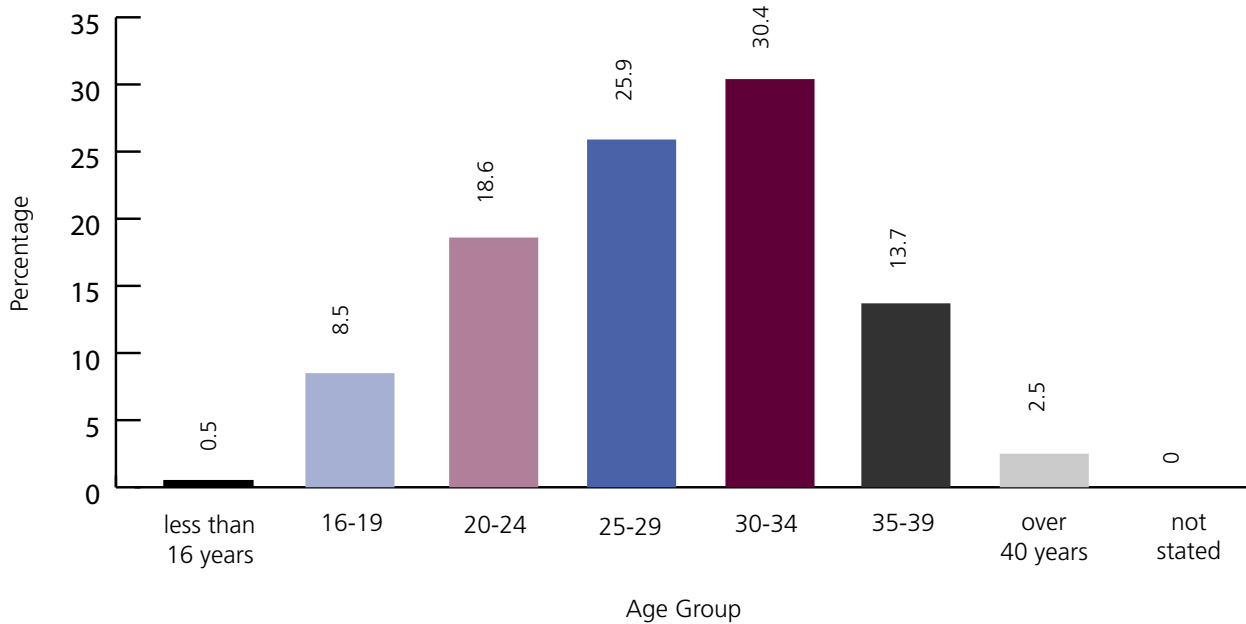


Figure 2.1: Percentage of women, by age group at registration; 2005.

2.1.4 MATERNAL ETHNICITY

The ethnicity data for the women in the 2005 dataset, (as recorded at the time of registration) is shown in table 2.2. This demonstrates that the majority (73.3%) identified themselves as 'NZ European', followed by 17% who identified themselves as 'Maori'. The third highest ethnic group was recorded as 'Pacific Island' with a very similar number identifying themselves as 'Asian.' The 'Other' category included women from Africa, the Middle East, and Latin America. There were 0.7% of women did not state their ethnic origin. (See Figure 2.2)

Table 2.2: Number of women by ethnicity; 2005.

Ethnicity	Number (n)	Percentage (%)
NZ European	10,660	73.3
Maori	2,467	17.0
Pacific Islander	488	3.4
Asian	482	3.3
Other	348	2.4
Not stated	95	0.7
TOTAL	14,540	100.0

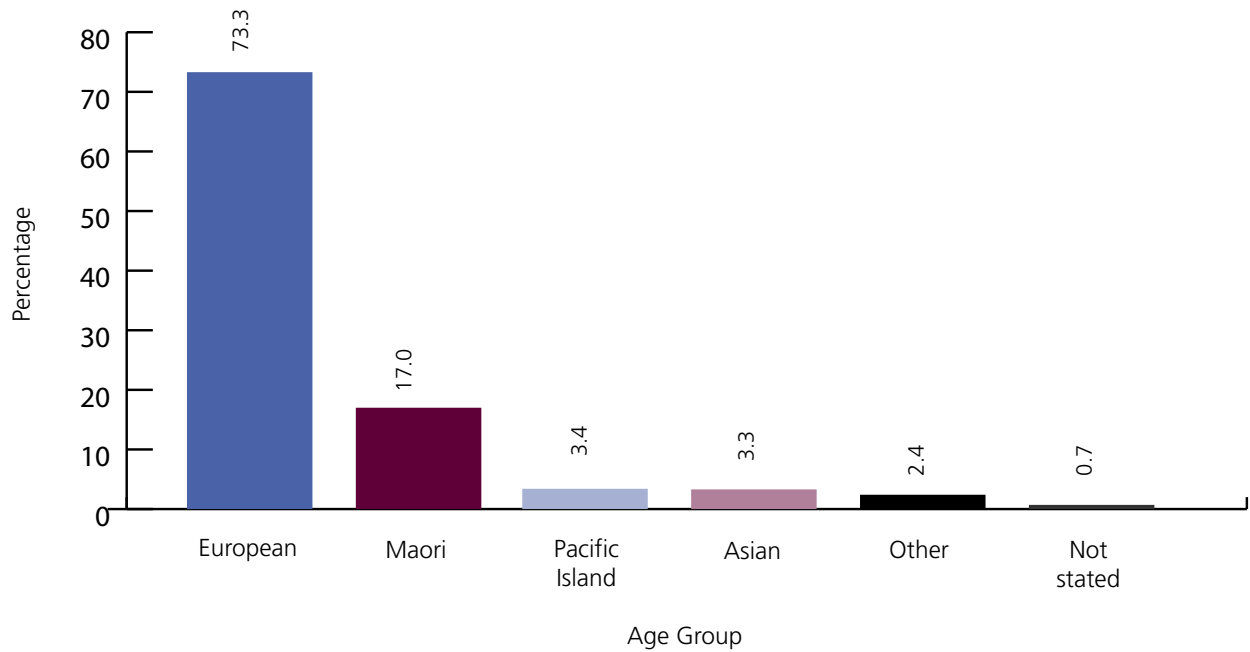


Figure 2.2: Percentage of women, by ethnicity; 2005.

2.2 ANTENATAL HISTORY

This section includes data on selected maternal health features. The first aspect is gravida and parity, followed by maternal health and other factors that could be considered to increase risks or concerns related to the current pregnancy.

2.2.1 GRAVIDA

Gravida refers to the total number of pregnancies a woman has had including the current one, regardless of whether they were carried to term or not. Multiple pregnancies count as one birth. For example, a woman who had one previous pregnancy and is currently pregnant is designated as 'gravida 2'. Almost one third of all women who registered with a MMPO midwife in 2005 were experiencing their first pregnancy (refer to Table 2.3 and Figure 2.3).

Table 2.3: Number and percentage of birthing women by gravida.

Gravida		Number (n)	Percentage (%)
Primigravida	1	4,501	31.0
Multigravida	2-5	9,197	63.3
	>5	842	5.8
TOTAL		14,540	100.0

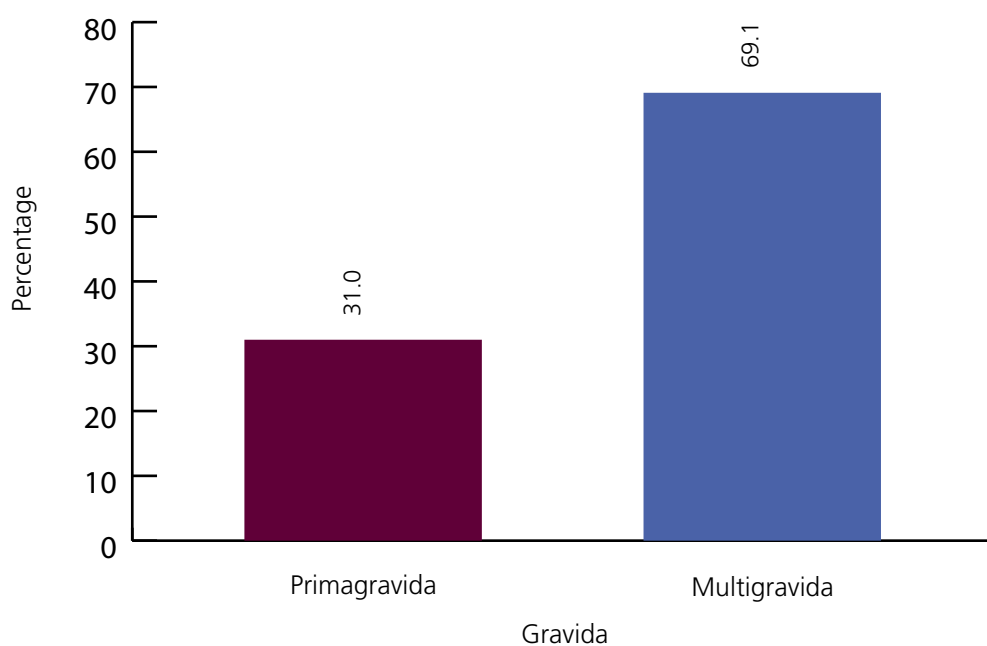


Figure 2.3: Percentage of women, by gravida; 2005.

2.2.2 PARITY

Parity refers to the number of times a woman has given birth and includes both live births or stillbirths. Women who have never given birth to a viable infant are called nulliparous. Primiparous is the term for women who have given birth only once before. Women who had subsequent births are called multiparous.

Table 2.4 and Figure 2.4 show that 41.7 per cent of the MMPO women had never given birth before to a viable baby. One in three women had a previous pregnancy resulting in a liveborn or stillborn baby. One in four women reported having had two or more previous pregnancies.

Table 2.4: Number and percentage of birthing women by parity

Parity		Number (n)	Percentage (%)
Nulliparous	0	6,063	41.7
Primiparous	1	4,736	32.6
Multiparous	2 to 5	3,599	24.8
	More than 5	142	1.0
TOTAL		14,540	100.0

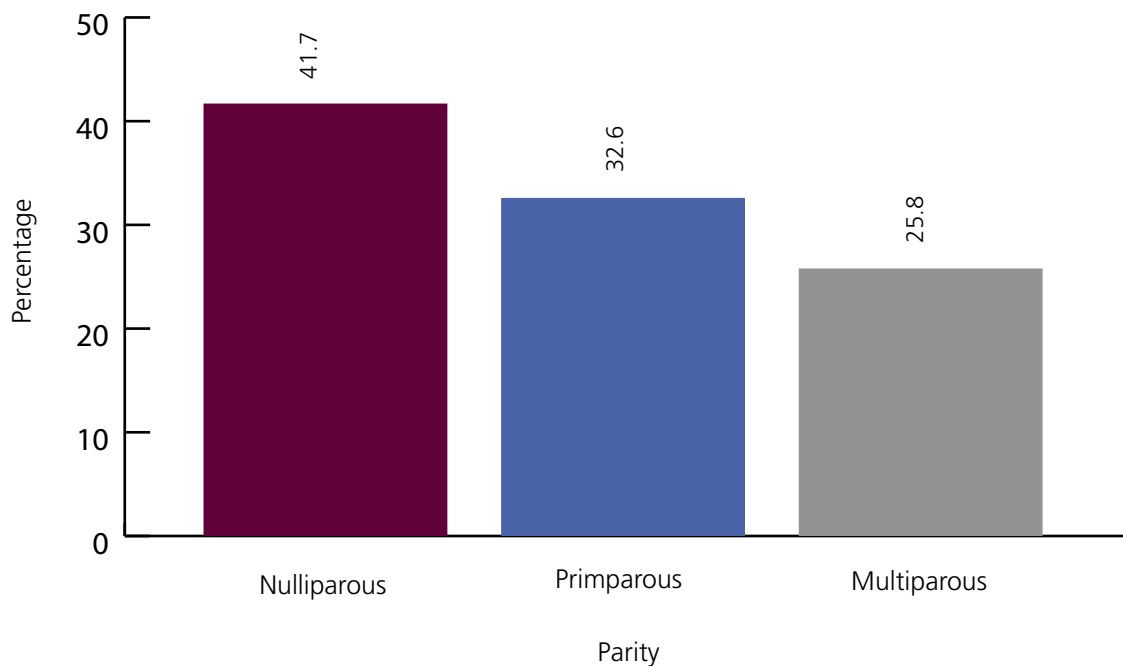


Figure 2.4: Percentage of women, by parity - multip vs. nulliparous.

2.2.3 PRE-EXISTING RISK FACTORS

During pregnancy the midwife undertakes a full medical and obstetric history. From this it has been possible to identify some features of interest that could be classified as 'risk factors'. For the 2005 cohort the following factors were considered of interest: an existing medical condition, multiple pregnancy, previous caesarean section and increasing age, for example giving birth for the first time and being over 37 years of age or being over 39 years when giving birth. Using these criteria 41.2 per cent

of the entire 2005 MMPO cohort had one or more of these features (Table 2.5). There were 127 women with a multiple pregnancy. By far the most common feature reported was a coexisting medical condition such as asthma, diabetes, and others (32.9 per cent). In addition, almost 10 per cent of the 2005 cohort had experienced a previous caesarean section.

Table 2.5: Number and percentage of birthing women by pre-existing risk factors; 2005.

Specific features	Number (n)	Percentage (%)
Nulliparous > 37 years of age	170	1.2
Over 39 years of age	366	2.5
Previous caesarean section	1,434	9.9
Multiple pregnancy (2+ babies)	127	0.9
Other medical conditions	4,786	32.9
Woman with one or more of the above factors	5,985	41.2
Woman with none of the above factors	8,555	58.8
TOTAL	14,540	100.0

2.3 SMOKING STATUS DURING PREGNANCY

Smoking status, including number of cigarettes per day, is recorded at the time of registration with a MMPO LMC midwife. In 2005, the majority of registrations (97 per cent) recorded the woman's smoking status. This data indicates that, 78.3 per cent of women reported that they were smoke free during pregnancy and 21.7 per cent reported that they were smoking during their pregnancy (Figure 2.6).

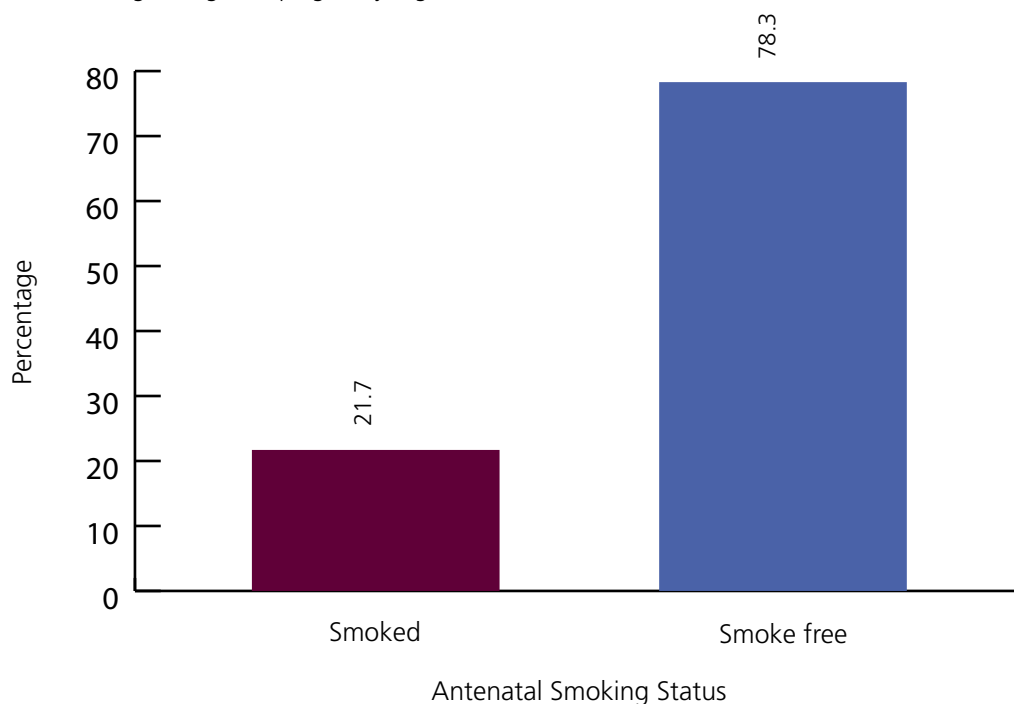


Figure 2.5: Smoke free status during pregnancy; 2005.

Of the women who reported that they were smoking during their pregnancy, the age group with the highest level of smoking were women under the age of 20 (46.1 per cent). The number of women who reported that they were smoking during pregnancy decreased with increasing age. For women who were over 30 years of age the majority (86 per cent) reported being smoke free. Of the women who reported that they did smoke most commonly reported having between five to ten cigarettes per day (refer to Tables 2.6 and 2.7, and Figure 2.6).

Table 2.6: Number of women who reported smoking during pregnancy by age group and number of cigarettes smoked per day.

Cigarettes smoked per day	Number of women in age group (years)				
	<20	20-29	30-39	40+	Total
Nil	677	4,663	5,359	298	10,997
1-4	201	462	231	12	906
5-10	251	669	323	22	1,265
11-19	90	372	211	17	690
20+	36	80	65	4	185
TOTAL	1,255	6,246	6,189	353	14,043

Table 2.7: Percentage of women who reported smoking during pregnancy by age group and number of cigarettes smoked per day.

Cigarettes smoked per day	Percentage of women in age group (years)				
	<20	20-29	30-39	40+	Total
Nil	53.9	74.6	86.6	84.4	78.3
1-4	16.0	7.4	3.7	3.4	6.5
5-10	20.0	10.7	5.2	6.2	9.0
11-19	7.2	6.0	3.4	4.8	4.9
20+	2.9	1.3	1.1	1.1	1.3
TOTAL	100.0	100.0	100.0	100.0	100.0

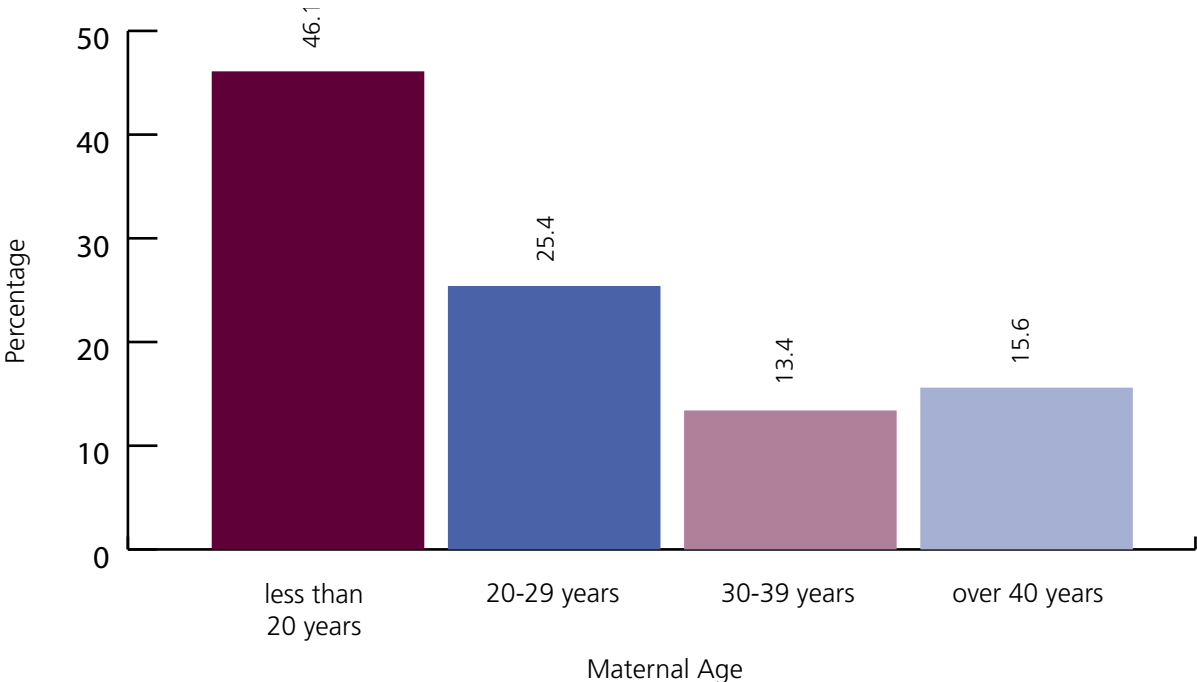


Figure 2.6: Percentage of women who reported smoking during pregnancy, by age group; 2005.

2.4 DURATION OF PREGNANCY

For the majority of women (85.8 per cent) gestation at the onset of labour was between 38 and 41 weeks of pregnancy which is demonstrated in Table 2.8 below. There were only a very small number (1.4 per cent) who had very premature labours (before 32 weeks gestation) and 6.9 per cent of pregnancies were more than 42 weeks gestation at the commencement of labour.

Table 2.8: Number and percentage of women by weeks of gestation at labour commencement or elective caesarean (all women); 2005.

Weeks gestation	Number (n)	Percentage (%)	Cumulative percentage (%)
20-23	59	0.4	0.4
24-27	45	0.3	0.7
28-31	94	0.6	1.4
32-36	862	5.9	7.3
37-41	12,476	85.8	93.1
42+	1,004	6.9	100
TOTAL	14,540	100.0	

3 LABOUR DETAILS

This chapter is based upon the data obtained from the 14,540 women registered with MMPO LMC midwives who laboured and gave birth in 2005. It describes length of labour, transfers during labour and specific labour procedures such as induction of labour.

3.1 LENGTH OF LABOUR

MMPO midwives report separately on both the onset of contractions and established labour in the notes for women. The midwife will discuss with the woman about when contractions started and when labour was thought to be established, this helps to clarify the length of the labour for both the woman and the midwife. The data for length of labour for this report has been taken from the time that established labour is reported which is generally timed as later than when the contractions first started.

As expected for length of labour the MMPO data confirms that primiparous women had longer labours than the multiparous women, with 47.1 per cent of first-time mothers reported as having labours that lasted longer than eight hours. This was compared with 16

per cent of the multiparous women in this category. Conversely, 67.7 per cent of the multiparous women had labours of less than six hours, compared to 30.9 per cent of the primiparous women. The most common length of labour for primiparous women was between ten to fifteen hours; for multiparous women, between two to four hours. When these lengths of labour are combined, 43.6 per cent of all women (who went into labour) experienced a labour of between two and six hours.

NOTE: The information in Table 3.1 below excludes the mothers who had an elective caesarean (n=825), because the assumption was these women would not have had labours prior to the caesarean operation.

Table 3.1: Number and percentage of women by hours of labour and parity for 2005 (excludes elective caesareans).

Hours of labour	Primiparous		Multiparous		Totals	
	n	%	n	%	n	%
<1	24	0.4	191	2.4	215	1.6
1-2	105	1.8	830	10.6	935	6.8
2-4	688	11.7	2,534	32.3	3,222	23.5
4-6	997	17.0	1,755	22.4	2,752	20.1
6-8	995	16.9	906	11.6	1,901	13.9
8-10	790	13.5	506	6.5	1,296	9.4
10-15	1,201	20.5	464	5.9	1,665	12.1
>15	772	13.1	286	3.6	1,058	7.7
Not stated	299	5.1	372	4.7	671	4.9
TOTAL	5,871	100.0	7,844	100.0	13,715	100.0

3.2 TRANSFERS DURING LABOUR

Women who have planned to give birth at home or in a primary unit require transfer to a secondary or tertiary unit if requiring extra analgesia or when concerns arise during labour. Similarly women may have to transfer between secondary and tertiary units if there are concerns with neonatal health. The tables below do not provide an explanation as to why there was a transfer of place of birth. The information presented in Tables 3.2 and 3.3 show that over 83 per cent of women gave birth in the primary setting of their choice.

NOTE: These figures do not include the elective caesareans, because these women would not have experienced labour, and the place of birth was pre-arranged at the time of the caesarean booking.

Table 3.2: Number and percentage of women transferring from primary birthing localities during labour in 2005 (excludes elective caesareans).

Planned birthplace	Planned place of birth*	Transfers	Transfers
	n	n	%
Home	1,207	279	23.1
Primary facility	1,893	255	13.5
Primary plus facility	125	7	5.6
TOTAL	3,225	541	16.8

* (excluding elective caesareans)

Table 3.2 above shows the number and percentage of transfers for all women who had planned to birth and who did actually give birth at home and/or in primary facilities. This means, for example, while 1,207 women had planned to give birth at home, 279 (23.1 per cent) were transferred to another birthing facility during labour, 928 women actually gave birth at home. Suggesting a low tolerance to concerns during labour and conservative midwifery practice.

The second table (Table 3.3) shows the number and percentage of transfers for each facility type or setting based on the total 2005 cohort. For example: the 279 women were transferred from home to another facility represent

2.0 per cent of the total 13,715 women. (There were 946 women with elective caesarean sections who were not included in this table).

Overall, the above figures indicate the mothers who had planned to birth at home had the highest rate of transfers and as expected, those in the tertiary facilities having the lowest. In addition to this, only 4.2 per cent of all mothers registered with MMPO LMC midwives had to transfer at all during their labours.

Table 3.3: Total number and percentage of transfers during labour and birth setting for 2005 (excludes elective caesareans).

Planned birthplace	Transfers	
	n	%
Home	279	2.0
Primary facility	255	1.9
Primary plus facility	7	0.05
Secondary facility*	28	0.2
Tertiary facility*	9	0.07
Total transferred	578	4.2
Total not transferred	13,137	95.8
TOTAL	13,715	100.0

* NOTE: Transfers from secondary and tertiary facilities are likely to be due to unavailability of neonatal service in the planned place of birth.

3.3 LABOUR PROCEDURES

Induction of labour

The majority of women (81.1 per cent) commenced labour spontaneously in 2005 and labour was induced for 17.3% of the women in the MMPO cohort (Table 3.4). Primiparous women were more likely to be induced with 21.5 per cent of inductions being undertaken with primiparous women, compared to 14.2 per cent for multiparous women.

Table 3.4: Number and percentage of women by labour induction and parity (all women); 2005.

Procedure	Primiparous		Multiparous		Total	
	n	%	n	%	n	%
INDUCTION						
Yes	1,306	21.5	1,207	14.2	2,513	17.3
No	4,656	76.8	7131	84.1	11,787	81.1
Not stated	101	1.7	139	1.6	240	1.7
TOTAL	6,063	100.0	8,477	100.0	14,540	100.0

Anaesthetics during labour and birth

Overall, the majority of multiparous women (76.2 per cent) did not have any anaesthetic procedures during labour, but of those that did, epidurals were the most common (Table 3.5). The numbers of anaesthetic procedures were higher for primiparous women. The rates of epidurals (including those combined with spinals) for this group was almost 35 per cent, compared with nearly 15 per cent for the multiparous women. There were only very small numbers of women requiring general and local anaesthetics with similar figures for general anaesthesia between primiparous women and

multiparous women. The level of local anaesthetics was lower in multiparous women compared to primiparous women. This may reflect the number of women requiring suturing for this group. Interestingly, multiparous women showed a marginally higher rate of spinal anaesthetics than primiparous women (7.8 vs. 7.7 per cent, respectively).

Table 3.5: Number and percentage of women who had an anaesthetic procedure.

Procedure	Primiparous		Multiparous		Total	
	n	%	n	%	n	%
ANAESTHETIC PROCEDURES						
Epidural	1,929	31.8	1,093	12.9	3,022	20.8
Epidural and spinal	177	2.9	140	1.7	317	2.2
General anaesthetic	49	0.8	57	0.7	106	0.7
Local anaesthetic	42	0.7	30	0.4	72	0.5
Spinal	468	7.7	662	7.8	1,130	7.8
Nil used	3,385	55.8	6,459	76.2	9,844	67.7
Not stated	5	0.1	27	0.3	32	0.2
TOTAL	6,063	100.0	8,477	100.0	14,540	100.0

* NOTE: The information in Table 3.5 includes women who had an elective caesarean, as anaesthetic procedures would be part of the surgical process.

4 BIRTHS

When talking about the births and types of birth the figures are based upon the number of actual births which took place (this includes the multiple pregnancies).

So whilst there were 14,540 women who gave birth there were 14,666 babies born. The information presented in this next section relates to the birth of the baby and includes the extra 126 multiple births (0.8% of cohort).

For these multiple births it is possible for a woman to have more than one type of birth. Information is presented on the type of birth and how it relates to age and ethnicity as well as birth setting and geographical areas.

4.1 TYPE OF BIRTH

The majority of babies born to the women in the 2005 cohort, were normal vaginal births (71.7 per cent). The overall rate of caesarean section rate was 21.1 per cent of which 6.5 per cent were elective caesareans and 14.6 per cent were emergency caesareans. Of the instrumental births, 4.3 per cent were ventouse births and 2.5 per cent were forceps births.

4.1.1 BIRTH TYPE AND PARITY

The mother's parity is compared to the type of birth she experienced, and this is presented in Table 4.1. The types of births are divided into vaginal births and caesareans, with each being subdivided into the types of procedures for each type of birth.

Table 4.1: Number and percentage of births by birth type and parity 2005.

Birth Type	Primiparous		Multiparous		Total	
	n	%	n	%	n	%
Normal vaginal	3,727	61.0	6,782	79.4	10,509	71.7
Vaginal breech	16	0.3	31	0.4	47	0.3
Operative breech	8	0.1	3	0.0	11	0.1
Ventouse	487	8.0	138	1.6	625	4.3
Forceps	294	4.8	69	0.8	363	2.5
Total vaginal	4,532	74.2	7,023	82.2	11,555	78.8
Elective caesarean	218	3.6	728	8.5	946	6.5
Emergency caesarean	1,355	22.2	788	9.2	2,143	14.6
Total caesarean	1,573	25.7	1,516	17.7	3,089	21.1
Not stated	12	0.2	10	0.1	22	0.2
TOTAL	6,117	100.0	8,549	100.0	14,666	100.0

Multiparous women (79.4 per cent) were more likely to experience a normal birth when compared to primiparous women (61.0 per cent). Primiparous women had higher levels of ventouse births (8.0 per cent) and forceps births (4.8 per cent) compared with multiparous women (1.6 per cent and 0.8 per cent respectively).

Of the caesarean sections multiparous women were more likely to have an elective caesarean (8.5 per cent) than primiparous women (3.6 per cent). Conversely primiparous women were more likely to have an emergency caesarean (22.2 per cent) when compared to multiparous women (9.2 per cent)

4.1.2 BIRTH TYPE AND MATERNAL AGE

Just over half of all the women giving birth in the MMPO cohort were aged between 25 to 34 years old (56.3 per cent). Thirty per cent (one in three women) were between 30 to 34 years old. Nearly nine per cent were under the age of 20 and 2.5 per cent were women aged 40+ years.

The influence of age and birth type is explored in Table 4.2 (numbers) and in Table 4.3 (percentages). When age and birth type are looked at in this way, it becomes apparent that women in the lower age groups have a higher proportion of normal vaginal births. Women under 20 years of age whilst only a small proportion of the

overall cohort (8.8 per cent) had the highest incidence of normal vaginal birth (between 80 and 84.8 per cent). The proportion of normal vaginal birth reduces as age increases with the women who are over forty having the lowest incidence of normal vaginal birth (65.2 per cent).

The highest incidence of instrumental births was in the age group 30 and 34 years (7.6 per cent). Whereas the age group with the highest incidence of caesarean sections were women who were over 40 years old. This group had both the highest elective (11.1 per cent) as well as the highest emergency caesarean sections (17.9 per cent).

Table 4.2: Number of births by birth type and maternal age; 2005.

Birth Type	Maternal age (years)							
	<16 (n)	16-19 (n)	20-24 (n)	25-29 (n)	30-34 (n)	35-39 (n)	40+ (n)	Total (n)
Normal vaginal	56	991	2,089	2,779	3,016	1,338	240	10,509
Vaginal breech	0	0	11	9	15	10	2	47
Operative breech	0	0	0	3	8	0	0	11
Ventouse	1	49	117	169	204	73	12	625
Forceps	0	25	65	82	133	52	6	363
Total vaginal	57	1,065	2,282	3,042	3,376	1,473	260	11,555
Elective caesarean	0	17	109	211	368	200	41	946
Emergency caesarean	8	155	326	538	712	338	66	2,143
Total caesarean	8	172	435	749	1,080	538	107	3,089
Not stated	1	2	1	4	8	5	1	22
TOTAL	66	1,239	2,718	3,795	4,464	2,016	368	14,666

Table 4.3: Percentage of births by birth type and maternal age; 2005.

Birth Type	Maternal age (years)							
	<16 (%)	16-19 (%)	20-24 (%)	25-29 (%)	30-34 (%)	35-39 (%)	40+ (%)	Total (%)
Normal vaginal	84.8	80.0	76.9	73.2	67.6	66.4	65.2	71.7
Vaginal breech	0.0	0.0	0.4	0.2	0.3	0.5	0.5	0.3
Operative breech	0.0	0.0	0.0	0.1	0.2	0.0	0.0	0.1
Ventouse	1.5	4.0	4.3	4.5	4.6	3.6	3.3	4.3
Forceps	0.0	2.0	2.4	2.2	3.0	2.6	1.6	2.5
Total vaginal	86.4	86.0	84.0	80.2	75.6	73.1	70.7	78.8
Elective caesarean	0.0	1.4	4.0	5.6	8.2	9.9	11.1	6.5
Emergency caesarean	12.1	12.5	12.0	14.2	15.9	16.7	17.9	14.6
Total caesarean	12.1	13.9	16.0	19.7	24.2	26.7	29.1	21.1
Not stated	1.5	0.2	0.0	0.1	0.2	0.2	0.3	0.2
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

4.1.3 BIRTH TYPE AND MATERNAL ETHNICITY

The following table (Table 4.4) and figures (Figures 4.1 and 4.2) refer to the numbers of births by birth type and by maternal ethnicity. When the woman's ethnicity is compared to the type of birth, it can be seen that women who identified as Maori had the highest rate of normal vaginal births (82 per cent) and the lowest caesarean rates (13.9 per cent). Conversely, the women who identified as Asian had the lowest rate of normal vaginal

births (62.1 per cent) and the highest rate of instrumental births (Ventouse or forceps). They also had the second highest rate of emergency caesareans.

The highest rates of caesareans, both elective and emergency were in the 'Other' category (23.8 per cent), followed closely by 'NZ European' at 22.7 per cent. The not stated category is where the ethnicity has been provided but there is no data on type of birth.

Table 4.4: Number of births by birth type and maternal ethnicity 2005.

Birth type	NZ European (n)	Maori (n)	Pacific Island (n)	Asian (n)	Other (n)	Not stated (n)	Total (n)
Normal vaginal	7,479	2,039	386	307	226	72	10,509
Vaginal breech	33	8	1	3	1	1	47
Operative breech	10	0	0	0	1	0	11
Ventouse	481	60	13	46	24	1	625
Forceps	304	23	6	18	12	0	363
Total vaginal	8,307	2,130	406	374	264	74	11,555
Elective caesarean	791	83	24	19	24	5	946
Emergency caesarean	1,655	263	59	89	59	18	2,143
Total caesarean	2,446	346	83	108	83	23	3,089
Not stated	2	5	1	12	2	0	22
TOTAL	10,755	2,481	490	494	349	97	14,666

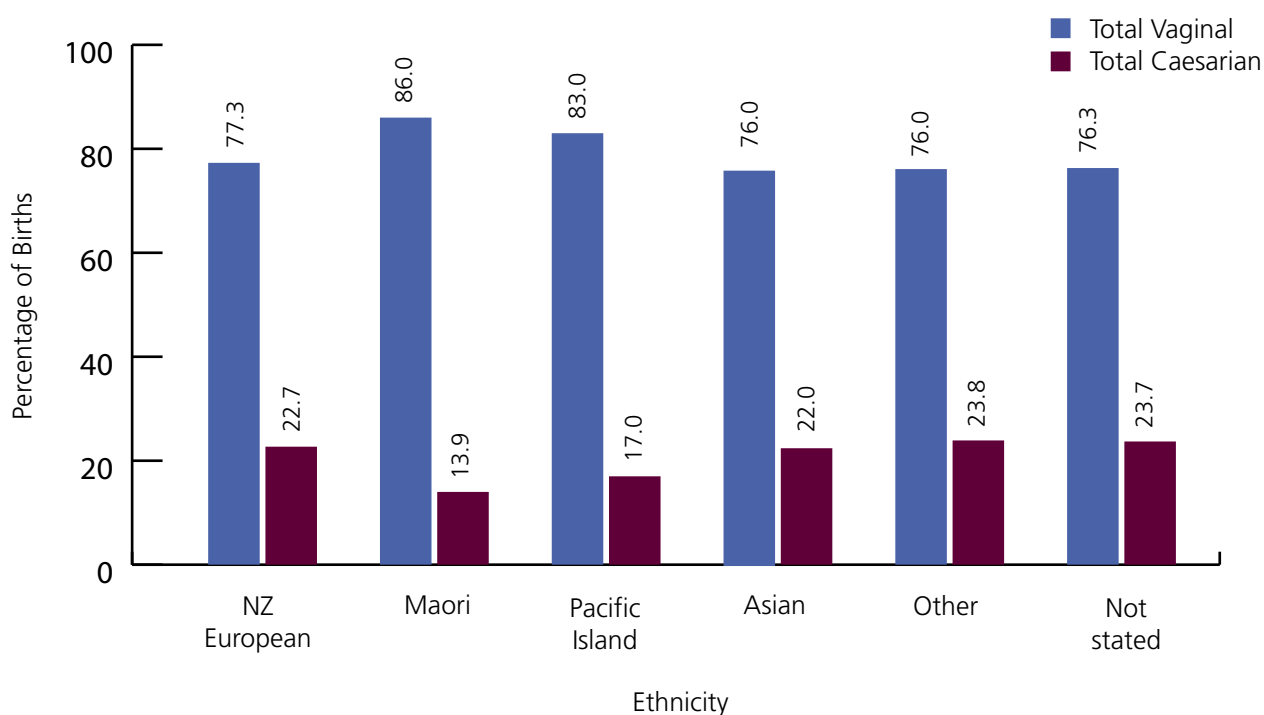


Figure 4.1: Percentage of births by birth type - vaginal vs. caesarean - and ethnicity.

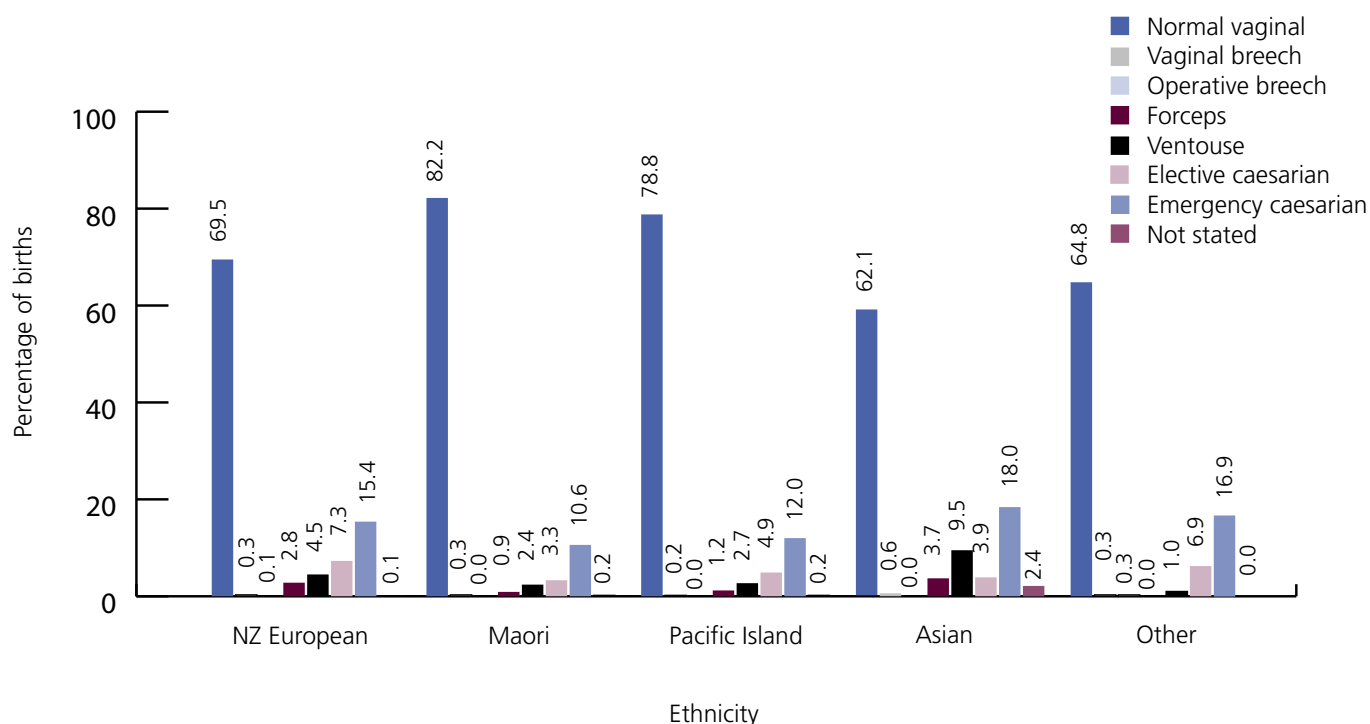


Figure 4.2: Percentage of births, by birth type and maternal ethnicity. (The not stated had ethnicity stated but not type of birth).

4.2 PLACE OF BIRTH - GEOGRAPHIC DISTRIBUTION AND BIRTH PLACE SETTING

This section examines the geographic distribution of the women giving birth in the North and South Island, along with the DHB region and looks at the rurality of the women registered with a MMPO LMC midwife in 2005.

There were slightly more women giving birth in the North Island (58.5%) compared to the South Island. The majority of the births in the North Island (68.2%) occurred in secondary birthing facilities whereas the majority of births in the South Island occurred in tertiary facilities (59%).

The locations of the tertiary birthing facilities in New Zealand are: Auckland; Hamilton; Wellington; Canterbury; and Otago. Almost nineteen per cent of women registered with a LMC MMPO midwife gave birth in primary facilities or at home. Overall, the 2005 cohort shows the majority of births occurred in secondary facilities (Table 2.3).

Table 4.5: Number and percentage of women by birth place type and geographic distribution 2005.

Birth place type	North Island		South Island		Not Stated		New Zealand	
	n	%	n	%	n	%	n	%
Primary facility	940	11.0	688	11.5	10	15.9	1,638	11.3
Primary plus*	0	0.0	194	3.3	0	0.0	194	1.3
Secondary facility	5,807	68.2	1,138	19.1	25	39.7	6,970	47.9
Tertiary facility	1,269	14.9	3,519	59.0	22	34.9	4,810	33.1
Home births	496	5.8	426	7.1	6	9.5	928	6.4
TOTAL	8,512	100.0	5,965	100.0	63	100.0	14,540	100.0

* A primary maternity hospital that is contracted to carry out elective caesareans.

4.2.1 BIRTHS IN RURAL AREAS

Section 88 Maternity Notice 2002 (Ministry of Health, 2002) defines the domicile of the mother according to the rurality of the place of residence. The data obtained from the 2005 MMPO cohort is presented in Table 2.4 (numbers) and Figure 2.1 (percentages).

Table 4.6: Number of births by birth setting and rurality.

Birth place type	Home	Primary	Primary plus facility*	Secondary facility	Tertiary facility	Total
	n	n	n	n	n	n
Not rural	494	254	154	3,749	3,013	7,664
Semi-rural	102	119	14	1,056	322	1,613
Rural	255	983	23	1,699	1,092	4,052
Remote rural	65	256	4	340	267	932
Not stated	14	26	1	175	189	405
TOTAL	930	1,638	196	7,019	4,883	14,666

* A primary maternity hospital that is contracted to carry out elective caesareans.

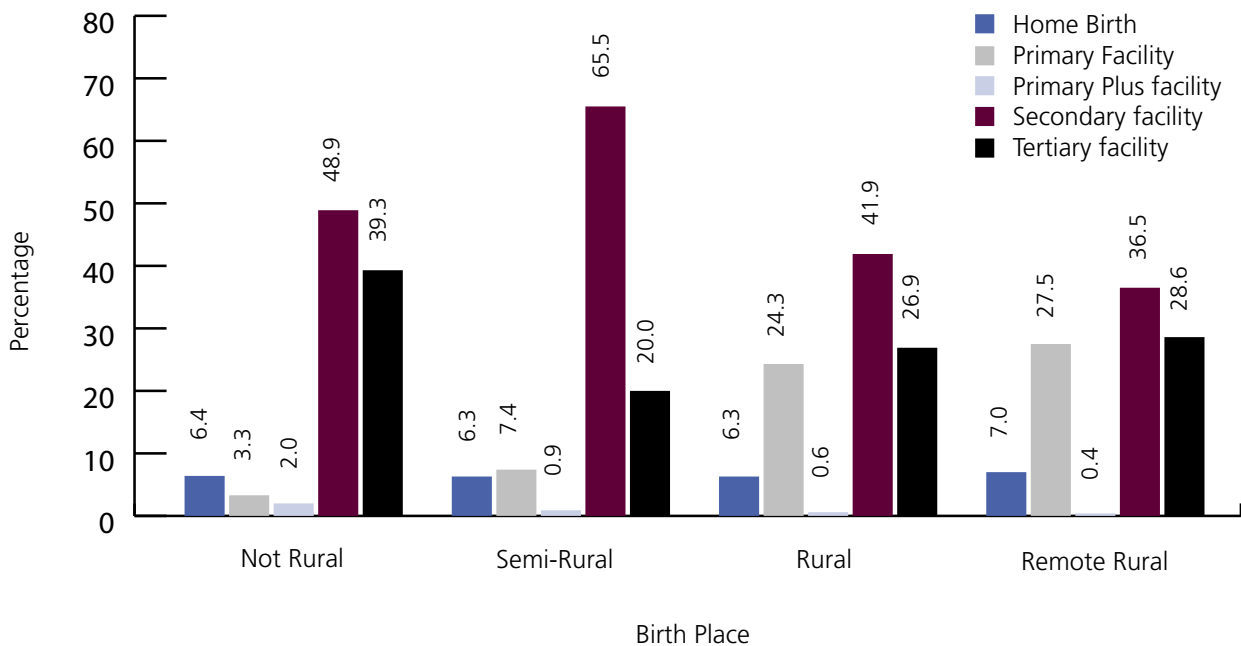


Figure 4.3: Percentage of births by birth place type and rurality.

Overall, 52.3 per cent of the babies born to women registered with MMPO LMC midwives were from urban domiciles and, of these 88.2 per cent gave birth in either a tertiary or secondary setting, 5.3 per cent gave birth in a primary or primary plus setting and 6.4 per cent gave birth at home.

Of the 44.9 per cent who of women who lived in semi rural, rural or remote rural environment, 72.3 per cent gave birth in a secondary or tertiary setting, 21.2 per cent

gave birth in a primary or primary plus setting and 6.3 per cent gave birth at home. Suggesting that as rurality increases there are a higher number of women accessing primary birth settings.

For women who gave birth at home the rurality of their home does not appear to influence their choice of birth setting, with a similar per centage living in an urban environment through to a remote rural environment (from 6.4 to 7 per cent)

4.3 BIRTH SETTING AND PARITY

Information in Table 4.7 compares the birth setting with the mother's parity.

For primiparous women, the majority (87.9 per cent) gave birth in either a secondary or tertiary facility, with most (48 per cent) giving birth in a secondary facility. Primiparous women were less likely to give birth at home

(3.4 per cent) or in a primary unit (8.1 per cent) than multiparous women who had higher rates of home birth (8.5 per cent) and primary and primary plus settings for birth (15.1 per cent). They also had a lower rate of use of tertiary facilities (28.6 per cent) than primiparous women (39.9 per cent).

Table 4.7: Number and percentage of births by birth setting and parity.

Place of birth	Primiparous		Multiparous		Total	
	n	%	n	%	n	%
Home birth	205	3.4	725	8.5	930	6.3
Primary facility	497	8.1	1,141	13.3	1,638	11.2
Primary plus facility	40	0.7	156	1.8	196	1.3
Secondary facility	2,936	48.0	4,083	47.8	7,019	47.9
Tertiary facility	2,439	39.9	2,444	28.6	4,883	33.3
TOTAL	6,117	100.0	8,549	100.0	14,666	100.0

4.3.1 BIRTH SETTING AND TYPE OF BIRTH

The setting for birth appeared to have a strong influence on the type of birth that a woman had. Women who chose to give birth at home or in a primary unit were more likely to have a vaginal birth, however if there were complications or concerns and sufficient time the woman was transferred to a secondary or tertiary care setting. It is therefore to be expected that secondary and tertiary care settings had higher levels of instrumental and operative births when compared to home and primary unit births.

The birth setting is compared to the type of birth the mother had and is presented in Table 4.7 (numbers) and Figures 4.4 and 4.5 (percentages). From this it can

be seen that both secondary and tertiary facilities had a similar rate of elective caesareans (6.9 per cent versus 7.9 per cent, respectively), however, 21.3 per cent of the tertiary facility births were emergency caesareans compared with 15.7 per cent in secondary facilities. Tertiary facilities also had the highest rate of ventouse births and forceps births.

The primary plus facility is authorised to carry out elective caesareans, which accounts for 8.2 per cent of all the elective caesareans reported in this birth cohort. This facility also had the highest total caesarean procedure rate per births by birth place type (40 per cent).

Table 4.7: Number of births by birth setting and birth type.

Birth Type	Home	Primary facility	Primary plus facility	Secondary facility	Tertiary facility	Total
	n	n	n	n	n	n
Normal vaginal	927	1,624	112	4,993	2,853	10,509
Vaginal breech	3	1	0	24	19	47
Operative breech	0	0	0	7	4	11
Ventouse	0	7	2	259	357	625
Forceps	0	3	3	143	214	363
Total vaginal	930	1,635	117	5,426	3,447	11,555
Elective caesarean	0	0	78	482	386	946
Emergency caesarean	0	3	1	1,100	1,039	2,143
Total caesarean	0	3	79	1,582	1,425	3,089
Not stated	0	0	0	13	9	22
TOTAL	930	1,638	196	7,021	4,881	14,666

* A primary maternity hospital that is contracted to carry out elective caesareans in 2005.

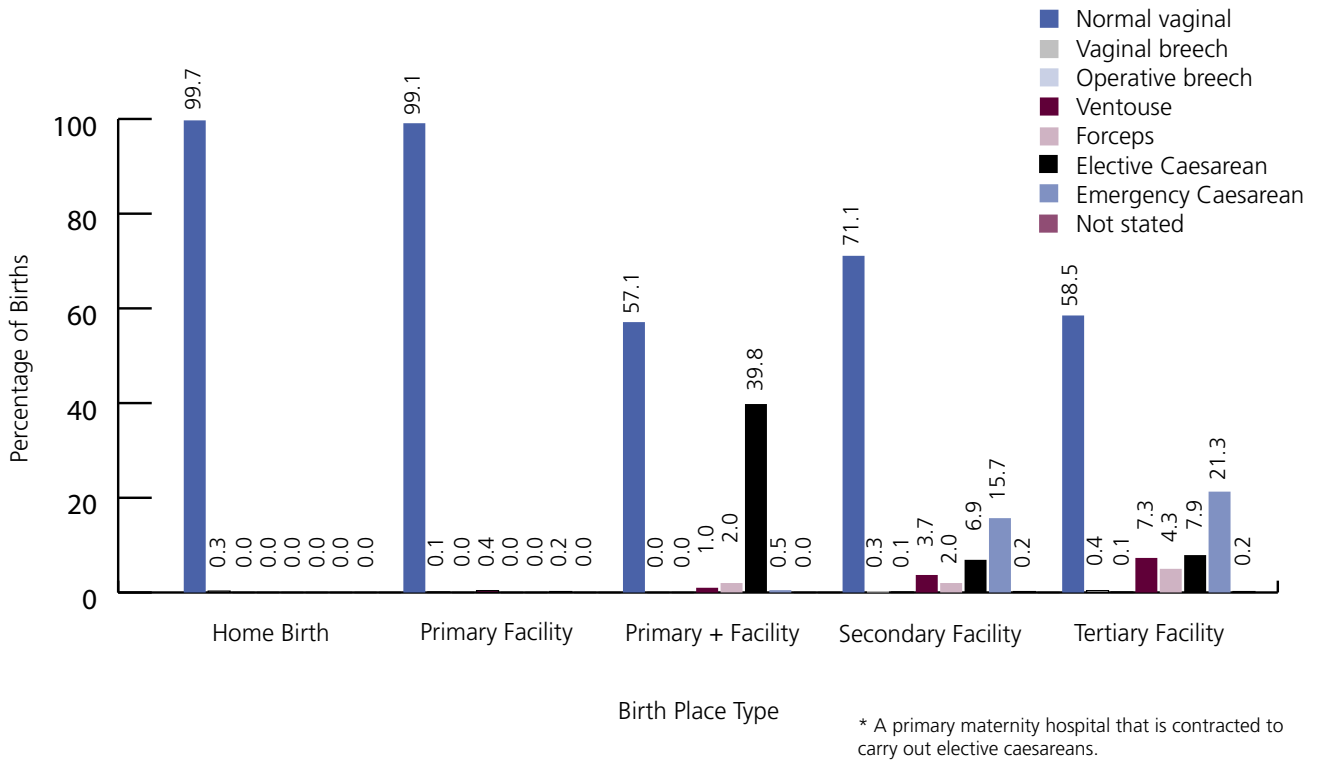


Figure 4.4: Percentage of births by birth type and birth setting.

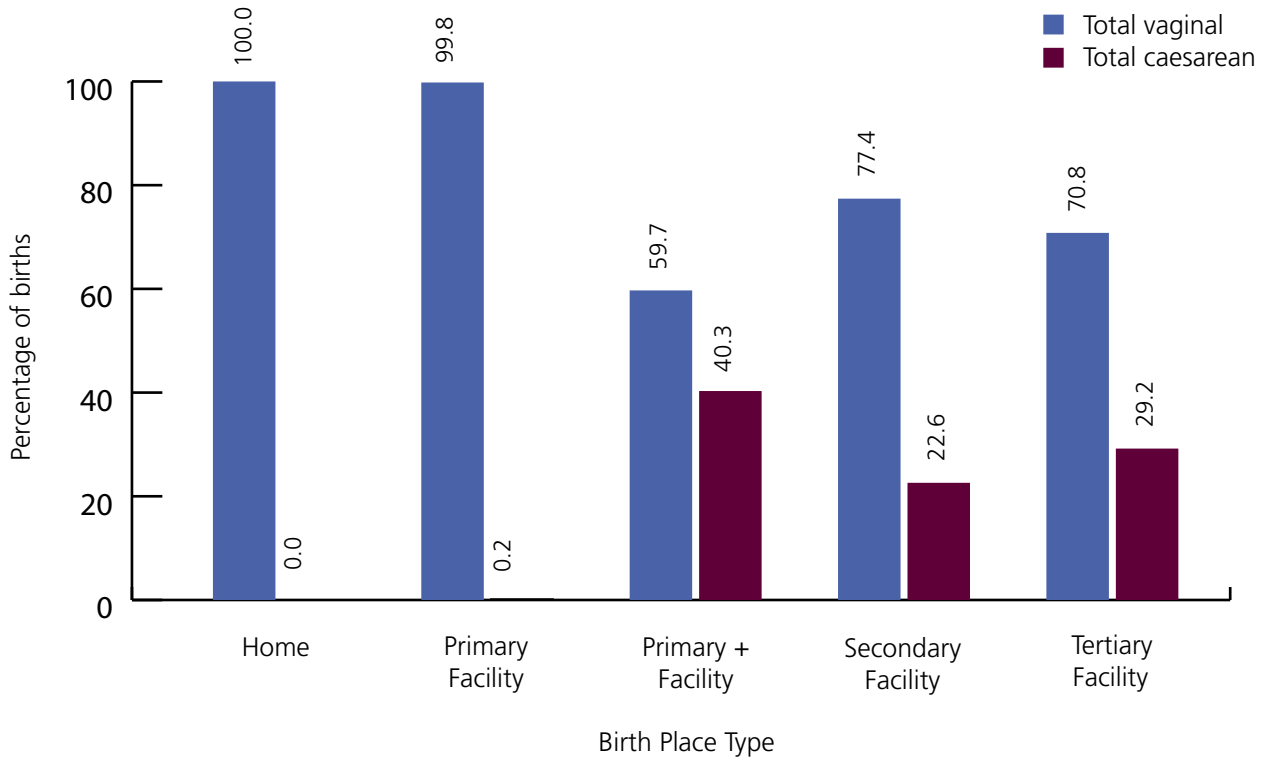


Figure 4.5: Percentage of births by birth type - vaginal vs. caesarean - and birth place facility.

4.4 WATER USE DURING LABOUR AND BIRTH

Immersion in water is known to have beneficial analgesic properties and is becoming increasingly popular during labour. In the MMPO 2005 cohort thirty per cent of the births were recorded as using water as part of their pain management during labour or for the birth and 13 per cent of these were births in water.

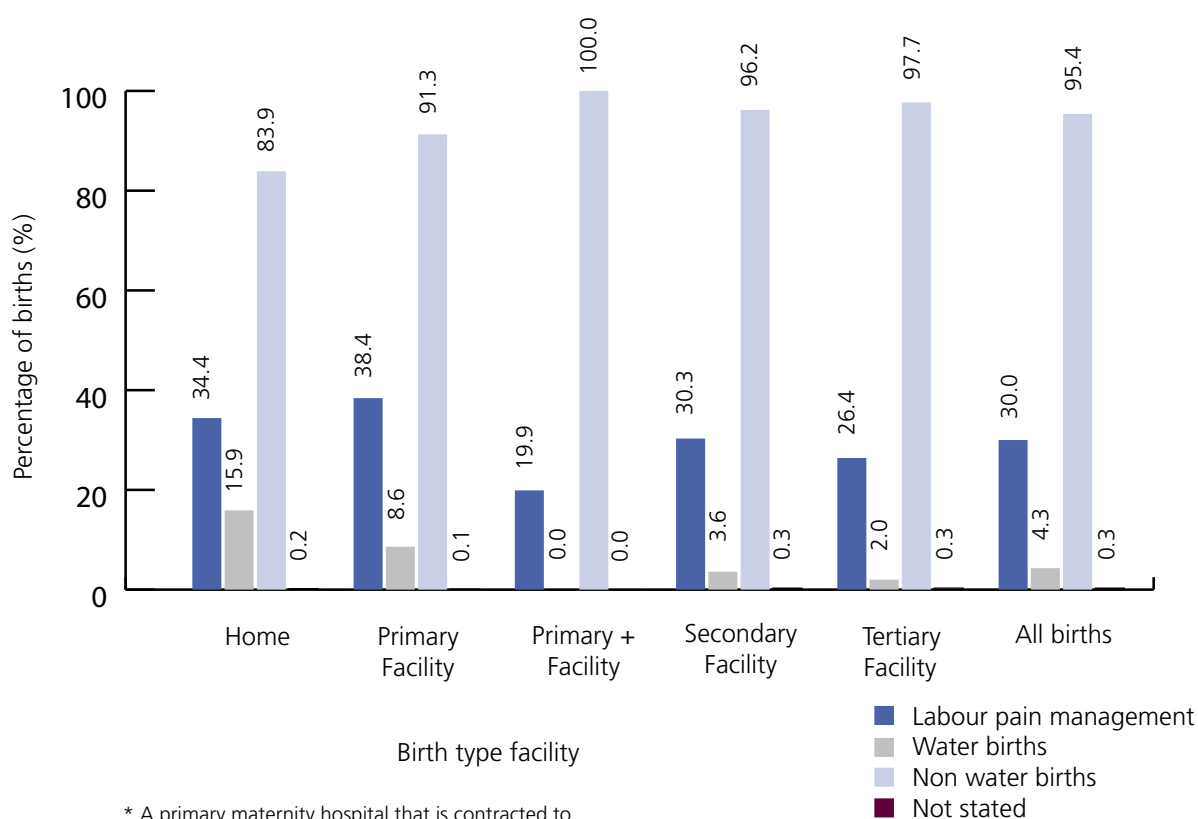
The highest use of water in labour was reported for home births and primary facilities, with the ratio of using water for labour pain management at about one in three. Secondary and tertiary facilities had lower rates of water use for labour pain management and birth which may be related to accessibility and availability of pools in these facilities.

Table 4.9: Number of births to women using water in labour; 2005.

Use of water	Home	Primary facility	Primary plus facility*	Secondary facility	Tertiary facility	Total
	n	n	n	n	n	n
Labour pain management	320	629	39	2,124	1,290	4,402
Water births	148	141	0	251	97	637
Total water use**	468	770	39	2,375	1,387	5,039
Non water births	780	1,496	196	6,752	4,768	13,992
Not stated	2	1	0	18	16	37
TOTAL	930	1,638	196	7,021	4,881	14,666

* A primary maternity hospital that is contracted to carry out elective caesareans.

** This includes those women who used water for labour pain management and for water births.



* A primary maternity hospital that is contracted to carry out elective caesareans.

Figure 4.6: Percentage of births to women who used water during labour; 2005.

4.5 PERINEAL TRAUMA

4.5.1 Episiotomy

In 2005 the overall episiotomy rate was 6.2 per cent with 11.4 per cent of primiparous women receiving an episiotomy compared to only 2.4 per cent of the multiparous women in the MMPO cohort.

Table 4.10: Number and percentage of women having an episiotomy.

Procedure	Primiparous		Multiparous		Total	
	n	%	n	%	n	%
EPISIOTOMIES						
Yes	692	11.4	206	2.4	898	6.2
No	5,319	87.7	8,189	96.6	13,508	92.9
Not stated	52	0.9	82	1.0	134	0.9
TOTAL	6,063	100.0	8,477	100.0	14,540	100.0

4.5.2 Other Vaginal tears

The information presented in Table 4.11 includes only the women who had a vaginal birth and excludes all caesarean births. Primiparous women had the highest rate of perineal trauma, with 66.7 per cent having a first, second, third degree tear, or an episiotomy. Almost two thirds of the multiparous women (60.1 per cent) either had an intact perineum or a graze. Almost half of all women (49.3 per cent) had an intact perineum or a graze.

Table 4.11: Number and percentage of women with perineal trauma by parity following all vaginal births.

Procedure	Primiparous		Multiparous		Total	
	n	%	n	%	n	%
Intact/Graze	1,488	32.5	4,271	60.1	5,759	49.3
1st degree	990	21.6	1,485	20.9	2,475	21.2
2nd degree	1,224	26.7	1,061	14.9	2,285	19.5
3rd degree	148	3.2	60	0.8	208	1.8
Episiotomies	695	15.2	206	2.9	901	7.7
Tear Grade not stated	39	0.9	25	0.4	64	0.5
TOTAL	4,584	100.0	7,108	100.0	11,692	100.0

* The total number of perineal trauma equals more than the total number of women because some women may have an extended tear from their episiotomy or may have labial tears or grazes.

4.6 THIRD STAGE LABOUR OUTCOMES FOR ALL BIRTHS

MMPO midwives report on four categories for management of the third stage of labour (placental delivery) these are:

1. **Active management of the third stage;** which involves the administration of a uterotonic during the third stage, cord clamping and cutting, and controlled cord traction to facilitate the birth of the placenta.
2. **Active management and treatment;** this group are women who had active management but then have required further uterotonic administration during the third stage of labour.
3. **Physiological** management involves an approach that facilitates the physiology of the woman's body. It is a hands off approach in which there is minimal intervention and the woman expels the placenta herself using maternal effort and without the use of a uterotonic.
4. **Physiological and treatment** refers to women who were initially managed physiologically, but then required a treatment with a uterotonic.

The following table (Table 4.12) and figure (Figure 4.7) condenses these four treatment categories into two categories for initial description. The two main categories then are either active – which includes active management and active management with treatment or physiological which includes physiological management and physiological management and treatment.

Table 4.12: Number and percentage of births by postpartum blood loss by ecobolic procedures - active vs. physiological - following all births.

Postpartum blood loss	Active		Physiological		Not Stated		Total	
	n	%	n	%	n	%	n	%
0-500	8,571	85.0	4,237	92.7	11	55.0	12,819	87.4
501-749	643	6.4	115	2.5	0	0	758	5.2
750-1000	425	4.2	88	1.9	0	0	513	3.5
>1000	178	1.8	25	0.5	0	0	203	1.4
Not stated	256	2.5	108	2.4	9	45.0	373	2.5
TOTAL	10,073	100.0	4,573	100.0	20.0	100.0	14,666	100.0

The numbers and percentages from Table 4.12 indicate that those women who had an active management for the third stage experienced increased blood loss. In the MMPO 2005 cohort 68.6 per cent of women had an active management of the third stage and 31 per cent had physiological management of the third stage. The majority of women (87.4 per cent) had a blood loss of less than 500 mls, but when looking at the two categories, separately, it becomes clear that 92.7% of the women who had physiological care had a blood loss of less than 500 mls when compared to the women who had active management (85 per cent).

There were 8.7 per cent of the cohort who experienced a blood loss of between 500 mls and 1000 mls which is defined as a post partum haemorrhage (PPH). Of these

10.6 per cent were in the active management group and 4.4 per cent were in the physiological group.

Finally, 1.4 per cent of the total cohort had a blood loss greater than 1000mls (severe PPH), of which 1.8 per cent were in the active management group and 0.5 per cent were in the physiological group.

There were women in both the active and physiological groups who did not have a stated blood loss – a similar rate in each (2.5 per cent and 2.4 per cent).

POSTPARTUM BLOOD LOSS

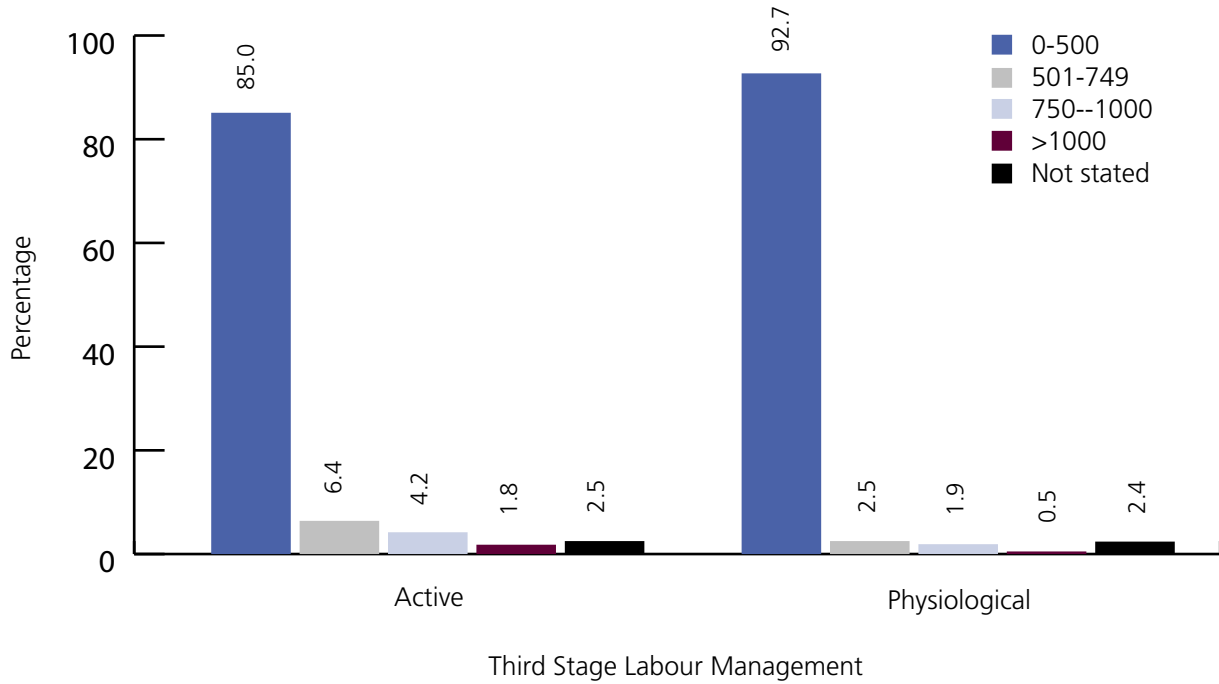


Figure 4.7: Percentage of births, by postpartum blood loss and third stage labour management - active vs. physiological - following all births.

A fuller description of the third stage has been provided by separating the data into the four management types described earlier. Table 4.13 and Figure 4.8 provide information on postpartum blood loss by third stage management group including treatment.

Table 4.13: Number and total percentage of births by postpartum blood loss by ebolic procedures following all births.

Postpartum blood loss (ml)	Active	Active and treatment	Nil - Physiological	Physiological & treatment	Not stated	Total	
	n	n	n	n	n	n	%
0-500	8,162	409	3,794	443	11	12,819	87.4
501-749	547	96	51	64	0	758	5.2
750-1000	340	85	38	50	0	513	3.5
>1000	127	51	5	20	0	203	1.4
Not stated	246	10	89	19	9	373	2.5
TOTAL	9,422	651	3,977	596	20	14,666	100.0

Of the women who had their third stage actively managed 6.5 per cent required further treatment compared to 13 per cent of women who had physiological management. Of those women who went on to have further treatment, 62.8 per cent of women in the active group had a blood loss of less than 500ml compared to 74.3 per cent in the physiological group.

Looking at the differences between the different categories it appears that there were more women in the physiological group (95.4 per cent) and physiological and treatment group (74.3 per cent) had a blood loss of less than 500 mls when compared to the women that were actively managed (86.6 per cent) and had active management and treatment (62.8 per cent). (Figure 4.8)

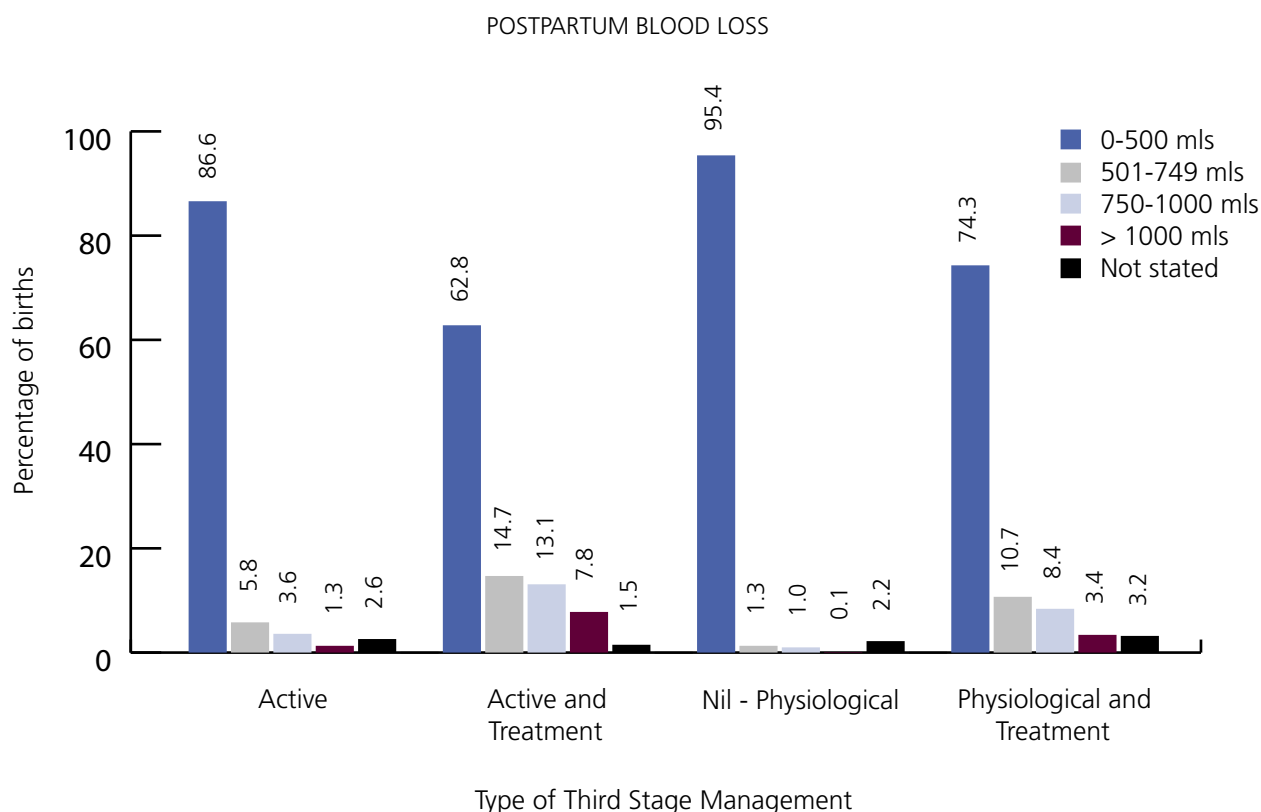


Figure 4.8: Percentage of births, by postpartum blood loss and ecobolic procedures following all births.

4.6.1 PARITY AND THE THIRD STAGE

The influence of parity on the type of third stage management is described in Table 4.14 using the four previously explained management definitions. The type of management of the third stage of labour (placental birth) for all births (caesareans included) is compared to the mother's parity and is presented in the following table (Table 4.12). This demonstrates that primiparous women

had a higher rate of active management and active with treatment (75.8 per cent) when compared to multiparous women (63.6 per cent). Conversely multiparous women had a higher rate of physiological and physiological with treatment (36.3 per cent) care during the third stage of labour than primiparous women (24 per cent).

Table 4.14: Number and total percentage of births by ecobolic procedures and parity following all births.

Ecobolic procedures	Primiparous		Multiparous		Total	
	n	%	n	%	n	%
Active	4,321	70.6	5,101	59.7	9,422	64.2
Active and treatment	320	5.2	331	3.9	651	4.4
Nil - physiological	1,217	19.9	2,760	32.3	3,977	27.1
Physiological and treatment	251	4.1	345	4.0	596	4.1
Not stated	8	0.1	12	0.1	20	0.1
TOTAL	6,117	100.0	8,549	100.0	14,666	100.0

4.6.2 THIRD STAGE MANAGEMENT AND PLACENTAL OUTCOMES

When discussing the third stage of labour, it is important to know if the placenta is retained and requires manual removal. It is also useful to know the state of the placenta and membranes when they are delivered because either situation can result in an increased blood loss and risk of post partum haemorrhage. The midwives have recorded this data in the MMPO notes and the results for the 2005 cohort are demonstrated in Table 4.15 (numbers) and Figure 4.9 (percentages).

The majority of women in the MMPO 2005 cohort had placentas that were considered to be complete (95.1 per cent), with 2.2 per cent considered to have ragged membranes, 1.9 per cent the placenta was considered to be incomplete and 0.8 per cent required a manual removal for a retained placenta.

Table 4.15: Number and total percentage of births by placenta condition and ecboic procedures following all births.

Placenta condition	Active	Active and treatment	Nil - Physiological	Physiological & treatment	Not stated	Total	
	n	n	n	n	n	n	%
Complete	9,024	560	3,808	543	17	13,952	95.1
Ragged membranes	169	32	95	23	0	319	2.2
EUA/Manual removal	67	29	11	4	0	111	0.8
Incomplete	162	30	63	26	0	281	1.9
Not stated	0	0	0	0	3	3	0.02
TOTAL	9,422	651	3,977	596	20	14,666	100.0

Women who received both active management and further treatment had higher rates of retained placenta, ragged membranes and incomplete placenta when compared to women who received physiological management.

NOTE: the following figure (figure 4.9) has excluded the data where the placenta was delivered "complete."

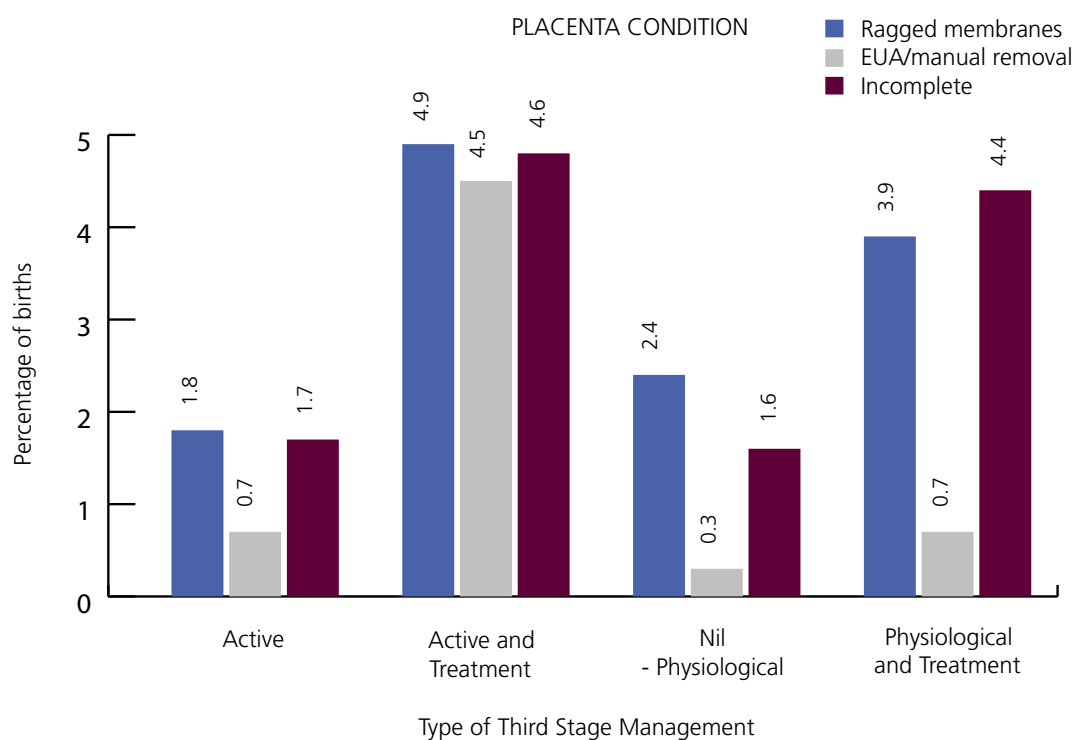


Figure 4.9: Percentage of all births with incomplete delivery of placenta by ecboic type.

4.7 THIRD STAGE LABOUR OUTCOMES FOR NON-OPERATIVE BIRTHS

The data in the following tables is similar to the previous section that discussed third stage labour outcomes for all births. However it provides third stage information for all vaginal births only and operative breech births, instrumental births and caesarean births have been excluded from the data. Instrumental and operative births are generally considered to have higher blood loss due to the interventions themselves, so describing the normal vaginal birth third stage outcomes separately allows for differences that may occur due to type of birth.

Overall, of the women who experienced a non operative birth 64.3 per cent of the MMPO cohort had active

management of the third stage compared to 35.5 per cent who had physiological (Table 4.16). Of these 92.1 per cent of women had a blood loss of less than 500 mls, 4.9 per cent had a blood loss of between 500 and 1000mls and 1 per cent had a blood loss of more than a 1000mls.

There was a lower incidence of blood loss over 500 mls in the physiological third stage (3.9 per cent) when compared to active management (7.1 per cent). For blood loss over 1000 mls there were 1.3 per cent in the active management group compared to 0.6 per cent in the physiological group.

Table 4.16: Number and total percentage of births by postpartum blood loss by ecobolic procedures - active vs. physiological - following all non-operative births.

Postpartum blood loss (ml)	Active		Physiological		Not stated		Total	
	n	%	n	%	n	%	n	%
0-500	6,842	91.1	3,892	94.1	10	52.6	10,744	92.1
501-749	260	3.5	79	1.9	0	0	339	2.9
750-1000	176	2.3	59	1.4	0	0	235	2.0
>1000	98	1.3	24	0.6	0	0	122	1.0
Not stated	133	1.8	83	2.0	9	47.4	225	1.9
TOTAL	7,509	100.0	4,137	100.0	19	100.0	11,665	100.0

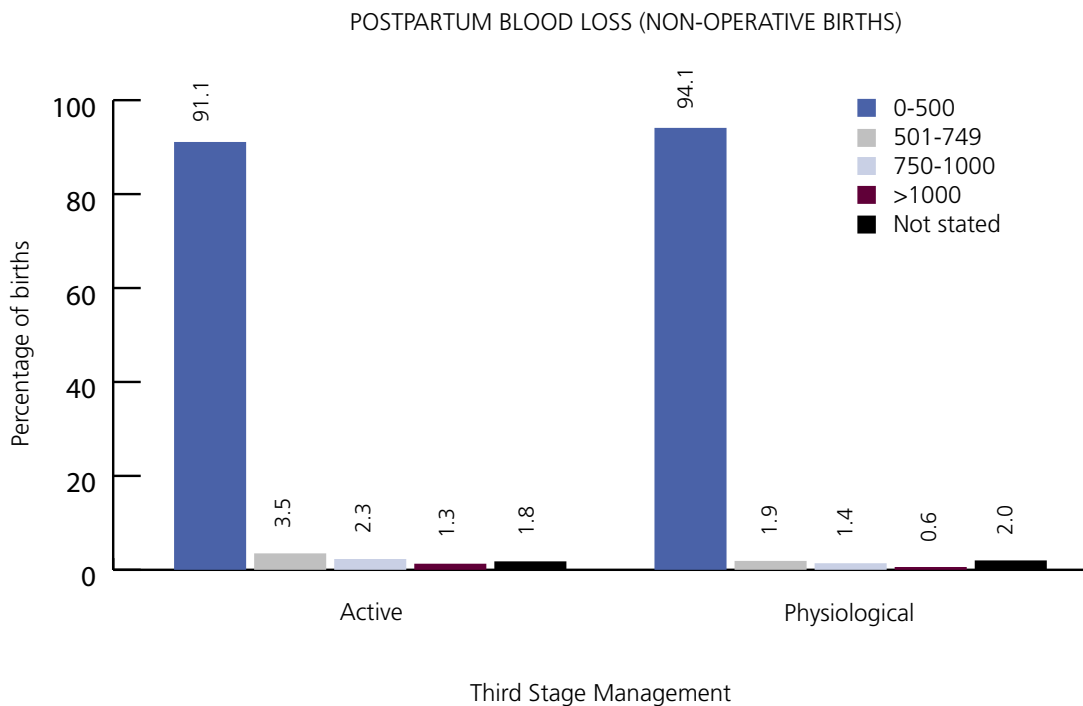


Figure 4.10: Percentage of births, by postpartum blood loss by ecobolic procedures - active vs. physiological - following all non-operative births.

The blood loss data in Table 4.17 (numbers) and Figure 4.11 (percentages) once again illustrate a similar pattern to those previously discussed, with women who had the active management followed by treatment reported as having the highest blood loss, whereas those who had physiological management reported the least amount of blood loss.

Table 4.17: Number and total percentage of births by postpartum blood loss and ecbolic procedures, following all non-operative placental births.

Postpartum blood loss (ml)	Active	Active & treatment	Nil - physiological	Physiological & treatment	Not stated	Total	
	n	n	n	n	n	n	%
0-500	6,538	304	3,484	408	10	10,744	92.1
501-749	196	64	28	51	0	339	2.9
750-1000	119	57	16	43	0	235	2.0
>1000	68	30	4	20	0	122	1.0
Not stated	129	4	69	14	9	225	1.9
TOTAL	7,050	459	3,601	536	19	11,665	100.0

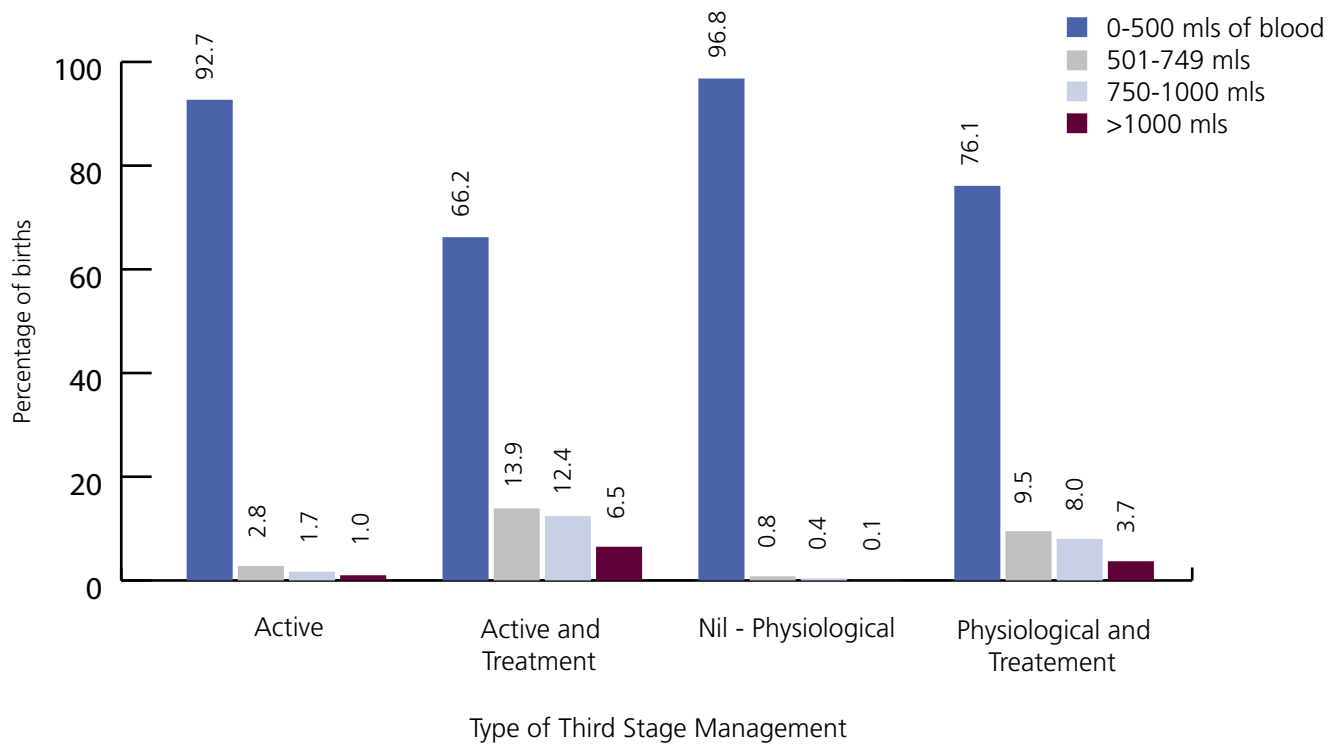


Figure 4.11: Percentage of births, by postpartum blood loss by ecbolic procedures following all non-operative births.

Parity and vaginal birth

The following table (refer to Table 4.18) reveals that more primiparous (71.4 per cent) than multiparous women (59.9 per cent) had active management following a vaginal birth. Conversely more multiparous women had (40 per cent) had physiological third stage compared to primiparous women (28.4 per cent).

Table 4.18: Number and total percentage of births by ecbotic procedures and parity following all non-operative births.

Ecbotic procedures	Primiparous		Multiparous		Total	
	n	%	n	%	n	%
Active	3,036	66.6	4,014	56.5	7,050	60.4
Active and treatment	217	4.8	242	3.4	459	3.9
Nil - physiological	1,077	23.6	2,524	35.5	3,601	30.9
Physiological and treatment	220	4.8	316	4.5	536	4.6
Not stated	7	0.2	12	0.2	19	0.2
TOTAL PROCEDURES	4,557	100.0	7,108	100.0	11,665	100.0

Blood loss data following either a normal vaginal or non-operative breech birth are listed in Table 4.19 (numbers) and Figure 4.12 (percentages) below. The mothers who had active management followed by treatment had more ragged membranes, more manual removals and a higher rate of incomplete placental expulsion.

Table 4.19: Number and total percentage of births, by placenta condition and ecbotic procedures, following all non-operative placental births.

Placenta condition	Active	Active & treatment	Nil - physiological	Physiological & treatment	Not stated	Total	
	n	n	n	n	n	n	%
Complete	6,726	383	3,450	487	16	11,062	94.8
Ragged membranes	155	25	93	21	0	294	2.5
EUA/Manual removal	35	25	1	4	0	65	0.6
Incomplete	134	26	57	24	0	241	2.1
Not stated	0	0	0	0	3	3	0
TOTAL	7,050	459	3,601	536	19	11,665	100.0

NOTE: the following figure has excluded the data where the placenta was delivered "complete".

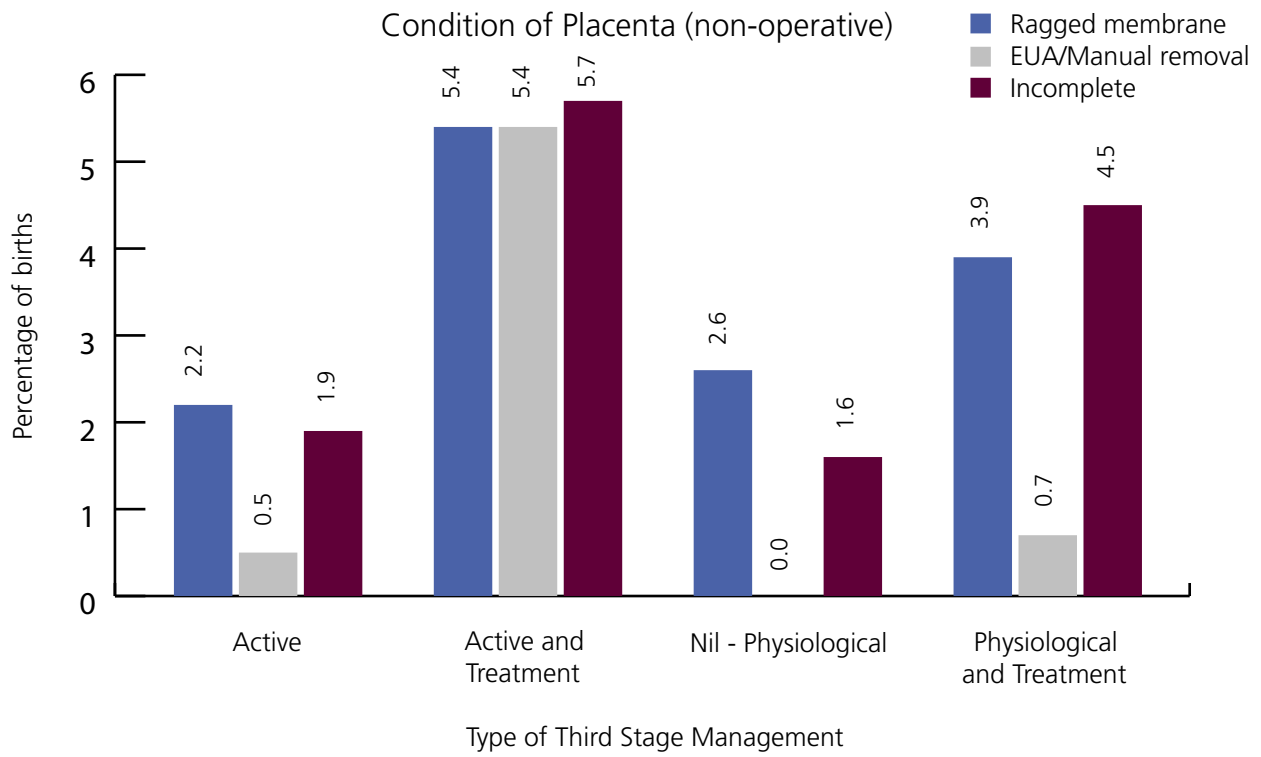


Figure 4.12: Percentage of non-operative births with incomplete delivery of the placenta by ecbotic type.

5 BABIES

This chapter is based upon the number of babies born to mothers registered with an MMPO midwife in 2005. The total number of babies born in New Zealand in 2005 was 58,278 (Ministry of Health, 2007) of which 14,666 babies (25.2 per cent) are included within this report. The data includes the multiple births and relates to neonatal outcomes with particular focus upon gestational age at birth, Apgar score, and birth weight followed by status at birth.

5.1 GESTATIONAL AGE AT BIRTH

The majority of babies, 85.6 per cent were born between 37 to 41 weeks gestation, and the remaining 14.4 per cent were born outside these gestations. Of these only 7.5% were born prior to 36 weeks and therefore would be considered to be premature. There were 6.8 per cent born after 42 weeks gestation. The pattern remains similar for both primiparous and multiparous mothers. The primiparous mothers had slightly more births at 42+ weeks (7.7 per cent) compared with multiparous women (6.3 per cent).

Table 5.1: Number and percentage of babies by gestational age at birth and parity.

Gestational age (weeks)	Primiparous		Multiparous		All births	
	n	%	n	%	n	%
20 - 23	31	0.5	31	0.4	62	0.4
24 - 27	22	0.4	25	0.3	47	0.3
28 - 31	49	0.8	52	0.6	101	0.7
32 - 36	386	6.3	516	6.0	902	6.2
37 - 41	5,159	84.4	7,391	86.4	12,550	85.6
42+	469	7.7	535	6.3	1,004	6.8
TOTAL	6,116	100.0	8,550	100.0	14,666	100.0

NOTE: The numbers in this table will differ from those given on Table 2.8, because this table is based on babies and Table 2.1 is based upon births (mothers).

5.2 APGAR SCORES

Five minutes after birth, a set of observations are made of newborns and their responses to certain stimuli are rated according to an Apgar score. The results for the 2005 MMPO birth cohort are presented in Tables 5.2 (numbers) and 5.3 (percentages).

Over 93 per cent of babies born in the 2005 MMPO cohort had an Apgar score of 10 at five minutes. The number of babies that showed a zero after five minutes is close to the figure for the number of stillborns and neonatal deaths.

Table 5.2: Number of births, by Apgar score at five minutes and birth type place.

Apgar score	Home	Primary facility	Primary plus facility*	Secondary facility	Tertiary facility	Total
	n	n	n	n	n	n
0	1	1	0	40	54	96
1 - 4	2	6	2	32	24	66
5 - 8	22	45	5	450	288	810
9 - 10	905	1,584	188	6,483	4,506	13,666
Not stated	0	2	1	16	9	28
TOTAL	930	1,638	196	7,021	4,881	14,666

* A primary maternity hospital that is contracted to carry out elective caesareans.

Table 5.3: Percentage of births, by Apgar score at five minutes and birth type place.

Apgar score	Home	Primary facility	Primary plus facility*	Secondary facility	Tertiary facility	Total
	%	%	%	%	%	%
0	0.1	0.1	0.0	0.6	1.1	0.7
1 - 4	0.2	0.4	1.0	0.5	0.5	0.5
5 - 8	2.4	2.7	2.6	6.4	5.9	5.5
9 - 10	97.3	96.7	95.9	92.3	92.3	93.2
Not stated	0.0	0.1	0.5	0.2	0.2	0.2
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0

* A primary maternity hospital that is contracted to carry out elective caesareans.

5.3 BIRTH WEIGHTS

The table below (Table 5.4) shows the birth weight of the babies born in the 2005 MMPO cohort. There were 66.7 per cent of the babies who weighed between 3000 to 3999 grams at birth. Less than one per cent of the babies weighed less than 1000 grams, and 5.5 per cent weighed less than 2500 grams with 15.6 per cent weighing over 4 kg.

Overall, it appears the primiparous women had babies with lower birth weights than the multiparous women and multiparous women had more babies in the heavier weight categories.

Table 5.4: Number and percentage of births by birth weight of babies and parity.

Birth weight (grams)	Primiparous		Multiparous		All babies	
	n	%	n	%	n	%
0 - 999	67	1.1	69	0.8	136	0.9
1000 - 1499	32	0.5	28	0.3	60	0.4
1500 - 1999	67	1.1	76	0.9	143	1.0
2000 - 2499	224	3.7	246	2.9	470	3.2
2500 - 2999	849	13.9	919	10.7	1,768	12.1
3000 - 3499	2,101	34.4	2,680	31.3	4,781	32.6
3500 - 3999	2,008	32.8	2,986	34.9	4,994	34.1
4000+	751	12.3	1,531	17.9	2,282	15.6
Not stated	17	0.3	15	0.2	32	0.2
TOTAL	6,116	100.0	8,550	100.0	14,666	100.0

5.4 BIRTH STATUS

In 2005 there were 14,540 women who gave birth to 14,666 babies; this figure includes 126 babies who were multiple births. Of the total cohort of babies 99.2 per cent (n=14,565) were liveborn, 0.69 per cent (N=101)

were stillborn, and 0.14 per cent (N=21) died within 27 days of birth. Reasons for mortality vary and may relate to prematurity, abnormality or may be unexplained and this report is unable to provide information on the reasons for mortality.

Table 5.5: Number of mothers and babies, by data source 2005.

MMPO registration 2005	Total (n)	Details
Total birthing women	14,540	
Total liveborn babies	14,565	14,544 liveborn babies + 21 neonatal deaths 0-27 days
TOTAL BABIES	14,666	14,565 liveborn babies + 101 stillborns

Definitions of mortality

A fetal death – also known as a stillbirth is the death of a baby born at 20 weeks or beyond or weighing at least 400g if gestation is unknown. The fetal death rate is calculated per 1000 babies born (alive or dead). For this cohort the fetal death rate was 6.9 per 1000 births. This rate does not include neonatal deaths only stillbirths.

Neonatal death – the death of any baby showing signs of life at 20 weeks or beyond or weighing at least 400g if gestation is unknown. Early neonatal death is a death that occurs within the first seven days following birth

and late neonatal death is a death that occurs between the 8th day and 28th day. The neonatal death rate is calculated as the number of deaths per 1000 babies born alive at 20 weeks or beyond and for this cohort was 1.4 per 1000 live births.

Perinatal mortality rate – is the fetal deaths and early neonatal deaths per 1000 babies born alive or dead at 20 weeks or beyond and weighing more than 400g if gestation is unknown and was 8.2 per 1000 for this cohort.

Table 5.6: Number and percentage of births by neonatal status.

Neonatal status	%	Neonatal status	n
Liveborn	99.2	Liveborn	14,156
		Liveborn with congenital abnormality	23
		Neonatal referrals	365
Perinatal Mortality	0.8	Stillborn	101
		Early Neonatal mortality (less than 7 days)	19
Neonatal Mortality	0.01	Late Neonatal mortality (7 to 27 days)	2
TOTAL	100.0		14,666

Among the babies born to the MMPO registered women in 2005, a total of 101 babies were stillborn, with the majority occurring at secondary and tertiary facilities. When a baby has died during pregnancy the midwife refers to an obstetrician to discuss labour induction. Therefore the majority of women who had a fetal death have been referred to a secondary or tertiary unit to give birth.

Table 5.7: Number and percentage of births by status at birth and birth place type.

Status at birth	Home		Primary facility		Primary plus facility*		Secondary facility		Tertiary facility		Total	
	n	%	n	%	n	%	n	%	n	%	n	%
Live births	929	99.9	1,636	99.9	196	100.0	6,979	99.4	4,825	98.9	14,565	99.3
Still births	1	0.11	2	0.12	0	0.0	42	0.6	56	1.15	101	0.69
TOTAL BIRTHS	930	100.0	1,638	100.0	196	100.0	7,021	100.0	4,881	100.0	14,666	100.0
Neonatal deaths	1	0.12	0	0.00	0	0.0	9	0.13	11	0.23	21	0.14

5.5 NEONATAL TRANSFERS FROM HOME AND PRIMARY FACILITIES

Babies can be transferred after birth to either a neonatal unit (NNU), or a special care baby unit (SCBU) for neonatal care. The transfers that occurred from home or a primary facility in the 2005 MMPO baby cohort are shown in Table 5.8. Three home birth babies were transferred to a NNU/SCBU, twenty-nine primary facility

babies and three Primary Plus facility babies were also transferred. Data on neonatal transfers within secondary and tertiary facilities was not considered reliable because some 'internal' transfers (from delivery suite to NNU in the same hospital) did not seem to be identified as a transfer.

Table 5.8: Number and percentage of admissions / transfers to NNU/SCBU of babies, by birth place type.

Transfer to NNU/SCBU	Home		Primary facility		Primary plus facility*	
	n	%	n	%	n	%
Yes	3	0.3	29	1.8	3	1.5
No	927	99.7	1,609	98.2	193	98.5
TOTAL	930	100.0	1,638	100.0	196	100.0

* A primary maternity hospital that is contracted to carry out elective caesareans.

6 POSTNATAL PERIOD

This chapter provides information on the postnatal period and is based on the number of babies who were born in 2005 although, some of the information relates to the mothers. The first part of this section examines data regarding breastfeeding with the second part looking at maternal smoking status.

6.1 BREASTFEEDING

All babies born with MMPO LMC midwives have breastfeeding rates recorded at initial feed, 48 hours, two weeks, and on discharge from the LMC (between four to six weeks of age).

The tables below present the breastfeeding data for two weeks postpartum. This data has been collated according to birthing locality and maternal ethnicity. The breastfeeding data by birth locality are presented in the following table and figure, Table 6.1 (numbers) and Figure 6.1 (percentages). Almost 78 per cent of 2005

MMPO babies were exclusively or fully breastfed at two weeks of age. Babies born at home had the highest rate at 90.6 per cent.

There is a pattern of gradual decreasing exclusive breastfeeding rates for the birthing facilities, although the secondary and tertiary facilities had higher rates of babies that were fully breastfed. Primary, secondary and tertiary facilities had similar rates of artificial feeding (bottle-feeding) at about ten per cent.

Table 6.1: Number and total percentage of births, by breastfeeding at two weeks and birth place type.

Breastfeeding at two weeks	Home	Primary facility	Primary plus facility*	Secondary facility	Tertiary facility	Total	
	n	n	n	n	n	n	%
Exclusive	806	1,239	143	4,837	3,234	10,259	70.0
Fully	37	97	10	606	380	1,130	7.7
Subtotal	843	1,336	153	5,443	3,614	11,389	77.7
Partial	33	107	27	670	544	1,381	9.4
Artificial	41	168	15	712	491	1,427	9.7
Not stated	13	27	1	196	232	469	3.2
TOTAL	930	1,638	196	7,021	4,881	14,666	100.0

* A primary maternity hospital that is contracted to carry out elective caesareans.

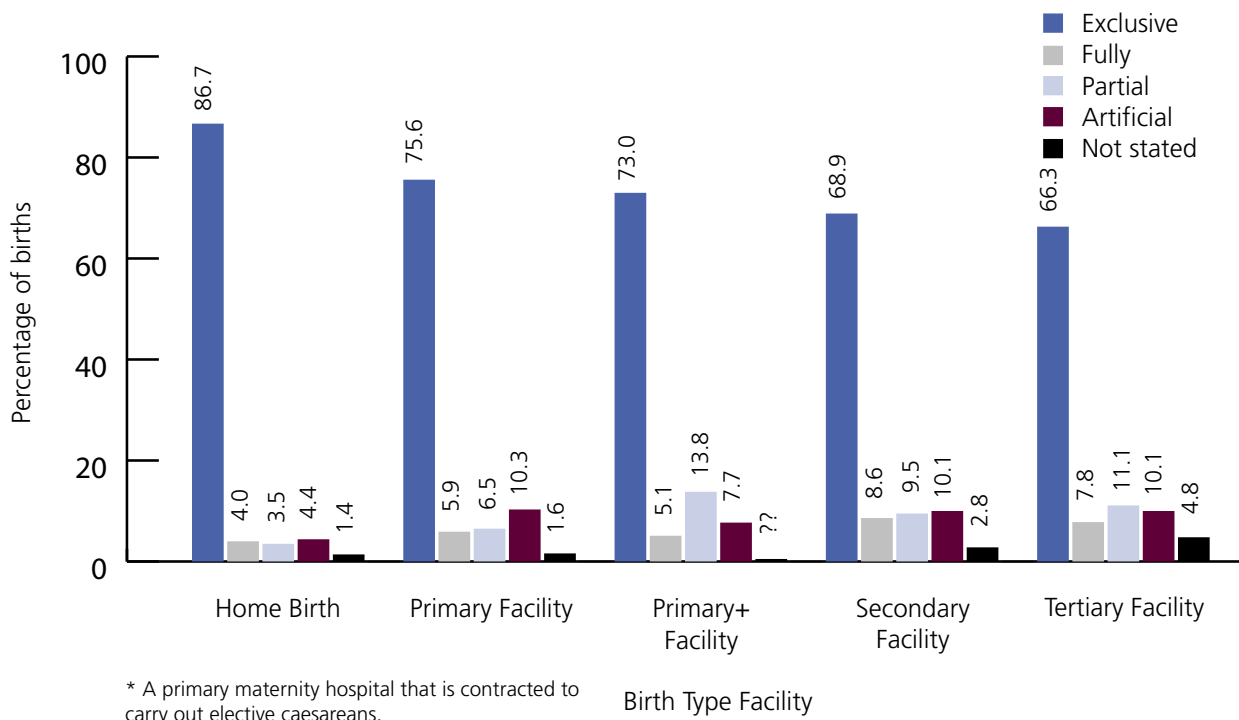


Figure 6.1: Percentage of births, by breastfeeding at two weeks and birth place type.

The breastfeeding data based on maternal ethnicity is presented in the following tables, Table 6.2 (numbers) and Figure 6.2 (percentages). The ethnic category of 'Other' (African, Middle Eastern, etc.) had the highest rates per ethnic group at over 80.8 per cent of babies having been exclusive and fully breastfed. Asian babies showed the lowest exclusive breastfeeding rate in 2005 but the highest rate of fully and partial breastfeeding, in addition to having the second lowest rate of artificial

feeding (bottle-fed). Babies born to Maori and Pacific Island mothers had the highest artificial feeding rates (bottle-feeding) in 2005 at just under 13 per cent. Pacific Island babies showed the second lowest rate of exclusive breastfeeding, but the second highest rate of fully breastfeeding.

Table 6.2: Number and total percentage of births, by breastfeeding at two weeks and ethnicity.

Breastfeeding at two weeks	NZ European	Maori	Pacific Island	Asian	Other	Not stated	Total	
	n	n	n	n	n	n	n	%
Exclusive	7,733	1,599	311	289	255	72	10,259	70.0
Fully	767	227	50	55	27	4	1,130	7.7
Subtotal	8,500	1,826	361	344	282	76	11,389	77.7
Partial	936	257	63	83	37	5	1,381	9.4
Artificial	1,000	318	48	34	14	13	1,427	9.7
Not stated	329	80	18	23	16	3	469	3.2
TOTAL	10,765	2,481	490	484	349	97	14,666	100.0

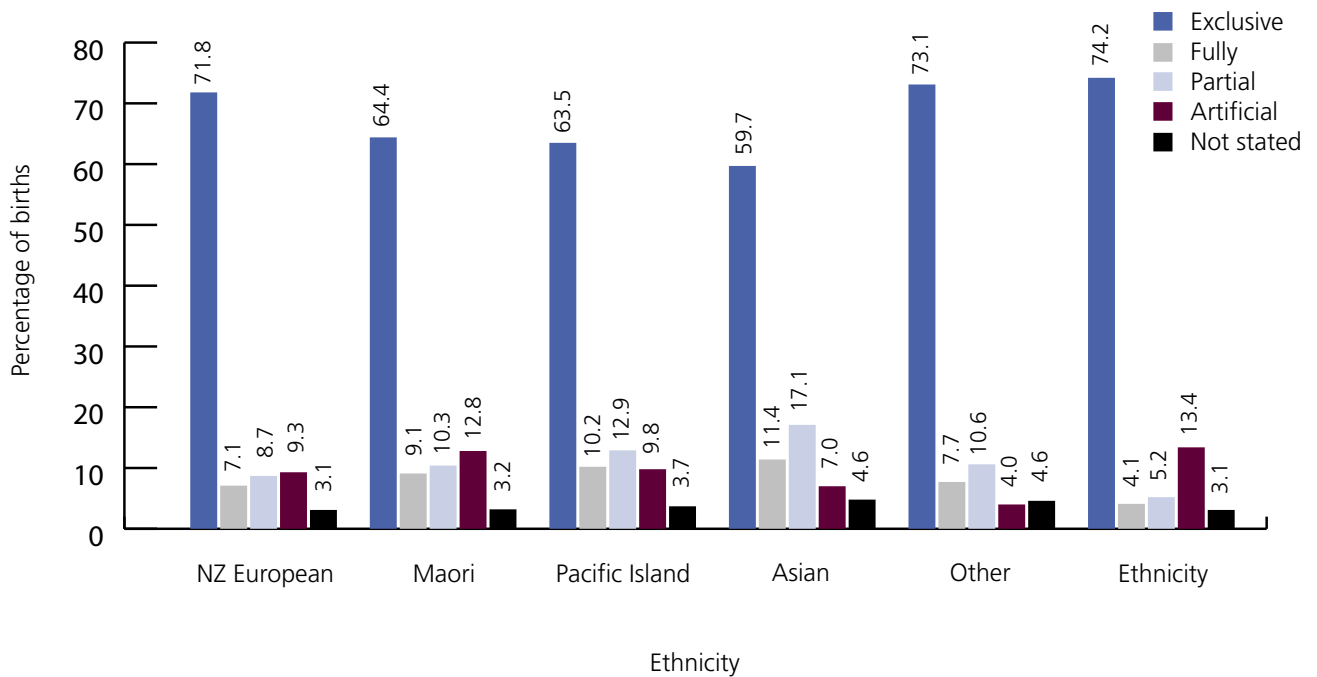


Figure 6.2: Percentage of births, by breastfeeding at two weeks and ethnicity.

6.2 POSTNATAL HEALTH: SMOKING STATUS AFTER PREGNANCY

Smoking status, including number of cigarettes smoked, is also recorded by MMPO midwives postnatally. Overall, the data indicates a general decrease in smoking rates following the birth.

During pregnancy 21.7 per cent of women smoked (refer to Figure 2.5 in chapter 2).

This rate dropped by 2.6 per cent to 19.1 per cent postnatally (Figure 6.3). In the group with the highest reported smoking rate (the mothers who were under 20 years of age) there was a 6.3 per cent decrease in smoking, followed by a 3.3 per cent decrease in the mothers aged 20 to 29. Mothers aged over 40 years old showed a slightly increased rate of smoking postnatally (+1.2 per cent).

Number of cigarettes being smoked a day

The other areas where there were changes to smoking postnatally related to the number of cigarettes being smoked daily. Overall there was a reduction in the number of women smoking more than 10 cigarettes a day from 4.9 per cent to 3.1 per cent and those smoking more than 20 a day dropped from 1.3 per cent to 0.6 per cent.

As in the antenatal smoking figures, those women who did smoke most commonly reported having between five to ten cigarettes per day (refer to Tables 6.3 and 6.4).

Table 6.3: Number of women who reported smoking after pregnancy, by age group and number of cigarettes smoked per day.

Cigarettes smoked per day	Number of women in age group (years)				
	<20	20 - 29	30 - 39	40+	Total
Nil	745	4,758	5,289	283	11,075
1 - 4	162	475	235	17	889
5 - 10	256	608	340	24	1,228
10 - 19	64	225	118	15	422
20+	10	43	28	1	82
TOTAL (reported)	1,237	6,109	6,010	340	13,696

Table 6.4: Percentage of women who reported smoking after pregnancy, by age group and number of cigarettes smoked per day.

Cigarettes smoked per day	Number of women in age group (years)				
	<20	20 - 29	30 - 39	40+	Total
Nil	60.2	77.9	88.0	83.2	80.9
1 - 4	13.1	7.8	3.9	5.0	6.5
5 - 10	20.7	10.0	5.7	7.1	9.0
10 - 19	5.2	3.7	2.0	4.4	3.1
20+	0.8	0.7	0.5	0.3	0.6
TOTAL (reported)	100.0	100.0	100.0	100.0	100.0

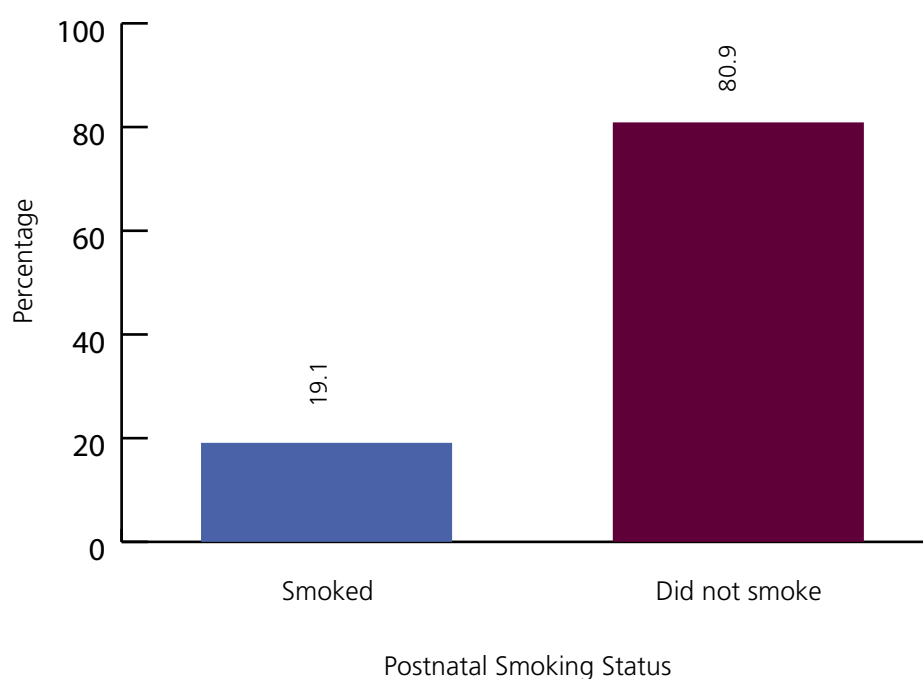


Figure 6.3: Percentage of women who reported smoking after pregnancy, by data source.

The following figure (Figure 6.4) shows that almost 40 per cent of women younger than 20 years of age reported smoking postnatally. The older the woman was, the less likely it was that they smoked up to age 40 years, however those women aged 40 years and over showed a slight increase in smoking behaviour postnatally. In the age group of 30 plus the majority of women (88 per cent) did not smoke at all.

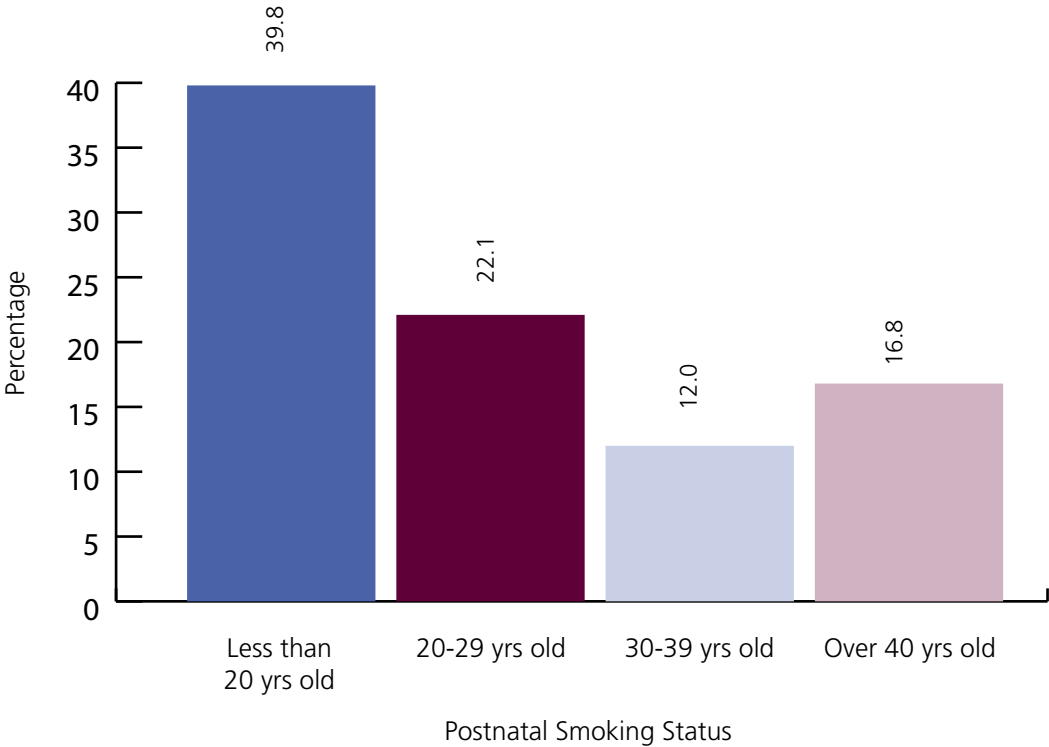


Figure 6.4: Percentage of women who reported smoking after pregnancy by age group.

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6 APPENDIX: "THE MMPO MATERNITY NOTES" DATASET



Client Profile Summary

Maternity Notes number

from inside the folder

Registration type New registration
 Change in LMC NHI number

Name (block capitals please)

Surname or family name

First names

Previous Surname(s)

Address (block capitals please)

Street and No.

Suburb

City / town

Phone home

District Health Board Regio

Date of birth

Occupation

NZ Citizen or Resident

Meets Section 88 eligibility

Woman's residence

Woman referred by

Community Services Card

Woman's ethnic group(s) (C/T)

NZ/European

Other European

NZ Maori

Middle East

Religious beliefs relevant to

Partner Yes No

Next of kin (block capitals pleas

Name

Address

Phone home

Family Doctor / General Prac

Labour and Birth Summary

Maternity Notes number

from inside the folder

Planned birth place Home Hospital
 Birthing unit

Place of birth (if different to the above) Home Hospital Birthing unit

Other (specify)

Location of birth (Name of facility if applicable)

Postnatal transfer planned (Name of facility if applicable)

Transferred during L&B Yes No

Transferred from Home Hospital Birthing unit

Mode of transfer Ambulance Car (Woman's) Car (Midwife's) Air

Woman accompanied by Midwife Other specify

Length of time involved in transfer

Location where care commenced (Name of facility if applicable)

Name of second authorised Practitioner

Onset of labour day/month/year Gestation weeks

Referral details

Date of referral (date/month/year)	Name of provider referred to	Specialist type eg Obstetrician	Hosp	Private	Reasons for referral use referral Guidelines or Ultrasound indications list
<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="radio"/>	<input type="radio"/>	<input type="text"/>
<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="radio"/>	<input type="radio"/>	<input type="text"/>
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Care transferred

Yes No If yes, then date time

Specialist type (eg Obstetrician) Name Change LMC Yes No

Labour and birth

	Date	Time
Admitted to Hospital	<input type="text"/>	<input type="text"/>
Midwife in attendance	<input type="text"/>	<input type="text"/>
Rupture of forewaters	<input type="text"/>	<input type="text"/>
Rupture of hindwaters	<input type="text"/>	<input type="text"/>
Onset contractions	<input type="text"/>	<input type="text"/>
Labour established	<input type="text"/>	<input type="text"/>
Fully dilated	<input type="text"/>	<input type="text"/>
Effective pushing commenced	<input type="text"/>	<input type="text"/>
Time of birth	<input type="text"/>	<input type="text"/>
Placenta	<input type="text"/>	<input type="text"/>
Completion of care	<input type="text"/>	<input type="text"/>

LMC present at birth Yes No Claiming birth Yes No OR

Claiming labour and birth exceptional circumstances Yes No

Length of labour

1st Stage (hours) (mins) 2nd Stage (hours) (mins) 3rd Stage (hours) (mins)

Pre labour ROM (hours) Total length of labour (hours) (mins)

Artificial ROM during labour Yes No If yes, hours of labour Cervical dilatation (cm)

Profile Summary

Labour and Birth Summary



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