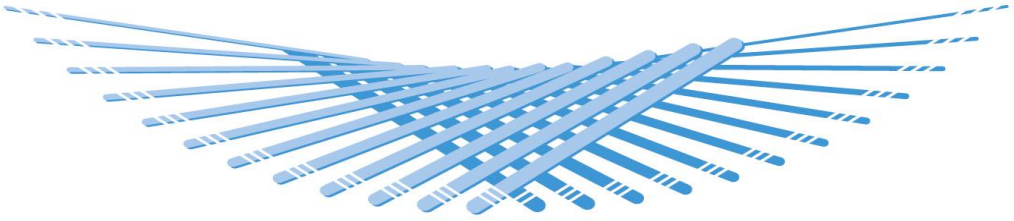
Maternity Quality and Safety Programme

Annual Report

2013/2014



COUNTIES MANUKAU HEALTH

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Table of Contents

Acknowledgements 2

Table of Contents 3

List of Tables 5

List of Figures 6

Abbreviations 8

Comment from Clinical Director Women's Health, Director of Midwifery, Clinical Lead Neonatology, General Manager Kidz First and Women's Health and Senior Portfolio Manager Child, Youth and Maternity 9

Introduction 10

Data Sources 11

Aims and Objectives of Counties Manukau Health Maternity Service and Maternity Quality and Safety Plan 13

Current Workforce situation 13

- Workforce Supply 13
- Midwifery Workforce Development Model 14

Maternity Services 16

- Maternity services provided in Counties Manukau 16
- Counties Manukau Health Facilities view 18
- DHB of birth for DHB resident women 19
- Maternity Provider 24
- Timing of engagement with Antenatal Care 27
- Maternity Outcomes 28
- Maternity risk profiles 31
- Risk factors for poor maternity outcomes 33
  - Diabetes in Pregnancy 34
  - Body Mass Index (BMI) 37
  - Smoking 38
- Clinical outcomes for women birthing at Counties Manukau Health facilities 41
  - Mode of delivery 41
  - Vaginal Birth after Caesarean Section 45
  - Uterine rupture (following Caesarean Section) 46
  - Post-Partum Haemorrhage 46
  - Induction of labour 49

Anaesthetic for Caesarean section 50
Obstetric anal-sphincter injuries- 3rd and 4th degree tears 50
Neonatal outcomes 52
Admissions to the Neonatal Unit 52
Survival by birth weight and gestational age 54
Infection 57
Meconium Aspiration Syndrome 59
Hypoxic Ischaemic Encephalopathy 59
ANZNN comparison data 60
Breastfeeding at Discharge 62
Maternity Quality and Safety Plan 2013/14 63
Implementation of the Quality and Safety Programme in Counties Manukau Health 2013/2014 77
MQSP governance and operations 77
Governance structure for MQSP 77
Quality Improvement 79
Implementation of the National Maternity Monitoring Group Recommendations 79
Timing of registration with LMC 79
Variation of gestation at Birth 80
Maternal Mental Health Services 81
Maternity USS 82
Implementation of Guidelines for Consultation with Obstetric and Related Medical Services (Referral Guidelines) 83
Clinical Indicators analysis to drive quality improvement 83
Changes in Clinical practice that have been driven by MQSP initiatives 84
Communication forums or networks that have been established or strengthened 85
Changes in Maternity Services resulting from consumer engagement and feedback 85
Business as usual Quality Improvement Activities 87
Priorities for 2014-15 89
Counties Manukau Health Maternity Quality & Safety Governance Group Work Plan for 2014-15 90
Appendix 1 106

List of Tables

Table 1. Maternity Services available in Counties Manukau 17
Table 2. Women who birthed in CM Health facility by DHB of residence, 2004-2013 19
Table 3. Location of birthing for Counties Manukau Women, 2004-2013 20
Table 4 Counties Manukau Women who birthed “inside” and “outside” Counties Manukau, 2013 ..21
Table 5. Counties Manukau resident Women who birthed at a CM Health Facility, 2013 23
Table 6. Maternity Provider at time the woman birthed 24
Table 7.Maternity Provider by women resident in Counties Manukau birthing at CM Health facilities by Ethnicity, 2013 25
Table 8. Maternity Provider by Deprivation 2013 26
Table 9. 2011 Clinical Indicators for Standard Primipara by domicile of residence (CM) and Middlemore Hospital in 2011 30
Table 10. CM resident Women birthing at CM Health facility identified with Diabetes in Pregnancy 2006-2013, trend by ethnicity 34
Table 11. Percentage of CM resident women birthing within each ethnic group identified as having Diabetes in Pregnancy in 2013 35
Table 12. BMI by ethnicity for women at time of booking at CM Health facility, 2013. 37
Table 13. Number of CM women, by ethnicity, booked at CM Health facility, whose smoking status was recorded at time of first booking, 2013 40
Table 14. Smoking status for women, by age, recorded at time of first booking, 2013 40
Table 15. Vaginal Delivery after Caesarean Section, 2011-2013, for women birthing in CM Health facilities. 46
Table 16. Uterine rupture following Caesarean section, for all women birthing at a CHM facility 2009-2013 46
Table 17. Percentage of Post-Partum haemorrhage of all for women birthing at CM Health facilities, 2003-2013 47
Table 18. Percentage and number of Post-Partum haemorrhage of all for women birthing at CM Health facilities, by ethnicity, 2013 49
Table 19. Induction of Labour by parity as a percentage of births, for all women birthing at CM Health facility, 2010-2013. 50
Table 20. Anal Sphincter injuries for all women birthing at CM Health facilities, 2007-2013. 51
Table 21 Number of babies with Meconium Aspiration syndrome admitted to the MMH neonatal Unit 2009-2013. 59
Table 22. Percentage of babies at given gestation, with outcomes of NEC, CLD, IVH, ROP and EOS, Middlemore hospital compared to ANZNN data. 61
Table 23. Breastfeeding at discharge from MMH facility for 2013. 62
Table 24. Maternity Quality and Safety Work Plan 2013/14 64
Table 25. Summary table of work programmes currently underway 106

List of Figures

Figure 1. CM Health Facility Deliveries Risk Level, 2006-2013 32
Figure 2. CM Health Facility Deliveries Risk Level by Midwife Type, 2010-2013 32
Figure 3. CM Health Facility Deliveries Risk Level by Mother's Ethnicity 2013 33
Figure 4. Percentage of CM resident women birthing, by ethnicity, identified with Diabetes in Pregnancy, 2006-2013 35
Figure 5. Percentage of CM Health women birthing in the 2013 year with Diabetes in Pregnancy by age and ethnicity 36
Figure 6. BMI by ethnicity at time if booking at CM Health facility, 2013. 38
Figure 7. Percentage of CM women, by ethnicity, booked at CM Health facility, whose smoking status was recorded at time of first booking, 2013 39
Figure 8. Smoking prevalence at time of booking for CM women birthing at CM Health facilities, 2013 40
Figure 9. Mode of delivery for all women birthing at a CM Health facility by calendar year 2003-2013 41
Figure 10. Mode of delivery for all women birthing at a CM Health facility, by ethnicity, 2013 42
Figure 11. Mode of delivery by age group for all women birthing at a CM Health facility, by age, 2013. 42
Figure 12. CM Health Facility Caesarean Deliveries Risk Level, 2006-2013 43
Figure 13. CM Health Facility Caesarean Deliveries Percentage Increase by Ethnicity between 2006 and 2013 44
Figure 14. CM Health Facility Caesarean Deliveries by Ethnicity, 2006-2013 44
Figure 15. CM Health Facility Caesarean Deliveries by Ethnicity, 2006 vs. 2013 45
Figure 16. Percentage of Post-Partum haemorrhage of all women birthing at CM Health facilities, 2003-2013. 47
Figure 17. Percentage of women, birthing in CM Health, who have a Post-Partum haemorrhage and require a blood transfusion, 2003-2013. 48
Figure 18. Percentage and number of Post-Partum haemorrhage of all for women birthing at CM Health facilities, by ethnicity 2013 49
Figure 19. Anaesthetic type as a percentage of all deliveries at CM Health facilities 2003-2013. 50
Figure 20. Total admissions to Middlemore Neonatal Unit, Level II & III, 2009-2013. 52
Figure 21. Sum of WIES by Financial Year, 2008/9-2012/13. 53
Figure 22. Total admissions to Middlemore Neonatal Unit, gestational age 23-31 weeks, 2009-2013 53
Figure 23. Number of births by birth weight and percentage survival by birth weight, Middlemore Hospital, 2007-2013 compared to ANZNN survival by birthweight 2010. 54
Figure 24. Percentage Survival by Birth weight, Middlemore Neonatal Unit compared to ANZNN data, 2010 -2012. Middlemore Neonatal Unit data only 2013. 55
Figure 25. Number of births, by gestation and % survival, Middlemore Hospital, 2007-2013 compared to ANZNN survival by gestation 2010 56
Figure 26. Percentage survival by gestational age, Middlemore hospital compared to ANZNN data, 2010-2012. Middlemore hospital data only 2013. 56
Figure 27. Percentage of 24-27 week gestation neonates ventilated, 2007-2013.Middlemore hospital compared to ANZNN data, 2010-2012. Middlemore hospital data only 2013. 57

Figure 28. Number of babies born at < 28 weeks gestation, admitted to the neonatal unit, and the % who suffered from one or more episodes of late onset sepsis. Middlemore data compared to ANZNN data 2008-2012. Middlemore only data 2007and 2013. 58
Figure 29. Number of babies born at 28-31 weeks gestation, admitted to the neonatal unit, and the % which suffered from one or more episodes of late onset sepsis, 2007-2013. Middlemore data compared to ANZNN data 2008-2011. Middlemore only data 2007,2012 &2013. 58
Figure 30.Mode of ventilation for meconium aspiration, 2009-2013. 59
Figure 31. Hypoxic Ischaemic Encephalopathy (HIE), Middlemore Hospital, 2009-2013..... 60
Figure 32. Governance structure of MQSP 79

Abbreviations

ANZNN	Australia and New Zealand Neonatal Network
CM Health	Counties Manukau Health (previously Counties Manukau DHB)
DHB	District Health Board
DIP	Diabetes in pregnancy
GDM	Gestational Diabetes Mellitus
ICD10	International Statistical Classification of Diseases and Related Health Problems, 10th Revision
LMC	Lead Maternity Carer
MAT	National Maternity Collection
MEAG	Maternity Expert Advisory Group
MQSP	Maternity Quality and Safety Programme
NMDS	National Minimum Dataset
NMMG	National Maternity Monitoring Group
NZHIS	New Zealand Health Information Service

Comment from Clinical Director Women's Health, Director of Midwifery, Clinical Lead Neonatology, General Manager Kidz First and Women's Health and Senior Portfolio Manager Child, Youth and Maternity

The Maternity Quality and Safety Governance Group are pleased to provide the second report to the Ministry of Health for the Maternity Quality and Safety Programme (MQSP) for the 2013/14 financial year.

The report covers the initiatives undertaken in the past 12 months as part of the implementation of the MQSP as well providing information requested by the National Maternity Monitoring Group (NMMG).

The implementation of the recommendations from the External Maternity Review in 2012 is on-going and is aligned to the MQSP. Details of this work are included as an additional document for completeness.

The work plan and activity sheets included in this report summarise the activity occurring in the Counties Manukau district related to improving maternity care for women.

Although not specifically requested the report also provides information about our maternity population, the services provided to women accessing services through Counties Manukau Health Facilities as well as clinical outcomes for these women and their babies in order to provide a full picture of maternity service provision in our district.

Counties Manukau Health remains committed to needs of our community and strives to provide appropriate, accessible, quality clinical care to our women and their babies in a whanau ora kaupapa for women with high needs.

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Sarah Tout	Lindsay Mildenhall	Thelma Thompson	Nettie Knetsch	Carmel Ellis
Clinical Director Women's Health	Clinical Lead Neonatology	Director of Midwifery	General Manager Kidz First & Women's Health	Acting Portfolio Manager Child Youth and Maternity

Introduction

The purpose of Counties Manukau Health's (CM Health) Maternity Quality and Safety Programme (MQSP) Annual Report is fourfold. The report provides the Ministry of Health (MoH) with the required information about the delivery of the expected outputs as set out in Section 2 of MQSP CFA Variation. In addition the report documents CM Health's progress towards delivering the MQSP Work Plan deliverables in 2013/14 as well as outlining further planned work to improve the quality and safety of maternity services delivered in the district in 2014/15.

This year there has also been a request from the National Maternity Monitoring Group (NMMG) to use the MQSP Annual Report to provide information to them about how our DHB is implementing the recommendations of the NMMG's Annual report. More specifically the NMMG has asked for detail about how CM Health has implemented the revised referral guidelines, how we are supporting early engagement and registration with LMCs, detail about access to maternal mental health services for women in our district and some discussion about our caesarean section and induction rates.

The implementation of the MQSP is now in its second year. As outlined in detail in last year's report the national implementation of the MQSP coincided with an increased focus on maternity outcomes in Counties Manukau both through recommendations of an External Review of Maternity Care in Counties Manukau[1] as well as a Population Health Strategy focusing on Housing, Smokefree and the First 2000 days (peri-conception through to age five years). Throughout this report an attempt has been made to refer to work that is happening or has happened as a result to the External Review and the First 2000 days where there are overlaps with the objectives of the MQSP. Many of the areas included in the MQSP were also highlighted or recommendations for action were made by the External Maternity Review. Details relating to the External Maternity Care Review are provided in an attached document.

The formal programme of work that resulted from the External Maternity review is planned to be absorbed into business as usual at the end of 2014 and governance of this work will shift from the Maternity Review Board to the Maternity Quality and Safety Governance group (MQSGG). It is acknowledged that the specific funding for the MQSP will be discontinued July 2015. The MQSP co-ordinator role may be reconfigured without specific MoH funding for the MQSGG but is envisaged that the MQSGG will continue and a focus on quality improvement will be sustained within resource constraints by utilising existing resources and resources made available through the External Review recommendations.

[1] This report is available at http://www.countiesmanukau.health.nz/News_Publications/default.htm

Data Sources

Data for this report has been pulled from three of sources. These include;

1. **The National Minimum Dataset (NMDS)** is maintained by the Ministry of Health and is a national collection of publicly funded hospital discharge information, including clinical information, for inpatients and day patients. All hospital admissions during pregnancy are captured in this dataset, and birth events are recorded for both mothers and infants. It should be noted the district level analysis only captures births that occur in hospital (Z37); therefore homebirths and births that occur before arrival at hospital (e.g. in a car or ambulance) are not captured.

   In addition, very limited antenatal care data are recorded, and the completeness and quality of these data are unknown. The event of a stillbirth is recorded in maternal records, but an infant record is not created. Data from the NMDS are not a good source of delivery facility prior to 2009 because only one birth event was captured for each delivery. Therefore, if a woman birthed in one facility and had her postnatal care at a different facility, it was the latter facility that was captured at discharge. Since 2009, in-hospital postnatal care has been recorded as a separate event; so the facility for the birth event is a better reflection of birth location.

2. **Healthware** is a software package used at CM Health since October 2004 to capture maternity data, replacing Terranova which was implemented in the late 1990's. A local database for maternity data was necessary to enable claiming for the provision of primary maternity services under Section 88; however this function is no longer needed as DHBs are now bulk-funded for these services.

   Healthware is used to record antenatal, labour and delivery, and postnatal data for the women and their infants that use CM Health maternity services. Data are generally entered by CM Health employed midwives and CM Health administrative staff. Private LMCs and Shared Care GPs do not currently enter data directly into the system. Healthware provides a rich source of data not available from other sources including maternity service provider, booking date, estimated delivery date (EDD), antenatal visit data, body mass index, smoking, alcohol use, and parity. In Healthware mothers can be linked to their infant's. Data are limited for women who do not receive CM Health provided care. For those women with a self-employed LMC the information is generally limited to booking and delivery information .There is more information available for women under Shared care as most information from GPs antenatal visits is collected electronically and entered into Healthware. All Shared care Midwifery visits are entered into Healthware.

   In addition, antenatal care data for women under Secondary Care are limited in Healthware. The accuracy of Healthware data is unknown. Ethnicity data in Healthware come from PIMS. At CM Health, ethnicity data are collected on admission to hospital by administrative staff who verbally enquires about ethnicity. If more than one ethnic group is specified, then the patient is asked to indicate which ethnic group they would like recorded first, and this is

entered into the first of three fields. This could be regarded as a preferred ethnicity. This process for collecting ethnicity data does not comply with national standards and neither does the ethnicity question on the Booking form. Each woman in Healthware is assigned a domicile code based on where she lives. As it is a live database a woman's residential address is updated if she moves. Therefore, the domicile code extracted from Healthware may not coincide with where she lived at the time she delivered, if she subsequently moved residence. Each Domicile code can be mapped to a Census Area Unit.

3. **National Maternity Collection (MAT)** sources information from 1) clinical and demographic information on all births in a NZ hospital or birthing unit via the National Minimum Dataset (around 95% of all births), 2) service use and demographic information on all births attended by an LMC from LMC claims for services provided under the Primary Maternity Services Notice (Section 88) (around 80% of births) and 3) fact of birth from all birth registrations reported to Births, Deaths and Marriages, Department of Internal Affairs (generally thought to be complete). MAT has the same limitations as the NMDS and the data that is submitted on the LMC claims forms.

4. **Australian and New Zealand Neonatal Network data (AANZNN)** The Australian and New Zealand Neonatal Network (ANZNN) is a collaborative network that monitors the care of high risk newborn infants by pooling data to provide quality assurance for this resource consuming care. The network was established in 1994 under the recommendation of the National Health and Research Council's (NHMRC) Expert Panel on Perinatal Morbidity. Since its establishment the network has developed a minimum data set and implemented a data collection that monitors the mortality and morbidity of infants admitted to neonatal intensive care units across Australia and New Zealand. All neonatal intensive care units in Australia and New Zealand have contributed to the network's audit of babies since 1st January 1995. In 1998 all level II units in New Zealand joined the network and began contributing data. The level II unit in Tasmania joined in 1999 and most recently five level II units in New South Wales, three level II units in Queensland, one level II unit in the Northern Territory, one level II unit in Victoria and a Paediatric Intensive Care Unit in South Australia have joined the network[2].

5. **Neonatal Unit Middlemore Hospital** collects information in its own database which is uploaded to AANZNN. Data was provided for this report directly from the neonatal unit at Middlemore Hospital.

[2] Information taken directly from website http://npesu.unsw.edu.au/data-collection/australian-new-zealand-neonatal-network-anznn

Aims and Objectives of Counties Manukau Health Maternity Service and Maternity Quality and Safety Plan

The aim of the Counties Manukau Health's Maternity Quality and Safety Programme is to bring together stakeholders to monitor maternity care to women resident within Counties Manukau and thus improve communication, teamwork and the quality of maternity care available to women and their babies' resident within Counties Manukau.

The key objectives for the implementation of the Maternity Quality and Safety Programme in year two include;

- Clearly establish the direction, purpose and work programme of the Maternity Quality and Safety Governance Group
- Ensure there is a clear understanding of how the Maternity Quality and Safety Governance Group functions within the Women's Health Quality Framework
- Ensure professional stakeholders are well informed and engaged in quality and safety activities
- Developing processes that enable clinicians and consumers to participate in planning and service design
- Consolidating a comprehensive consumer network across the Counties Manukau district to provide input into the development, implementation and maintenance of the Maternity Quality and Safety Programme
- Achieve key outcomes for quality improvement activities in the community, primary and secondary/tertiary sectors

Current Workforce situation

Workforce Supply

The Midwifery workforce shortage is a long standing issue in the Counties Manukau area. This shortage has historically included both CM Health employed midwives and self-employed midwives working as LMCs. The lack of Midwifery training in the 1980s caused a shortfall not only in numbers but also impacts on current skill mix. This shortage was exacerbated by the increase in birth volumes for women living in Counties Manukau between 1996 and 2006 however over the last six years birth volumes have not increased and in 2013 there was reduction in birth numbers in Counties Manukau. The midwifery shortage has improved in recent years. The budgeted midwifery full time equivalent (FTE) is 144.16 and nursing is 19.18 FTE. The actual Midwifery staffing level is 123.56FTE and nursing staffing level is 28.35 FTE. The combined 11.43 FTE gap is filled with bureau staff. The DHB community midwifery service is fully staffed.

Nationally the primary maternity model of care is provided predominately by self-employed midwife LMCs. In 2013 61% of pregnant women in Counties Manukau were managed by self-employed LMCs. This is an increase of ~10% from 2012.

There are 132 self- employed midwives with access agreements for CM Health maternity facilities. There are still an insufficient number of employed and self-employed midwives in Counties

Manukau. There are only 9 practicing Pacific Midwives and 12 practicing Maaori Midwives. The ratio of graduate midwives to experienced midwives is higher than is clinically desirable.

The Workforce strategies over the last 8 years have focused on increasing the local midwifery population to match the demographics of the Counties area. These have included scholarships, mentoring programmes and commencement of joint projects with Auckland University of Technology. The Midwifery Education and Development Service was set up to increase clinical placements and a satellite midwifery school based at Middlemore Hospital both started in 2007. There were 14 midwifery students within the whole programme in 2008 and in 2014 there are 67 students who live in Counties in the programme. This includes 17 Maori and 16 Pacific students.

At present the support services within Women's Health mad Kidz First (DHB maternity provider) consist of a total of 3.9FTE Social Work; a Violence Intervention Programme team, 2.8 FTE breastfeeding advocates, 3 FTE community support work for DHB community midwifery services. In addition there is a CM Health wide Child Protection Team and a Child, Youth and Families liaison social worker.

CM Health is committed to meeting national policy direction of having self-employed LMCs as the primary providers of primary maternity care. For CM Health to achieve this significant investment in supporting self-employed LMCs into practice is required as well as additional social support resource to meet the complex social needs of our women.

Midwifery Workforce Development Model

It is acknowledged that a two prong approach is needed to address workforce issues. The supply of midwives in Counties Manukau must be increased and, in addition, culture and relationships between self- employed LMCs and hospital staff must improve.

In response to the workforce supply issues outlined in the previous section, as well as acknowledgement that we have a large population of women with both medical and social vulnerabilities, the Workforce Working Group is developing a workforce action plan to increase the supply of midwifery workforce. The working group is undertaking two pieces of work in regards to the supply of midwifery staff. These are;

- Modelling of the number of self-employed midwives needed to manage 75% of women given birth rates and changes in demographic profiles. This has been completed and a report is expected to be released to the sector in July indicating a further 24 self-employed LMC are needed primarily in Manurewa, Papakura, Mangere and Otara.

- Benchmarking of the DHB provider arm workforce to other DHBs particularly in birthing and assessment. This information is not directly comparable between DHBs because of different levels of complexity and different models of care. It is expected to be presented to the working group in July.

It is recognised that the relationship between self-employed midwives and employed DHB clinical staff has at times been strained and considerable effort is being put into trying to create a culture of mutual respect, clear communication and appropriate clinical support. Six midwifery pathways have

been developed by the Workforce Working group[3] and consulted on to clarify roles and responsibilities of self-employed LMCs and DHB midwives in clinical areas where there at times lacks understanding when referring to DHB providers.

The pathways are:

- Induction of labour
- Caesarean section category 1: extreme emergency
- Caesarean section category 2,3 and 4
- Premature labour
- Prolonged latent phase
- Decreased fetal movement.

The intent of the pathways is not to be prescriptive but to enable a culture of women centred care and to promote a culture of flexibility. The pathways are not clinical guidelines but outline the communication expected of clinicians involved in a woman's maternity care. The pathways individualise the 6 clinical situations to more clearly describe LMC midwifery caregiver choices previously outlined in the general MoH 2012 Referral Guidelines. The 6 clinical pathways reflect the need for effective communication between women, self- employed LMCs and midwifery and medical staff in these specific clinical areas.

Some issues will need to be addressed to facilitate the implementation of the pathways. The issues relate to the need for women centred care to drive the culture and style of maternity service provision.

[3] The Workforce Project Board has been established with the aim of increasing the supply of the midwifery workforce. The group has a large membership (19) reflecting Self-employed LMCs across 7 areas in Counties Manukau as well as DHB employed staff across a number of services, MERAs, NZNO and NZCoM are also represented.

Maternity Services

This section briefly describes the maternity services available to women living in Counties Manukau. The analysis presented then explores the proportion of women living in Counties Manukau who birth in Counties Manukau facilities, compares the characteristics of the "inborn" vs "outborn" women and then looks specifically at the provider of maternity services for women who deliver in CM Health facilities. While CM Health acknowledges it has a responsibility for the health and wellbeing of women living in the district, it is difficult for the CM Health to influence the care women receive when they birth in other DHB facilities. Therefore the data related to clinical outcomes is limited to a CM Health facilities view. Where residential data is available for risk factors for poor maternity outcomes, this is included as there is an opportunity for CM Health to potentially influence these factors for women living in the district e.g. smoking rates.

Maternity services provided in Counties Manukau

Maternity care provision at a DHB level is shaped by the funding framework, the available workforce, and maternal choice.[4] A woman's choice of maternity care provider is in turn influenced by her understanding of the system, preferences, past experience, the level of care required, and LMC availability.[5,6,7] Women living in Counties Manukau have the option of engaging with a self-employed LMC or accessing maternity care through DHB provided services.

Because of the shortage of self-employed LMCs working in Counties Manukau CM Health provides primary maternity services to a higher proportion of women than is seen in other DHBs around the country. Over the past year the percentage of women being cared for by self-employed LMCs has increased from 50% to 61% with the balance of women being cared for by DHB provided services.

Maternity services offered in Counties Manukau are described in Table 1. The CM Health community midwifery service is bulk funded by primary maternity funding from the Ministry of Health. Hospital/Primary Maternity Unit midwives are funded from the maternity facility and secondary service funding. CM Health has had a unique system of Shared Care that developed in response to a self-employed LMC shortage[8]. Previously this provided care to a significant percentage of women who delivered in a CM Health facility (17% in 2009) however in 2013 the percentage of these women receiving Shared Care decreased to 4%. GPs that provide Shared Care have not been required to have specific training in antenatal care and are not required to have a postgraduate Diploma of Obstetrics and Gynaecology. Although Shared Care is being passively phased out primary care still has an important role to play as many women visit their primary care provider to confirm their pregnancy. The DHB is working with primary care to clarify what is expected in terms of

[4] Jackson C Antenatal care in Counties Manukau District Health Board; A focus on maternity Care. 2011

[5] Health Services Consumer Research. *Maternity Services Consumer Satisfaction Survey Report 2007.* Auckland: Ministry of Health; 2008.

[6] Morton S, Atatoa Carr P, Bandara D, et al. *Growing Up in New Zealand: A longitudinal study of New Zealand children and their families. Report 1: Before we are born.* Auckland: Growing Up in New Zealand; 2010.

[7] Bartholomew K. *The Realities of Choice and Access in the Lead Maternity Care System: Operationalising choice policy in the New Zealand maternity reforms*. Auckland, The University of Auckland; 2010.

[8] Women who choose Shared Care receive most of their antenatal care from a GP (funded through primary maternity funding) that enters into a Shared Care arrangement with the DHB. In addition, these women are offered three antenatal visits with CM Health employed community midwife and are delivered at a CM Health facility by a DHB employed midwife.

screening and linking with LMC when a women presents to General Practice for confirmation of pregnancy. For those wishing to continue in shared care, on-going CME in this area will be required. Secondary Care accepts referrals from GPs and midwives, for women identified as high risk, through the Obstetric Medical Clinic and Diabetes in Pregnancy Service.

Table 1. Maternity Services available in Counties Manukau

Service	Description
Closed Unit/CM Health Community Midwifery Service	Antenatal, labour, and postnatal care is provided by a CM Health employed midwife with clinics held at Middlemore Hospital, Manukau and Botany, Pukekohe and Papakura Birthing Units and in various locations across the community. Antenatal and postnatal outpatient/home care is provided by a CM Health community midwife, whilst labour and intrapartum care is provided by CM Health employed midwives at Middlemore Hospital or one of the three Primary Birthing Units. High risk women receive closed unit midwifery care in conjunction with Obstetric, Medical or Anaesthetic teams.
Self-Employed LMC	Provide antenatal, labour and post natal care using, primarily, a continuity of care model by the same midwife. In addition many Self-employed LMCs care for high risk women in conjunction with secondary care. Some self-employed LMC will also do home births.
Shared Care	Maternity care is shared between the woman's GP and a CM Health community midwife. The majority of the antenatal visits are provided by the GP, with a minimum of four antenatal visits offered with a CM Health community midwife. Labour care is provided by a CM Health employed midwife at Middlemore Hospital or one of the three Primary Birthing Units and postnatal care is provided by the CM Health community midwife. If a woman becomes high risk, care is transferred to the Closed Unit service.
Caseloading (Team)	This service provides continuity of care throughout pregnancy, labour, and the postnatal period including home birthing. A CM Health employed midwife works within a team to provide care as an "employed" LMC. Women deemed at high risk may continue with Caseloading care in conjunction with the Obstetric team.
Private Obstetrician	Women can engage with a private obstetrician who utilises CM Health facilities for birthing or caesarean section.
Teenage Pregnancy	CM Health community midwives provide a service for young mothers aged <18 years at various locations across the community, using the support services of Te Kaha O Rangitahi Trust, including clinic transport. A DHB Social Worker provides support for this service as well. This service provides care as per the community midwifery model above.

Service	Description
Diabetes in Pregnancy	For women with previous or newly diagnosed diabetes (Type I & II or Gestational) care is provided by a multidisciplinary team comprised of an obstetrician, midwife, diabetes physician, and dietician. Primary maternity care for these women may be provided by CM Health employed midwife specialists or self- employed LMCs.
Maternal Fetal Medicine/Obstetric Medical Service	Women with complex medical conditions during pregnancy are seen by the specialist team (Obstetrician, Medical Physician and Anaesthetist as required) at Manukau SuperClinic. These women are provided with midwifery care by the women's LMC or a CM Health employed midwife specialists. Women with complex fetal conditions during pregnancy are seen by Specialist services at Middlemore Hospital.
General SMO Obstetrician Antenatal Clinic	These clinics run from Manukau SuperClinic, Papakura, Pukekohe and Dawson Road (newly started) and see Obstetric referrals from Community midwives and LMCs.

Source: Jackson C. Antenatal Care in Counties Manukau DHB: A focus on Antenatal Care (pg 35). 2011. Updated 2014.

Women who birth in CM Health facilities also have a choice of primary birthing facility. CM Health has three primary birthing units located in Botany Downs, Papakura, and Pukekohe in addition to a birthing suite at Middlemore Hospital which caters for primary as well as secondary births. There are clear guidelines about which women are considered appropriate to birth in Primary Units. Primary Birthing Units are staffed by CM Health midwives and are well supported by self-employed LMCs. These units are suitable for women with a low risk pregnancy.

Counties Manukau Health Facilities view

The vast majority of women who birth at CM Health facilities live in Counties Manukau (93%).Women living in Auckland DHB women make up 6% of women who birth at CM Health facilities.

Table 2. Women who birthed in CM Health facility by DHB of residence, 2004-2013

DHB of residence	Mothers who birthed at CM Health facility by year									
	2004	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**
Counties	6157	6333	7136	7501	7584	7477	7554	7555	7494	6828
Auckland	543	563	614	581	517	492	522	507	505	469
Waitemata	23	17	20	19	24	30	16	21	15	11
Elsewhere	40	55	51	48	54	57	56	42	51	48
Total	6763	6968	7821	8149	8179	8056	8148	8125	8065	7356

Source: Data extracted by Decision Support 2013 and with update of 2013 data in May 2014. Note there is variation in the data extracted from Decision Support and data extracted from NMDS.

DHB of birth for DHB resident women

As described above there are a number of models of care available to women living in Counties Manukau including the option of birthing in a primary birthing unit. In addition if a woman, living in Counties Manukau, engages with an LMC who has an access agreement with another DHB, then that woman may birth in that facility. There will also be a small number of women that are referred to ADHB because of identified fetal complications (such as congenital heart disease), severe maternal cardiac conditions as well as women that, due to unforeseen circumstances, birth in another DHB facility.

Table 3. Location of birthing for Counties Manukau Women, 2004-2013

DHB location of birthing	CM Health mothers birthing in different DHBs, by year									
	2004	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**
Counties	6,274	6,687	7065	7381	7459	7292	7320	7439	7392	6780
Auckland	1,252	1,107	1001	1155	1072	997	1095	1029	1121	1068
Waitemata	43	32	24	56	35	43	41	40	49	53
Elsewhere	55	41	43	41	35	37	29	33	30	28
Total	7,624	7,867	8133	8633	8601	8369	8485	8541	8592	7929
% Birthing in Counties Manukau	82.3%	85.0%	86.9%	85.5%	86.7%	87.1%	86.3%	87.1%	86.0%	85.5%

Source: National Minimum Dataset. Note women who birth reflect the number of women giving birth rather than the number of births. Note there is variation in the data extracted from Decision Support and data extracted from NMDS .

While the number of women living in Counties Manukau who gave birth increased from 2003 to 2007, it remained stable 2007-2012 and decreased in 2013. The proportion of Counties Manukau women birthing in Counties Manukau has also remained static in recent years at between 85-87%.

Table 4 Counties Manukau Women who birthed "inside" and "outside" Counties Manukau, 2013

	Women birthing in Counties Manukau		Women birthing outside Counties Manukau	
	Number	**Percentage**	**Number**	**Percentage**
Ethnicity				
Maaori	1,624	95%	78	5%
Pacific	2,426	96%	92	4%
Indian	574	88%	76	12%
Chinese	282	51%	266	49%
Other Asian	310	81%	71	19%
European/Other	1,564	73%	566	27%
Total	6,780	86%	1,149	14%
Maternal Age				
<20 years	549	96%	23	4%
20-24 years	1,666	93%	122	7%
25-29 years	1,853	87%	269	13%
30-34 years	1,640	79%	430	21%
35-39 years	856	77%	251	23%
40+ years	216	80%	54	20%
NZ Deprivation Index 2006 Decile (CAU*)				
Unknown				
Decile 1-2	654	64%	375	36%
Decile 3-4	317	66%	162	34%
Decile 5-6	818	75%	273	25%
Decile 7-8	607	85%	109	15%
Decile 9-10	4,357	95%	230	5%
Suburb				
Franklin	822	86%	136	14%
Howick	924	60%	622	40%
Mangere	1,131	90%	125	10%
Manurewa	1,479	94%	99	6%
Otara	733	95%	36	5%
Papakura	772	92%	69	8%
Papatoetoe	892	94%	62	6%
CM Health nfd*	27	100%	0	0%

Source: National Minimum Dataset. Note: Ethnicity is prioritised. NZ Deprivation Index is at Census Area Unit level. Suburbs are Auckland City subdivisions.* nfd= not further defined

The vast majority of pregnant Pacific, Maaori and Indian women living in Counties Manukau District birth at CM Health facilities with 96%, 95% and 88% respectively birthing in CM Health facilities. In contrast only 51% of pregnant Chinese women living in Counties Manukau birth in a CM Health facility. A higher percentage of Counties Manukau young women and those women living in the most deprived areas birth at CM Health facilities compared to the percentage of older women and those living in less deprived areas. A high percentage of women living in Howick (40%) birthed at another DHB.

CM Health Women who delivered at a CM Health Facility 2013

The majority (86%) of women living in Counties Manukau birth at a CM Health facility and most of these women birth at the Middlemore Hospital site. The highest percentage of women, by ethnic group, birthing at primary birthing units were European/Other women, followed by Chinese and Maaori women. A low percentage (5%) of Pacific women birthed at a Primary Birthing Unit. The percentage of women birthing in a Primary Birthing Unit was highest in the Franklin area with 41% of women living in Franklin, using CM Health facilities, birthing at a primary birthing unit. The lowest percentage of women birthing at a Primary Birthing Unit was women living in Mangere were only 1% of women birthed at a Primary Birthing Unit. Overall 14% of women living in Counties Manukau birthed at a Primary Birthing Unit which is a decrease from 17% in 2012. The reduction in primary births is strategically important as CM Health wishes to review the configuration of primary birthing facilities and investigate options to support community based primary birthing.

Table 5. Counties Manukau resident Women who birthed at a CM Health Facility, 2013

	Number of Women who birthed at each CM Health facility				% of Deliveries at PBU
	MMH	Botany PBU	Papakura PBU	Pukekohe PBU	
Ethnicity					
Maaori	1,314	59	169	82	19%
Pacific	2,301	46	50	29	5%
Asian	1,040	97	14	15	11%
Indian	544	17	4	9	5%
Chinese	227	51	4	0	20%
Other Asian	269	29	6	6	13%
European/Other	1,162	148	69	185	26%
Total	5,817	350	302	311	14%
Maternal Age					
<20 years	479	19	31	20	13%
20-24 years	1,427	68	88	83	14%
25-29 years	1,584	100	87	82	15%
30-34 years	1,402	104	59	75	15%
35-39 years	731	54	29	42	15%
40+ years	194	5	8	9	10%
NZ Deprivation Index 2006 Decile (CAU*)					
Decile 1-2	502	99	13	40	23%
Decile 3-4	235	47	9	26	26%
Decile 5-6	601	70	36	111	27%
Decile 7-8	540	31	33	3	11%
Decile 9-10	3,916	100	210	131	10%
Suburb					
Franklin	481	28	19	294	41%
Howick	724	198	1	1	22%
Mangere	1,115	14	2	0	1%
Manurewa	1,345	35	94	5	9%
Otara	692	38	3	0	6%
Papakura	568	12	181	11	26%
Papatoetoe	869	22	1	0	3%
CM Health nfd*	23	3	1	0	15%
Maternity Provider*					
Closed Unit	2174	31	29	7	3%
Self-employed midwife	3337	273	267	298	20%
Private obstetrician with SAH midwife	25	0	0	0	0%
Shared Care	269	1	11	0	4%
TEAM	79	49	0	0	38%
Total	5884	358	307	305	6850

Source: National Minimum Dataset for first part of table. **Data for maternity provider is from Healthware rather than NMDS and therefore the total women birthing is slightly different (6780 vs 6850). Note: Ethnicity is prioritised. NZ Deprivation Index is at Census Area Unit level. Suburbs are Auckland City subdivisions.* nfd= not further defined. Note: MMH: Middlemore Hospital; PBU: Primary Birthing Unit. Ethnicity is prioritised. NZ Deprivation Index is at Census Area Unit level. Suburbs are Auckland City subdivisions. . Closed Unit = All care provided by CM Health midwives and obstetricians for moderate to high risk women. Team = Caseloading/Team Midwife – CM Health midwife.

Maternity Provider

The maternity provider reported here is the provider at the time of birth, although for women who used Secondary Care only for labour and delivery the maternity provider at the onset of labour is used. A woman can change her maternity provider at any time during her pregnancy. These data are derived from Healthware and is therefore a facilities view of Counties resident women. While the majority of women living in Counties Manukau deliver in Counties Manukau facilities, a proportion, as described above, do not.

Table 6. Maternity Provider at time the woman birthed

Provider	**Number of women (%)**				
	2009	**2010**	**2011**	**2012**	**2013**
Self-employed midwife	55%	58%	58%	56%	61%
Shared Care	17%	17%	15%	11%	4%
Closed Unit	24%	23%	23%	30%	33%
Team	1%	1%	1%	0*%	2%
Private obstetrician with SAH Delivery MW	2%	2%	3%	2%	0*%

Note: Data extracted by Decision Support 2014. These data relate to CM Health resident women who birth at CM Health facilities. Closed Unit = All care provided by CM Health midwives and obstetricians for moderate to high risk women. TEAM=Caseloading/Team midwife – CM Health midwife. * note rounded down to 0% there are some women with these maternity providers

Table 7 provides data about the choice of maternity provider by ethnicity. European/Other women most frequently used a self- employed LMC as their maternity care provider (81%) followed by Closed Unit care (14.4%) with only a small percentage of these women using shared care (1.8%) or Team care (2.9%). Maaori women also most frequently used a self- employed LMC as their maternity provider (58.4%), followed by Closed Unit (35.5%) and Shared care (5.1%). Pacific women used a self-employed LMC most commonly (49.8%) followed by Closed Unit (43.7%) and Shared care (5.2%). Chinese women living in Counties Manukau who delivered at a Counties Manukau facility received their maternity care from an LMC most frequently (58.8%) followed by closed unit (35.5%) while only 0.4% used Shared care.

Table 7.Maternity Provider by women resident in Counties Manukau birthing at CM Health facilities by Ethnicity, 2013

	No.	Crude Rate	Crude OR (95% CI)	P-value
Self employed midwife				
Maaori	855	58.4 (55.9-61.0)	0.34 (0.29-0.40)	<.0001
Pacific	1205	49.8 (47.8-51.8)	0.24 (0.21-0.28)	<.0001
Chinese	164	58.8 (53.0-64.6)	0.35 (0.26-0.45)	<.0001
Indian	349	57.4 (53.5-61.3)	0.33 (0.27-0.40)	<.0001
Other Asian	180	57.3 (51.9-62.8)	0.33 (0.25-0.42)	<.0001
Euro/Other	1422	80.5 (78.7-82.4)	ref	ref
Total	4175			
Shared Care				
Maaori	74	5.1 (3.9-6.2)	2.98 (1.95-4.56)	<.0001
Pacific	127	5.2 (4.4-6.1)	3.10 (2.08-4.61)	<.0001
Chinese	1	0.4 (-0.3-1.1)	0.20 (0.03-1.48)	0.1154
Indian	28	4.6 (2.9-6.3)	2.70 (1.61-4.54)	0.0002
Other Asian	20	6.4 (3.7-9.1)	3.81 (2.14-6.77)	<.0001
Euro/Other	31	1.8 (1.1-2.4)	ref	ref
Total	281			
Closed Unit				
Maaori	519	35.5 (33.0-37.9)	3.26 (2.75-3.86)	<.0001
Pacific	1057	43.7 (41.7-45.7)	4.60 (3.94-5.37)	<.0001
Chinese	99	35.5 (29.9-41.1)	3.26 (2.47-4.31)	<.0001
Indian	211	34.7 (30.9-38.5)	3.15 (2.54-3.90)	<.0001
Other Asian	100	31.8 (26.7-37.0)	2.77 (2.11-3.63)	<.0001
Euro/Other	255	14.4 (12.8-16.1)	ref	ref
Total	2241			
Team				
Maaori	15	1.0 (0.5-1.5)	0.34 (0.19-0.61)	0.0003
Pacific	20	0.8 (0.5-1.2)	0.28 (0.16-0.46)	<.0001
Chinese	15	5.4 (2.7-8.0)	1.87 (1.04-3.38)	0.0367
Indian	12	2.0 (0.9-3.1)	0.66 (0.35-1.25)	0.2054
Other Asian	14	4.5 (2.2-6.7)	1.54 (0.84-2.81)	0.1614
Euro/Other	52	2.9 (2.2-3.7)	ref	ref
Total	128			
Private obstetrician with SAH midwife				
Maaori	0	0	-	-
Pacific	11	0.5 (0.2-0.7)	1.34 (0.49-3.63)	0.5655
Chinese	0	0	-	-
Indian	8	1.3 (0.4-2.2)	3.91 (1.35-11.32)	0.0119
Other Asian	0	0	-	-
Euro/Other	6	0.3 (0.1-0.6)	ref	ref
Total	25			

Source: Healthware. Note: Only includes CM Health women who birthed in CM Health facilities. Ethnicity is preferred. Closed Unit = All care provided by CM Health midwives and obstetricians for moderate to high risk women. Team = Caseloading/Team Midwife – CM Health midwife

Table 8. Maternity Provider by Deprivation 2013

	No.	Crude Rate per 100	Crude OR (95% CI)	P-value
Self-employed midwife				
Decile 1-2	496	74.8 (71.5-78.1)	ref	ref
Decile 3-4	234	72.4 (67.6-77.3)	0.89 (0.66-1.20)	0.4266
Decile 5-6	597	73.2 (70.1-76.2)	0.92 (0.73-1.16)	0.4725
Decile 7-8	372	60.3 (56.4-64.2)	0.51 (0.40-0.65)	<.0001
Decile 9-10	2476	55.9 (54.4-57.4)	0.43 (0.36-0.51)	<.0001
Total	4175			
Shared Care				
Decile 1-2	11	1.7 (0.7-2.6)	ref	ref
Decile 3-4	6	1.9 (0.4-3.3)	1.12 (0.41-3.06)	0.8230
Decile 5-6	22	2.7 (1.6-3.8)	1.64 (0.79-3.41)	0.1842
Decile 7-8	20	3.2 (1.8-4.6)	1.98 (0.94-4.18)	0.0710
Decile 9-10	222	5.0 (4.4-5.7)	3.12 (1.70-5.76)	0.0003
Total	281			
Closed Unit				
Decile 1-2	116	17.5 (14.6-20.4)	ref	ref
Decile 3-4	67	20.7 (16.3-25.2)	1.23 (0.88-1.73)	0.2189
Decile 5-6	167	20.5 (17.7-23.2)	1.21 (0.93-1.58)	0.1492
Decile 7-8	205	33.2 (29.5-36.9)	2.35 (1.81-3.05)	<.0001
Decile 9-10	1685	38.0 (36.6-39.5)	2.90 (2.35-3.57)	<.0001
Total	2240			
Team				
Decile 1-2	40	6.0 (4.2-7.8)	ref	ref
Decile 3-4	15	4.6 (2.3-6.9)	0.76 (0.41-1.349)	0.3737
Decile 5-6	24	2.9 (1.8-4.1)	0.47 (0.28-0.79)	0.0044
Decile 7-8	15	2.4 (1.2-3.6)	0.39 (0.21-0.71)	0.0021
Decile 9-10	34	0.8 (0.5-1.0)	0.12 (0.08-0.19)	<.0001
Total	128			
Private Obstetrician with SAH midwife				
Decile 1-2	0	0	-	-
Decile 3-4	1	0.3 (-0.3-0.9)	-	-
Decile 5-6	6	0.7 (0.1-1.3)	-	-
Decile 7-8	5	0.8 (0.1-1.5)	-	-
Decile 9-10	13	0.3 (0.1-0.5)	-	-
Total	25			

Source: Healthware. Note: Only includes CM Health women who delivered in CM Health facilities. NZ Deprivation Index is at Census Area Unit level. Closed Unit = All care provided by CM Health midwives and obstetricians for moderate to high risk women. Team = Caseloading/Team Midwife – CM Health midwife

Table 8 provides information about choice of maternity provider by deprivation. Crude rates of Self-employed LMC were lower in women living in decile 7-10 compared to women living in more affluent areas. In general, Maori, Pacific and women living in Decile 9/10 areas have lower use of Team midwives but have higher use of closed unit midwives. This is reflective of the DHB only having 2-3 caseloading midwives in 2013 who were located in the Botany primary birthing unit (NZ Dep 1-3). In 2014 a further 3 case loading midwives have commenced and will provide services in high need areas such as Mangere (NZDep 9 to 10).

Timing of engagement with Antenatal Care

NICE guidelines recommend that antenatal care should be started in the first trimester and preferably before 10 weeks.[9] This is echoed by the PMMRC recommendation that women should commence antenatal care before 10 weeks. Women often see their GP to confirm their pregnancy but the DHB does not have the means to capture this information. The DHB also does not have visibility of when a woman registers with an LMC. Work is underway to improve the GP engagement pathway as outlined in the models of care section.

The NMMG provided DHBs with MAT data for the trimester of LMC registration for 2012.[10] These data are incomplete for women living in Counties Manukau because of the high percentage of women who do not access self-employed LMC services.

The data provided by NMMG for 2012 showed that 47% (2743) women living in Counties Manukau who registered with an LMC did so by the end of their first trimester. This is similar to 2011 data. In 2011 the trimester of registration was recorded for 64% (n=5596) of Counties Manukau women and indicates that of these 64% of women living in Counties Manukau, whose time of registration was recorded, 46% (n=2590) of women registered in the first trimester, 45% (n=2514) registered in the second trimester, 8%(n= 467) in the third trimester and 0.4% (n=25) registered with an LMC in the postnatal period.[11]

In addition Jackson reviewed time of booking[12] in her 2011 review of Antenatal care in Counties Manukau DHB. This is the time the LMC sends the paperwork to the birth place of the woman's choice and is therefore different from time of registration above. She found that during 2007-2009, 16.8% of Counties Manukau resident women who delivered at CM Health were booked by 10 weeks, 44.8% of women booked late at 10-18 weeks gestation, whilst 38.4% either booked very late (after 18 weeks) or did not book at all.[13]

As part of our MQSP data has been collated prospectively from March 2013 about women who present to the Birthing and Assessment Unit in Middlemore hospital who have not had any registration documentation submitted to Counties Manukau i.e. they are unbooked. This group encompassed two groups; women who were registered with a provider and may have been booked at another DHB and women who were unregistered and had not received any care from a maternity provider during their pregnancy. The unregistered women i.e. those not engaged in maternity care are of most concern as they are not accessing antenatal care.

From April 2013 to March 2014 there were 114 women who presented to the Birthing and assessment unit who were unregistered for maternity care who were seen and discharged without birthing and 133 women who presented to the unit who were unregistered for maternity care who went on to deliver their baby/babies.

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[9] National Institute for Health and Clinical Excellence. Antenatal care routine care for the healthy pregnant woman. London: National Institute for Health and Clinical Excellence; 2008.

[10] Letter to Geraint Martin 9th January 2014 from Norma Campbell -, Chair of NMMG

[11] National Maternity Collection, Ministry of Health 2013

[12] Booking gestation was used as a proxy for the onset of antenatal care because the date of the first antenatal assessment is not captured in any accessible local or national datasets. The extent to which Booking Date reflects the onset of antenatal care is unknown for most CM women and requires further investigation.

[13] Jackson C. Antenatal Care in Counties Manukau DHB: A focus on Antenatal Care. 2011

Maternity Outcomes

The desired outcome of all pregnancies is a healthy mother and a healthy infant(s). The Ministry of Health reports annually on 12 clinical indicators based on the standard primipara in an attempt to allow meaningful comparison across DHBs. A summary of the 2011 data for women living in Counties Manukau birthing anywhere as well as those women who birthed at Middlemore Hospital is provided in Table 9 and overall compares well to the New Zealand average in most cases. Of note women living in Counties Manukau were statistically significantly different from the NZ population for clinical indicator 3,4,5,6 and 9 and women birthing at MMH are statistically significantly different from the New Zealand population for indicator 4, 5 and 9.

A standard primipara living in Counties Manukau is less likely to have a Caesarean-section compared to a standard New Zealand primipara despite Counties Manukau having a comparatively socially deprived population with often high complexity. The reasons for this are unknown but it is hypothesised that population demography, population expectations, models of maternity care and collaboration between the maternity service providers may play a role. As part of the MQSP indications for caesearan sections are being reviewed because although our rate of caesarean section is lower than the New Zealand average, it is increasing (see Figure 9) and we want to better understand the reasons for this. It is not possible retrospectively review the indications for caesarean sections, but with implementation of the MIS it will be possible to monitor indications going forward.

A standard primipara living in Counties Manukau or birthing at MMH is less likely to undergo an induction of labour compared to a standard New Zealand primipara. It is not clear whether it is good to have a low induction of labour rate or not. While increasing induction of labour has a significant impact on workload for clinicians this needs to be balanced with the risks of not inducing women who may have an indication for induction. While the MMH induction rate is lower than the New Zealand average for a standard primipara it is increasing. As part of the MQSP work is being done locally to review practice around induction of labour particularly in the context of neonatal outcomes. A working group has just completed an evidence based regional guideline which is in the process of being implemented in MMH and will be audited against in the coming months.

Clinical Indicator 5 refers to Standard primipara with an intact lower genital tract. In 2011 both a standard primipara living in Counties Manukau or birthing at MMH was less likely to have an intact lower genital tract post-delivery compared to a standard New Zealand primipara. The term “intact genital tract” is not a precise term and the recognition of injury to the genital tract may vary by individuals and DHBs. Identifying an injury depends on how the woman is examined after delivery and the culture that is pervasive in the delivery unit. At CM Health, the midwives and doctors have had extensive training in this area and the diagnosis of an “intact perineum” is not made until the patient has had a thorough examination including a PR examination to exclude an obstetric anal sphincter injury (OASIS). There have also been educational sessions for Self-employed midwives taught by obstetricians on the identification and management of 3rd and 4th degree tears that have been running in the Auckland region for over 2 years.

This is enhanced by the "no blame" culture within the DHB where staff/LMCs are encouraged to report perineal trauma without fear of blame. The more thoroughly the patient is examined the more trauma will be identified and treated appropriately and this may account for the lower rate of 'intact genital tract' at CM Health. In addition it is recognised that women birthing at CM Health are from a population living in highly deprived areas, have poor nutrition and a higher rate of anaemia which can result in poor quality tissues that may also predispose to perineal trauma.

A standard primipara living in Counties Manukau is more likely to have an episiotomy and no 3rd- or 4th-degree perineal tear compared to the New Zealand standard primipara. This is seen as a positive finding as an episiotomy done in the appropriate position can protect women from 3rd or 4th degree tears.

A standard primipara living in Counties Manukau or delivering at MMH is more likely to have a general anaesthetic compared to the New Zealand standard primipara. This is thought to reflect the rates of obesity in our population making regional forms of anaesthesia technically difficult and late presentation in some emergencies not allowing time for a regional anaesthetic.

Blood transfusion with vaginal birth is recorded as higher for women living in Counties Manukau and Middlemore Hospital but does not reach statistical significance. For this indicator to be more useful it would be appropriate to also record the postpartum haemorrhage rate (PPH) for a standard primipara and we would encourage this to be included in the Ministry of Health's clinical indicators in the future. As indicated by the Perinatal and Maternal Mortality Review Committee, and as part of our maternity review process, we are aware that late booking is an issue for our population and as a result the management of chronic anaemia is challenging. A significant number of our woman are anaemic at booking and without the opportunity to improve this antenatally, for the same blood loss at delivery, there will be a higher blood transfusion rate post-delivery. We believe this is the reason for our higher rates of blood transfusion in a standard primipara. As part of the MQSP an audit of the number of women who have a baseline ferritin done with booking bloods has been undertaken and further work is planned at improving the treatment of iron deficient women antenatally.

More detail about the work being undertaken in response to the Clinical Indicators is outlined in the Quality Improvement Initiatives section.

Table 9. 2011 Clinical Indicators for Standard Primipara by domicile of residence (CM) and Middlemore Hospital in 2011

	Indicator	CM women birthing anywhere	Middlemore Hospital (facilities view)
1	Standard primiparae who have a spontaneous vaginal birth	70.8%. This is higher than the NZ average of 70% but is not statistical significantly different from the New Zealand average.	65.2%. This is lower that the NZ average of 65.6% but is not statistical significantly different from the New Zealand average.
2	Standard primiparae who undergo an instrumental vaginal birth	13.4%. This is lower than the NZ average of 13.9% but is not statistical significantly different from the New Zealand average.	15.2%. This is lower than the NZ average of 16% but is not statistical significantly different from the New Zealand average.
3	Standard primiparae who undergo Caesarean section	*13.1%.This is statistically significantly lower than the NZ average of 15.5%.	16.3%. This is lower than the NZ average of 17.9% but is not statistical significantly different from the New Zealand average.
4	Standard primiparae who undergo induction of labour	*2.7%. This is statistically significantly lower than the NZ average of 4.3%.	*3.0%. This is statistically significantly lower that the NZ average of 4.8%.
5	Standard primiparae with an intact lower genital tract (no 1st–4th-degree tear or episiotomy)	*20.3%. This is significantly lower than the NZ average of 33.1% of women.	*16.5%. This is significantly lower than the NZ average of 27.3%.
6	Standard primiparae undergoing episiotomy and no 3rd- or 4th-degree perineal tear	*21.8%. This is statistically significantly higher than the NZ average of 19%.	21.3%. This is higher than the NZ average of 22.1% but does not reach statistical significance.
7	Standard primiparae sustaining a 3rd- or4th-degree perineal tear and no episiotomy	2.7%. This is lower than the NZ average of 3.2% but does not reach statistical significance.	2.9%. This is lower than the NZ average of 3.2% but does not reach statistical significance.
8	Standard primiparae undergoing episiotomy and sustaining a 3rd- or 4th-degree perineal tear	1.3%. This is higher than the NZ average of 1.1% but does not reach statistical significance	1.8%. This is higher than the NZ average of 1.3% but does not reach statistical significance
9	General anaesthesia for Caesarean section	*12.2%. This significantly higher that the NZ average of 8.4%	*13.2%. This significantly higher that the NZ average of 8.3 %
10	Blood transfusion with Caesarean section	4.2%. This is higher than the NZ average of 3.3% and is borderline for reaching statistical significance.	4.3%. This is higher than the NZ average of 3.3% and is borderline for reaching statistical significance.
11	Blood transfusion with vaginal birth	1.8%. This is higher than the NZ average of 1.6% but does not reach statistical significance.	2.1%. This is not statistically higher than the NZ average of 1.8%.
12	Premature births (between 32 and 36 weeks gestation)	5.7%. This is lower than the NZ average of 6.1 and is borderline for reaching statistical significance.	6.3%. This is lower that the NZ average of 6.7 but does not reach statistical significance.

Source: Ministry of Health 2012. New Zealand Maternity Clinical Indicators 2010. Wellington. Ministry of Health.

* Statistically significantly

Maternity risk profiles

In order to better understand the needs of our maternity population better, work was commissioned from Health Partners Consulting Group to try to stratify our maternity population in terms of risk[14]. Following the national clinical referral guidelines, Gary Jackson developed data queries to enable extraction of the maternity risk profiles from current data collections. He included all women who were resident in Counties Manukau and delivered at any publicly funded facility- not necessarily CM Health facility. This section therefore provides a population view of Counties Manukau women rather than a CM Health facilities view.

Pregnant women were divided into three groups:

1. Primary birth: woman with no condition mentioned in the referral guidelines.
2. At risk birth: woman with a condition that recommends a consultation.
3. High risk birth: woman with a condition that recommends transfer.

While there were some data limitations[15] the analysis showed that the number of women considered to be an "at risk" or" high risk" birth has been increasing over time, whereas primary births have continued to decline. It has been noted that there was a decrease in women birthing in 2013 with the decrease seen primarily in the primary birth and at risk birth group. High risk births remained largely unchanged (Figure 1).

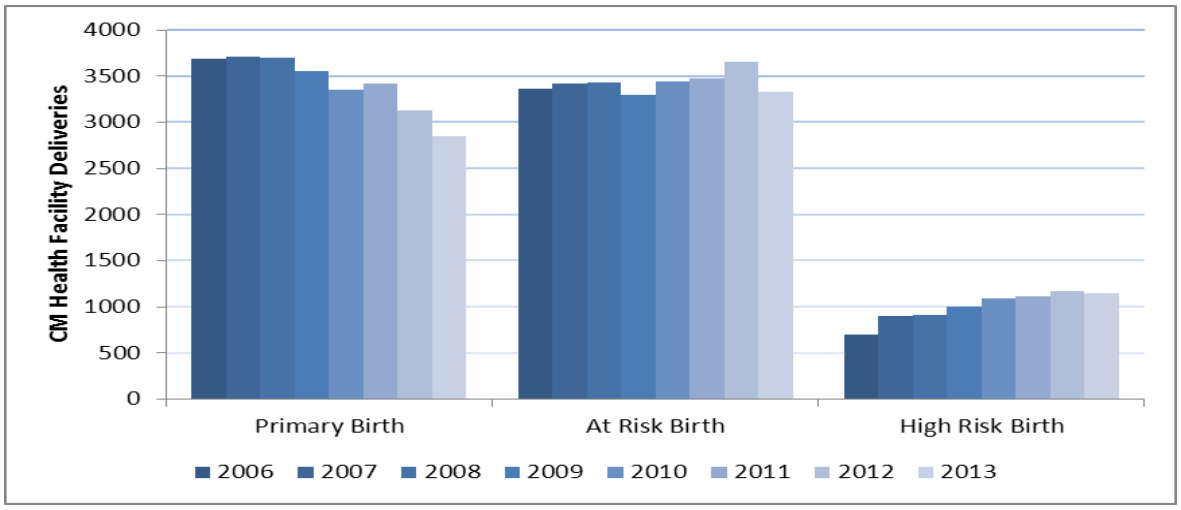
While data for self-employed LMCs shows a lower case mix due to the data limitations, half their cases would still be considered at risk and around half of the high risk women are still cared for by self-employed LMCs. This supports the assertion that midwives in CM Health look after more complex cases than would be expected in other parts of the country. There was no particular pattern seen by ethnicity, deprivation or ward in relation to the proportion being assessed as at risk or high risk. Figure 3 shows risk by mother's ethnicity in 2013.

[14] Jackson, G. (2013). Identification of Vulnerable and High Needs Women in Counties Manukau Health Maternity Services. Auckland: Health Partners Consulting Group Limited.

[15] It may be that the care is transferred but the self-employed LMCs can still be involved, or remain recorded. The re-coding occurs at the point of admission for labour, so care transferred once labour starts is not shown.

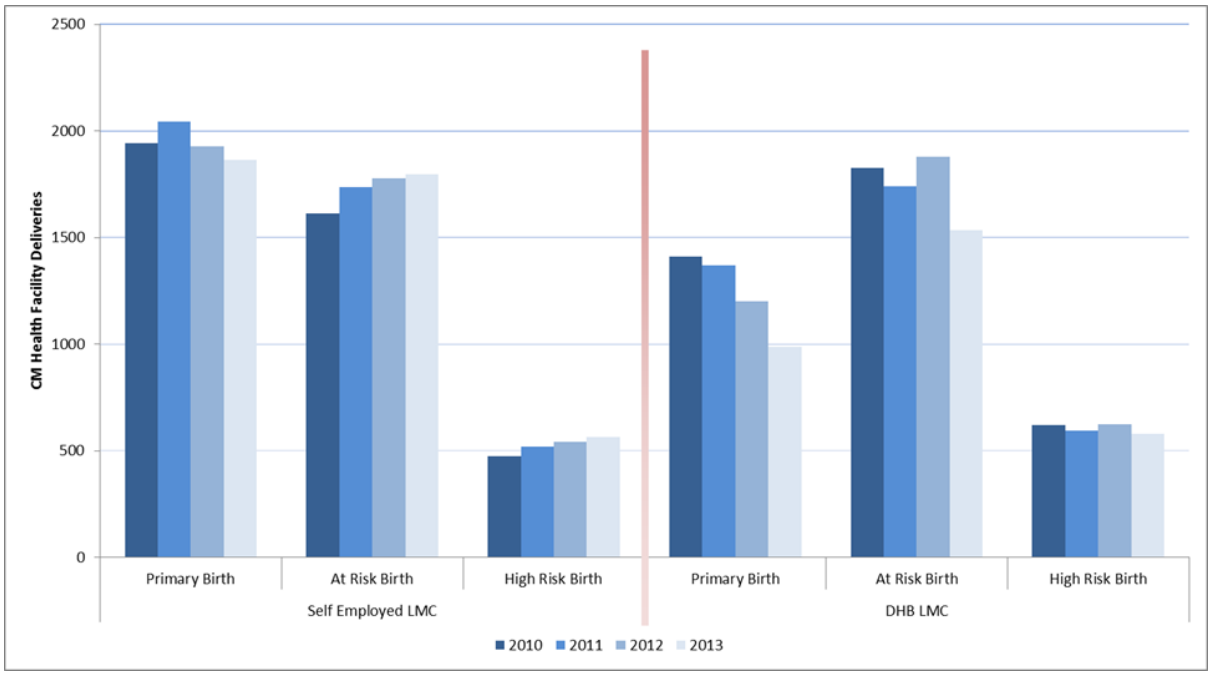
Self-employed LMCs and CM Health-employed LMCs are not captured correctly in the dataset, so the comparison of these two groups will only be for the 2010-2013 period.

Figure 1. CM Health Facility Deliveries Risk Level, 2006-2013



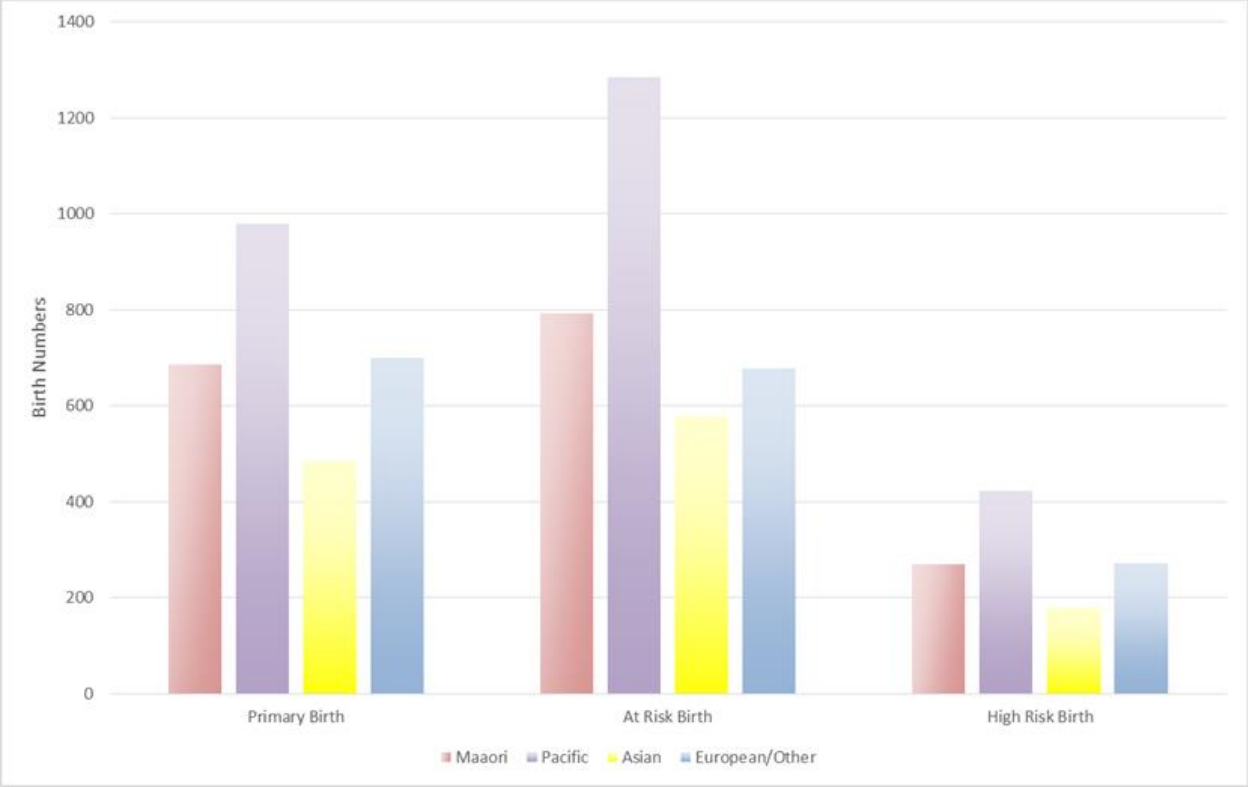
Source: Wang K, Papa P. Midwifery Workforce. Projections on Midwifery Workforce Need. CM Health, 2014.

Figure 2. CM Health Facility Deliveries Risk Level by Midwife Type, 2010-2013



Source: Wang K, Papa P. Midwifery Workforce. Projections on Midwifery Workforce Need. CM Health, 2014.

Figure 3. CM Health Facility Deliveries Risk Level by Mother's Ethnicity 2013



Source: Wang K, Papa P. Midwifery Workforce. Projections on Midwifery Workforce Need. CM Health, 2014.

Risk factors for poor maternity outcomes

The prevalence of risk factors for poor maternity outcomes is higher in Counties Manukau women when compared to the rest of New Zealand.

Jackson concluded in her 2011 report[16] that

"The CMDHB population of child bearing women and the maternity population (those actually giving birth) have a substantially different demographic profile to the New Zealand population. CMDHB mothers are younger on average than mothers across New Zealand and a greater proportion are Maaori, Pacific and Asian, and live in areas of high socioeconomic deprivation"

These significant population differences pose challenges in making direct comparisons of health outcomes between the CMDHB population and the New Zealand population as a whole, and need to be considered when examining maternity care and outcomes in Counties Manukau".

In addition when Jackson looked specifically at identified risk factors for perinatal death (including Body Mass Index, Smoking, Gestational diabetes, socio economic status, small for gestational age, post term, antenatal abruption, no antenatal care) she found that the prevalence in CM Health was the same or higher than the national prevalence, with the exception of advanced maternal age.

[16] Jackson C. Antenatal Care in Counties Manukau DHB: A focus on Antenatal Care (pg 120). 2011

Those risk factors for which CM Health women had a higher prevalence included overweight and obesity, smoking, hypertension in pregnancy, diabetes in pregnancy, low socio-economic status, no antenatal care, and small for gestational age[17]. The higher prevalence of these risk factors in Counties Manukau resident women will contribute to the higher perinatal mortality rate noted by the PMMRC.[18]

In the following sections data are presented from Healthware regarding diabetes in pregnancy, smoking status at time of booking and BMI at time of booking. The data is for Counties Manukau women who birth in CM Health facilities.

Diabetes in Pregnancy

Diabetes in pregnancy (DIP), which includes both Gestational Diabetes (GDM) and pre-existing diabetes, represents a significant risk for poorer pregnancy outcomes and has implications for the future health of both mother and baby. Concern has been expressed locally and internationally about the increasing prevalence of diabetes in pregnancy.

The number of deliveries for Counties Manukau women, who deliver at CM Health facility, identified with DIP has doubled from 232, in 2006, to 461, in 2013, with women with DIP making up 6.8% of all deliveries of Counties Manukau domiciled women birthing at a CM Health facility. The largest volume of DIP cases continues to be women of Pacific ethnicities with 196 Pacific women identified has having DIP in 2013 (Table 10).

When looking at DIP by ethnic group Indian women have the highest percentage of pregnancies within their ethnic group complicated by pre-existing or gestational diabetes (13%), followed by Chinese women (11%) and other Asian women (9%) (Table 11).

Table 10. CM resident Women birthing at CM Health facility identified with Diabetes in Pregnancy 2006-2013, trend by ethnicity

	Maaori	Pacific	Chinese	Indian	Other Asian	European/Other	Total	% of all women birthing*
2006	44	114	5	23	9	37	232	3.3%
2007	30	144	11	37	9	42	273	3.7%
2008	47	162	9	46	11	56	331	4.4%
2009	42	154	10	37	16	37	296	4.1%
2010	40	180	15	46	20	60	361	4.9%
2011	53	208	11	49	24	72	417	5.6%
2012	64	201	38	83	36	80	502	6.8%
2013	57	196	31	86	30	61	461	6.8%

Note: Source Healthware . *Percentage is of all deliveries is for women resident in CM Health and delivering at CM Health facilities

[17] Jackson C. Antenatal Care in Counties Manukau DHB: A focus on Antenatal Care . 2011

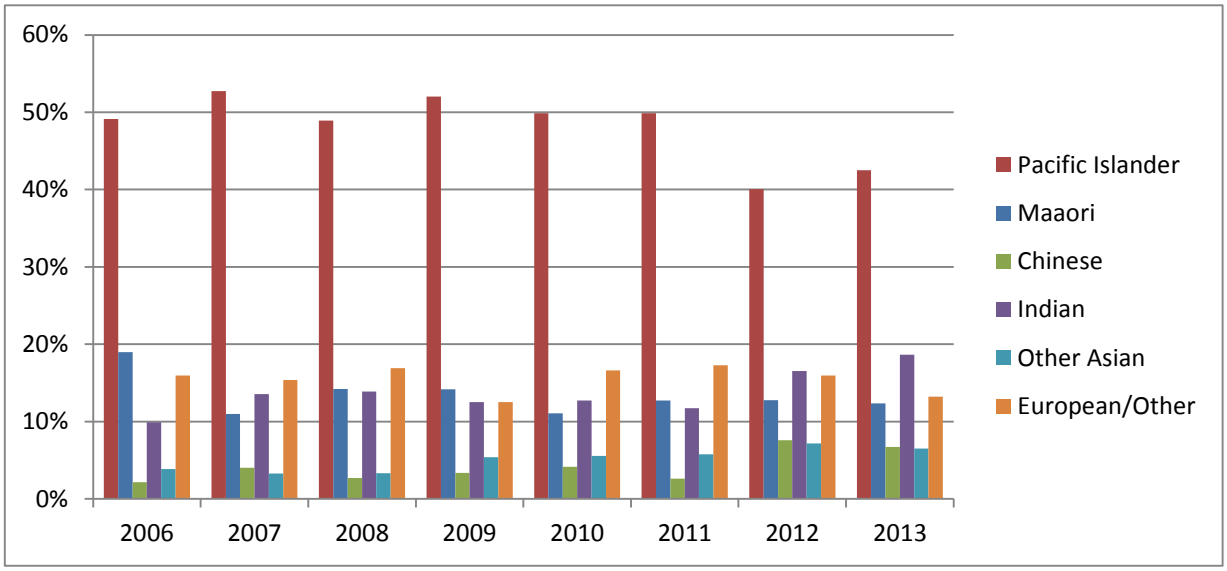
[18] PMMRC. Fifth Annual Report of the Perinatal and Maternal Mortality Review Committee: Reporting mortality 2009. Wellington: Health Quality & Safety Commission 2011; 2011.

Table 11. Percentage of CM resident women birthing within each ethnic group identified as having Diabetes in Pregnancy in 2013

Ethnicity	Number	Total births	Percentage of deliveries in women with pre-existing diabetes or GDM
Maaori	58	1567	3.7%
Pacific	196	2673	7.3%
Chinese	86	658	10.7%
Indian	31	290	13.1%
Asian Other	30	338	8.9%
Euro/Other	61	1854	3.3%

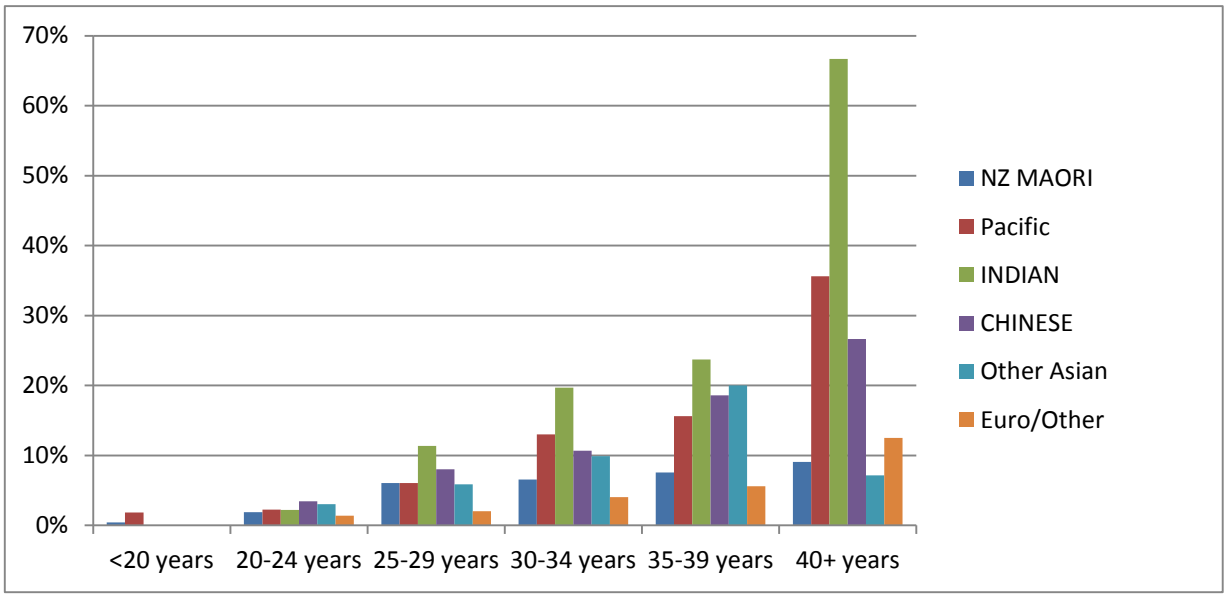
Note: Source Healthware . *Percentage is of all deliveries is for women resident in CM Health and birthing at CM Health facilities

Figure 4. Percentage of CM resident women birthing, by ethnicity, identified with Diabetes in Pregnancy, 2006-2013



Note: Source Healthware . Percentage is of all deliveries is for women resident in CM Health and birthing at CM Health facilities

Figure 5. Percentage of CM Health women birthing in the 2013 year with Diabetes in Pregnancy by age and ethnicity



Source: Healthware. Deliveries are for women resident in Counties Manukau and birthing at CM Health facilities

There has been work undertaken nationally to develop a new algorithm for the diagnosis of diabetes during pregnancy. Is unclear whether this will increase the number of women living in Counties who are diagnosed with diabetes during pregnancy or whether it will just mean these women are identified earlier. If the new algorithm does result in more women being diagnosed with diabetes in pregnancy this has the potential to impact on induction rates given diabetes in pregnancy is an indication for induction. There has been considerable work by the Diabetes in Pregnancy team to work with primary maternity providers to enable them to continue to provide primary maternity care for diabetic women.

Body Mass Index (BMI)

Overweight and obesity are recognised risk factors for a number of complications during pregnancy including gestational diabetes, preterm and post-term birth, induction of labour, caesarean section, macrosomia, stillbirth, and neonatal and maternal death[19]. In Jackson's 2011 report she found that between 2007-2009 35% of CM Health women who delivered in a CM Health facility had a BMI within the normal range, 27% were overweight and 38% were obese at time of booking.[20]

BMI on booking was extracted by Decision Support for 2013 for Counties Manukau women who booked at CM Health facility and shows that 1.1 % of women were underweight, 28.9% of women had a normal BMI, 23.5% of women were overweight and 37.3% of women were obese[21]. This data is shown in Table 12 below. Figure 6 shows that the distribution of BMI varies by ethnicity with 30% of CM Health Maaori women birthing at a CM Health facility being overweight and 45% were obese, while 24% of Pacific women were overweight and 64% were obese.[22]

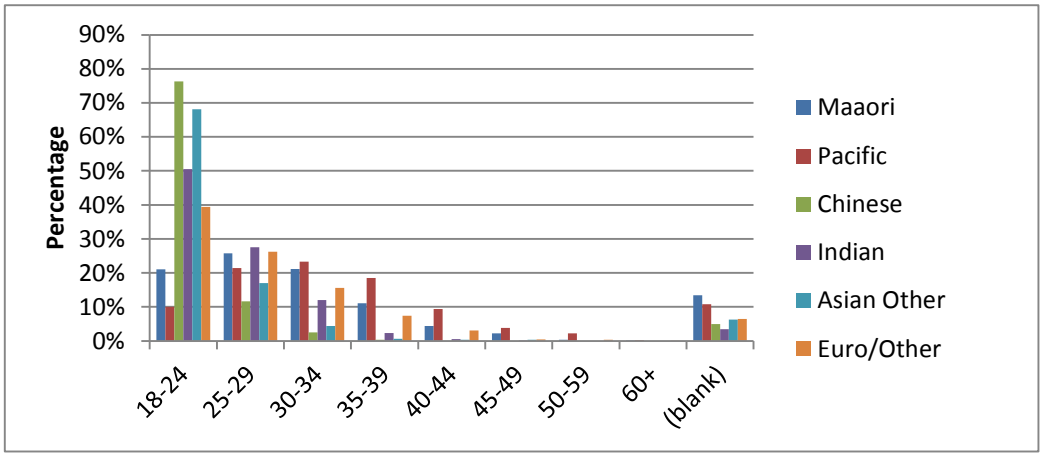
Table 12. BMI by ethnicity for women at time of booking at CM Health facility, 2013.

Booking BMI	NZ Maaori	Pacific Islander	Chinese	Indian	Asian Other	European/Other	Total
<18	8	10	12	22	9	20	81
18-24	314	245	216	308	216	699	1998
25-29	385	524	33	168	54	466	1630
30-34	316	569	7	73	14	277	1256
35-39	165	452	1	14	2	131	765
40-44	65	229	0	3	1	54	352
45-49	33	93	0	1	1	8	136
50-59	5	54	0	0	0	6	65
60+	2	6	0	0	0	1	9
(blank)	200	264	14	21	20	114	633
Total	1493	2446	283	610	317	1776	6925

Source: Healthware. Extracted by Decision Support 2014. CM Health women birthing at CM Health facility. Note BMI data was not available for all CM women booked at CM Health facilities

[19] Jackson C. Perinatal Mortality in Counties Manukau. 2011.
[20] Jackson C. Antenatal Care in Counties Manukau DHB: A focus on Antenatal Care (pg 120). 2011
[21] 9.1% unknown
[22] Note unknown BMI was excluded from the denominator

Figure 6. BMI by ethnicity at time if booking at CM Health facility, 2013.



Source: Healthware. Extracted by Decision Support 2014.

Smoking

Smoking during pregnancy is associated with a number of adverse pregnancy outcomes including miscarriage, placental abruption, intrauterine growth restriction, premature delivery, and stillbirth.[23] In addition, smoking during pregnancy has been associated with an increased risk of neonatal death, particularly as a result of Sudden Unexplained Death in Infancy (SUDI). [24]

There is currently no system that reliably captures smoking status of pregnant women in New Zealand. There is however a national health target which requires 90% of pregnant women to be offered advice and support to quit smoking at registration and booking and systems are being developed to allow this information to be captured systematically.

Smoking data is however captured variably in a number of databases. The New Zealand Child and Youth Epidemiology Service reports data from the National Maternity Collection and assess the proportion of women who smoked at first registration with a Lead Maternity Carer (LMC). This information is not as useful as in other parts of New Zealand because of the comparatively low percentage of women who book with a self-employed midwife. There are also demographic differences between women who book with different maternity providers (Table 7 and 8) that make it likely these data underestimate the smoking prevalence of Counties women. Smoking status is also captured through ICD coding on discharge. Historically these data have been difficult to interpret as while the women who are documented as smokers are well capture it has not been clear what proportion of women have been asked the question and therefore what denominator should be used. The impression is these data are improving as women are more consistently being asked about their smoking status.

[23] Jackson C. Perinatal Mortality in Counties Manukau. 2011.
[24] Jackson C. Perinatal Mortality in Counties Manukau. 2011.

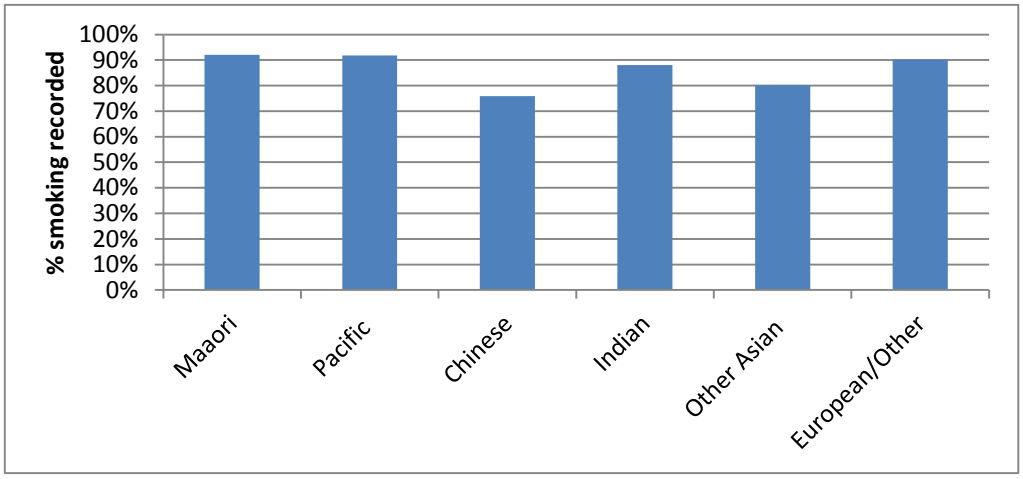
When Jackson reviewed this data for 2007-2009 she noted that smoking data completeness varied by maternity provider, ethnicity, age group, parity, deprivation, and suburb which impacts of validity of the data. [25]

Healthware data for Counties Manukau resident women booked at CM Health facility, by ethnicity, is presented in Figure 7 and Table 13.[26] Smoking status at time of booking is available for 90% of Counties resident women booked to birth at CM Health facilities in 2013.

In total 21% of Counties resident women, with a smoking status recorded, were smoking at the time of booking in 2013. However there were huge ethnic disparities with the figure being 50% for Maaori women and less that 3% for women in Asian groups. These figures are very similar to figures for smoking at the time of booking in 2012. This is clearly an urgent issue for Maaori infants and mothers. Smoke Free has been identified as a population health priority and work is being progressed through Better Outcomes for All Programme Board with significant focus on decreasing smoking during and after pregnancy.

At a population level, assuming similar prevalence for CM women birthing at facilities outside CM Health, this would equate to approximately 1,700 pregnant women needing support to quit smoking in 2013.

Figure 7. Percentage of CM women, by ethnicity, booked at CM Health facility, whose smoking status was recorded at time of first booking, 2013



Source: Healthware. Extracted by Decision Support 2013. Note smoking status available for 90% of women at time of booking.

[25] Jackson C. Perinatal Mortality in Counties Manukau. 2011.

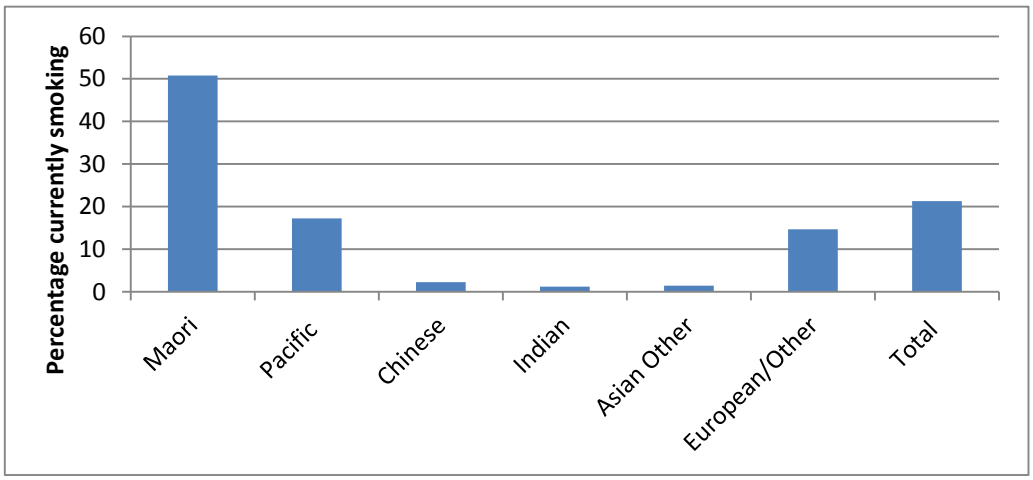
[26] At CM Health smoking status is noted on the booking form for those women booked to deliver at a CM Health facility and recorded in Healthware.

Table 13. Number of CM women, by ethnicity, booked at CM Health facility, whose smoking status was recorded at time of first booking, 2013

Smoking Status	Maaori	Pacific	Chinese	Indian	Other Asian	European/Other	Total
Currently Smoking	677	395	5	7	4	228	1316
Non-Smoker	313	1234	195	518	230	936	3426
Used to Smoke	360	598	13	9	16	428	1424
Total	1350	2227	213	534	250	1592	6166

Source: Healthware. Extracted by Decision Support 2014. Note smoking status not available for all women at time of booking.

Figure 8. Smoking prevalence at time of booking for CM women birthing at CM Health facilities, 2013



Source: Healthware. Extracted by Decision Support 2014. Note smoking status not available for all women at time of booking.

Smoking status also varied by age with 36% percentage of women aged <20 years documented as currently smoking at first booking compared to 15% of women >30 years of age (Table 14).

Table 14. Smoking status for women, by age, recorded at time of first booking, 2013

Smoking Status	<20	20-24	25-29	30-34	35-40	>40	Total
Currently Smoking	170	453	310	218	124	41	1316
Non-Smoker	179	687	981	955	490	134	3426
Used to Smoke	129	404	376	306	172	37	1424
Total	**478**	**1544**	**1667**	**1479**	**786**	**212**	**6166**

Source: Healthware. Extracted by Decision Support 2014. Note smoking status not available for all women at time of booking.

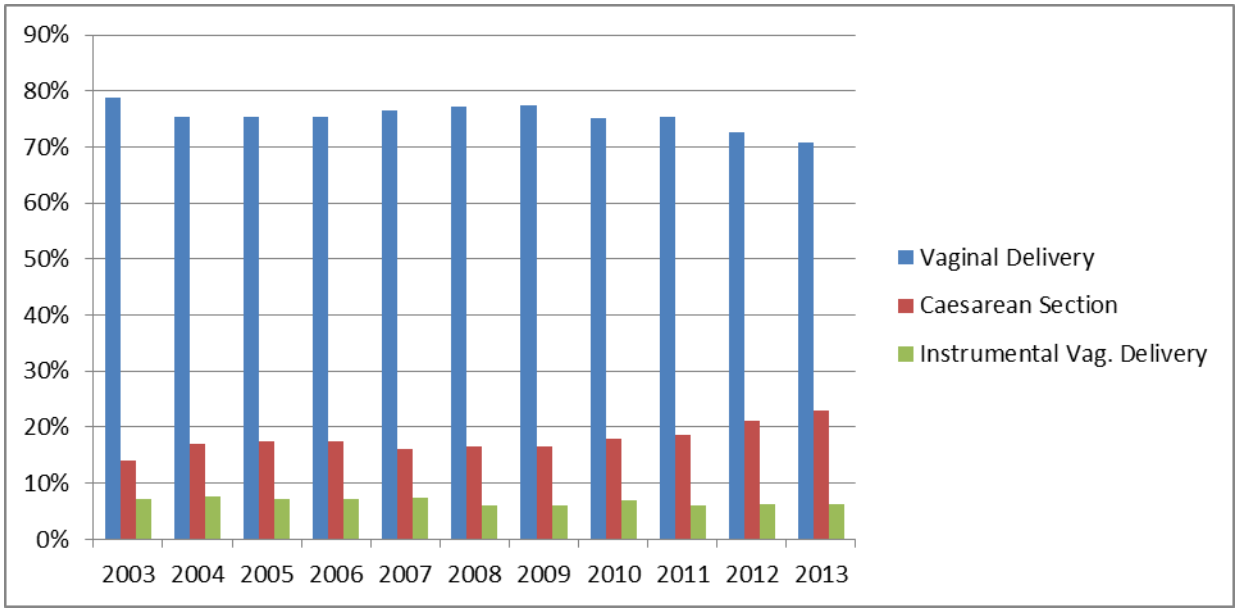
Clinical outcomes for women birthing at Counties Manukau Health facilities

The data provided in this section represents a facility view of outcomes for women birthing at Counties Manukau facilities so includes women living in Counties Manukau who birth at CM facilities as well as data for women not living in Counties Manukau but who choose to birth at CM Health facilities. As described in the previous section 93% of the women who birth at CM Health facilities live in Counties Manukau and 86% of women who live in Counties Manukau birth at CM Health facilities. The bulk of the women living in Counties Manukau who birth elsewhere are Asian women living in Eastern part of the DHB.

Mode of delivery

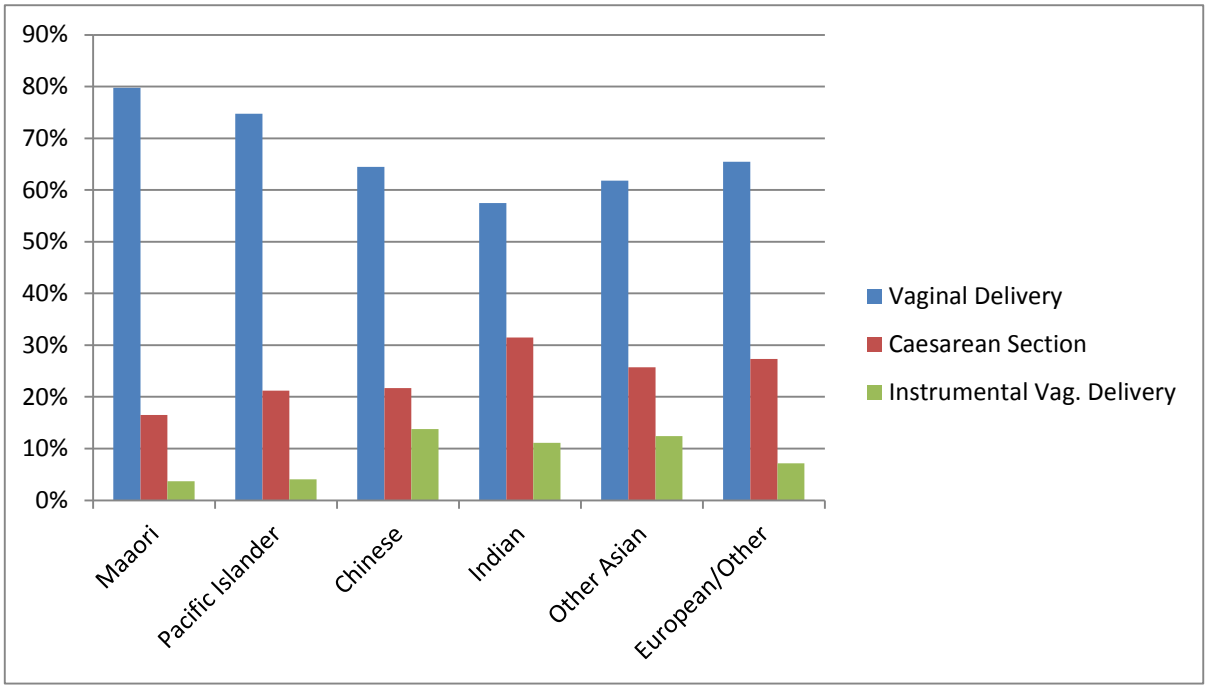
The vast majority of women birthing at CM Health facilities do so by normal vaginal delivery. The Caesarean section rate has been increasing over the last 3 years and with 22.9% of all women birthing do so by Caesarean section in 2013. In 2013 80% of Maaori women and 75% of Pacific women who birth at a CM Health facility have their babies by vaginal delivery. Indian women have the highest percentage of deliveries by C-Section (32%) and instrumental vaginal delivery (11%) and the lowest percentage of vaginal deliveries (57%).

Figure 9. Mode of delivery for all women birthing at a CM Health facility by calendar year 2003-2013



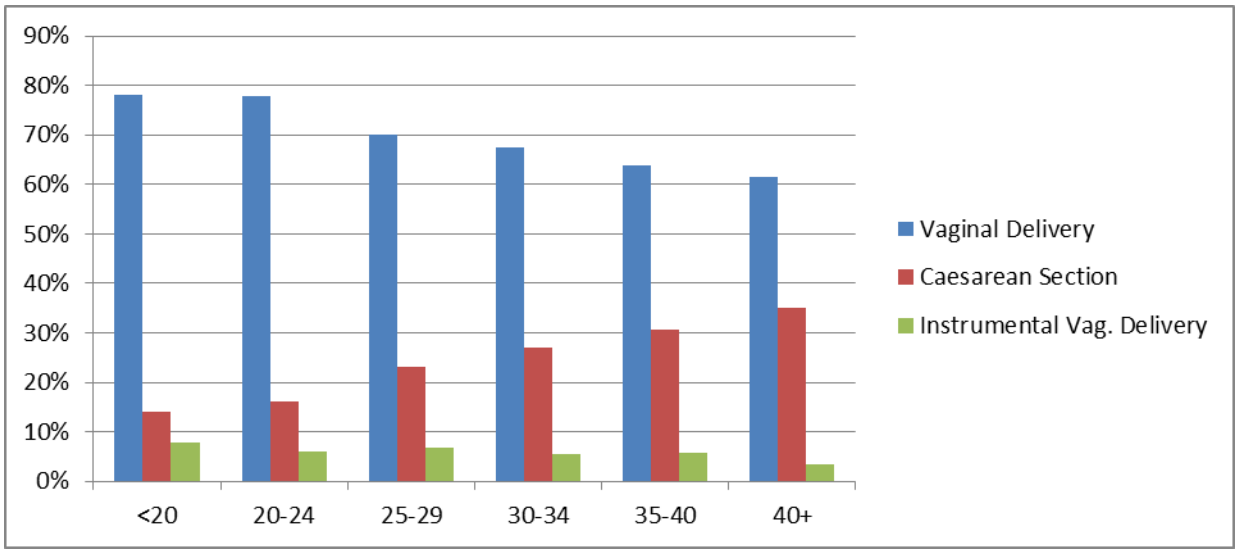
Source: Healthware. Extracted by Decision Support 2013. All CM Health sites.

Figure 10. Mode of delivery for all women birthing at a CM Health facility, by ethnicity, 2013



Source; Healthware. Extracted by decision Support 2013. Ethnicity is preferred.

Figure 11. Mode of delivery by age group for all women birthing at a CM Health facility, by age, 2013.



Source: Healthware. Extracted by Decision Support 2013.

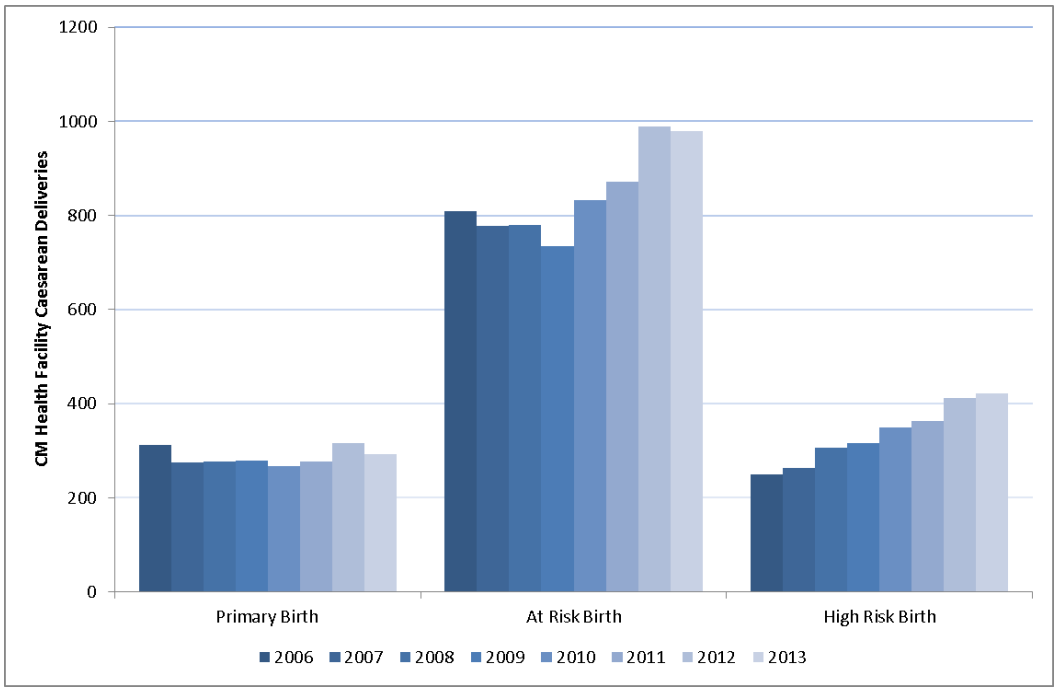
The percentage of women birthing by vaginal delivery decreases with increasing age and the Caesarean Section rate increases. In 2013 78% of women less than 20 years of age birth by vaginal delivery, 14% by Caesarean Section and 8% by instrumental vaginal delivery compared to women over 40 years 62% deliver by vaginal delivery, 35% by Caesarean Section and 3% by instrumental vaginal delivery.

Figure 12 shows CM Health facility caesarean deliveries by risk group from 2006 to 2013.[27] There is a clear increasing trend for women in the "at risk" and "high risk" birth groups to have a caesarean section. The indication for caesarean section is not available from the data.

While the number of caesareans among European/Other and Maaori women did not grow much between 2006 and 2013, the number of caesareans among the Asian and Pacific groups increased substantially (Figure 13 and Figure 14). For instance, the number of caesareans in the Asian group rose by 71% from 2006 to 2013 and Asian women accounted for 15% to 21% of total caesareans in the same period (Figure 15)

The increase in high risk births and the growing rate of caesareans means greater demands on maternity services and has a multiplying effect on the workload for midwives, obstetric surgeons and others in the maternity team.

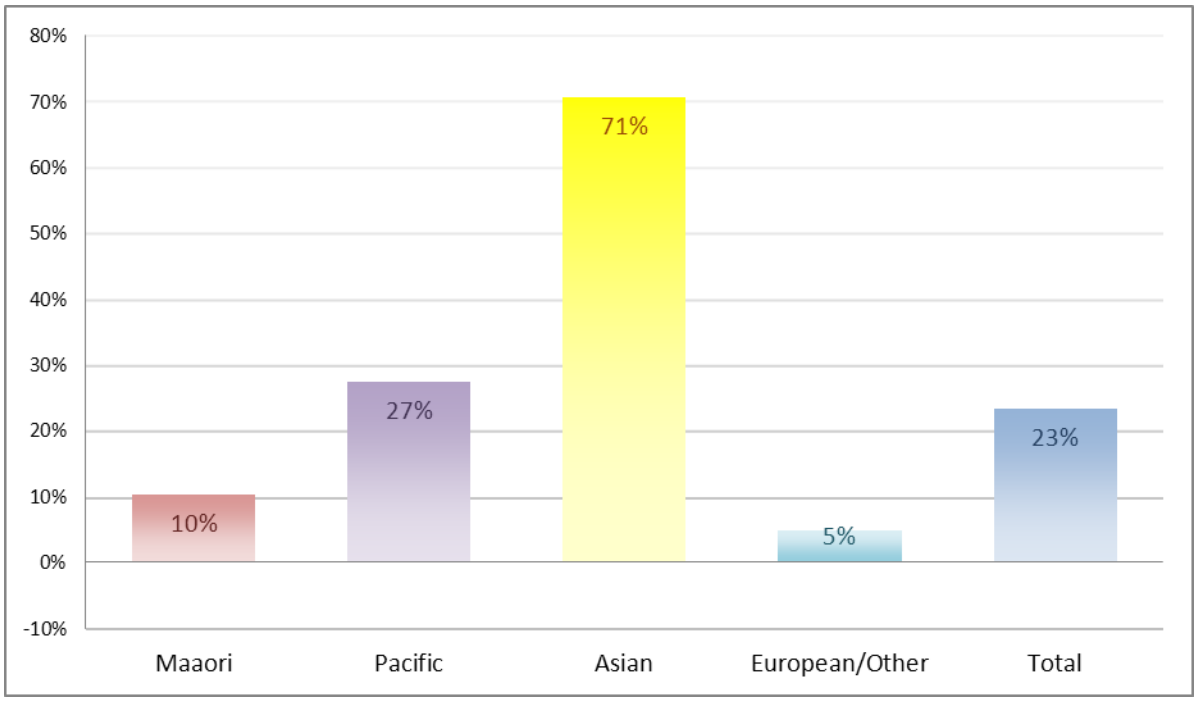
Figure 12. CM Health Facility Caesarean Deliveries Risk Level, 2006-2013



Source: Wang, K, Papa P. Midwifery Workforce. Projections on Midwifery Workforce Need. CM Health, 2014.

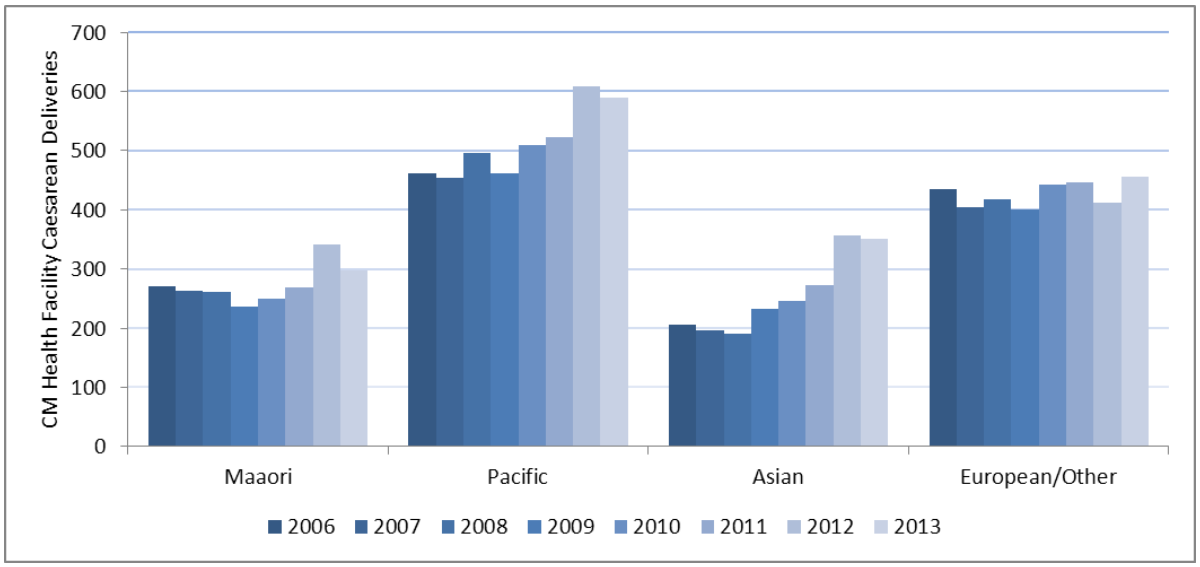
[27] Data are from work done by Keming Wang building on the work done by Health Partners to stratify women on the basis of risk. The data is from National Minimum dataset and includes all women birthing at Counties Manukau facility.

Figure 13. CM Health Facility Caesarean Deliveries Percentage Increase by Ethnicity between 2006 and 2013



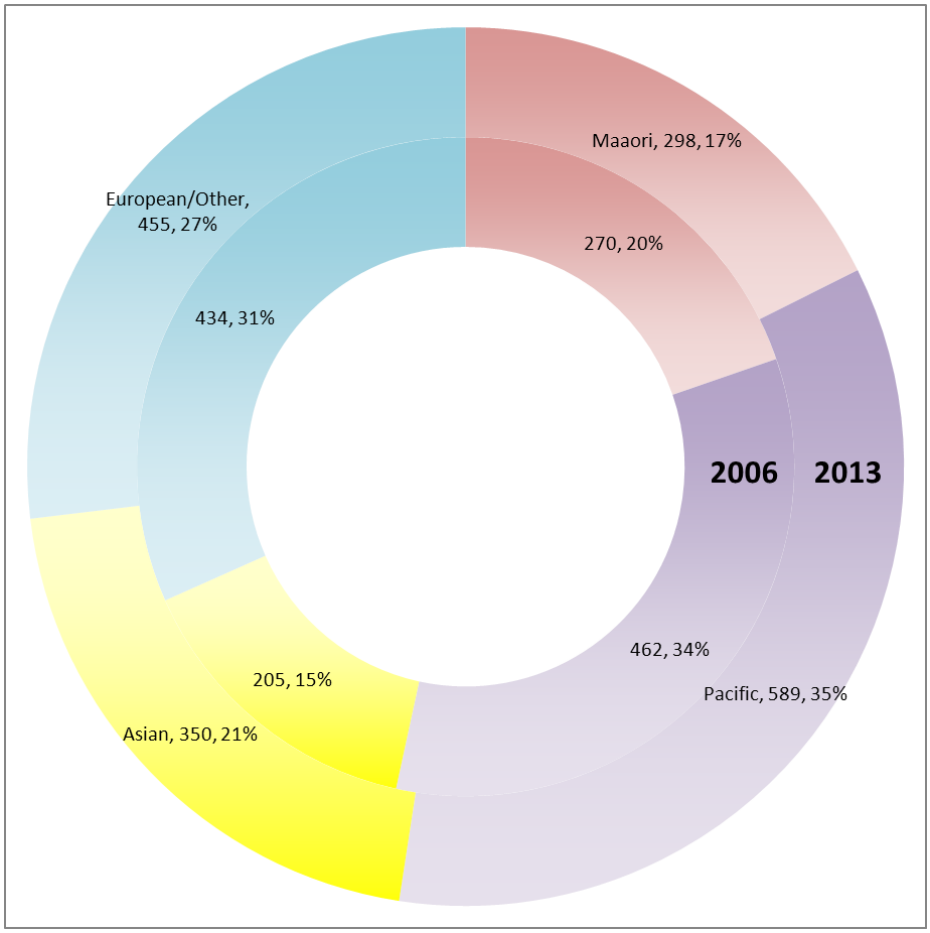
Source: Wang, K, Papa P. Midwifery Workforce.Projections on Midwifery Workforce Need. CM Health, 2014.

Figure 14. CM Health Facility Caesarean Deliveries by Ethnicity, 2006-2013



Source: Wang, K, Papa P. Midwifery Workforce. Projections on Midwifery Workforce Need. CM Health, 2014

Figure 15. CM Health Facility Caesarean Deliveries by Ethnicity, 2006 vs. 2013



Source: Wang, K, Papa P. Midwifery Workforce. Projections on Midwifery Workforce Need. CM Health, 2014

Vaginal Birth after Caesarean Section

The New Zealand Guideline Group currently recommends that women without additional risk factors, who have had a previous Caesarean section, are offered a vaginal birth.[28]

The percentage of women birthing by vaginal delivery after one previous delivery by Caesarean Section has fluctuated from 2011 to 2013. In 2013 36% of women who had previously had a baby born by Caesarean Section went on to have a vaginal delivery post Caesarean section (Table 15).

[28] New Zealand Guidelines Group. Care of women with Breech Presentation or Previous Caesarean Birth. Welington, New Zealand Guidelines Group, 2004.

Table 15. Vaginal Delivery after Caesarean Section, 2011-2013, for women birthing in CM Health facilities.

Year	Months	Caesarean	Vaginal	% VBAC
2011	Jan-Jun	122	117	49%
	Jul-Dec	159	101	39%
2012	Jan-Jun	152	96	39%
	Jul-Dec	161	101	39%
2013	Jan-Jun	173	88	34%
	Jul-Dec	155	95	38%

Source: Healthware. Extracted by Decision Support 2014. Caesarean: All women who had an Caesarean during that year who had had one previous CS. Vaginal: All women who had a vaginal birth that year who had had one previous CS.

A retrospective descriptive study by van der Merwe et al looked at factors affecting vaginal birth after caesarean section at Middlemore Hospital .[29]This study included 806 women who delivered a singleton baby in 2008 &2009 and had planned to have a vaginal birth after a previous Caesarean section. Of this group 73.4% (592) had a vaginal delivery and the remaining 26.6% (n=214) had a repeat Caesarean section. The VBAC rate was lower in women with a high BMI. VBAC was more likely in women with increasing parity, previous vaginal delivery and previous VBAC. It was also noted that there was maternal morbidity associated with VBAC including 5% PPH, 3% third or fourth degree tears, 2% manual removal of placenta and two women that had hysterectomies. There were no uterine ruptures but the study was not powered to investigate this.

Uterine rupture (following Caesarean Section)

Uterine rupture is defined as a disruption of the uterine muscle extending to and involving the uterine serosa or disruption of the uterine muscle with extension to the bladder or the broad ligament. Since 2009 uterine rupture rate has been below 0.74% which is the recognised risk of uterine rupture following vaginal birth after a Caesarean section.

Table 16. Uterine rupture following Caesarean section, for all women birthing at a CHM facility 2009-2013

Year	Uterine Rupture	Total C-Sections	% of Uterine Ruptures
2009	2	1333	0.15%
2010	1	1469	0.07%
2011	2	1506	0.13%
2012	2	1703	0.12%
2013	0	1690	0.00%

Source: Healthware. Extracted by Decision Support 2013. All patients who have an ICD-10 code of O71.1 "Rupture of uterus during labour" who had also had a previous 'Caesarean Section'.

Post-Partum Haemorrhage

A Post-Partum haemorrhage (PPH) is defined as an estimated blood loss of >/=500ml in the first 24 hours following birth. The percentage of women having a PPH is shown in Figure 16 as a percentage

[29] Van der Merwe A, Thompson J, Ekeroma A. Factors affecting vaginal birth after caesarean section at Middlemore Hospital, Auckland, New Zealand. NZMJ 27 September 2013, Vol 125 No 1383.

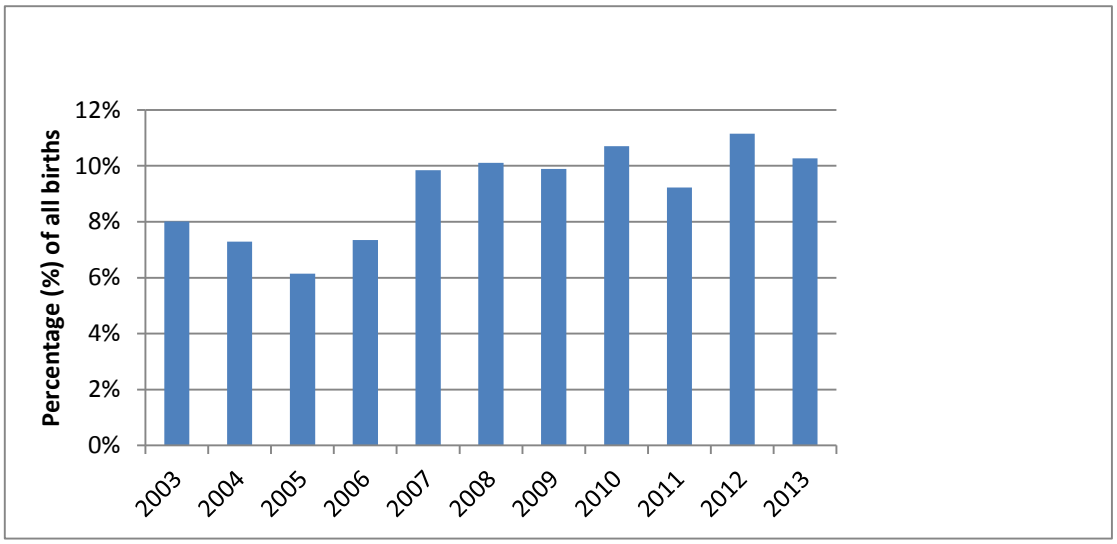
of all women birthing at a CM Health facility. In 2013 10% of all women birthing at a CM Health facility had a PPH (Table 17). Of those women who had a PPH while birthing at a CM Health facility 21% received a blood transfusion (Figure 17).

Table 17. Percentage of Post-Partum haemorrhage of all for women birthing at CM Health facilities, 2003-2013

Year	PPH cases	All deliveries	% of all deliveries
2003	521	6505	8%
2004	493	6763	7%
2005	428	6968	6%
2006	575	7821	7%
2007	802	8149	10%
2008	827	8179	10%
2009	797	8056	10%
2010	872	8148	11%
2011	750	8125	9%
2012	899	8065	11%
2013	758	7380	10%

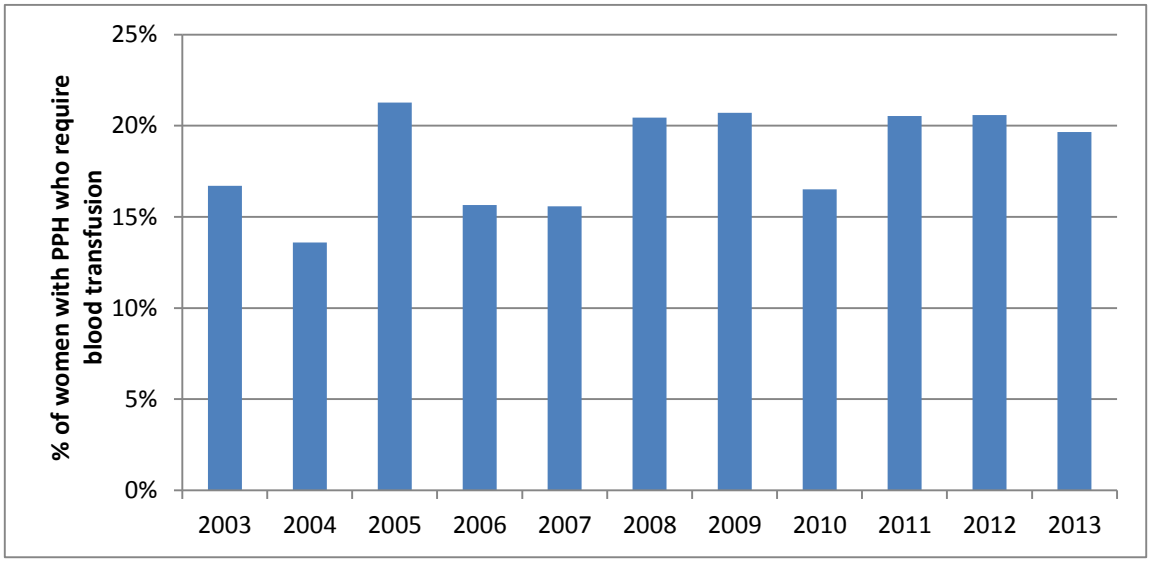
Source: Healthware. Extracted by Decision Support 2014.

Figure 16. Percentage of Post-Partum haemorrhage of all women birthing at CM Health facilities, 2003-2013.



Source: Healthware. Extracted by Decision Support 2014.

Figure 17. Percentage of women, birthing in CM Health, who have a Post-Partum haemorrhage and require a blood transfusion, 2003-2013.



Source: Healthware. Extracted by Decision Support 2014

The majority of PPH occur in Pacific women (51.7%) and are more likely to occur after the third stage (Table 18). The majority of PPH occur in women in living in decile 9 and 10.

There are a number of recognised risk factors for PPH which include retained placenta, failure to progress during the second stage of labour, Placenta accrete, lacerations , instrumental delivery, large for gestational age newborn (eg, >4000 g),hypertensive disorders, induction of labour Augmentation of labour with oxytocin. [30]

In addition placenta previa, history of previous PPH, obesity, high parity, Asian or Hispanic race, precipitous labour, first stage of labour longer than 24 hours, uterine overdistention, uterine infection, and use of some drugs, such as antidepressants, have been associated with PPH. [31]

While there was clinical suspicion PPH were more common in Pacific and low decile women this is the first time the data has been extracted for review. More work needs to be done to understand the high PPH number, in these groups, in the Counties context.

[30] Sheiner E, Sarid L, Levy A, Seidman DS, Hallak M.Obstetric risk factors and outcome of pregnancies complicated with early postpartum hemorrhage: a population-based study.J Matern Fetal Neonatal Med. 2005;18(3):149.

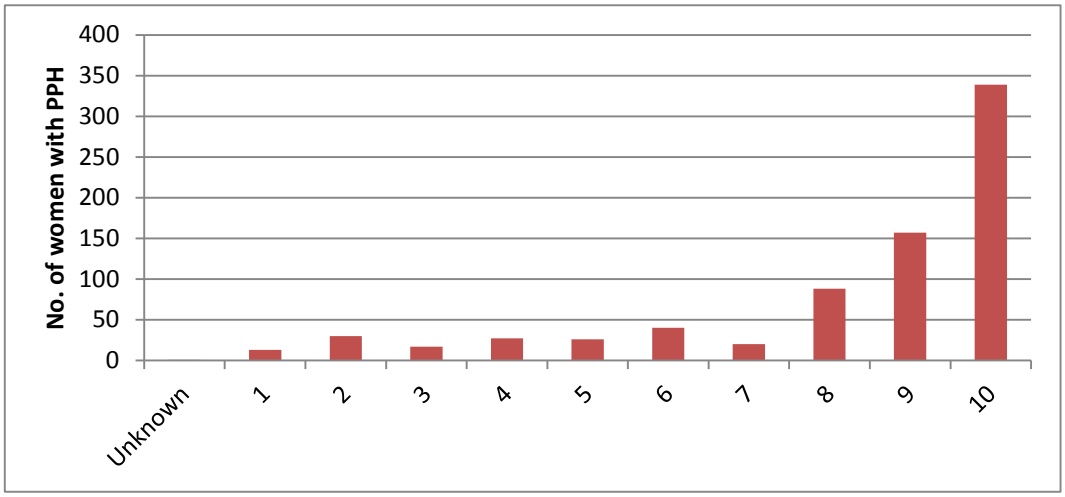
[31] UpTodate. Risk factors for postpartum haemorrhage. Accessed 8/7/2014

Table 18. Percentage and number of Post-Partum haemorrhage of all for women birthing at CM Health facilities, by ethnicity, 2013

Ethnicity	Other immediate postpartum haemorrhage	Third-stage haemorrhage	Total	% of total PPH
NZ Maori	110	16	126	16.6
Pacific Islander	338	54	392	51.7
Chinese	18	3	21	2.8
Indian	60	2	62	8.2
Asian Other	29	4	33	4.4
European/Other	105	19	124	16.4
Total	**660**	**98**	**758**	**100**

Source: Healthware. Extracted by Decision Support 2014.

Figure 18. Percentage and number of Post-Partum haemorrhage of all for women birthing at CM Health facilities, by ethnicity 2013



Source: Healthware. Extracted by Decision Support 2014.

Induction of labour

Labour may be induced for a number of indicators including pre labour spontaneous rupture of membranes, post -dates, pre eclampsia, intrauterine growth retardation, diabetes, maternal medical complications, intra uterine death, decreased liquor, prolonged latent phase and large for dates. As noted in the clinical indicators section the percentage of inductions is increasing in CM Health and is being audited as part of the MQSP. Increasing inductions may be clinically appropriate but does have an impact on workload. A new regional induction of labour guideline has been developed as it was

recognised there was variation in practice across and a good understanding of the evidence for good practice was needed.

Table 19. Induction of Labour by parity as a percentage of births, for all women birthing at CM Health facility, 2010-2013.

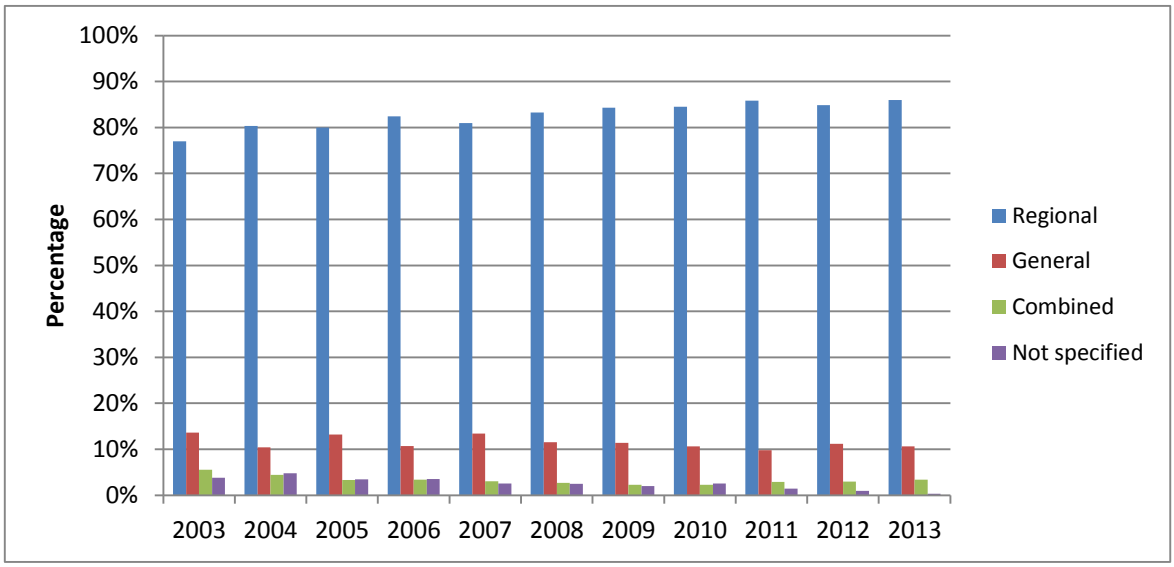
	Nulliparous Inductions	Nulliparous Inductions as % of all births	Multiparous Inductions	Multiparous Inductions as % of all births	All Inductions	All Births	Inductions as % of all births
2010	599	7%	702	9%	1301	8148	16%
2011	643	8%	792	10%	1435	8125	18%
2012	794	10%	872	11%	1666	8065	21%
2013	757	10%	840	11%	1597	7380	22%

Source: Healthware. Extracted by Decision Support 2014

Anaesthetic for Caesarean section

There are a number of options available for providing anaesthetic to women undergoing a Caesarean section. Figure 19 shows the percentage of regional, general and combined anaesthetics as a percentage of all births at CM Health facilities. The majority of women have a regional anaesthetic when undergoing a Caesarean section. The percentage of women, birthing at a CM Health facility who have a general anaesthetic was 10.6% in 2013 and this has been static over the last 5 years.

Figure 19. Anaesthetic type as a percentage of all deliveries at CM Health facilities 2003-2013.



S

Source: Healthware. Extracted by Decision Support 2014.

Obstetric anal-sphincter injuries- 3rd and 4th degree tears

Third and Fourth degree tears involve the anal sphincter complex and can led to significant long term complications.

Third degree tears are defined as follows;

3a- Less than 50% of the external anal sphincter thickness torn

3b-More than 50% of external anal sphincter torn

3c both external and internal sphincter torn

Fourth degree tears involve both the anal sphincter complex and the rectal mucosa.

Table 20 shows the anal sphincter injuries for all women birthing at CM Health facilities 2007-2013. In 2013 3.2% of all women who had vaginal births had a third degree tear and 0.12% of women giving birth vaginally had a fourth degree tear.

Table 20. Anal Sphincter injuries for all women birthing at CM Health facilities, 2007-2013.

	3rd degree tears	% total Vaginal Births	4th degree tears	% total Vaginal births	Total Vaginal births	3rd & 4th tears % of vaginal births
2007	141	2.1%	6	0.09%	6867	2.1%
2008	154	2.3%	15	0.22%	6817	2.5%
2009	143	2.1%	14	0.21%	6709	2.3%
2010	142	2.1%	14	0.21%	6598	2.3%
2011	148	2.3%	17	0.26%	6519	2.4%
2012	189	3.0%	14	0.22%	6395	3.0%
2013	185	3.2%	7	0.12%	5690	2.8%

Source: Healthware. Extracted by Decision Support 2014. All patients who have an ICD-10 code of O702 or O703.

Neonatal outcomes

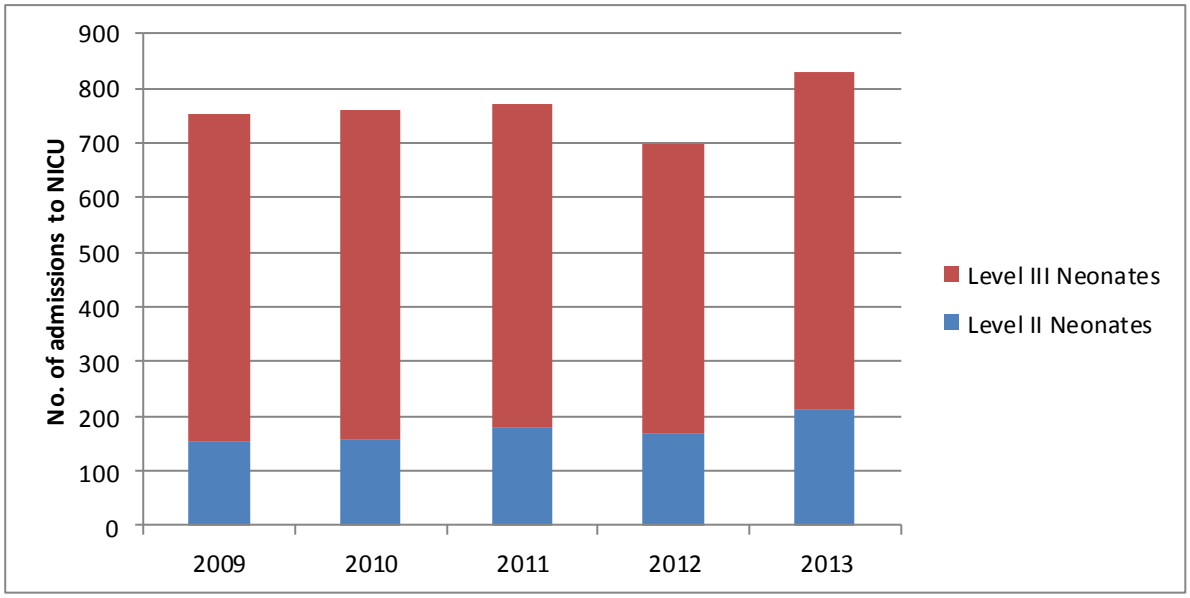
It is important when considering the quality of the maternity services that neonatal outcomes are reviewed as the management of women during pregnancy and labour obvious impacts on the outcomes for their babies.

It is noted that the percentage of premature births in a standard primipara living in Counties Manukau or delivering in MMH is lower than for a standard NZ primipara (refer to Clinical Indicator section pg31).

Admissions to the Neonatal Unit

The Neonatal Unit at Middlemore Hospital has 36 cots and provides care for both level II and III babies. The number of admissions to the unit increased in 2013 compared to 2012, with 828 admissions. The number of admissions of babies 23-31 weeks decreased in 2013 compared to 2012 with 84 babies admitted in 2013 compared to 99 in 2012.

Figure 20. Total admissions to Middlemore Neonatal Unit, Level II & III, 2009-2013.

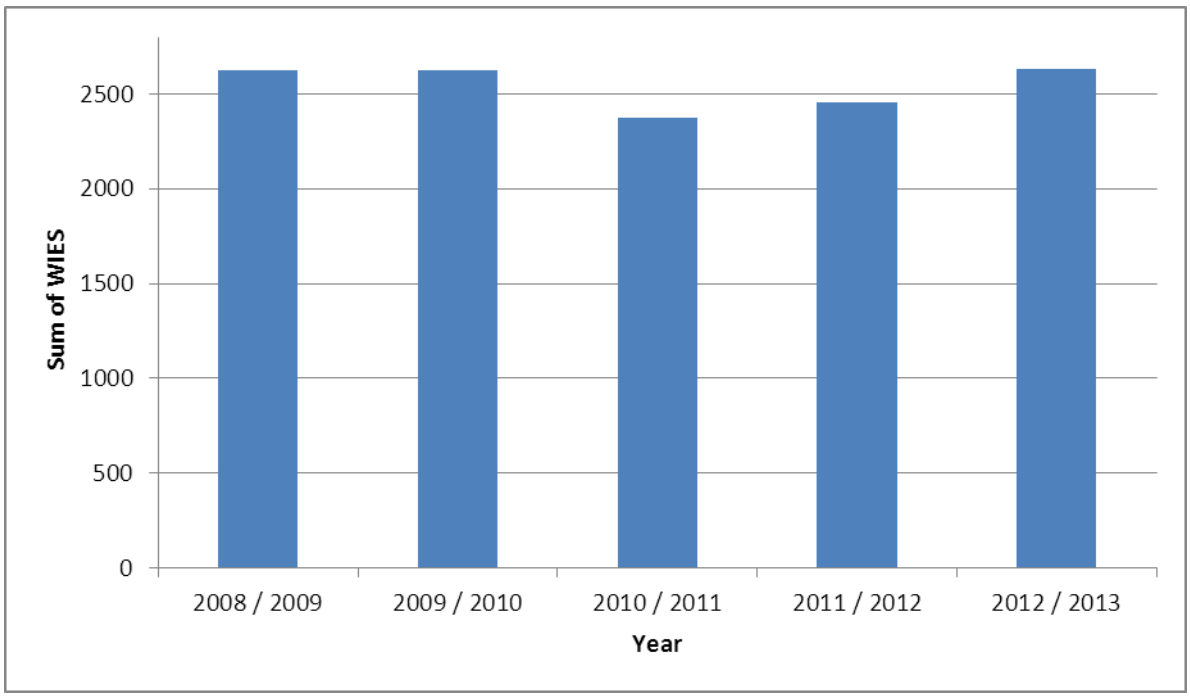


Source: Data provided by Decision Support. Each baby is only counted once ie if they are transferred from level III to level II they are not counted twice. This is a different data source to the data provided for the 23-31 week infants.

During this time the WIES[32] value has increased (Figure 21). Over this time period the number of admissions for babies <32 weeks gestation peaked in 2009, dipped to five year low in 2010, increased in 2011 and 2012 and plateaued in 2013 (Figure 22).

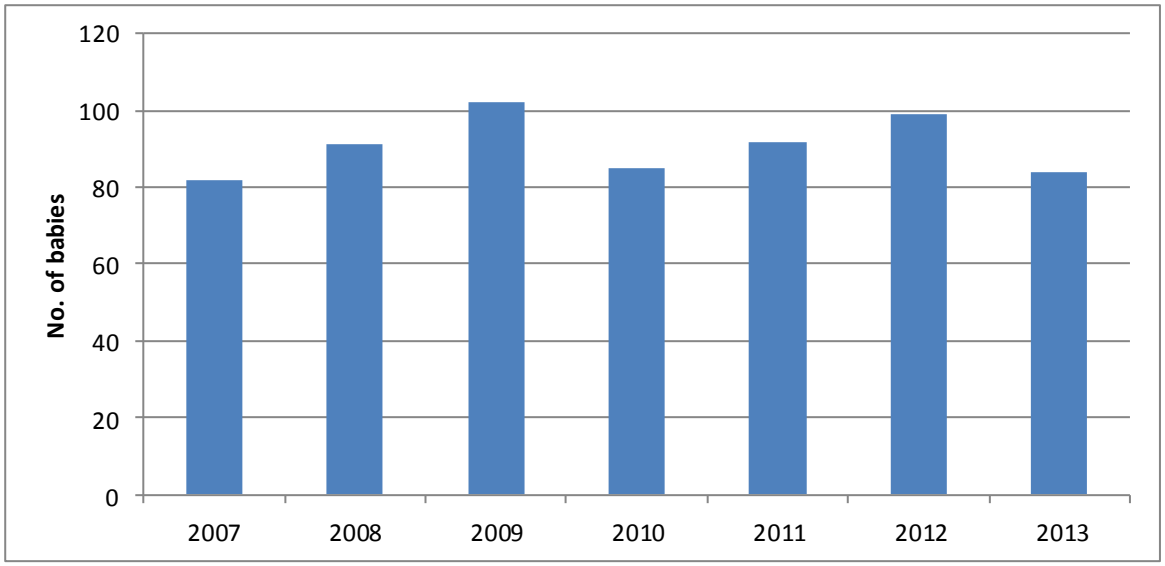
[32] WEISS is a method of weighting individual discharges based on complexity.

Figure 21. Sum of WIES by Financial Year, 2008/9-2012/13.



Source: Casemix. Sum of WIES includes all inpatient neonatal babies admitted (DHB Maternity provider Level 0, Independent Maternity Provider level 0, Neonates L1, Neonates L2, Neonates L3).

Figure 22. Total admissions to Middlemore Neonatal Unit, gestational age 23-31 weeks, 2009-2013

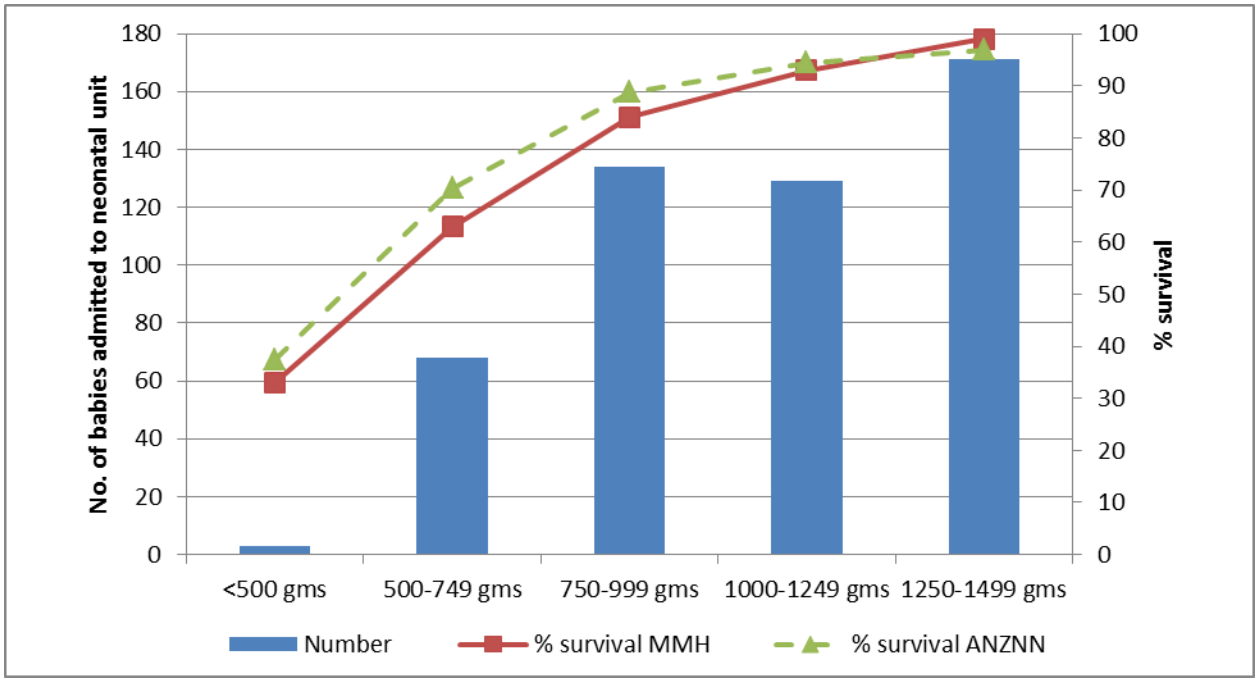


Source: Data provided by Middlemore Neonatal Unit. Collected as per ANZNN guidelines.

Survival by birth weight and gestational age

Between 2007-2013 there were 3 births <500grams, 68 births 500-749 grams, 134 births 750-749 grams and 300 births > 1000 grams. The survival rate for those less 500grams was poor (33%) but, as expected, survival steadily increased as birth weight increased (Figure 23).

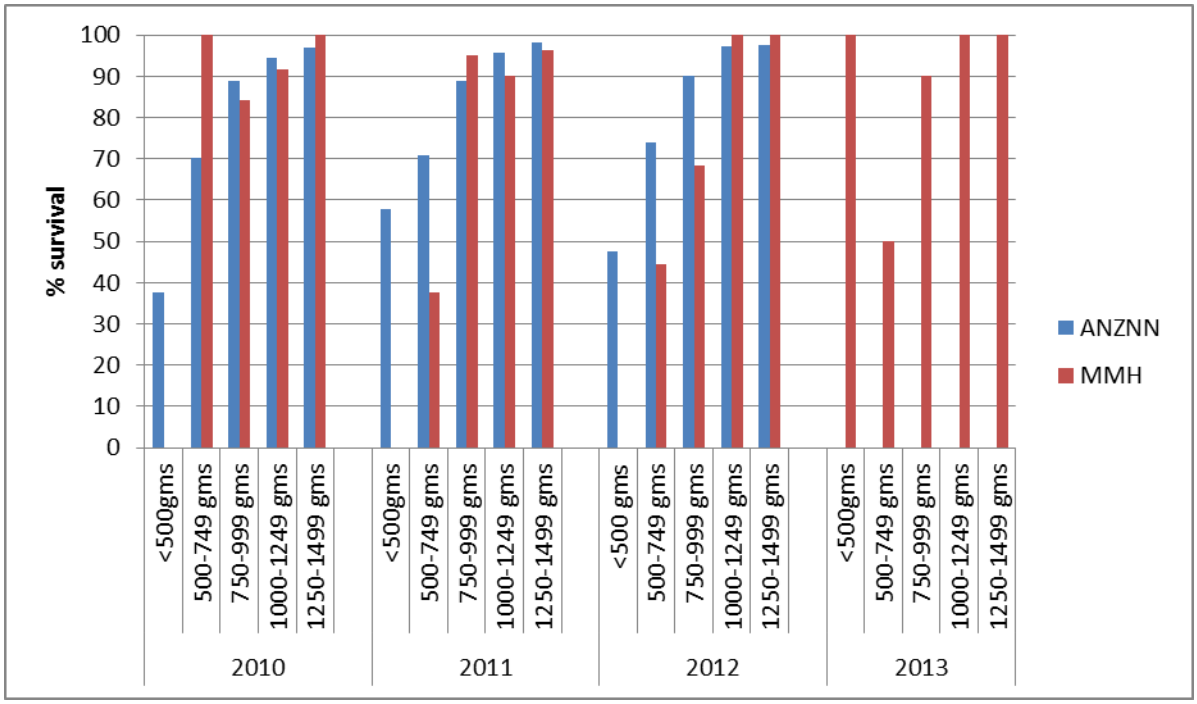
Figure 23. Number of births by birth weight and percentage survival by birth weight, Middlemore Hospital, 2007-2013 compared to ANZNN survival by birthweight 2010.



Source: Data provided by Middlemore Hospital Neonatal Unit .Collected as per ANZNN guidelines. Note: ANZNN= Australia and New Zealand Neonatal Network, MMH= Middlemore Hospital.

Figure 24 compares the percentage survival by birth weight for those babies admitted to the Middlemore neonatal unit with data from the Australian and New Zealand Neonatal Network (ANZNN). There were no neonates < 500g admitted to MMH unit in 2010 and 2011. There was one baby admitted <500gms in 2012 who did not survive and one baby admitted <500gms in 2013 who did survive.

Figure 24. Percentage Survival by Birth weight, Middlemore Neonatal Unit compared to ANZNN data, 2010 -2012. Middlemore Neonatal Unit data only 2013.



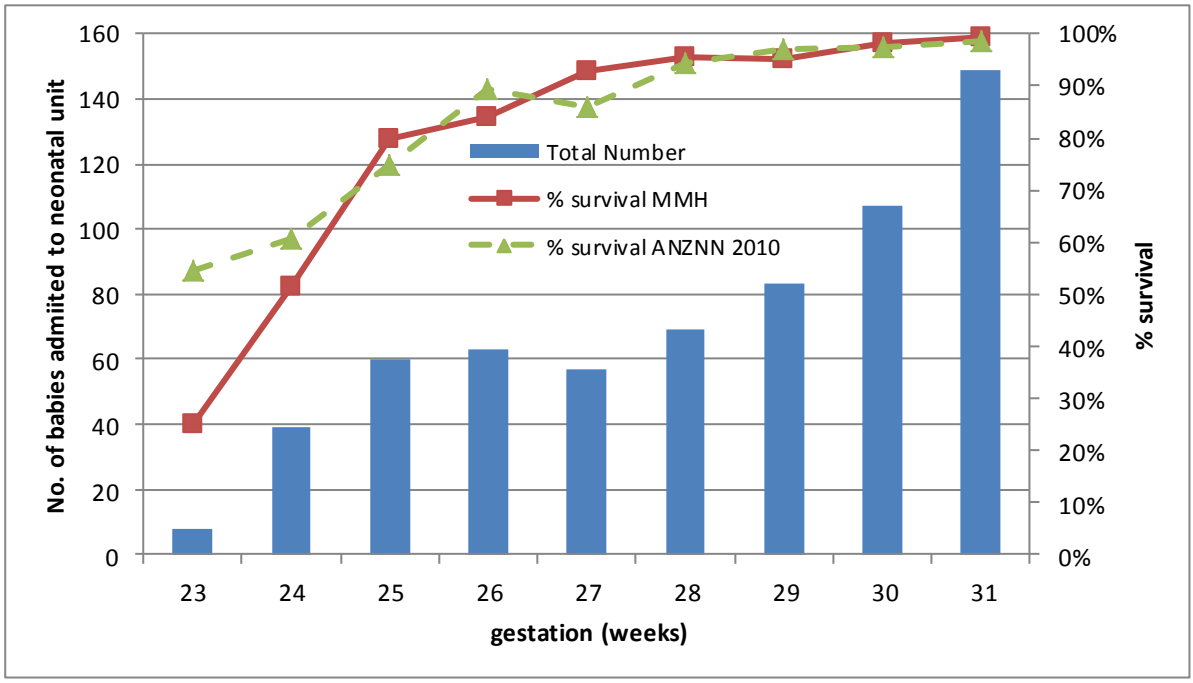
Source: Data provided by Middlemore Hospital Neonatal Unit. Collected as per ANZNN guidelines. . Note: ANZNN= Australia and New Zealand Neonatal Network, MMH= Middlemore Hospital.

The total number of births at 23 and 24 weeks is low (8 and 39 respectively for the 6 years 2007-2013). Survival increases with increasing gestation with 99% of 31 week infants surviving (Figure 25).

By way of comparison Figure 26 shows Middlemore Hospital percentage survival by gestational age compared to the Australian and New Zealand Neonatal Network data.[33] There were no babies of 23 weeks gestation admitted to the MMH unit in 2010 and 2011. In 2012 there was 2 babies admitted at 23 weeks who did not survive. In 2013 there were 3 babies admitted to the unit at 23 weeks and one survived.

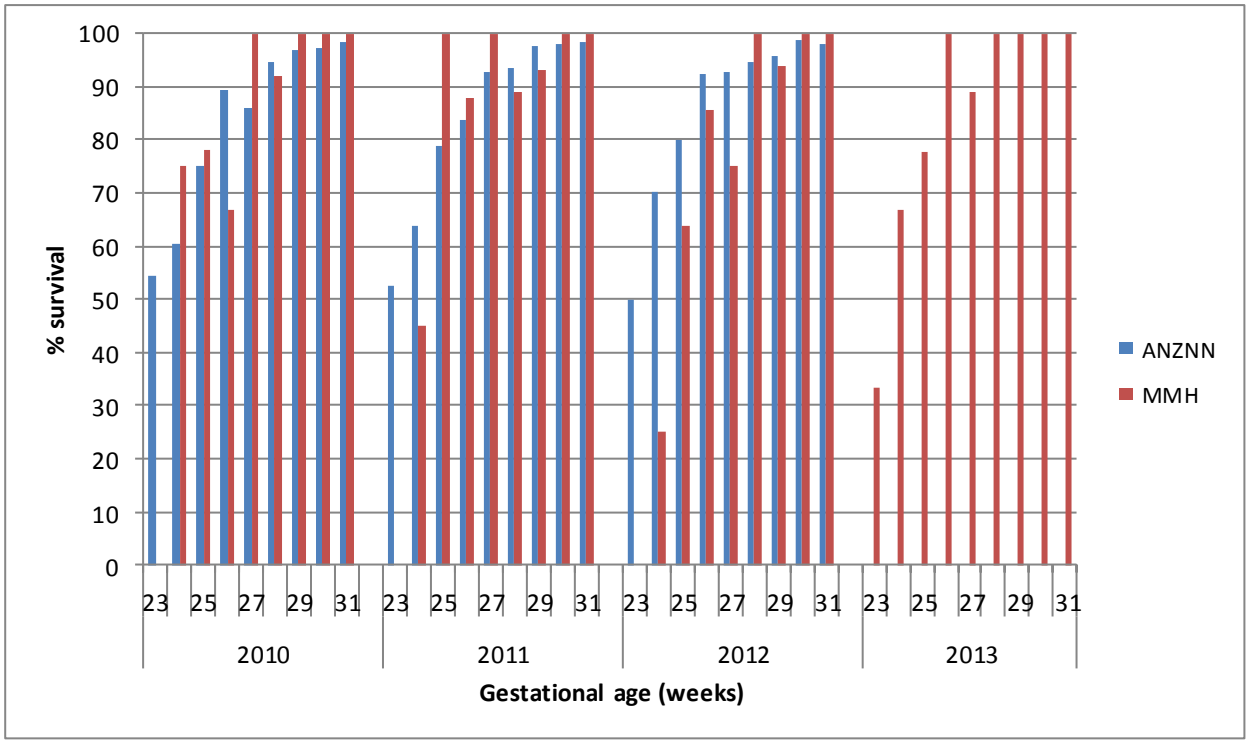
[33] The New Zealand and Neonatal Network has complied data from all level III units in Australia and New Zealand contributing since January 1995 with level II units in New Zealand joining in 1998 and 9 Level II units in Australia currently contributing data. Collated by the University of New South Wales.

Figure 25. Number of births, by gestation and % survival, Middlemore Hospital, 2007-2013 compared to ANZNN survival by gestation 2010



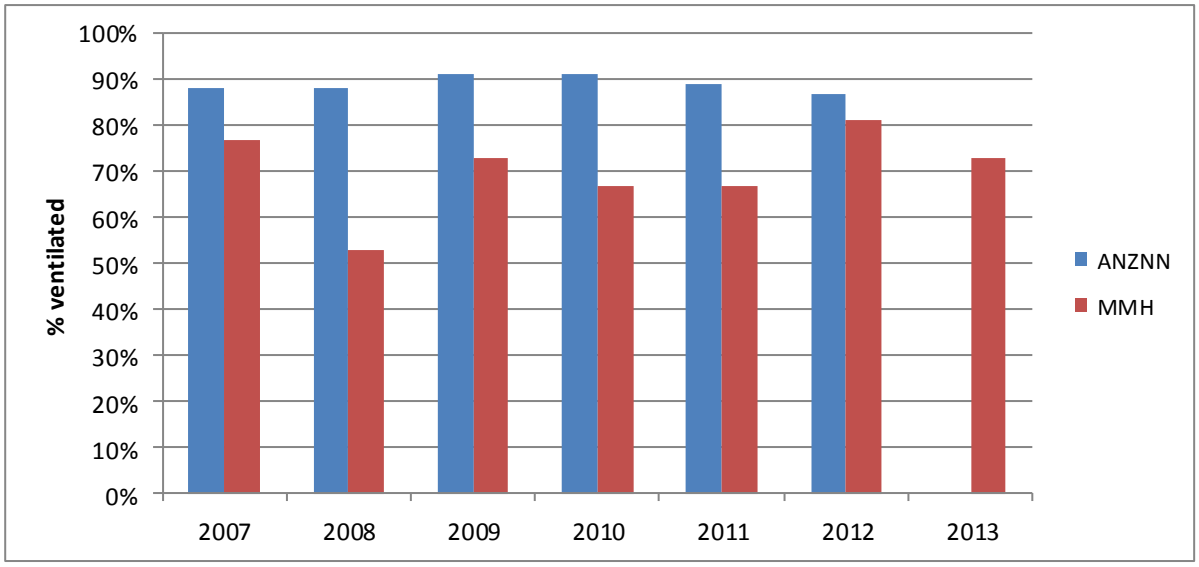
Source: Data provided by Middlemore Hospital Neonatal Unit. Collected as per ANZNN guidelines. Note: ANZNN= Australia and New Zealand Neonatal Network, MMH= Middlemore Hospital.

Figure 26. Percentage survival by gestational age, Middlemore hospital compared to ANZNN data, 2010-2012. Middlemore hospital data only 2013.



Source: Data provided by Middlemore Hospital Neonatal Unit. Collected as per ANZNN guidelines. Note: ANZNN= Australia and New Zealand Neonatal Network, MMH= Middlemore Hospital.

Figure 27. Percentage of 24-27 week gestation neonates ventilated, 2007-2013.Middlemore hospital compared to ANZNN data, 2010-2012. Middlemore hospital data only 2013.



Source: Data provided by Middlemore Hospital Neonatal Unit. Collected as per ANZNN guidelines.Note: ANZNN= Australia and New Zealand Neonatal Network, MMH=Middlemore Hospital

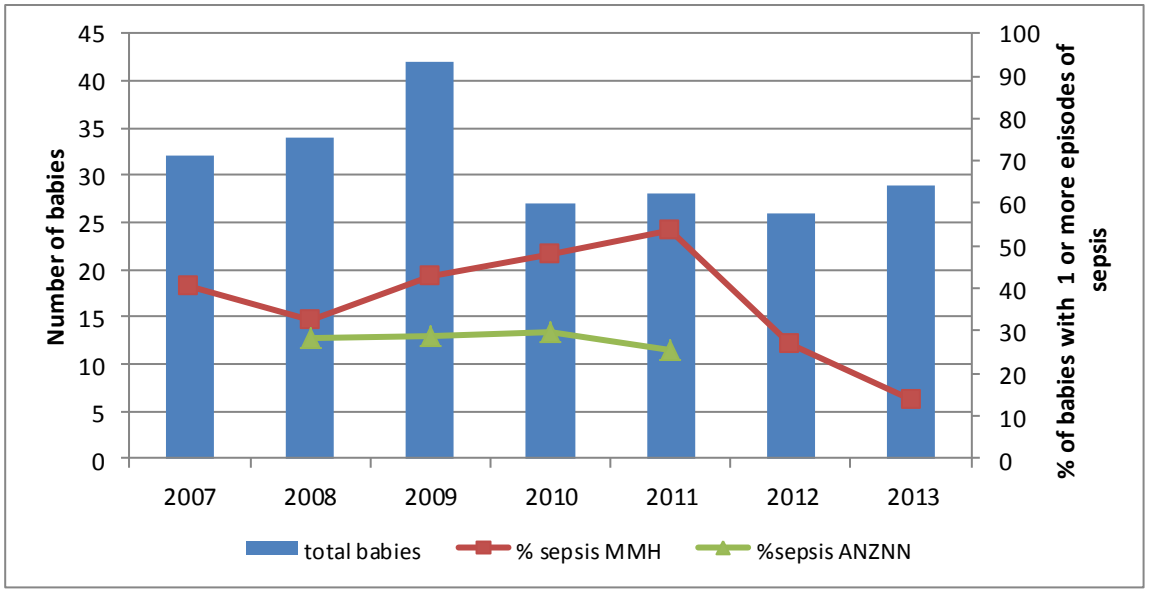
Figure 27 shows the percentage of 24-27 week neonates ventilated at Middlemore Hospital, 2007-2013. The percentage of these neonates ventilated has varied over this time period with a low of 53% in 2008 to a peak of 73% in 2012. There is also comparison data shown from ANZNN from 2007-2012 which shows Middlemore Hospital has consistently had a lower percentage of these babies ventilated compared comparable data from ANZNN.

Infection

Infection is a well-recognised cause of morbidity and mortality in preterm infants. Figure 28 & 29 show the percentage of babies (< 28 weeks and 28-31 weeks gestation respectively) who suffered from one or more episode of late onset sepsis, with available ANZNN data as a comparison. The percentage of babies less that 28 weeks gestation who suffered from one or more episodes of late onset sepsis appeared to be trending up from 2008 to a peak of 53.6% in 2011 but this decreased in 2013 to a low of 13.8% over the reported time period. The percentage of babies born between 28-31 weeks gestation who had one or more episodes of sepsis appeared more stable over the reported time period although the lowest percentage (7.1%) of episodes of infection was also been seen in 2013. There has been a quality improvement initiative undertaken to improve the way central lines were inserted and maintained during this period (CLAB) which is temporally associated with the decrease percentage of babies that have had an episode of sepsis. Routine Lactoferrin use may also have contributed to the decreased incidence of sepsis seen in 2013.

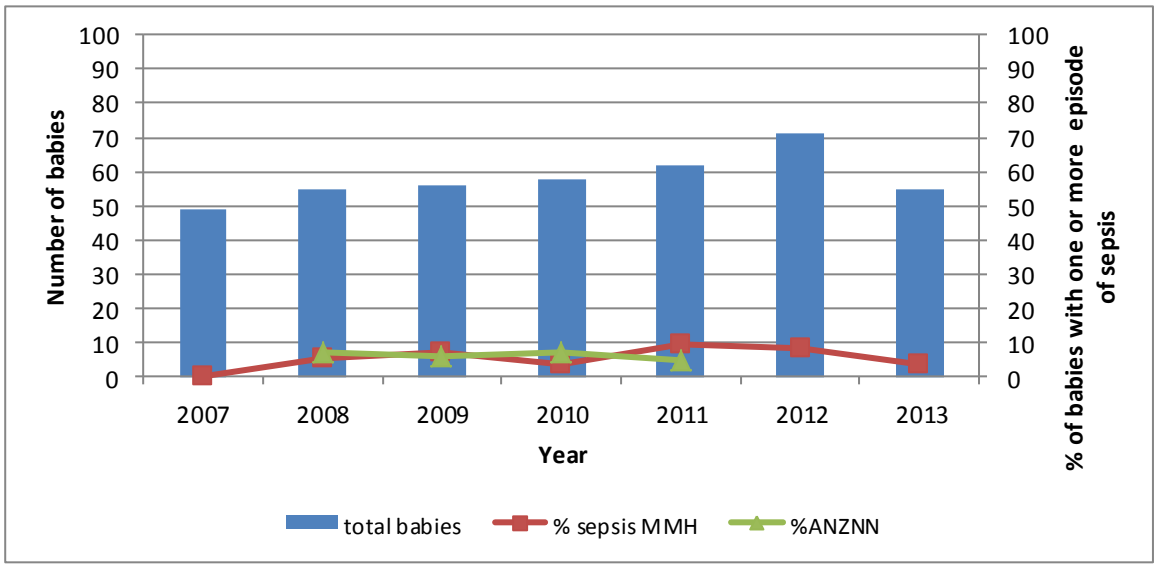
Early onset sepsis is less common than late onset sepsis. 3.6% (n=1) and 6.9% (n=2) of babies less than 28 weeks being admitted to the MMH neonatal unit in 2012 and 2013 respectively suffered from early onset sepsis. For babies 28-31 weeks gestation admitted to the MMH neonatal 2.4% (n=2) suffered from early onset sepsis in 2013.

Figure 28. Number of babies born at < 28 weeks gestation, admitted to the neonatal unit, and the % who suffered from one or more episodes of late onset sepsis. Middlemore data compared to ANZNN data 2008-2012. Middlemore only data 2007and 2013.



Source: Data provided by Middlemore Hospital Neonatal Unit. Collected as per ANZNN guidelines.Note: ANZNN= Australia and New Zealand Neonatal Network, MMH=Middlemore Hospital

Figure 29. Number of babies born at 28-31 weeks gestation, admitted to the neonatal unit, and the % which suffered from one or more episodes of late onset sepsis, 2007-2013. Middlemore data compared to ANZNN data 2008-2011. Middlemore only data 2007,2012 &2013.



Source: Data provided by Middlemore Hospital Neonatal Unit. Collected as per ANZNN guidelines. Note: ANZNN= Australia and New Zealand Neonatal Network, MMH=Middlemore Hospital

Meconium Aspiration Syndrome

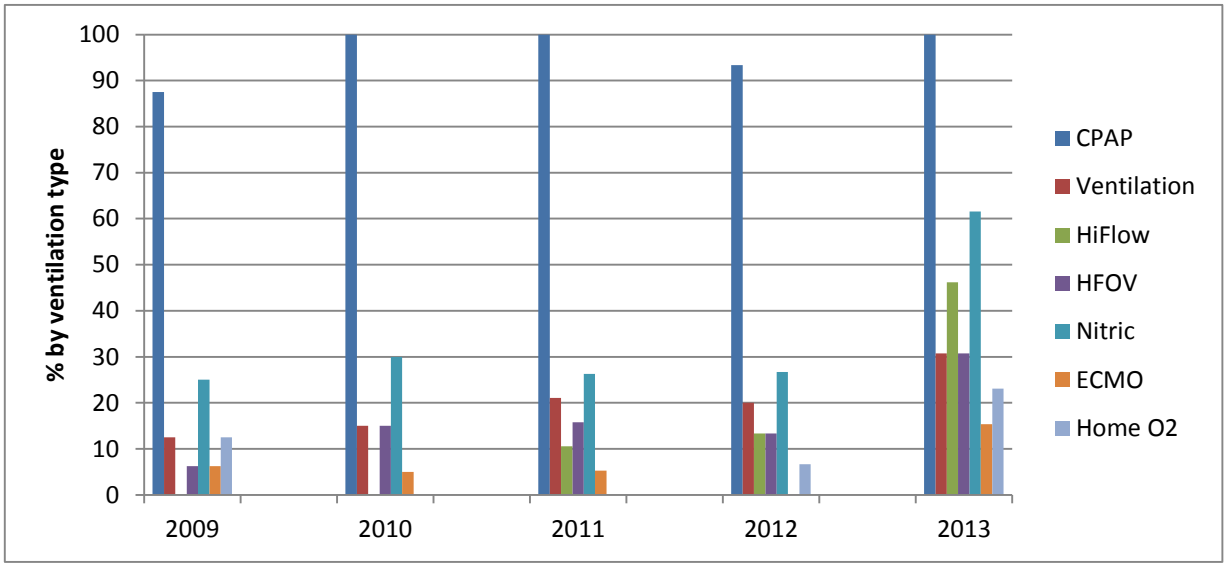
Meconium Aspiration Syndrome (MAS) is characterised by early onset of respiratory distress and chest X-ray consistent with MAS in a meconium—stained infant. The severity of MAS can vary from mild respiratory distress to severe respiratory distress requiring more intensive ventilation support. The total number of babies, with MAS admitted to the neonatal unit, is shown in Table 21. Figure 30 shows that most of these babies were managed with CPAP ventilation. Only one baby died from this condition during this time period and that was in 2012.

Table 21 Number of babies with Meconium Aspiration syndrome admitted to the MMH neonatal Unit 2009-2013.

Year	Number of MAS
2009	16
2010	20
2011	19
2012	15
2013	13

Source: Data provided by Middlemore Hospital Neonatal Unit

Figure 30.Mode of ventilation for meconium aspiration, 2009-2013.



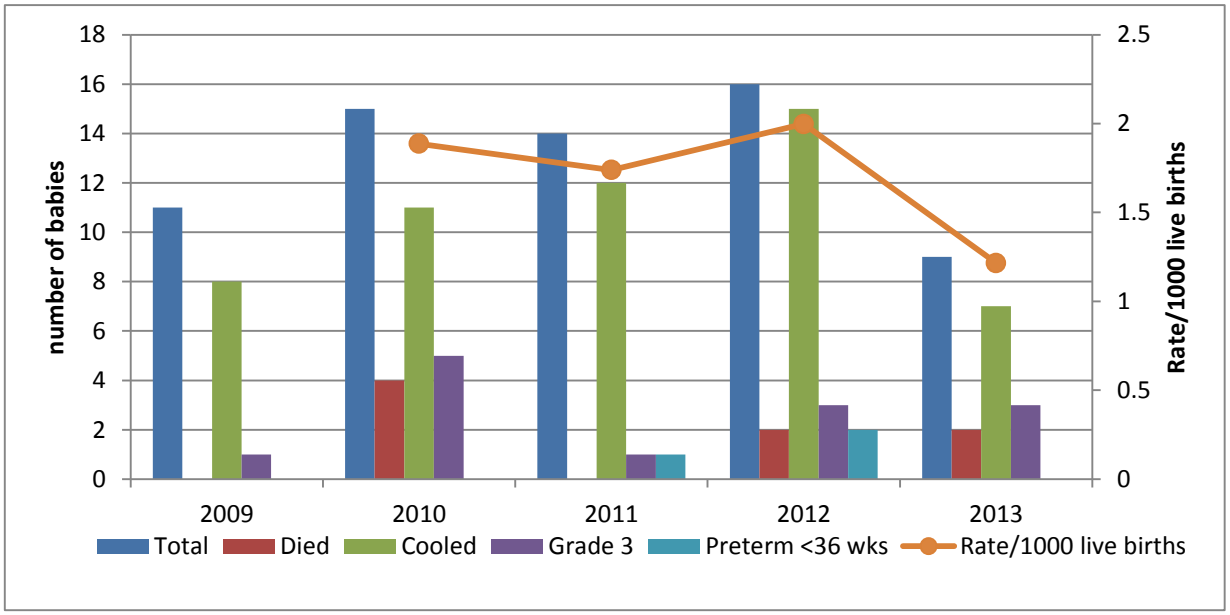
Source: Data provided by Middlemore Hospital Neonatal Unit

Hypoxic Ischaemic Encephalopathy

Hypoxic Ischaemic Encephalopathy (HIE) results from perinatal asphyxia (lack of oxygen to the brain around the time of birth). Moderate cooling significantly reduces death/major disability in newborns with moderate-to-severe HIE. Figure 31 shows the total number of babies admitted to the neonatal unit at MMH from 2009-2013 with HIE. The majority of these babies were > 36 weeks (data on gestation not available for 2009 &2010), most were cooled with 4 deaths in 2010 (27% of cases

admitted to the unit), 2 deaths in 2012 (13% of cases admitted to the unit) and 2 deaths in 2013 (22% of cases admitted to the unit). The total number of babies admitted with HIE peaked in 2012 at 16 with only 9 babies with HIE admitted in 2013. It is uncertain at this why the number of babies with HIE has decreased so dramatically in 2013 but may reflect better obstetric care.

Figure 31. Hypoxic Ischaemic Encephalopathy (HIE), Middlemore Hospital, 2009-2013.



Source: Numerator data provided by Middlemore Hospital Neonatal Unit. Denominator data NMDS live births at CM Health facilities only

ANZNN comparison data

There are a number of important neonatal outcomes that are collected by the ANZNN and some comparison data from the Middlemore neonatal unit is shown in Table 22. The percentage of babies admitted to MMH neonatal unit, at less than 28 weeks gestation, who were diagnosed with necrotising enterocolitis (NEC) was similar to the percentage reported 2008-2011 by the ANZNN. In 2013 the percentage of babies with NEC decreased and this is temporally associated with the introduction of routine probiotic and lactoferrin use. The percentage of babies with Chronic Lung Disease (CLD) was similar to the data reported by the ANZNN for babies 27-31 weeks gestation. The percentage of babies, < 28 weeks gestation, with a grade 3 or 4 IVH was higher than the percentage reported by the ANZNN in 2011 (24.1% vs 10.5%). In 2010 the percentage of babies < 28 weeks with ROP +3 was higher (12.5%) than that reported by the ANZNN (10.7%) but was lower in 2011 (7.7% vs 13.4%). The use of a retinal camera has been introduced into routine use. It is thought this is responsible for the increased diagnosis of ROP stage 3 as it enables a more detailed look at the retina. While the percentage of babies with ROP +3 increased in 2013, it is interesting to note that none required treatment.

Table 22. Percentage of babies at given gestation, with outcomes of NEC, CLD, IVH, ROP and EOS, Middlemore hospital compared to ANZNN data.

	NEC		CLD				IVH 3 & 4		ROP +3			
	< 28 weeks		<28weeks		<32 weeks		< 28 weeks		< 28 weeks		Treatment <28 weeks	
	ANZNN	MMH	ANZNN	MMH	ANZNN	MMH	ANZNN	MMH	ANZNN	MMH	ANZNN	MMH
2008	10.1%	11.1%	N/A	32.0%	N/A	15.4%	N/A	2.9%	N/A	13.3%	9.1%	13.3%
2009	8.6%	11.1%	N/A	28.9%	N/A	12.7%	N/A	18.6%	N/A	13.5%	8.4%	10.8%
2010	10.5%	7.4%	44.8%	55.6%	22.0%	21.2%	11.5%	7.4%	10.7%	12.5%	7.3%	8.3%
2011	6.5%	6.7%	53.4%	33.3%	24.0%	19.6%	10.5%	24.1%	13.4%	7.7%	8.1%	3.8%
2012	8.0%	7.1%	48.4%	39.3%	21.1%	25.3%	N/A	15.4%	12.9%	11.1%	N/A	5.6%
2013	N/A	3.5%	N/A	48.3%	N/A	26.2%	N/A	10.3%	N/A	25%	N/A	0%

Source: Provided by the Middlemore Hospital Neonatal Unit. NEC= necrotising enterocolitis, CLD= Chronic Lung Disease, IVH= Intraventricular haemorrhage, ROP= Retinopathy of Prematurity. N/A= not available. Note denominator used for CLD is" total all" not just those that survived to 36 weeks in order to be consistent with NZANN data. IVH denominator is all that had an USS. ROP denominator is all that had an eye exam.

Breastfeeding at Discharge

Middlemore Hospital and the Primary Birthing units are all Baby Friendly Hospital Initiative (BFHI) accredited. BFHI target is 75% exclusive at discharge from all facilities.

Breastfeeding at discharge is collected for babies discharged from Middlemore hospital with 79.7% of records being complete in 2013. Overall, in 2013 from the data available, 79.5% of babies were exclusively breastfed at discharge from MMH, 5% were artificially feed and 9.2% were partial breastfeeding. The data for 2013 is provided below by ethnicity in Table 23 European /Other have the highest rates of exclusive breastfeeding at discharge (85.7%) while Maaori have the lowest percentage of exclusive breastfed babies at discharge (77.2%).

The exclusive breastfeeding rates for women that birth at a primary unit are 93% while exclusive breastfeeding rates for women who are transferred to a primary birthing unit after birth are 88%.

Table 23. Breastfeeding at discharge from MMH facility for 2013.

Ethnicity	Exclusive	Artificial	Partial	Fully
NZ Maaori	77.2%	7.84%	10.54%	4.28%
Pacific Islander	77.8%	5.54%	12.83%	3.52%
Asian	77.5%	4.91%	14.37%	2.84%
Indian	79.5%	1.94%	14.22%	4.36%
European	85.7%	2.87%	8.11%	2.7%
Other	77.8%	1.71%	17.09%	2.56%
Unknown	85.0%	3.33%	9.17%	2.5%
Grand Total	79.5%	4.97%	11.75%	3.5%

Source: Healthware. Extracted by Decision Support 2014 for babies discharged from Middlemore hospital. Note only includes data for 79.7% of discharges. MMH only incl NNU BFHI Reports - Baby deliveries at MMH

Maternity Quality and Safety Plan 2013/14

The Maternity Quality and Safety Work Plan is shown in Table 24 for 2013/14. The Plan outlines activities related to Governance and Clinical Leadership, Local Communication Systems and Information Sharing, Data Monitoring, Co-ordination and Administration of the Quality and Safety Programme, Sector Engagement, Consumer Engagement and Quality improvement as required for the Maternity Quality and Safety Programme. In addition more detail is provided in Appendix 1 about the current work underway in Counties Manukau to improve access to contraception, early registration with LMC, workforce development, improved understanding of clinical variability and improved access to smoking cessation support.

Table 24. Maternity Quality and Safety Work Plan 2013/14

Work Stream 1: Governance and Clinical Leadership

Objectives	Measured by	Milestones / actions	Target completion date	By who	Status (on target/delayed/ completed)
Clear direction, purpose for the group and work programme	1.1 Quality and Safety Governance group Terms of Reference reviewed and completed including membership appointed	Seek input from key personnel Draft documents Distribute for discussion Amend and finalise Distribute to key personnel / groups Post to website/HealthPoint Review To follow up GP representative with GP Chief advisor for CM Health	30/10/13 30/06/14	Director of Midwifery Director of Midwifery	Completed Completed Completed Completed Completed Completed Completed
Clear understanding of how this group functions alongside others	1.2 Diagram of structure completed including addition of quality forums etc 1.3 Work programme agreed and milestones achieved	a. Attendance at meeting maintained b. Feedback mechanism in place	As scheduled	Director of Midwifery	Completed

Awareness of national priorities	1.4 Feedback to MQSGG National meetings/ teleconferences		As Scheduled	Maternity Portfolio Manager	On going
	1.5 An Annual Report on maternity services and outcomes	a. Drafted by	31/03/14	Maternity Portfolio Manager /Public Health Physician	
		b. Finalised by	12/07/14		

Work Stream 2: Local Communication Systems and Information Sharing

Objectives	Measured by	Milestones / actions	Target completion date	By who	Status (on target/delayed /completed)
Professional stakeholders are well informed regarding quality and safety activity and achievements	2.1 Web page (SouthNET/ Healthpoint) updated with Terms of reference, minutes and plan 2.2 Calendar sharing for meeting, events and education 2.3 Measurement of number of hits on Healthpoint	a. Identify preferred communication and information sharing mechanisms b. Survey Monkey questionnaire distributed. c. Redistributed due to poor initial uptake • Feedback received and analysed • Clarification re use of personal e-mails and confidentiality being sought • Discussion at Access holder meeting	30/01/2014 Jan 14 Feb 14	Maternity Portfolio Manager	Completed Completed Completed Completed

Communicate indicators for maternity quality and safety	2.4 Quarterly newsletter 2.5 Include on website – clinical indicators, scorecard info, incident trends, smoking target	a. Quality & Risk quarterly reporting b. Organisation change impacting on report • Requirements for reporting to be identified • Format to be established c. Reports posted to Quality page on Women's Health website	30/6/2014	Quality and Risk Manager	Waiting for clarity on what and how to report In place

Enable feedback from professional stakeholders	2.6 Access holders meetings frequency and chair/structure function reviewed 2.7 Information for new LMC to the area	Consultation with Access Holders – Decision to meet monthly and have a person from Primary Directorate of DHB Chair-Waiting for the Primary Directorate to decide upon position for this. Booklet completed by Primary Midwife Specialist		Director of Midwifery Director of Midwifery	Completed Completed

Work Stream 3: Data Monitoring

Objectives	Measured by	Milestones / actions	Target completion date	By who	Status (on target/delayed/completed)
Oversight of data collection monitoring, reporting and usage	3.1 Regular reporting and analysis of national and local clinical indicators	a. Identify what indicators are currently collected and what is not b. Consulted with • Casemix and coding • Health Round Table • MoH Clinical Indicators • PMMRC reports and recommendations Also need to include BadgerNet once established and Maternal Mental Health evaluation of regional services		Director of Midwifery	Ongoing

Work Stream 4: Coordination and Administration of the Quality and Safety Programme

Objectives	Measured by	Milestones / actions	Target completion date	By who	Status (on target/delayed /completed)
Roles and responsibilities are clearly defined	4.1 Timeframe and milestones achieved	a. Identify schedule re what and when for reporting		Maternity Portfolio Manager	Completed
	4.2 Regular reporting on work programme	b. Find out if there are any contracting issues or any issues with consumers and what we need to change		Maternity Portfolio Manager	Ongoing

Work Stream 5: Sector Engagement

Objectives	Measured by	Milestones / actions	Target completion date	By who	Status (on target/delayed /completed)
Robust processes for clinicians to participate in planning and service design	5.1 Processes/initiatives are endorsed and approved measured by meeting records	a. Identify current standard operating procedure for communication b. Identify gaps: • Maternal mental health screening(First 2000days)	30/5/14	Maternity Portfolio Manager	Terms of Reference identifying membership/ objectives/ meeting times

		Maternity Review Project Board identified a number of gaps in local maternity networks. The following working groups and/or project boards have been formed with clinicians and service providers. These local maternity networks provide a way to co-ordinate participation on clinical quality improvement activities. The forums allow clinicians and service providers to identify local priorities for the Maternity Quality and Safety Programme. The working groups and project boards are: 1.) Maternity Ultrasound Clinical Working Group 2.) Models of Care and Workforce Project Board(Benchmarking with DHBs re employed FTE; Demographics of birthing women and LMc's in the DHB area) 3.) Family Planning, Contraception and Sexual Health Working Group Current & Next year • GP's role during the first contact with the women clarified. • LMC Booking system for early engagement			

The implementation of 2012 Guidelines for Consultation with Obstetric and Related Medical services is reviewed including emergency transport plans		a. Identify streamlined emergency transfer processes e.g. College of Midwives Referral guidelines. b. Identification of issues to report back to St John c. Transfer process audit from community to MMH • For 3/12 audit (April1-June 30) d. Identify work done within College of Midwives Nationally e. Workforce group establishing Communication Pathways	1/7/14	LMC rural representative/ NZCOM Guideline liaison (Janine Clemons) Secondary care Midwife representative	Completed

Work Stream 6: Consumer Engagement

Objectives	Measured by	Milestones / actions	Target completion date	By who	Status (on target/delayed /completed)
Incorporate consumer perspective into service design	6.1 Consumer feed back	a. Identify what current mechanisms are in place b. Organisational Consumer questionnaire to be implemented	30/06/14	Maternity Portfolio Manager	Underway
Improve mechanisms for consumers to provide feedback on services	6.2 Number and variety of mechanisms in which feedback is received	a. Feedback form review • Testing of current DHB form • Hand out to women rather than self-sourced b. Consult with consumers re best way to obtain feedback • Next meeting May(meeting postponed)	30/06/14	Maternity Portfolio Manager	Underway Completed Delayed

Work Stream 7: Quality Improvement

Objectives	Measured by	Milestones / actions	Target completion date	By who	Status (on target/delayed /completed)
Review of key target outcomes in addition to business as usual quality activities of the Women's Health Quality Framework	7.1 Data reported by CMS specialist of unbooked women presenting in Birthing and Assessment	a. Clarify source of unbooked women report • C Kirby consulted, data collection process clarified b. Engagement work stream update	30/1/14	Quality and Risk Manager	Completed
	7.2 Baseline data taken of Hb and ferritin before treatment commenced and at 36 weeks	a. Explore what laboratory data is available. b. Identify gaps and opportunities c. How assesses, when collected, how treated d. Stock take of what is currently being collected e. Look across population at what should be collected f. Education of GP's and midwives and literacy strategies	Jan 14	Clinical Director Women's Health Consultant self-employed LMC Obstetrician lead(SW)	Underway

Review of key target outcomes in addition to business as usual quality activities of the Women's Health Quality Framework	7.3 Number of inductions and rational assessed for appropriateness of treatment	a. Review Guideline b. Review local documentation/record of induction process c. review – only those who have IOP (age, gestation reason for induction) d. H/O to undertake review of 3/12 retrospective starting 01/01/14 – 31/03/14		Obstetrician lead (KO-G) Secondary Care Midwife representative	Completed Completed In progress- results not yet available
	7.4 Number of LSCS performed and rationale are assessed	a. Review charts using audit tool to identify criteria used for Caesar RANZCOG tool Data to be discussed with divisional support	8/4/14	Clinical Director Women's Health Director of Midwifery	Underway
	7.5 Audit of 34-36 week gestation births in CM Health	a. Identify process to assess reason where identifiable b. Discuss with /audit raw data from clinical coding Data to be discussed with divisional support	8/4/14	Clinical Director Women's health Secondary Care midwife representative	Underway

Implementation of the Quality and Safety Programme in Counties Manukau Health 2013/2014

MQSP governance and operations

Governance structure for MQSP

Figure 33 shows where the Maternity Quality and Safety Governance Group (MQSGG) fits within the wider DHB governance structure. Information received from the MoH and NMMG are discussed at the monthly MQSGG meetings. The actions and activities proposed by the MQSGG are reported monthly to the Maternity Review Project Board (MRPB) which in turns reports to the Executive Leadership Team (ELT). The activities and projects undertaken by the MRPB align with the MQSP. The MRPB will cease in December 2014. A plan will be developed to transition the activities and projects currently under the remit of MRPB to the MQSGG.

Membership of the MQSP Governance Group and Consumer Representation

The membership of the MQSP is broad and has representation of maternity stakeholders working in a range of settings. These include;

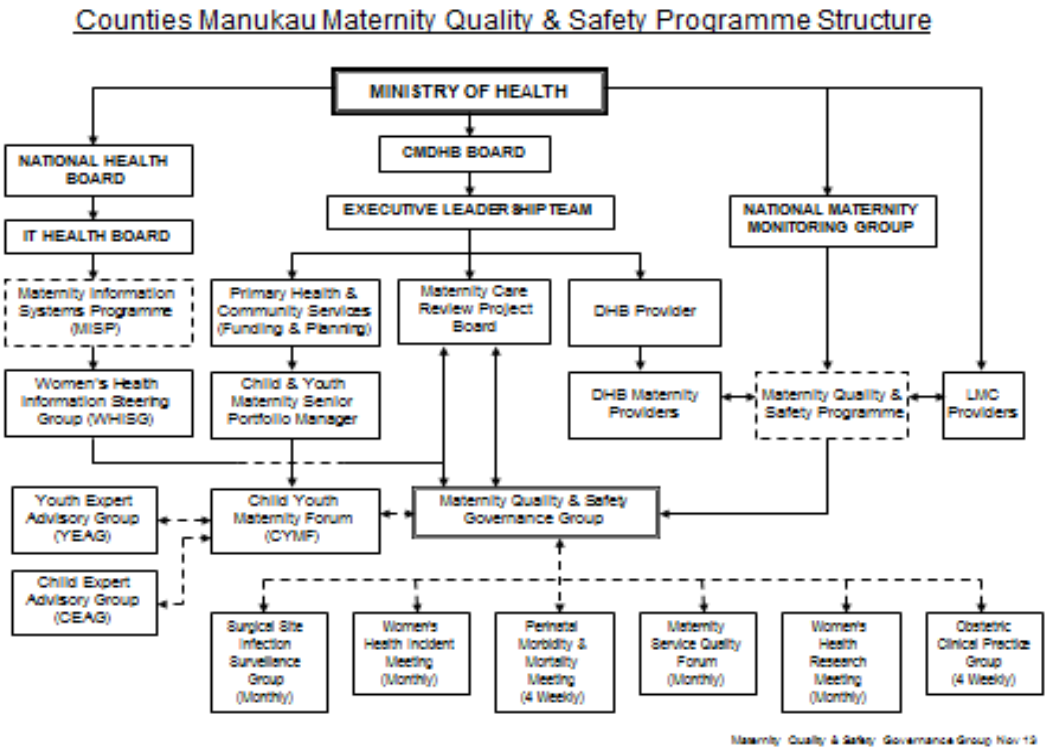
- Maaori representation
- Pacific representation
- GP with involvement in Maternity
- Lead Maternity Carer x2 (Self-employed midwives-1rural;1 urban) nominated by Auckland NZCoM
- Senior Obstetrician
- Senior DHB Midwife Secondary Services
- Senior DHB Midwife Primary Services
- Director of Midwifery
- Maternal Mental Health Services Representative
- Public Health Advisor to the Child, Youth and Maternity team
- Community Representations x2
- Child, Youth and Maternity Senior Portfolio manager
- Maternity Portfolio Manager
- Quality and Risk Manager

There are 2 consumer representatives on the MQSGG. The selection criteria required that the consumer representatives had birthed at Counties within the last 4 years and represent the community demography. In addition there have been a number of consumer focus groups that have provided feedback on their maternity experiences and had the opportunity to provide input into service design. During the past year consumer feedback has been sought on the following topics:

- Accessing and engaging early in pregnancy
- Utilisation of Primary Birthing Units
- Access and advice to contraception
- Strategies to reduce smoking in pregnant women
- Culturally appropriate nutritional interventions to reduce obesity
- Look and design of a phone application for Pacific and Maaori women

The Women's Health Portfolio Manager, who sat in the Funding and Planning Child, Youth and Maternity Team, was established to support and develop the MQSP. This role is currently being reviewed. An experienced self-employed Midwife has been contracted to promote and support self-employed midwives to provide self-employed services in high deprivation areas. This role has also lead the 'self-employed Midwives integrated with Family Health Practices' work and also provides a LMC perspective to primary antenatal care at a number of DHB forums. A Perinatal Midwife Specialist co-ordinates the local monthly Perinatal Mortality meetings, which includes hospital staff as well as community based clinicians and consumer. This role also provides continuity and support for the women and their families who have had a perinatal loss. An administrator supports the MQSGG meeting and updates the actions in the Maternity Quality & Safety Work Plan. CM Health has a Decision Support Team and a Public Health team that provides data analysis support for the MQSP.

Figure 32. Governance structure of MQSP



Quality Improvement

Implementation of the National Maternity Monitoring Group Recommendations

Timing of registration with LMC

As previously stated in the "Timing of engagement with antenatal care" section CM Health is aware that women living in Counties Manukau are not currently being appropriately engaged with antenatal care in a timely fashion. Early engagement with maternity care is recognised as being important in order to identify, and where possible mitigate, any risk factors present during a woman's pregnancy as well as provide education and opportunities for health promotion.

The original intention of the work on improving early engagement was to promote the importance of early engagement with maternity care (by 12 weeks gestation) and guide women to appropriate points of entry. Subsequent information from consumer engagement, evidence from published literature and Counties Manukau Health internal reports indicates pregnant women do generally proactively seek care from professionals, particularly general practice but the system has not been effective at engaging women with a maternity carer. For example, a pregnancy may be confirmed by a general practice but the woman has not engaged actively with a Lead Maternity Carer or DHB Maternity Services even though they continue to seek medical care from their practice.

The issues relate to the role of general practice in 1st trimester care, identifying and linking women with an LMC, the effectiveness of Lead Maternity Carer (LMC) coordination when women have not

registered with one and the working relationships between general practice and midwives (self - employed and DHB).

Promotion is still necessary but CM Health has prioritised improving the effectiveness of the entry points for maternity care. This includes supporting general practice to assist women to identify an LMC as early as possible.

CM Health is in the process of engaging with general practice and midwives on antenatal guidelines to provide clarity on roles and responsibilities. This is not to be confused with Shared Care that CM Health that has historically been undertaken for some years, as outlined in the first section, as a mechanism to provide maternity care when there was a shortage of midwives. The DHB has moved away from Shared Care as the midwifery capacity has improved. The guidelines primarily relate to 1st trimester care and the role of primary care when a woman is confirmed pregnant.

Maori women from Manurewa, Papakura and Mangere feature highly in women who turn up unexpectedly at DHB services and are not booked for birth or antenatal care. They include first time mothers as well as women with children already. Work lead by the contracted experienced LMC has promoted connecting Self-employed midwives with GP practices in Manurewa and Mangere.

To provide better access to maternity care advice and improve the use of primary birthing facilities, the DHB is investigating the establishment of more Maternity Resource Centres in high need areas. Resource centres would provide free pregnancy testing and drop in access to talk to a midwife. If they are located at primary birthing facilities such as Papakura, women and whanau/families also have the opportunity for a midwife to show them around the facility and discuss the experience they could have. General practice guidelines are expected to guide women to resource centres and primary birthing facilities as one of multiple ways to access maternity care.

The DHB operates an LMC coordination service to link pregnant women to an appropriate LMC. This service has been upgraded to be more efficient and timely. A redesign is intended to enable general practice referrals as a way for women to access maternity care.

More detail about the projects to improve early engagement is available in Appendix 1.

Variation of gestation at Birth

It has been signalled by the NMMG that there is interest in better understanding the reasons for planned early birth (eg. Induction, elective caesarean section). It is recognised that Caesarean and Induction rates are increasing (Figure 9 and Table 19). CM Health has undertaken a number of initiatives to help understand these trends better. This work has included reviewing the rates of caesarean sections. Unfortunately data from coding does not enable the DHB to understand the reason for changes in Caesarean section rates. Multiple indications are recorded so it is difficult to ascertain the number of emergency caesarean sections in 1st or 2nd stage of labour. There are plans underway for Decision support to apply the Robson criteria to women who have had a Caesarean section to better understand the population undergoing Caesarean-sections. The DHB also looks forward to the Maternity Clinical Information System (MCIS) which will enable clearer data to be

collected for analysis. In addition MMH is introducing an electronic operation note which may provide more information about the indication for Caesarean-sections in the near future.

A house surgeon has undertaken a 3 month retrospective audit of inductions (results are pending) to better understand clinical practice in CM Health facilities. A regional Induction of Labour guideline is about to be introduced and future audits of CM Health practice will be against this guideline.

In addition all births at 34-36 weeks are being reviewed in order to understand the reasons for births at this gestation. There were 395 women in 2013 who birthed a baby/babies between 34-36 weeks gestation at a CM Health facility (~5% of women birthing). The majority of births at this gestation resulted from spontaneous preterm labour or premature rupture of membranes- the aetiology of which is not clear. Further detail about this work is available in Appendix 1.

Maternal Mental Health Services

The External Review of Maternity Care in Counties Manukau District commented that the nature and extent of Maternal Mental Health was out of scope of the review but advised the DHB to give consideration to the establishment of a mother and baby unit and to take necessary steps to improve maternal mental health services health services within the district.

In 2013 the Northern Region Perinatal and Infant Report (NRA) made specific recommendations for enhancement to Maternal Mental Health services across the region. From December 2013, work streams began the development of 3 mother and baby inpatient beds based at Auckland Hospital (Child and Family unit, Starship). These will be accessible to mothers and babies with acute maternal mental health presentations from the CM catchment. Other Packages of Care, and improved respite facilities as part of these work streams will also enhance maternal mental health responsiveness. The expected completion of the work streams is September 2014.

Over the last year Maternal Mental Health has been part of the CM mental health "Framework for Change". This single point of entry project will give all potential clients and their referrers an improved consistent triage and crises response.

CM maternal mental health has improved the early identification and access to appropriate services for perinatal conditions in primary care settings through a joint project with Turuki Healthcare in the Mangere Locality. The on-going plan is to extend similar activities across other PHO's in the CM district with early development commenced in the Otara Locality.

In addition to the above, CM Health has initiated the First 2000 Days project which focuses on early life course intervention, from peri-conception through to age five years. Specific attention will be given to services for Maaori and Pacific communities. The purpose of the project is to bring about an improved integration of services from peri-conception to pre-school age, and to ensure that these interact better with families, their babies and young children to provide the foundations for all Counties Manukau children to reach their full physical, social, emotional, mental and spiritual potential.

There are three workstreams within the First 2000 Days project:

1. Planned, healthy pregnancy
2. Optimal Maternal, Infant and Child nutrition
3. Parenting and supporting the development of attachment relationships

The workstream 'Healthy Attachment Development and Appropriate Parenting Skills' will focus on promoting the development of healthy attachment relationships for infants with their mother and families in Counties Manukau and supporting the development of parenting skills.

The desired outcomes of this workstream are:

- All infants and children to achieve optimal age-appropriate emotional competence by the age of 5.
- All infants and children will have secure attachment relationships which will also enable their capacity to learn in the context of their cultural and community support.
- All parents will have easy access to advice about raising children and will be able to access health and education services that their children are entitled to.

Maternity USS

A specific Maternity Ultrasound Clinical Working Group has been established to establish indications for USS and work with providers. There are 5 private radiology providers plus the DHB who provide access to maternity ultrasound. Access to maternity ultrasound in Mangere has diminished as a result of the provider not having the staffing. Scans are being provided through nearby clinics but women do have to travel further.

For CM Health there are issues with the complexity of our women who do need scans as well as women requesting unnecessary scans. Consequently, maternity ultrasound providers operate at full capacity and it is difficult to access semi-urgent or urgent scans.

The radiology providers have committed to supporting the DHB to only provide scans that are consistent with guidelines. As a result of the providers understanding how LMCs manage the radiology booking systems, additional capacity has been provided by some of the ultrasound providers to improve access.

Maternity ultrasound is funded through Section 88 of the NZ Public Health & Disability Act 2000 by the Ministry of Health. DHBs consequently have limited access to detailed information although access has recently been provided to ad hoc datasets detailing ultrasound use by un-identified resident individuals.

Clinical guidance is also to be provided to referrers for the indications where urgent and semi-urgent scans may be required.

The NMMG has asked for comment of the National (increasing) trends in maternity ultrasound utilisation

We believe the trends are a result of:

- DHB strategies to engage women in maternity care by 12 weeks gestation. The dating scans are more likely to be used rather than dating from the anatomy scans. In addition, we understand most un-booked women do have general practitioners and have dating scans, second Nuchal Translucency scan and the third anatomy scan.
- Recognition of obesity as a risk factor for perinatal mortality and lack of reliability of clinical examination in women with obesity. Palpating for fundal height is much less reliable/possible in women with a BMI >32 and therefore many of these women will have serial growth scans to assess fetal growth.
- Introduction of GROW and evidence from the UK that GROW improves perinatal mortality. This would increase scans in appropriate women.
- Introduction of guidelines for postdates pregnancy and recommendation to scan for liquor volume prior to arranging post-dates induction of labour.

Implementation of Guidelines for Consultation with Obstetric and Related Medical Services (Referral Guidelines)

The Referral Guidelines were developed by the Ministry of Health in 2012 and were circulated to self- employed LMCs. CM Health became aware that the guidelines had been distributed to self-employed LMCs and followed up with education to employed staff. The DHB continues to work with employed staff and self- employed LMCs to ensure the guidelines are followed.

There are a number of pieces of work underway that are improving awareness and implementation of the referral guidelines. These include work to improve the communication between self-employed LMCs and employed staff as well as building respect and collegiality between maternity sectors of the workforce as outlined in the workforce development section. The development of the communication pathways to clarify roles and responsibilities will in effect support the implementation of the referral guidelines. The intent of the pathways is not to prescribe roles and responsibilities between LMCs and DHB services but to promote flexibility and create an enabling environment where the needs of women are central and fundamental to how services are provided irrespective of who the provider is.

Clinical Indicators analysis to drive quality improvement

The Clinical indicators provide useful information to inform quality improvement although interpretation and attributing meaning to them must be done in the context of the outcomes for women and their babies. While the Caesarean- section rate is low when comparing a standard primipara living in Counties Manukau to the New Zealand average overall the Caesarean-section rate for women birthing at CM Health facilities is increasing as shown in Figure 9. As outlined above work is being done to look at the indications for Caesarean sections and understand why the percentage is increasing. This increase may or may not be clinically appropriate.

Likewise the clinical indicators show induction of labour rate in a standard primipara in CM Health is lower than the New Zealand average. It has been noted however that our induction rates for women delivery in a CM Health facility are increasing. Work, as described above, is being undertaken to understand whether the increasing induction rate is appropriate and also consideration given to the potential work force implications if the increasing numbers reflect good clinical practice.

The Clinical Indicators also show that blood transfusions are higher for women having vaginal births. It is felt this is likely to higher rates of undetected and/or untreated anaemia during pregnancy. Work is underway to improve recognition and treatment of iron deficiency anaemia as outlined in Appendix 1.

Changes in Clinical practice that have been driven by MQSP initiatives

- Given that many women are required to be cared for by CM Health community maternity services a change in model of care has been completed to improve the continuity of care for these women. Within the community midwifery service a "named" midwife actively engages with the woman to provide all her antenatal and postnatal outpatient care where possible. The community Midwives have defined caseload women and negotiate with each woman the best location for her care. Home antenatal visits have increased significantly to meet the women's needs.

- In Otara, a full time midwifery clinic now operates as Dawson Rd Maternity Clinic (co-located with a large Primary Care practice in Otara) to facilitate easier access to LMCs/midwives and promotion of early maternity services engagement by 12 weeks gestation. A drop in service opened 15th April 2013. The number of unbooked or unregistered women resident in Otara birthing in CM Health facilities has reduced to lower levels compared to other high need areas like Manurewa, Mangere and Papakura. Pregnancy testing is available as well as implant contraception insertion. The clinic staff actively seeks to connect pregnant women with a self-employed LMC.

- DNA rate for community midwifery care have dropped below 15% (from 22% two years ago) with the introduction of the change model of care (as described above) and the use of Community Support Workers to follow up with women who we have been unsuccessful at engaging with services.

- Breastfeeding rates at discharge from the maternity facility maintained above the benchmark (BFHI) across all the ethnic groups.

- LMC referral process has been established for woman referred to the DHB for maternity care. LMC's are notified through a text messaging service of referrals received for a pregnant woman requiring a primary maternity carer. LMCs with capacity to look after the woman can then respond.

- As outlined above under early engagement section there is work underway, with primary care, to clarify primary care's responsibility for a woman who presents to confirm pregnancy including the development of referral pathways for GPs, engaging the woman with an LMC as well as clarifying the professional relationship between the GP and the LMC during a woman's pregnancy .

- There is a project underway to reduce the number of women needing an iron infusion during pregnancy (and post-partum)by better recognition of iron deficiency anaemia, education around the importance of early treatment, health promotion with women re diet

as well as investigating options for safer IV iron products. The detail for this work is available in Appendix one.

- We are now monitoring the number of unbooked women presenting to MMH's Birthing Suite formally. This is important to understand the issues for these women but also to allow us to measure the impact of the initiatives we are undertaking to promote early engagement.

- Maternity service is preparing for the roll out of the national Maternity Clinical Information System (MCIS) starting in the last quarter of 2014.

Communication forums or networks that have been established or strengthened

- Communication commenced with GPs to encourage them to refer, and if necessary support, women early in pregnancy to engage either an LMC or CM Health maternity services.

- Clear guidelines provided to general practice about expectations of first antenatal visit are in development as above

- Dedicated midwife who develops our patient information. We have updated Healthpoint for patient and external health professionals to access.

- Profiles of self-employed Midwives available through Healthpoint for both consumers and health professionals to access.

Changes in Maternity Services resulting from consumer engagement and feedback

CM Health is aware that in order to improve outcomes for our women and babies we need to understand their experience of the health system and implement changes that meet their needs. In order to do this we need to engage with consumers to better understand their lived experiences.

To inform planning, CM Health commissioned Pacific Perspectives Ltd to seek feedback from Maaori and Pacific women, teenage mothers and high priority women on their experiences with maternity care with a focus on addressing the issues that were identified in the External Review. Maaori, Pacific and high priority women do not usually provide feedback so the approach with Pacific Perspectives enabled CM Health to seek explicit feedback from these groups.

The report methodology utilised 5 focus groups involving from 2 up to 18 women as well as one on one interviews with 10 women of Pacific ethnicity where English was a second language. A total of 61 women were involved. The sample size is small compared to the 8,100 babies born in Counties Manukau last year (47% of births are Maaori/Pacific). The vast majority of women have been satisfied with their care, this includes Maaori and Pacific mothers. The intention was to seek the views of the most hard to reach women.

The report made a number of observations:

- Women are able to get information on contraception from friends/family or more formal sources (e.g. school nurses) although some may not be fully aware of their options
- Poor service experiences at Middlemore Hospital and primary birthing units
- Peer or family support is widely used but not necessarily enabled by services
- Lack of awareness of the primary birthing units
- Complex lifestyles issues including lack of nutritional choices and obesogenic social environments

There is work underway to address these issues much of which has been described above but to summarise;

Integration of services

- Antenatal guidelines for general practitioners are under development to assist service improvement and coordination of services between midwives and general practice
- A midwifery liaison position is to be established to support closer working relationships between midwives and general practice as well as integration of services between self-employed midwives and DHB services. This position will have a significant role in the Otara Maternal and Child Health Integration Demonstration Site Project.

Access to antenatal care

- A referral service is being established to take referrals from general practice (and other providers such as Family Planning) for women confirmed pregnant but an LMC has not been confirmed-women will be followed up to discuss their needs
- A health literacy programme is being planned – the Pacific Perspectives report information is being used in the targeting of women
- CM Health operates midwife clinics at a community site that enable drop in maternity services for women who do not have an LMC

Workforce Development

- CM Health offer Maaori and Pacific midwife scholarship programmes(supported by the Tindall Foundation and the CM Pacific Health division)
- Joint Midwifery and Education Development Service between CM Health and AUT has increased number of students who reside in Counties Manukau from 14 in 2008 to 67 in 2014.
- A joint venture between Ko Awatea and AUT School of Midwifery has funded a Clinical Educator for Pasifika to support and mentor Pacific students to complete their studies

- A self-employed midwife supports new graduates and midwives wishing to work in CM Health as a LMC
- A workforce development group has developed 6 communication pathways to address the issues between self-employed and DHB midwives. The pathways relate to services provided mainly at Middlemore Hospital.
- The midwife workforce group has modelled the number of self-employed LMC's in each locality required to manage 75% of pregnant women
- CM Health has an ongoing programme for cultural competency including tikanga available to staff and self-employed midwives

Business as usual Quality Improvement Activities

In addition to the specific projects underway as part of the external maternity review work and the Maternity Quality Improvement programme there are a number of business as usual quality improvement activities which are outlined below.

1. Multidisciplinary review meetings reviewing current practices e.g. Diabetes in Pregnancy clinic processes

2. Monthly Obstetric clinical practice group meeting (multidisciplinary) focuses on guideline development

3. Monthly incident/feedback meetings to look at trends
   a. Reviews the number of incidents by classification, location and incident severity. Controlled charting allows for identification of variations in reporting and if these are common or special cause in nature
   b. Investigation into severity 1 - 3 incidents/complaints as required. There have been four maternity reviews undertaken in this financial year.

4. Monthly Maternity quality meetings- Provides a forum for discussion on new clinical practices, finalising of clinical controlled documents and quality plans being undertaken in clinical areas

5. Monthly access holders meetings(increased from bimonthly in 2014)

6. Monthly perinatal meetings with a teaching component of clustered conditions

7. Weekly CTG case based teaching and annual CTG education

8. Weekly paediatric liaison meeting

9. Health and Safety auditing completed bi-monthly in line with organisation requirements

10. Education Programme based on MOH priorities; Midwifery Council NZ requirements and needs analysis eg; Violence Intervention programme; BFHI education; Emergencies training; PROMPT(multidisciplinary emergency skills); Perineal Repair; Contraception Update; Diabetes and PET update; Preceptor training; Immunisation Course; Maternal mental health workshop; Professional Issues; Bereavement and Loss; SUDI prevention

11. CM Midwifery Graduate programme

Priorities for 2014-15

The priorities for the 2014/15 work plan are in the process of being finalised and it is intended that the work plan will be completed and signed off at the August meeting of the Maternity Quality and Safety Governance group. There are a number of pieces of work that will be carried over from the 2013/14 plan as well as a number of new activities outlined in Table 25.

In 2014/15 there is a continuing focus on strengthening consumer engagement with establishing regular consumer forums and further work to increase the opportunities for consumers to provide feedback regarding the care they received.

As stated in the introduction the work being undertaken by the External Maternity Review will be transferred over to the Maternity Quality and Safety Governance group and the Maternity Review Board will be disestablished. It will be important to have clarity about roles and responsibilities going forward and the function of the Maternity Quality and Safety Governance is made clear.

Resourcing for quality improvement activity in 2014/15 has been made available. There will be a need for the MQSGG to advocate for appropriate resourcing to continue to support quality improvement work from 2015/16. This may well be challenging given the competing demands in the current fiscal environment.

Counties Manukau Health Maternity Quality & Safety Governance Group Work Plan for 2014-15

Work Stream 1: Governance and Clinical Leadership

Objectives	Measured by	Milestones / actions	Target completion date	By who	Status (on target/delayed /completed)
Clear direction, purpose for the group and work programme	Work programme agreed and milestones achieved	Work Plan developed and signed off Attendance to meetings maintained	Sept 2014 MQSP governance group meeting	Chair of MQSGG	
Ensure the structures and roles are in place that will enable the work of the MQSP and External Maternity review to continue, after ring fence funding ceases		Development of new clinical governance and organisational structure to reflect function of the group when External Maternity Review work is transferred	December 2014	Director of Strategic Development /Director of Midwifery/ Clinical Director	
Integration of the External Maternity Review work into the Maternity Quality and Safety Governance structure		Transfer of the External Maternity Review work streams from the Maternity Review Board to the Maternity Quality and Safety Governance group	December 2014	Director of Strategic Development/ Director of Midwifery/ Clinical Director	

Objectives	Measured by	Milestones / actions	Target completion date	By who	Status (on target/delayed /completed)
Advocate within the DHB for transparency of maternity funding streams to ensure sufficient resource to continue quality improvement work	Business plans for budget requirements submitted Budget discussions of allocation of Quality and Safety funding on agenda of MQSGG meetings	Targets met Fiscal responsibility fits with overall organisational goals and direction	31 Jan 2014	Senior Portfolio Mgrs Youth, Child & Maternity/ Director of Midwifery/ Clinical Director	
Awareness of national priorities	Involvement in MQSGG National meetings/ teleconferences NMMG workplan priorities are included in CMH plan An Annual Report on maternity services and outcomes	CM Health is represented at all meetings Relevant information/documents are reviewed by MQSGG Drafted by Finalised by	As scheduled 31/03/15 30/06/15	MQSP co-ordinator MQSP co-ordinator/Public Health Physician	
Appoint Clinical MQSP co- ordinator role	Position filled	Job Description reviewed Role advertised Appointment made	Oct 2014	Senior Portfolio Manager Child, Youth and Maternity (or similar role)	

Work Stream 2: Local Communication Systems and Information Sharing

Objectives	Measured by	Milestones / actions	Target completion date	By who	Status (on target/delayed/completed)
Professional stakeholders are well informed regarding quality and safety activity and achievements	Measurement of number of hits on Healthpoint Evaluation of stakeholders re information and achievement	Calendar sharing for meeting, events and education on SouthNET Report quarterly to Access Holders meeting re indicators for maternity quality and safety activity. MQSGG meeting minutes, plan and Annual Report on SouthNET and Healthpoint Restructure maternity newsletters and information alongside Maternity Care Review Project Board communication plan. Annual report presentation	Feb 2015	Quality and Risk Manager Director of Midwifery MQSP Coordinator	
Implementation of Maternity Clinical Information System and neonatal component of the system	As per MCIS Implementation Plan	As per milestones in the MCIS implementation plan	Ongoing	Service Manager Primary Maternity Care	

Objectives	Measured by	Milestones / actions	Target completion date	By who	Status (on target/delayed/completed)
Communicate indicators for maternity quality and safety	Quarterly newsletter is provided Include on website – clinical indicators, scorecard info, incident trends, smoking target	Quality & Risk quarterly reporting - contributing to a restructured newsletter Reports posted to Quality page on Women's Health website and Healthpoint Quarterly summary of maternity quality and safety activity for Consumer Forum Communication plan included with Maternity Care Review Project Board plan.	Ongoing	Quality and Risk Manager Quality and Risk Manager/ Consumer members/MQSP Coordinator	
Enable feedback from professional stakeholders	Access holders meetings frequency and chair/structure function reviewed Web page (SouthNET/Healthpoint) regularly updated Measurement of number of hits on Healthpoint	Monthly meetings with Access holders Restructure Access Holders forums Investigate using Healthpoint as a way for access holders to provide feedback to the DHB	Ongoing Ongoing	Director of Midwifery/ MQSP co-ordinator	Ongoing

Work Stream 3: Data Monitoring

Objectives	Measured by	Milestones / actions	Target completion date	By who	Status (on target/delayed /completed)
Oversight of data collection monitoring, reporting and usage	Regular reporting and analysis of national and local clinical indicators Included in Annual Report yearly	Develop local clinically relevant indicators from available data sources Undertake consultation with • Casemix and coding • Health Round Table • MoH Clinical Indicators • PMMRC reports and recommendations Also need to include BadgerNet once established and Maternal Mental Health evaluation of regional services	December 2014 Dependent on introduction timeframes June 2015	Director of Midwifery/ Clinical Director Women's health MQSP Coordinator/ Public Health Physician	

Work Stream 4: Coordination and Administration of the Quality and Safety Programme

Objectives	Measured by	Milestones / actions	Target completion date	By who	Status (on target/delayed /completed)
Roles and responsibilities are clearly defined	Timeframe and milestones achieved Regular reporting on work programme	Identify schedule re what and when for reporting		MSQP co-ordinator	 Ongoing

Work Stream 5: Sector Engagement

Objectives	Measured by	Milestones / actions	Target completion date	By who	Status (on target/delayed/completed)
Robust processes for clinicians to participate in planning and service design	Processes/initiatives are endorsed and approved and decision making recorded in meeting records	Continue with the working group and project boards under the Maternity Review Project Board until the end of 2014 and then reassess the on-going requirements for these. The working groups and project boards include: • Maternity Ultrasound Clinical Working Group • Models of Care and Workforce Project Board • Family Planning, Contraception and Sexual Health Working Group	1/12/2014	Maternity Portfolio Manager or similar position	

Objectives	Measured by	Milestones / actions	Target completion date	By who	Status (on target/delayed/completed)
The implementation of 2012 Guidelines for Consultation with Obstetric and Related Medical services is reviewed including emergency transport plans	Documented evidence of new guideline release. Amendments to local documents to reflect changes required.	Identify streamlined emergency transfer processes The completion and implementation of the Communication pathways (Workforce group) Evaluation of pathways as part of an audit of Referral Guidelines The implementation of 2012 Guidelines for Consultation with Obstetric and Related Medical services is reviewed including emergency transport plans repeat audit	1 Sept 2014 1 July 2015	LMC rural representative/ NZCOM Guideline liaison (Janine Clemons) & Secondary care Midwife representative Director of Midwifery	Audit Underway, completed June 30, 2014 Analysis occurring
Provide appropriate education sessions for Self -employed LMCs and hospital staff and General Practitioners	Needs analysis completed Priorities identified Package implemented according to scheduled dates	Plan and develop an educational programme for clinicians Topics for consideration include Anaemia in pregnancy, diabetes, cardiovascular respiratory assessment and debriefing after the birth, and post-traumatic stress.		MQSP coordinator, educators, mental health clinicians.	

Work Stream 6: Consumer Engagement

Objectives	Measured by	Milestones / actions	Target completion date	By who	Status (on target/delayed /completed)
Improve mechanisms for consumers to provide feedback on services	Provision of a number and variety of mechanisms in which feedback is received	Strengthen Consumer feedback through establishing regular consumer forums – Importance of these occurring 3 monthly for the Consumers to bring ideas/issues/concerns and Health Professionals take ideas/seek consultation to occur. Support for the two consumer members on the MQSGG Strengthen the feedback mechanisms from consumers - explore improving the processes to enable women to provide feedback e.g. while in birthing unit, once home.		MQSP governance group/Director of Midwifery/ Clinical Director	

Work Stream 7: Quality Improvement

Objectives	Measured by	Milestones / actions	Target completion date	By who	Status (on target/delayed /completed)
Review of key target outcomes in addition to business as usual quality activities of the Women's Health Quality Framework	Data reported by CMS specialist of unbooked women presenting in Birthing and Assessment	Three monthly reporting schedule maintained	Ongoing	Clinical Midwife Specialist	Ongoing
	Early identification of women who are iron deficient early in pregnancy Reduction of the number of women needing an iron infusion. Improve safety of available treatment options	Education for maternity providers about appropriate investigations and subsequent management of women who are iron deficient Review clinical guideline for iron deficiency treatment Advocate for rapid iron infusion preparation	1 July 2015	Clinical Director Women's Health LMC urban representative Clinical Lead Obstetrics	Underway
Review of key target outcomes in addition to business as usual quality activities of the Women's Health Quality Framework (cont)	Number of inductions and rational assessed for appropriateness of treatment	Audit Induction of Labour against regional Induction of Labour Guideline	30 June 2015	Obstetrician lead and Secondary Care Midwife	Underway

Objectives	Measured by	Milestones / actions	Target completion date	By who	Status (on target/delayed /completed)
	Number of LSCS performed and rationale are assessed	Review charts using audit tool to identify criteria used for Caesarean RANZCOG tool Working with Decision support to categorise women using the Robson criteria to better understand the indicators for Caesarean section rate increases	 30 June 2015	Clinical lead Obstetrics Director of Midwifery	Underway
Improve consistency of management of women when first present pregnant to primary care and ongoing during pregnancy	Clarify GP's role during first contact with pregnant women clarified.	Develop clear guidance re appropriate referrals and investigations for pregnant women Develop clear process by which primary care can link women with LMC Focus on improving working relationships between general practice and maternity providers in high need localities through facilitated arrangements	 30 June 2015	GP liaison, Urban LMC representative & MQSP Coordinator	
Improve Early engagement with antenatal care	LMC Booking system for early engagement reviewed Increase percentage of women registered with LMC <14 weeks	Current process reviewed and adjusted. Data requested for MOH for year 2013/14 and 2014/15	31 October 2014 30 June 2015	Clinical Midwife Specialist Director of Midwifery	

Objectives	Measured by	Milestones / actions	Target completion date	By who	Status (on target/delayed /completed)
Improve screening for mental health issues. Guideline reviewed with different pathways for different women	Guideline completed with a suggested screening tools Guideline implemented Audit of number of pregnant women screened for mental health issues	Investigate introducing antenatal screening and post natal screening for mental health issues as general practice and midwifery guideline (connects to First 2000 work stream)	31 Dec 2014	Maternal Mental Health representative & Director of Midwifery	
Increase the number of pregnant women who receive influenza vaccine and Pertussis vaccination	Increased vaccination rates for pregnant women living in Counties Manukau	Identify baseline data for influenza and pertussis vaccination in pregnant women Deliver education to self-employed LMCs, hospital staff re the importance encouraging Pertussis and Influenza vaccination during pregnancy Explore options of how uptake for pregnant women could be increased eg community vaccination clinics, up skilling clinic staff to deliver vaccines	Ongoing	Public Health Physician/DOM/ Chief Nurse Advisor Primary & Integrated Care/ Midwife Manager Community Midwives	

Objectives	Measured by	Milestones / actions	Target completion date	By who	Status (on target/delayed /completed)
Provide accessible, acceptable contraception		Review the contraception pilots re long acting reversible contraception and vasectomies and implement service changes on the basis of results.	Dec 2014	Clinical Director	
Improve practice to decrease 3rd and 4th degree perineal tears.	Decrease 3rd and 4th degree perineal tears	Review practice for vaginal births used to decrease 3rd and 4th degree perineal tears Develop a guideline of practice to reduce 3rd and 4th degree perineal tears. Education on risk reducing practices for 3rd and 4th degree tears	Dec 2014 Mar 2015 June 2015	O&G Consultant & DOM	

Objectives	Measured by	Milestones / actions	Target completion date	By who	Status (on target/delayed /completed)
Implement Ministry of Health "Guidance for healthy weight gain in pregnancy"	Survey women about whether they recall their LMC having a conversation with them about appropriate weight gain during pregnancy	Establish baseline recording of weight and height currently Provide education to midwives about the importance of measured height and weight (not relying on self-reported) Provide education for midwives about skills and information to engage women in a conversation about appropriate weight gain during pregnancy Develop local CM pocket care showing appropriate weight gain during pregnancy based on pre pregnancy weight. Investigate adding a tick box into the patient management system "Had conversation re weight gain during pregnancy" Yes or No to act as a prompt and allow audit	November 2014 February 2015	MQSP co - ordinator	

Objectives	Measured by	Milestones / actions	Target completion date	By who	Status (on target/delayed /completed)
Early diagnosis of undiagnosed type 2 diabetes in pregnancy, and seen in clinic within two weeks	All women with HBA1c identified with booking bloods	Aim to start the HBA1c testing for all women at booking starting February 2015 Education around the implementation of the screening by HBA1c to all LMCs and GPs Implementation of National Guidelines for Diabetes in Pregnancy (dependent on MOH release) – Decision when to implement the recommendations from the MOH National Guidelines Group. Recommendations for HBA1c testing to be included in the Antenatal booking bloods when woman first presents for antenatal care. Funding discussed with Director of Hospital Services	Commence February 2015 Education and awareness start November 2014	DiP team Clinical Director	DiP Team to meet and decide

Objectives	Measured by	Milestones / actions	Target completion date	By who	Status (on target/delayed /completed)
Referral pathway for women with IGGT with HBA1c of 41-49 at < 20 weeks gestation	Referral pathway implemented with the PHO dieticians in the different localities	Referral pathway to be developed. Date for implementation confirmed. Dietician services to feedback to the group that they are ready to start and monitoring group in place. 3 monthly updates required of – how many referrals made, attendance and DNA rates. Match with laboratory information of how many HBA1c 41-49 were actually diagnosed and how many were seen by the PHO dieticians	Commence February 2015 Feedback 1st June 2015 2nd feedback 1st Sept 2015 3rd feedback 1st December 2015	Diabetes Dietician and Dietician team O&G Consultant Diabetes	Dietician team to meet and discuss
Diagnosis and treatment of gestational diabetes in a timely manner	Audit of numbers OGTT done, and patients seen in clinic within two weeks	Referral data from Clinical Midwife Specialist matched with data from lab	December 2015	Clinical Midwife Specialist - Primary	To be discussed with Clare and Isabella
Monitor the research around the DiP services	Performance against research timelines for the GEMS, TARGET, HUMBA and HBA1c trials	Regular 3 monthly feedback from the trial coordinators. Monitor performance against research timelines.		O&G Consultant Diabetes Diabetic Consultant	Ongoing

Appendix 1

This Appendix includes a summary table providing more detail about the work currently underway in Counties Manukau related to each of the Quality improvement areas

Table 25. Summary table of work programmes currently underway

Maternity Quality and Safety Activity	Target Group	Rationale for the project	Project Status	What has been delivered	Outcome/results to date	What is still to be delivered – where to from here?
Contraception						
Contraception: Postnatal	All women who deliver at a CM H facility	Provide contraception options to women following delivery.	Pilot commenced November 13, becoming business as usual.	A pilot offering postnatal women a Jadelle before discharge, IUCD appointment or other contraception supplied as required.	150+ Jadelles provided during pilot from November 13 – April 14.	To become business as usual offering postnatal women contraceptive choices.
Vasectomy Pilot	All CM H men who have completed their families	Provide vasectomy to complement other contraception methods.	Pilot project commenced end March.	Free vasectomy service (pilot) to test uptake in CM Health population.	37 appointments scheduled/completed within 4 week period. Uptake has been very quick.	Total 50 to be delivered. Data to be summarised at end of this pilot.
Improved engagement in Antenatal Care						
Key Maternity Messages	All pregnant women in COUNTIES MANUKAU	A media campaign targeted to Maaori, Pacific and women living in COUNTIES MANUKAU	On going	Key maternity messages designed by consumers and approved by clinicians widely disseminated	Key maternity messages aligned with the LMC Booking System	Media launch resourced for June 2014
Consumer	Maaori and Pacific	Raise awareness	On-going	Focus groups with over 60	Maternity Care Experiences of Teen,	Teen, Young, Maaori, Pacific and

Maternity Quality and Safety Activity	Target Group	Rationale for the project	Project Status	What has been delivered	Outcome/results to date	What is still to be delivered – where to from here?
Engagement Project	women who live in Counties Manukau, and have birthed in a CM Health facility in the last 4 years	and increase knowledge of antenatal care before 10 weeks gestation	improvement	participants 1:1 interviews with 10 women who speak English as a second language	Young, Maaori, Pacific and Vulnerable Mothers report identifying key findings and recommendations Strengthen multiply entry points for women to engage with an LMC early Maternity care consumer input in design and measuring maternity quality of care Consumer representation on MQSGG	Vulnerable Mothers experience improved maternity services
LMC Booking System	Access holders of Counties Manukau area. Dialhog (Texting system) is only used for central area, Primary Birthing Units have paper system	Many GP's do not understand the choices so cannot explain to the women. Women may not feel happy to call midwives even if has been looked after by her previously.	On-going improvement	681 women have been offered an LMC via central process antenatal and 207 postnatal. (ending March 2014)	Approximately 40% of women are returned to CU from the antenatal process and 12% from the postnatal process = 272 antenatal women and 182 postnatal women engaged with LMC. Clerical support for the process in place now.	Just started to introduce weekly updates on active referrals to the LMC's (antenatal). Next step is to notify women of name and number of the LMC who has accepted the referral to try and improve unable to contact rates – anticipated to be in place by end of May 2014

Maternity Quality and Safety Activity	Target Group	Rationale for the project	Project Status	What has been delivered	Outcome/results to date	What is still to be delivered – where to from here?
		This process is based on the midwife calling the woman. Connect as many women as possible with continuity provider.			Data from PBU is not yet available – has been requested.	
GP referrals to LMC and 1st trimester care	GP DHB midwives and self-employed Midwives	To reduce the number of pregnant women who do not receive antenatal care Improve antenatal care in the 1st trimester and ensure early engagement with a LMC by 10 weeks To determine from self-employed Midwives what	On going	Formed a GP focus group Consult with self-employed Midwives regarding provision of antenatal care in Botany Primary Birthing Unit.	A draft proposal of Clinical Guidelines for antenatal Care including referral pathways for GPs, providing options dependent on the woman's request/suitability for Primary Maternity Care and GPs professional relationship with an LMC's in their area.	Awaiting further feedback from self-employed Midwives and GP's regarding draft process.

Maternity Quality and Safety Activity	Target Group	Rationale for the project	Project Status	What has been delivered	Outcome/results to date	What is still to be delivered – where to from here?
		works and how to improve the current process				
Dawson Rd Drop In Clinic	Maaori and Pacific women who live in Counties Manukau who are pregnant and wish to find a midwife	To provide access to maternity services that are flexible enough to meet the woman's needs and raise awareness of the availability and benefits of antenatal care and education within a community setting	On-going	Scheduled Midwifery Clinics and a daily drop-in facility (Mon- Fri 0800 – 1630) providing: accessible, flexible , opportunistic pregnancy care; routine, scheduled antenatal care; an initial contact venue to signpost women seeking midwifery care; raise awareness of options for care; arrange contact with a self-employed midwife;	1312 women who have accessed the 'walk in' service between Jan 13 – Feb 14	A weekly Obstetric SMO and RMO antenatal clinic Postnatal drop in facility Education/facilitated group sessions
Workforce development						
Self-Employed	New graduate and	To increase the	On-going	Two new self-employed	More women from high	To continue to promote and

Maternity Quality and Safety Activity	Target Group	Rationale for the project	Project Status	What has been delivered	Outcome/results to date	What is still to be delivered – where to from here?
Midwives integrated with Family Health Practices (FHP)	new experienced midwives who wish to work as Self Employed midwives integrated with Family Health Practices in high deprivation areas in CM health	number of S/E midwives who are co-located in high deprivation areas of CM Health to improve the early access and on going engagement with midwifery care.	improvement not only with the 2 new project S/E midwifery groups but a change in culture with existing S/E midwifery groups now inviting and supporting new graduate midwives to join them	midwifery groups: 2013 now up to 6 members and 6 midwifery clinics integrated with FHP in Otara and Manurewa. 2014 has 3 members and they have 3 midwifery clinics in Mangere.	deprivation communities who primarily access their FHP for all primary care are now able to access full continuity of midwifery care at the same location. Convenience of all health services at one location close to home supports populations who are impacted by poverty. This convenience and the collegial relationship the midwives build with the FHP Doctors, Practice Nurses and Receptionist allows for trust by association which assists women to engage early with midwifery care.	support more midwives to co locate with FHP in high deprivation regions of CM Health and educate more FHP doctors about the merits of integrated and convenient holistic health practices which include and value continuity of midwifery care from their health practices.
Understanding Clinical Variation						
Induction of Labour	Women who have an induction of labour	Understand the number of inductions and rational assessed for appropriateness of treatment	On going	Review regional guidelines for the common indications for induction of labour (IOL) Currently in consultation stage	Once guidelines have been approved, they will replace current local guidelines Review of IOP (age, gestation reason for induction)	Audit practice and provide recommendations
Review 34-36 week gestation births	Women who have had a 34-36 week gestation birth	Understand the number of women who have had a 34-36 week	On going	CM Health has not identified a rise or concern in this cohort of births	In review	Review 2012 and 2013 data. Provide recommendations

Maternity Quality and Safety Activity	Target Group	Rationale for the project	Project Status	What has been delivered	Outcome/results to date	What is still to be delivered – where to from here?
		gestation				
Number of LSCS performed	Women who have had a LSCS performed	Rationale for the gradual rise in LSCS	On going	Review elective versus intra-partum caesareans and by indication and parity	Dedicated antenatal clinic for women who have in previous pregnancies experienced a 3rd or 4th degree tear (3% of vaginal births), 50% of these women are recommended to have an elective caesarean section Obesity and diabetes is on the rise also increases a women's likelihood for a caesarean section Development of the tool 'GROW' and creating a customised growth chart which helps more accurately identify small (growth restricted) babies. As a result, the number of women undergoing induction of labour for this indication has increase with a higher caesarean section Under a trial of labour with some women (30%-40%) being unsuccessful, women choose for subsequent births	Review 2012 data, research and provide recommendations

Maternity Quality and Safety Activity	Target Group	Rationale for the project	Project Status	What has been delivered	Outcome/results to date	What is still to be delivered – where to from here?
					to be caesarean section	
Reduction in the number of women needing an iron infusion in pregnancy	Any anaemic pregnant women in CM	Identifying women with iron deficiency at the beginning of pregnancy and treating them with iron therapy early will result in less iron deficiency anaemia late in pregnancy and therefore fewer women requiring iron infusions.	Ongoing via various strands	Trainee Intern Quality Improvement Project looking at the number of women who have a ferritin checked with their booking bloods and how many are treated appropriately.	Approximately half of women have ferritin levels checked at booking and only 37% with abnormal results have the appropriate treatment.	This project will have multiple arms: 1.)Further analysis of the QI cases to look at treatment throughout pregnancy and outcomes for mother and baby 2.)Rewriting the Prevention and Management of Iron Deficiency Anaemia in Pregnancy guideline 3.)Changing blood request forms to make it simpler to request ferritin with booking bloods 4.)Educating midwives and GPs about early treatment 5.)Educating women about the importance of iron in diets and supplements 6.)Continued lobbying to Ministry of Health for safer intravenous iron products on the Hospital Medicines List

Maternity Quality and Safety Activity	Target Group	Rationale for the project	Project Status	What has been delivered	Outcome/results to date	What is still to be delivered – where to from here?
Women presenting unbooked to Birthing & Assessment	All women unbooked and/or unregistered who – present at Birthing & Assessment at MMH.	To assess if presentations decrease with engagement strategies of the Maternity Care Review Action Plan.	On going	Quarterly data reports details include: • Unbooked women • Unregistered women • LMC registered but not booked women • New to CM • Women birthing • Women for antenatal care • Ethnicity • Residential area • Gestation at presentation • Parity of un-registered women	The monthly average for women presenting at Birthing and Assessment unbooked is 28 To see a decrease in women presenting unbooked at Birthing and Assessment	On going
Access to Services						
Northern Region Perinatal and Infant Mental Health Project (Acute focus)	Mothers (and fathers or primary carers) and babies who reside in the Northern Region with acute mental health needs	Provision of better support to mothers with acute mental health and/or addiction needs and their infants by expanding the continuum of	In progress	Currently in planning phase	Establishment of five work stream groups across the region: • Model of care • In-patient Service at Child and Family Unit (3 beds)	The enhanced acute response options across the 4 Northern region DHBs will include: Establishment of mother/baby inpatient facility based at the CFU (3 beds). Local services will be enhanced through the provision of

Maternity Quality and Safety Activity	Target Group	Rationale for the project	Project Status	What has been delivered	Outcome/results to date	What is still to be delivered – where to from here?
		acute mental health services available and appropriately co-ordination across the region.			• Community support Services • Workforce including community clinical roles • Northland services	additional Maternal Mental Health staff (16.5 FTE) to provide extended hours and on-call. Establishment of additional/enhanced community based respite facilities (6 beds). Increased community support packages will support families to access the right care for their needs. The workforce across the continuum will be provided with training for additional skills.
Maternity Ultrasound Clinical Working Group	• Ultrasound Service Providers • Self-Employed midwives • CM Health Midwives • CM Health Radiology	The improve timely access to all scans for pregnant women	On going	The Maternity Ultrasound Clinical Working Group have defined the 18 clinical indicators in section 88 as • Routine Scans • Semi-Urgent Scans • Urgent Scans The Maternity Ultrasound Clinical Working Group are developing Clinical Pathways	Unnecessary scans will decrease Ultrasound service providers are able to complete all scans within the approximate timeframes GP's and Midwives can book appointments within the approximate timeframes	Develop and agree on an implementation pathway . Train referrers e.g. GP's and midwives on the referral forms and approximate time frame for all scans

Maternity Quality and Safety Activity	Target Group	Rationale for the project	Project Status	What has been delivered	Outcome/results to date	What is still to be delivered – where to from here?
				for each clinical indicator including approximate timeframes for all scans		
Smokefree Pregnancy Pilot	Maaori and Pacific Island women living in the wider Manurewa area who are pregnant up to 28 weeks and smoking. Focus on young mums and early in pregnancy as possible.	High smoking rates during pregnancy recorded and current smokefree support not making sufficient difference. Growing body of evidence suggesting Incentivising pregnant women to stop may be the most effective. Pilot needed to test feasibility, efficacy and acceptance within the community.	Service delivery adding incentives to usual care (behavioural support & medication) has been running since August 2013. 12 week programme delivered by in-house staff and external providers. Pilot due to finish in June 2014 with an evaluation due in September.	A steering group formed to guide the project. Promotional and client resources produced. An 0.5fte employed to deliver the service. Newspaper story, TV story and radio interview produced. Radio adverts produced to promote pilot as well as Facebook and Trademe	Pilot advertised to community and self -employed midwives, primary care practices, Turuki Health, Taonga Education Centre, Anglican Woman's Trust, Plunket, WINZ, Maternal mental health services, Manurewa dairies and pharmacies. As of end of March 2014: 147 referrals received for pregnant women and whaanau (approx. 14 per month for pregnant women). The service is resulting in a 70%quit rate at 4 weeks and 60% at 12% for pregnant women. This can be compared to a 40-50% success rate at 4 weeks and 30-40% success rate at 12 weeks. More importantly has tripled referrals from the same area compared to previous year's results from a dedicated pregnancy service. 7 women within the first 6 months were identified as not having a	Continue recruiting referrals and providing incentives service until June 2014. Collecting data from first set of women who are 3 months after delivery to determine whether the intervention has reduced the relapse rate and helped more women to remain smoke free. Support and advise 2 DHBs and an NGO alliance with their replication of the model. Work on strategies to further advertise the pilot within the target audience and seek to increase engagement from Pacific Island pregnant women. Evaluation to be produced and disseminated. Secure funding from MOH for Year 2 of the project which will

Maternity Quality and Safety Activity	Target Group	Rationale for the project	Project Status	What has been delivered	Outcome/results to date	What is still to be delivered – where to from here?
				advertising. Consultation and promotion to key stakeholders conducted. Programme incorporating incentives in a structured schedule developed and being delivered to referrals meeting the criteria. Whaanau encouraged to join and receive vouchers.	midwife; this was then arranged via the DHB midwifery service. 60% are under 20 weeks pregnant and 26% are under the age of 20 years old. 80% identify as Maaori and 20% Pacific Island. 15% of all referrals are self-referrals which is the ideal, women are seeing the adverts and request the intervention themselves. The results suggest that the service is more appealing compared to previous service delivery, is attracting women that may not have previously engaged in Smokefree support and results in more pregnant women stopping smoking in pregnancy. Qualitative data received so far indicates that women experience a much more positive experience with quitting and look forward to the tangible benefits for their whaanau, feeling that their efforts are being recognised and internalise the motivation to maintain smoke free status.	continue in Manurewa but be piloted in one more locality, housing a Smokefree practitioner within an external provider. Year 3 will incorporate a third locality and housing another Smokefree practitioner in another external provider.