COUNTIES MANUKAU HEALTH

Maternity Quality and Safety Programme

Annual Report
2014 - 2015

Acknowledgements

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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
GP	General Practitioner
ICD10	International Statistical Classification of Diseases and Related Health Problems, 10th Revision
LARC	Long Acting Reversible Contraception
LMC	Lead Maternity Carer
MAT	National Maternity Collection
MCIS	Maternity Clinical Information System
MEAG	Maternity Expert Advisory Group
MEWS	Maternity Early Warning Score
MELAA	Middle Eastern Latin American African
MQSP	Maternity Quality and Safety Programme
MQSGG	Maternity Quality and Safety Governance Group
NMCIS	National Maternity Clinical Information System
NMDS	National Minimum Dataset
NMMG	National Maternity Monitoring Group
NZHIS	New Zealand Health Information Service
PIMS	Patient Information Management System
PMMRC	Perinatal and Maternal Mortality Review Committee
SUDI	Sudden Unexpected Death in Infancy

Introductory Comment

Counties Manukau Health is pleased to provide the third report to the Ministry of Health for the Maternity Quality and Safety Programme for the 2014/15 financial year.

The report covers the initiatives undertaken in the past 12 months as part of the implementation of the Maternity Quality and Safety Programme (MQSP) as well providing information requested by the National Maternity Monitoring Group. In previous years the Maternity Quality and Safety Programme report has focused on the activity identified in the Maternity Quality and Safety Plan. This year we have endeavoured to take a broader view and summarise activity underway across the maternity system that can be considered quality improvement work.

In addition we have redesigned the report in the hope that the information is more engaging, accessible and relevant to key stakeholders such as self-employed LMC midwives and women who live and/or birth in our district.

Counties Manukau Health remains committed to the needs of our community and strives to provide appropriate, accessible, quality clinical care to our women and their babies.

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CM Health Shared Vision and Values

Shared Vision

To work in partnership with its communities to improve the health status of all, with particular emphasis on Maaori and Pacific peoples and other communities with health disparities.

- We will do this by leading the development of an improved system of healthcare that is more accessible and better integrated.
- We will dedicate ourselves to serving our patients and communities by ensuring the delivery of both quality focussed and cost effective healthcare, at the right place, right time and right setting.
- Counties Manukau District Health Board will be a leader in the delivery of successful secondary and tertiary healthcare, and supporting primary and community care.

Shared Values

Care & Respect
Treating people with respect and dignity; valuing individual and cultural differences and diversity.

Teamwork
Achieving success by working together and valuing individual and cultural differences and diversity.

Professionalism
Acting with integrity and embracing the highest ethical standards.

Innovation
Constantly seeking and striving for new ideas and solutions.

Responsibility
Using and developing our capabilities to achieve outstanding results and taking accountability for our individual and collective actions.

Partnership
Working alongside and encouraging others in health and related sectors to ensure a common focus on, and strategies for achieving health gain and independence for our population.

Background

Counties Manukau Health (CM Health) has had an increased focus on improving the quality of maternity care provided to women living in the district for several years.

The Perinatal and Maternity Mortality Review Committee (PMMRC) first noted in their 2008-09 report that Counties had a higher perinatal related mortality that the New Zealand average.[1] Two years later, in 2011, PMMRC specifically recommended that *"further research was warranted to understand the higher rate of perinatal-related mortality in Counties Manukau."*

While it was thought, and later confirmed, that women living in Counties Manukau have a higher prevalence of risk factors, which explain the poor maternity outcomes compared to other women birthing in New Zealand, there was a desire to review the delivery of maternity care to women in the district to identify opportunities for improvement of outcomes for women and their babies by addressing these risk factors as well as other system issues.[2,3] To this end an independent external review panel was established to review the maternity care system and provide recommendations to guide a tangible action plan. This external review panel provided their report at the end of 2012.

The recommendations of this report were then translated into a work plan which has guided considerable work in the maternity sector in Counties Manukau. This work plan was overseen by a Maternity Review Board which reported through to the Executive Leadership Team and the Board. In addition there was also work being undertaken at a strategic level looking at how we could "Achieve Better Outcomes for All" and, at the end of 2012, preconception, the antenatal period and first years of life were captured as a priority area under the "First 2000 days" programme.

This increased focus on maternity care in Counties Manukau coincided with the implementation of the Ministry of Health (MoH) led Maternity Quality and Safety Programme (MQSP). The work of the MQSP and the work resulting from the Maternity Review have been connected through the Maternity Quality and Safety Governance Group (MQSGG) reporting through to the Maternity Review Board.

At the end of 2014 the Maternity Review Board entered a transitional period as it moved from a project structure to business as usual. As a result the governance structure in the maternity area is currently being re-configured. At the same time the overarching governance of child, youth and maternity services is also being reviewed but it is likely there will be a new child, youth and maternity governance group established to which the MQSGG will report. It is expected that the new governance arrangements will be clarified in the first quarter of the 2015/16 year.

1 PMMRC. 2009. Perinanatal and maternity Mortaility in New Zealand 2007. Third Report to the Minister of Health July 2008 to June 2009. Wellington: Ministry of Health http://www.hqsc.govt.nz/assets/PMMRC/Publications/Third-PMMRC-report-2008-09.pdf

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

3 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 .

Purpose of Annual Report

The purpose of CM Health's MQSP Annual Report is to:

- Provide information about the quality improvement work underway in the Counties area to women living and birthing in our district as well as the Maternity workforce.
- Provide the MoH with the contractually required information as set out in Section 2 of MQSP Crown Funding Agreement Variation.
- Document CM Health's progress towards delivering the MQSP Work Plan deliverables in 2014/15.
- Describe the work planned to improve the quality and safety of maternity services delivered in the district in 2015/16.
- Provide feedback to the NMMG on their key priority areas.
- Benchmark against New Zealand Maternity Clinical Indicators.

Alignment with the New Zealand Maternity Standards

The New Zealand Maternity Standards provide guidance for the provision of equitable, safe and high-quality maternity services throughout New Zealand. They consist of three high-level strategic statements to guide the planning, funding, provision and monitoring of maternity services by the Ministry of Health, DHBs, service providers and health practitioners.[4]

Standard One: Maternity services provide safe, high-quality services that are nationally consistent and achieve optimal health outcomes for mothers and babies.

8.2 Report on implementation of findings and recommendations from multidisciplinary meetings;

8.4 Produce an annual maternity report;

8.5 Demonstrate that consumer representatives are involved in the audit of maternity services at CM Health;

9.1 Plan, provide and report on appropriate and accessible maternity services to meet the needs of the Counties Manukau region;

9.2 Identify and report on the groups of women within their population who are accessing maternity services and whether they have additional health and social needs.

Standard Two: Maternity services ensure a women-centred approach that acknowledges pregnancy and childbirth as a normal life stage.

17.2 Demonstrate in the annual maternity report how CM Health have responded to consumer feedback on whether services are culturally safe and appropriate;

19.2 Report on the proportion of women accessing continuity of care from a Lead Maternity Carer (LMC) for primary maternity care.

Standard Three: All women have access to a nationally consistent, comprehensive range of maternity services that are funded and provided appropriately to ensure there are no financial barriers to access for eligible women.

24.1 Report on implementation of the Maternity Referral Guidelines processes for transfer of clinical responsibility.

4 Ministry of Health. 2011. New Zealand Maternity Standards: A set of standards to guide the planning, funding and monitoring of maternity services by the Ministry of Health and District Health Boards. Wellington: Ministry of Health.

Our District

The following chapter outlines key information about our district including the wider population and the geographical area where they live, the characteristics of the women we provide maternity services for and some detail about the facilities where we provide care.

Our Population

CM Health is responsible for providing (or funding) maternity services for women living in Counties Manukau.

In 2014, CM Health provided health and disability services to an estimated 524,500 people who reside in the local authorities of Auckland, Waikato District and Hauraki District. Our population is growing at a rate of one to two percent per year, the second fastest growing population (after Waitemata) when compared with other District Health Boards (DHBs). Overall, the Counties Manukau population is expected to grow by approximately 8,000-8,500 residents each year for the next 10 years.

There are a diverse range of needs that can be further distinguished by four geographical locality areas that have been defined covering the Counties Manukau district: Mangere/Otara, Eastern, Manukau and Franklin.

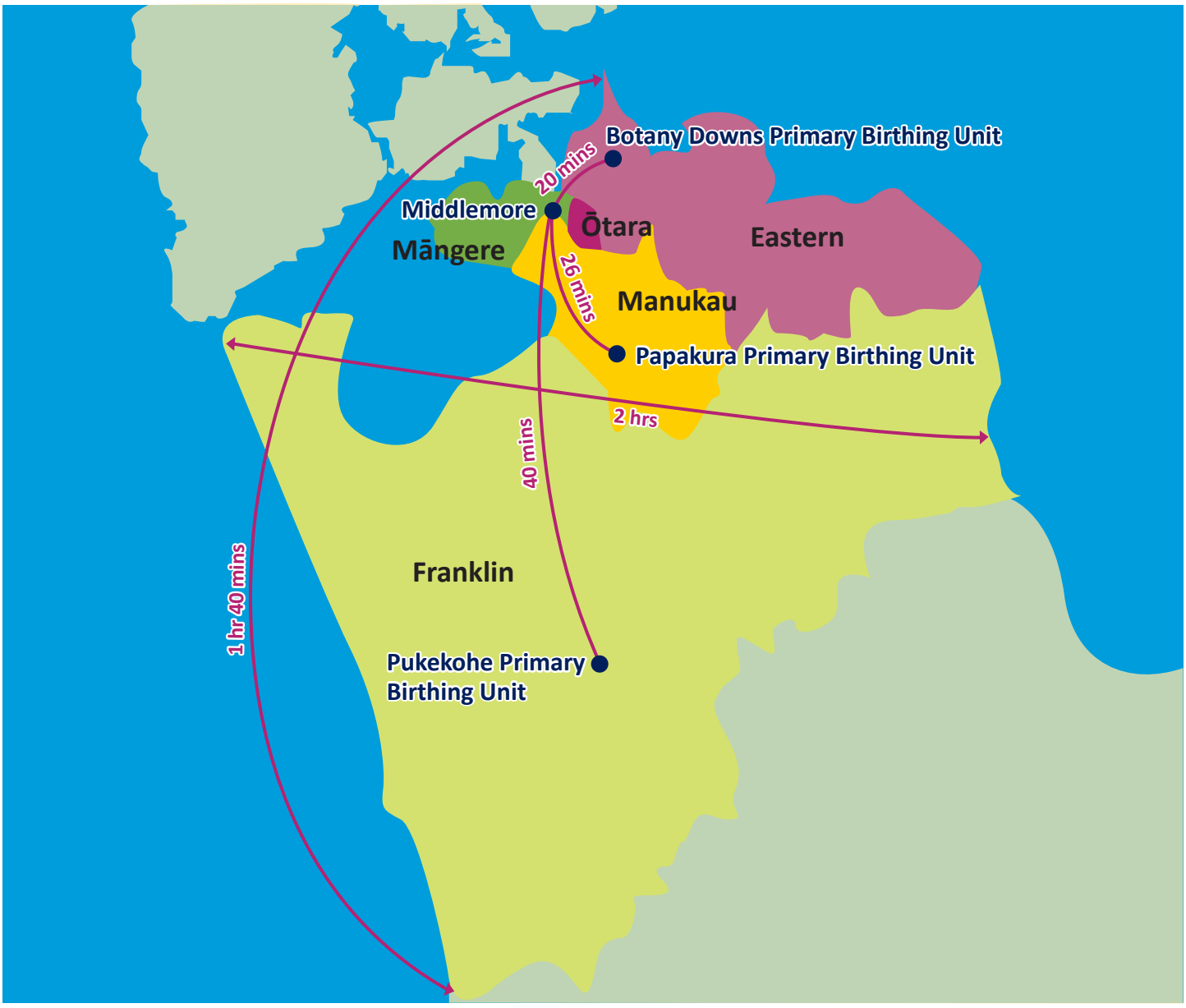
The Counties Manukau district has an ethnically diverse population: 16 percent Maaori, 39 percent NZ European/Other groups, 24 percent Asian, and 21 percent Pacific. Twelve percent of all New Zealand's Maaori population, 38 percent of New Zealand's Pacific people and 21 percent of New Zealand's Asian population live in Counties Manukau.

Compared with other DHBs, Counties Manukau has the second highest number of Maaori (after Waikato), the highest number of Pacific peoples, and the second highest number of people (after Auckland DHB) who identify as Asian ethnicities.

At the time of the 2013 Census 36 percent of the Counties Manukau population lived in areas classified as being the most socio-economically deprived in New Zealand. Fifty-eight percent of Maaori, 76 percent of Pacific and 45 percent of 0-14 year olds in Counties Manukau lived in areas with a deprivation index of 9 or 10 at the time of the 2013 Census.

On the basis of the NZDep2013 measure, Otara, Mangere and Manurewa are the most socio-economically deprived areas in the Counties Manukau district.

Figure 1. Maps showing locality and geographical boundaries of CM Health and facilities



The Women we Serve

CM Health is responsible for providing maternity services to women who live within the Counties Manukau DHB boundary. Most women (83%) living in Counties Manukau choose to birth at CM Health facilities (Table 1).

The majority of Counties Manukau women who birthed at another DHB's facility in 2014 birthed at an Auckland District Health Board (ADHB) facility. A woman may birth at another facility for a range of reasons. One reason is if a woman has a self-employed LMC midwife[5] who has an access agreement with another DHB. In 2014 60% of women living in Counties who birthed at ADHB facility lived in Howick with 42% of these women being Chinese women. There are a small number of women who are referred to ADHB because of identified fetal complications (such as congenital heart disease) or severe maternal cardiac conditions. A woman may also birth at another facility if she goes into labour un-expectantly while away from home.

Jasmine's Story

Throughout the report excerpts from one woman's birthing experience are captured in the relevant sections.

"I went up to the far north to find my whakapapa with my Mental Health worker. I had a dream that I was pregnant. I remember I was eating loads."

The characteristics of women who live in Counties Manukau and birthed in 2014 (regardless of where they birthed) are shown in Table 2.

Table 1. Location of birthing for Counties Manukau Women, 2010-2014

DHB LOCATION OF BIRTHING	CM HEALTH MOTHERS BIRTHING IN DIFFERENT DHBs, BY YEAR				
	2010	2011	2012	2013	2014
Counties	7342	7463	7415	6845	6755
Auckland	1042	985	1087	1064	1190
Waitemata	41	40	50	50	42
Elsewhere	82	78	69	46	74
Total	**8507**	**8566**	**8621**	**8005**	**8061**
% Birthing in Counties Manukau	**86.3%**	**87.1%**	**86.0%**	**85.5%**	**83.8%**

Source: National Minimum Dataset (NMDS). 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 Health Intelligence and Informatics and data extracted from NMDS and as the NMDS is updated these numbers differ slightly from numbers in last year's report.

5 Note that throughout the document 'self-employed LMC midwife' is the term used to describe midwives caring for women who claim funding, from the MoH, through Section 88 for their services. Other terms commonly used include lead maternity carer (LMC).

Table 2. Demography of Women living in Counties Manukau who birthed in 2014, regardless of DHB of birth

ETHNICITY	NUMBER	PERCENTAGE
Maaori	1671	20.7%
Pacific	2478	30.7%
Indian	713	8.8%
Chinese	630	7.8%
Other Asian	411	5.1%
European/Other	2158	26.8%
Total	8061	100%
MATERNAL AGE		
<20 years	509	6.3%
20-24 years	1706	21.2%
25-29 years	2318	28.8%
30-34 years	2198	27.3%
35-39 years	1032	12.8%
40+ years	298	3.7%
DECILE		
Unknown	14	0.2%
Decile 1-2	1104	13.7%
Decile 3-4	589	7.3%
Decile 5-6	1054	13.1%
Decile 7-8	756	9.4%
Decile 9-10	4544	56.4%
SUBURB		
Franklin	1010	12.5%
Howick	1621	20.1%
Mangere	1216	15.1%
Manurewa	1617	20.1%
Otara	716	8.9%
Papakura	907	11.3%
Papatoetoe	963	11.9%
CM Health nfd*	11	0.1%

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

Of the women who live in Counties Manukau and birthed in 2014, 30.7% were Pacific women, 26.8% were European/NZ European, 20.7% Maaori , 8.8% were Indian and 7.8% were Chinese. It is important to note that ethnicity is prioritised.[6]

The rate of births to women aged less than 20 years of age has continued to decrease in Counties Manukau since 2012 (Figure 2).

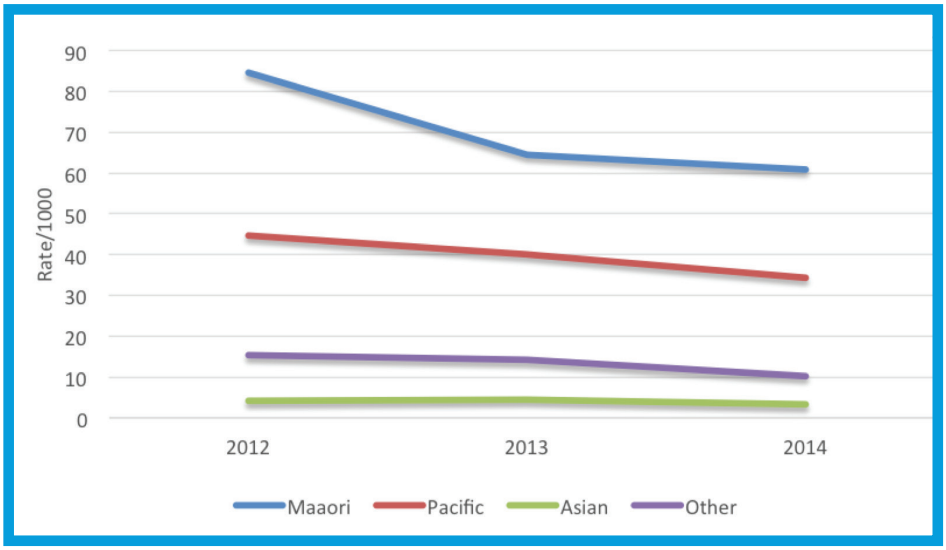
The Ministry of Health (MoH) provided DHBs a national analysis of the National Maternity Collection (MAT) for 2013.[7] This data is derived from the National Minimum data set (NMDS), Lead Maternity Carer (LMC)[8] claims for services provided under the Primary Maternity Services Notice, as well as data from Births, Deaths and Marriages collected by the

6 This is a process which assigns the ethnicity of a person who has given multiple responses to just one ethnicity in order to ensure that the total by ethnicity equals the total number of women. This means that if a woman identifies as more than one ethnicity only one ethnic group is assigned to her with Maaori prioritised first followed by Pacific, then Asian and then European. Prioritisation conceals diversity within, and overlap between, ethnic groups by eliminating multiple ethnicities from data.

7 Data provided by Laura Ross, Senior Advisor Ministry of Health.

8 This includes GPs and private obstetricians that provide antenatal care as well as self-employed LMC midwives

Figure 2. Birth rate, <20 years, by ethnicity, for women living in Counties Manukau, 2010-2014



Source: NMDS. Extracted by Dean Papa 2015.

Table 3. Ethnicity and quintile for women birthing in 2013, Counties Manukau vs the rest of New Zealand

	COUNTIES MANUKAU		REST OF NEW ZEALAND	
Ethnicity	**Number**	**Percentage(%)**	**Number**	**Percentage(%)**
Asian	1559	19.1%	6633	13.0%
European	1860	22.8%	26869	52.6%
Maori	1962	24.1%	12642	24.7%
MELAA	154	1.9%	1122	2.2%
Pacific Peoples	2608	32.0%	3789	7.4%
Unknown	14	0.2%	33	0.1%
Total	**8157**	**100%**	**51088**	**100%**
Quintile				
1	1061	13.0%	7539	14.8%
2	809	9.9%	8744	17.1%
3	699	8.6%	10631	20.8%
4	1265	15.5%	12141	23.8%
5	4301	52.7%	11556	22.6%
Unknown	22	0.3%	477	0.9%
Total	**8157**	**100%**	**51088**	**100%**

Source: MAT provided by MoH 2015. Note this data is sourced from NMDS, LMC claims and Births, Deaths and Marriages.

Department of Internal Affairs. While the MAT provides reasonably complete data for demographic details, the coverage of the data elements (eg body mass index, smoking status) relies on LMC claim data and therefore only provides data for women receiving their care from a LMC. In Counties a higher percentage of women receive their maternity care from DHB employed staff than other parts of the country and data for these women are not captured.

As stated above the MAT provides useful data for comparing ethnicity and level of deprivation between women living in Counties Manukau and the rest of New Zealand. There are some differences worth noting about women living in Counties Manukau who birthed in 2013 compared to women birthing, in the same year, in the rest of New Zealand (see Table 3).

A higher percentage of women living in Counties Manukau, and having babies, are Pacific compared to the rest of New Zealand. Table 3 shows that 32% of women living in Counties Manukau, who birthed in 2013, were identified as Pacific compared to 7.4% in the rest of New Zealand. Only 22.8% of women birthing in Counties were European/New Zealander compared to 52.6% of women birthing in the rest of New Zealand. There were also over double the percentage of women living in areas of highest deprivation (52.7%) compared to the rest of New Zealand (22.6%).

Our Maternity Workforce

CM Health's aim is for maternity care to be planned around the needs of women and their whaanau/families. Health professionals will work in a connected and co-ordinated way to ensure needs are met so that women and their whaanau/families have positive experiences and confidence in our maternity system. The workforce in the Counties Manukau area is made up of doctors, midwives, nurses, allied health and support staff.

The Obstetrics and Gynaecology service operates across the community with services at Middlemore Hospital, Manukau Health Park and runs consultant clinics in localities including Otara, and Papakura and Pukekohe Primary Birthing Units. A senior medical officer is on site, at Middlemore Hospital, 24 hours per day seven days per week and available to self-employed LMC midwives, GP and community midwives for consultation. The Obstetrics and Gynaecology service is staffed by 18.3 full time equivalents (FTE) of senior medical officers, four fellows, 16 registrars, and eight senior house officers. Midwives and nurses are part of this dedicated team including clinical nurse specialists (who operate the Early Pregnancy Clinic and an onsite Contraception service, via the maternity floor) and clinical midwife specialists.

There were 261 midwives who identified Counties Manukau as their first work area in the 2014 Midwifery Council of New Zealand workforce survey.[9] This is 8.8% of 2971, the total number of midwives nationally with an Annual Practicing Certificate (APC). The average age is 46.6 years compared with 47.3years nationally. The percentage of midwives in CM Health who give New Zealand Maaori as their first, second, or third ethnicity is 10.3% compared with 9.0% nationally. The percentage for Pacifica midwives is 4.6% for CM Health compared with 2.1% nationally.

The CM Health long term workforce strategy has focused on providing future workforce stability through increasing the local midwifery workforce to match the demographics of the Counties area. Strategies have included scholarships and mentoring programmes supported previously by the South Auckland Health Foundation and now by The Tindall Foundation, Pu Ora Matatini Maaori Midwifery and CM Health Pacific Unit, Pacific Midwifery Student Scholarships.

Pu Ora Matatini Maaori Midwifery Scholarship Programme

Since 2010, CM Health has worked on a wraparound student support scholarship in partnership with Te Kupenga (and then Te Hononga O Tamaki Me Hoturoa when they amalgamated), and the Auckland University of Technology (AUT). The aim was to support and grow Counties' Maaori midwifery workforce. This has been made possible due to the support from the Tindall Foundation. Seven Maaori midwives have completed their training. Of these four are employed by CM Health and three work as self-employed LMC midwives in our area. The completion rate of Maaori students at AUT School of Midwifery is now equivalent to other students.

9 https://www.midwiferycouncil.health.nz/workforce-data/

CM Health has reviewed this programme in consultation with all partners and has decided not to renew the contract. Instead this programme will be managed by the Maaori Health and the Building Capacity Team of Ko Awatea. There are currently ten students within the programme with the aim of offering 12 additional scholarships in 2016. This programme is supported by a Maaori Midwifery Liaison, which is a joint position with AUT University, and a CM Health Future Workforce Coordinator.

Pacific Midwifery Scholarship Programme

The Pacific Midwifery Student scholarship programme commenced in February 2014 offering five scholarships for Pacific midwifery students. The scholarship package is offered to second and third year students and pays for tuition fees and course related costs that would otherwise present a barrier to students successfully completing their studies. An important component of the scholarship package is the wrap around student support and mentoring. This is focused on practical support to successfully pass the written examinations. The scholarships are funded by the Pacific Health Development Unit at CM Health.

The wrap around support occurs in two ways. During 2013 the Pacific midwives in Counties established an "Aunties Programme". These are practising midwives who "adopt" a student and support her through regular meetings (at least monthly) and catch ups in between. They cover midwifery, ideas on how to cope with study, family and work commitments, contacts, and also meet with other students and Aunties.

The second wrap around support commenced in February 2014 when AUT employed a Cook Island Maaori midwife to undertake the newly created position as Pasifika student midwife support and clinical educator. This position came as part of a joint venture between the AUT Health Faculty, Midwifery School and Ko Awatea and CM

Entrance to Middlemore Hospital Birthing and Assessment

Health to address the retention and success rates of Pasifika midwifery students.

The Midwifery Education and Development Service commenced in 2007 as a joint project with AUT. The service was set up to increase clinical placements, along with a satellite midwifery school based at Middlemore Hospital. The aim was to grow our local workforce. There were 14 midwifery students who lived in the Counties area within the three year midwifery programme in 2008 , and in 2014 there were 67 students. This includes 17 Maaori and 16 Pacifica students. The midwifery programme moved to AUT's Manukau Campus last year which is in South Auckland.

Self-employed LMC Midwifery Workforce Projected Needs

A report was prepared to identify how many self-employed LMC midwives would be required if 75% of CM Health women are to be managed by self-employed LMC midwives; where they are needed and any other characteristics of the population or workforce that are relevant to workforce capacity (see Appendix 1). The aim for this information is to assist workforce planning including providing information of the areas of need to new self-employed LMC midwives in the area. The key finding was that Counties would need 25 more self-employed LMC midwives with an average caseload of 45 women and the greatest geographical areas of need are Manurewa, Mangere and Papakura.

Ongoing Support for New and Graduate Self-employed LMC Midwives to the Counties Area

Support has been provided for new self-employed LMC midwives to the area and comprises of an orientation which can include administration, referral processes, computer training, access to computer programmes offsite (with complimentary Virtual Private Network access) as well as meet and greet in clinical areas. A maternity information directory has been developed which is currently available on-line with a hard copy to be distributed to all access holders.

A self -employed LMC midwife liaison role commenced two and a half years ago with the specific purpose of offering support to new self-employed LMC midwives in the area. This included collegial support as well orientating midwives to the local facilities and support networks. In addition the role facilitated General Practitioners (GPs) and self-employed LMC midwives to either co-locate or link together.

CM Health is in the process of reviewing what new self-employed LMC midwives require. This has involved surveying previous new graduates for their suggestions and feedback and modifying the programme accordingly.

Graduate Programme

CM Health has provided and coordinated a graduate midwifery programme for over 10 years and is constantly reviewing and adapting it to meet evolving needs. The programme is led by the midwife co-ordinator. This role specifically supports new graduate employed midwives, newly graduate self-employed LMCs and has evolved to also now include new to area self-employed LMC midwives.

The trend over the past five years shows that approximately 50% of those who are employed in the graduate programme will, within their first five years, choose to move into self-employed LMC practice. The 2014 programme included 16 employed and seven self-employed LMC midwife graduates who will complete the programme in August 2015. The 2015 cohort includes 17 employed and seven self-employed LMC midwife graduates. There are a number of self-employed LMC groups which have recruited and supported graduate midwives into their midwifery practices. The graduate programme is a demonstration of CM Health's commitment to growing our workforce.

Our Maternity Services

Maternity care provision at a DHB level is shaped by the funding framework, the available workforce, and maternal choice.[10] CM Health supports the national policy direction of women being cared for by a self-employed LMC midwife providing continuity of care/carer.

A woman's choice of maternity care provider is in turn influenced by her understanding of the

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

system, preferences, past experience, the level of care required, and self-employed LMC midwife availability.[11,12,13] Most women living in Counties Manukau have the option of engaging with a self- employed midwife or accessing maternity care through DHB provided services.

Historically CM Health has provided primary maternity services to a higher proportion of women than other DHBs around the country because of a shortage of self-employed LMC midwives. Because of these self-employed LMC midwife shortages CM Health developed a unique system of Shared Care.[14]

Over the past three years this has changed because of an increase in the number of self-employed LMC midwives working in the district combined with a falling birth rate which has meant that now 67% of women book with a self-employed LMC midwife (Table 4).

Table 5 shows the percentage of women by maternity provider at the time of birth. It is likely the shift in maternity provider at time of birth is driven by the complexity of the women living in the district.

Although GPs are now less involved in the direct management of pregnancy and birth than they were historically primary care still has an important role to play as many women visit their primary care provider to confirm their pregnancy. This provides the opportunity for the GP to undertake an initial assessment, explain the maternity care system and support the woman to find a self-employed LMC midwife as well as arrange recall for immunisations such as Influenza and Pertussis. Secondary care accepts referrals from GPs and midwives using the Consultation for Referral Guidelines (2012).

Table 6 describes the different services available to women living in Counties Manukau.

Table 4. Maternity provider at time of booking

Maternity provider at time of booking	2011	2012	2013	2014
DHB services	52%	52%	50%	33%
Self-employed LMC midwife	48%	48%	50%	67%

Source : Healthware.Extracted by Chisako Shinagawa. Previous referred to as Closed Unit. Look after moderate to high needs women.

Table 5. Maternity Provider at the time the women birthed [15]

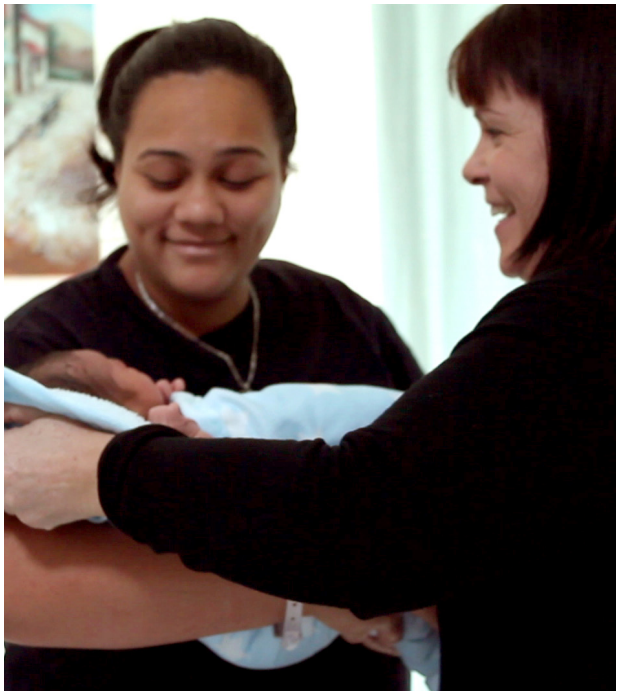
MATERNITY PROVIDER	2011	2012	2013	2014
DHB midwives/ obstetric team*	30.2%	35.9%	40.1%	37.4%
Shared Care	16.5%	11.0%	3.9%	1.8%
Self-employed LMC**	33.7%	30.4%	33.2%	32.5%
Self-employed LMC with secondary procedure	16.7%	20.5%	21.0%	26.1%
Team (CM Health employed LMC)	2.9%	2.2%	1.9%	2.3%

Source: Healthware.Extracted by Chisako Shinagawa. *Previous referred to as Closed Unit and looks after moderate to high needs women. **This will include a small no. of births by private obstetricians.

11 Health Services Consumer Research. Maternity Services Consumer Satisfaction Survey Report 2007. Auckland: Ministry of Health; 2008.
12 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.
13 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.
14 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. For those GPs wishing to continue in shared care, on-going Continuing Medical Education in this area will be required.
15 The maternity provider reported here is the provider at the time of birth.

Table 6. Maternity Services available in Counties Manukau

PRIMARY MATERNITY SERVICE	DESCRIPTION
Self-employed LMC Midwife	Midwives claim from the MoH to provide antenatal, labour and post-natal care using, primarily, a continuity of care model by the same midwife. Self-employed LMC midwives in Counties birth women at one of the three primary birthing units, the woman's home or the secondary care facility. Self-employed LMC midwives can also choose to provide primary maternity care for women who require a secondary maternity service e.g. diabetes in pregnancy.
CM Health Community Midwife	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. Home visits are an integral part of antenatal care delivery and postnatal outpatient/home care is provided by a CM Health community midwife. Care during labour is provided by CM Health employed midwives at Middlemore Hospital or one of the three primary birthing units.
CM Health Employed LMC Midwife	This service provides continuity of midwifery care throughout pregnancy, labour, and the postnatal period including home birthing. A CM Health employed midwife works within a case-loading team model to provide care as an 'employed' LMC.
Shared Care	Antenatal 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 at two of the three primary birthing units and postnatal care is provided by the CM Health community midwife. If a woman's pregnancy becomes medically complicated care is transferred to the DHB Maternity Services.
Private Obstetrician	Women can engage with a private obstetrician who utilises CM Health facilities for birthing.



A self-employed LMC midwife with mother and baby

"I found out I was pregnant and I could not stop crying…I was scared so I went to Dawson Road drop-in because I saw the sign. Everyone was nice and made me feel comfortable. I met the midwife and told her about myself and that my children had been taken from me. I went there for help because I was worried about the system….I wanted a home birth because I was scared of hospitals because of losing my other children. They found a midwife for me who would help me have a home birth and I met her a few times. "

SECONDARY MATERNITY 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 which comprises 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 specialist. 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 CM Health community midwives and self-employed LMC midwives.
Maternal Mental Health Services	The team offers assessment, treatment and advice for women who have developed mental illness during the perinatal period (during pregnancy or up to one year after the baby is born). The team consists of mental health nurses, social workers, psychiatrist, clinical psychologists and occupational therapists with specialist knowledge and experience in this field.
Social Worker	This role navigates women, families and midwives towards social services in the community dependent on the family's needs. The social worker facilitates liaison between CYF, non-governmental organisations, maternal mental health and the DHB Primary Maternity Services.

"My midwife wanted to introduce me to the social worker. The thought of meeting a social worker really frightened me but I when I met her with my midwife at a café, although I was not comfortable straight away I slowly felt I could trust her and that she was with me, not against me."

Social Worker's Perspective

"I first met Jasmine after her midwife asked her if she wanted social work support. We met over a coffee and she told me her story. I explained the role of the social worker working with the midwives. We talked about the team wrapped around her to support her and ensure the safest outcome for her and baby. Jasmines baby was born at Papakura Maternity and a plan had been put in place to oversee this couple.

This case is one of many where women really want to work through the changes needed during their pregnancy to ensure the best outcome for them and baby. These women need to be empowered to take the journey so we keep mothers and babies together in a healthy space. This also improves the outcome for future children and whanau as a whole."

Our Maternity Facilities

There are four facilities in Counties Manukau District where women can birth. CM Health supports the national priority to strengthen primary maternity services to promote and protect normal birth.

A woman's decision about where she will give birth is influenced by a number of factors and may include advice of her midwife, experience of family or friends, cultural expectations.

Women with low obstetric risk have a choice of 3 primary birthing units. 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.

In 2014 of the women that birthed at a CM Health facility, 12% birthed at a primary birthing unit.

Left to right from top: Pukekohe Birthing Unit, Middlemore Hospital, Botany Downs Birthing Unit and Papakura Birthing Unit

Use of primary units has been decreasing in recent years. Consideration is currently being given to how we can better support self- employed LMC midwives and women to utilise primary birthing units.

All three primary birthing units are Baby Friendly Hospital Initiative accredited (BFHI) and support the establishment of breastfeeding. The three primary birthing units provide women and their families with an option to use a purpose built pool for labour and/or water birth. Guidelines for admission to a primary birthing unit guide midwives as to who is suitable as there are no on-site obstetricians, emergency epidural or operating theatre facilities and the units are 20-60 minutes away from the secondary unit (depending on time of day and traffic). The primary birthing units are staffed by CM Health midwives and are well supported by self-employed LMC midwives. A brief description of each of the birthing units is provided below.

Papakura

Births Total	Transfers In	SMO Clinic Hours
263	867	8hrs

Papakura Birthing Unit is the oldest of the three primary units having celebrated its 70th birthday in 2013. Papakura Birthing Unit is located in a historical farm house and came into being in 1958 following the takeover from the Auckland Area Health Board. Papakura is part of the community and generations of local whanau choose to birth here. Papakura Birthing Unit is centrally located, close to the local township and public transport routes.

Midwives:

20 Self-employed LMCs who actively birth at Papakura

18 Core midwives incl. Charge Midwife Manager 12.1 FTE

4 Community midwives 3.2 FTE

1 Registered nurse 0.3 FTE

2 Clerical administrators 1.4 FTE

2 HCA's 1.4 FTE

Facility Offers:

10 Bed capacity

5 Single post-natal rooms

1 2 Bedded room

1 3 Bedded room

3 Birthing rooms

1 Birthing room with pool

4 Clinic rooms

Pukekohe

Births Total	Transfers In	SMO Clinic Hours
296	466	8hrs

Pukekohe Primary Birthing Unit is a Midwifery lead Maternity Hospital. It supports normal pregnancy and birth caring for low risk women and babies. It provides care for the entire Franklin district as well as part of the Waikato district. This huge area encompasses the Awhitu Peninsula, East to Kaiawa, South to Mercer and Waikaretu. There is Pukekohe Maternity Resource Centre (PMRC) on site, providing women with information on all pregnancy related issues, with free pregnancy tests, pamphlets, library and equipment for hire.

Midwives:

16 Self-employed LMCs who actively birth at Pukekohe

14 Core midwives incl. Charge Midwife Manage 10 FTE

2 Community midwives 0.5 FTE

2 Registered nurses 1 FTE

2 Clerical administrators 1.2 FTE

Facility Offers:

8 Bed capacity

8 Single post-natal rooms

1 Double bed room

2 Birthing rooms with pools

3 Clinic rooms

Botany

Births Total 319

Transfers In 1438

Botany Downs Birthing Unit is also known as “Whare Tapu”. The conceptual meaning of Whare Tapu alludes to the most sacred beginning of life – the birth of a child. Botany Downs Birthing Unit is a purpose built facility located at 292 Botany Road, near the Botany Town Centre. Women are able to be supported by their families and significant others in a quiet and comfortable environment. Many women who birth at Middlemore Hospital choose to transfer to Botany Downs Birthing Unit for their postnatal stay.

Midwives:

- **16** Self-employed LMCs who actively birth at Botany
- **20** Core midwives incl. Charge Midwife Manager 12.2 FTE
- **3** Community midwives 1.7 FTE
- **3** Registered nurses 1.7 FTE
- **2** Clerical administrators 1.4 FTE
- **2** HCA 1.4 FTE
- **3** Team case loading midwives

Facility Offers:

- **15** Bed capacity
- **6** Single post-natal rooms
- **3** Double bed room
- **1** 3 Bedded room
- **4** Birthing rooms
- **2** Birthing pools
- **5** Clinic rooms

Middlemore

Births Total 6413

Midwives:

- **55** Self-employed LMCs who actively birth at Middlemore
- **11** Core associate clinical midwife managers incl. unit midwife manager 6 FTE
- **50** Core midwives 33.35 FTE
- **6** Registered nurses 5 FTE
- **12** HCA 10 FTE
- **14** Ward Clerks 10.3 FTE

Facility Offers:

- **18** Birthing rooms
- **2** Flexi rooms can be used as birthing rooms, accommodates 4 women
- **5** Assessment rooms – total of 7 beds (2 doubles)
- **1** Ultrasound room
- **1** Clinic room
- **1** Whaanau room – not used for clinical care

Who births at primary birthing units?

The use of primary birthing units varies by ethnicity (Table 7) with the highest percentage of births occurring at a primary birthing unit being for European women (22% of all births to European women) , followed by Chinese (18%), Maaori (15%), Other Asian (9%), Pacific and Indian (5%) respectively.

A birthing pool

Table 7. Counties Manukau resident women who birth at each CM Health Facility, 2014

NUMBER OF WOMEN WHO BIRTHED AT EACH CM HEALTH FACILITY					
	MMH	Botany PBU	Papakura PBU	Pukekohe PBU	% of Deliveries at PBU
ETHNICITY					
Maaori	1297	46	121	67	15%
Pacific	2460	57	43	21	5%
Indian	690	24	9	5	5%
Chinese	212	42	2	2	18%
Other Asian	307	22	3	4	9%
European/Other	1447	128	85	197	22%
MATERNAL AGE					
<20 years	461	10	32	24	13%
20-24 years	1525	57	77	66	12%
25-29 years	1880	88	76	86	12%
30-34 years	1547	110	53	76	13%
35-39 years	754	44	23	39	12%
40+ years	246	10	2	5	6%
NZ DEPRIVATION INDEX 2006 DECILE (CAU*)					
Decile 1-2	503	104	10	32	22%
Decile 3-4	484	59	13	47	20%
Decile 5-6	555	34	31	94	22%
Decile 7-8	1005	49	42	30	11%
Decile 9-10	3866	73	167	93	8%

SUBURB					
Botany	141	41	0	0	23%
East Rural	107	23	5	0	21%
Franklin	505	3	6	266	35%
Howick	160	50	0	0	24%
Mangere	1200	9	2	0	1%
Manukau	325	12	5	1	5%
Manurewa	1229	17	76	3	7%
Otara	728	55	0	1	7%
Pakuranga	196	71	0	0	27%
Papakura	485	5	129	12	23%
Papatoetoe	668	13	3	2	3%
Takanini	187	6	33	3	18%
Non-CMH	221	13	3	8	10%
Otahuhu	261	1	1	0	1%
MATERNITY PROVIDER					
DHB employed midwives/obsterics (moderate/high risk women)	2001	20	22	5	2%
Self-employed LMC midwife	4149	249	238	291	16%
Private obstetrician with SAH midwife	10	0	0	0	0%
Shared Care	133	2	3	0	4%
TEAM	120	48	0	0	29%
Total	**6413**	**319**	**263**	**296**	**12%**

Source: Data provided by Health Intelligence and Informatics 2015 from Healthware. Note: Ethnicity is preferred. 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. Team = Caseloading/Team Midwife – CM Health midwife.

From left to right: A Franklin mum and grandma with baby and a post-natal room from Botany Downs Primary Birthing Unit

Factors that contribute to the difference in utilisation of the primary birthing units may include:

- Location of the primary birthing units in relation to where women live. Women living close to birthing units may be more likely to use them eg Pacific women residing in Otara and Mangere will utilise Middlemore as their Primary Birthing unit due to distance needed to travel to the nearest Primary Birthing Unit.
- Culturally using a hospital for birthing is aligned to Pacifica expectations for birth.
- The distance to be travelled to a primary birthing unit is also a factor for women living in decile 9 and 10 areas due to funds for transport or petrol.
- Rates of obesity among ethnic groups which equate to BMIs which preclude women from birthing at a primary birthing unit
- Our Indian women tend to favour birthing in Middlemore Hospital but also place of residence will contribute to low numbers birthing at Botany Downs.
- The admission criteria and cultural expectations are not aligned with our current configuration of primary birthing options

CM Health is currently reviewing the configuration of primary birthing facilities because of current underutilisation of these facilities for birthing.

"I didn't know about the Papakura Birthing Unit until my midwife told me about it. She said that if I had baby there I would get a rest and have support. I liked it at Papakura and I was helped and supported. Birthing my daughter went well. Afterwards I had my own room and could have visitors. The community health worker visited me and bought a pepi pod for baby to sleep in when I got home. She explained to me about safe sleep for my daughter. I also watched the DVD when I got home as my midwife bought it with her on one of her visits.

Before we left Papakura we said Karakia. When we got home all our whanau came round and we had kai and karakia. It was lovely. I love my daughter... "

Midwife's Perspective

"Jasmine went into labour on her due date. I called around to her house to check her over and found her to be in established labour. We decided to go directly to Papakura Primary Birthing Unit…Jasmine progressed quickly and birthed a beautiful baby girl. She had spent some time in the birthing pool but decided to get out for birthing. A karakia was said. Baby breastfed beautifully…The following day, I sent a referral to the SUDI team so Jasmine could have a pepi pod. Although she does not smoke, her partner does. The community health worker went to visit her at Papakura PBU and explained about safe sleep and the pepi-pod.

Jasmine had an uneventful recovery. She remained in the primary birthing unit for five days. The whaanau were there to greet her with karakia, waiata and kai.

Baby gained weight steadily from 3.71 kg at birth to a bouncing 5.13 kg at 6 weeks and was fully breastfed."

Quality at Counties Manukau Health

Quality improvement has been long imbedded in the culture at CM Health. However, the additional funding and focus provided by the national programme is welcomed and has enabled a coordinated approach to quality improvement activity in maternity services.

Aims and Objectives of MQSP

The MoH's funded MQSP is in its third year at CM Health. The aim of the CM Health's MQSP 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 MQSP in year three included;

- Provide woman-centred maternity care that meets the health needs of the population.
- Continue to implement, review and establish systems and processes to support the provision of quality and safe care. This work will be guided by the New Zealand Maternity Clinical Indicators and other available data and will contribute to achieving the National Maternity Standards and will be responsive to the NMMG recommendations.
- Ensure professional stakeholders are well informed and engaged in quality and safety activities.
- Consolidate a comprehensive consumer network across the Counties Manukau district to provide input into the development, implementation and maintenance of the MQSP.
- Achieve key outcomes for quality improvement activities in the community, primary and secondary/tertiary sectors.
- Share resources and work cohesively across the DHBs to develop new initiatives and processes to improve the service as they are identified.
- Work in partnership with all health agencies providing women's and children's health, to continue to forecast, develop and enhance a seamless service.
- Ensure there is a clear understanding of how the Maternity Quality and Safety Governance Group (MQSGG) functions within the Women's Health Quality Framework.
- Strengthen the interface between community, primary and secondary care.

Governance Structure for MQSP

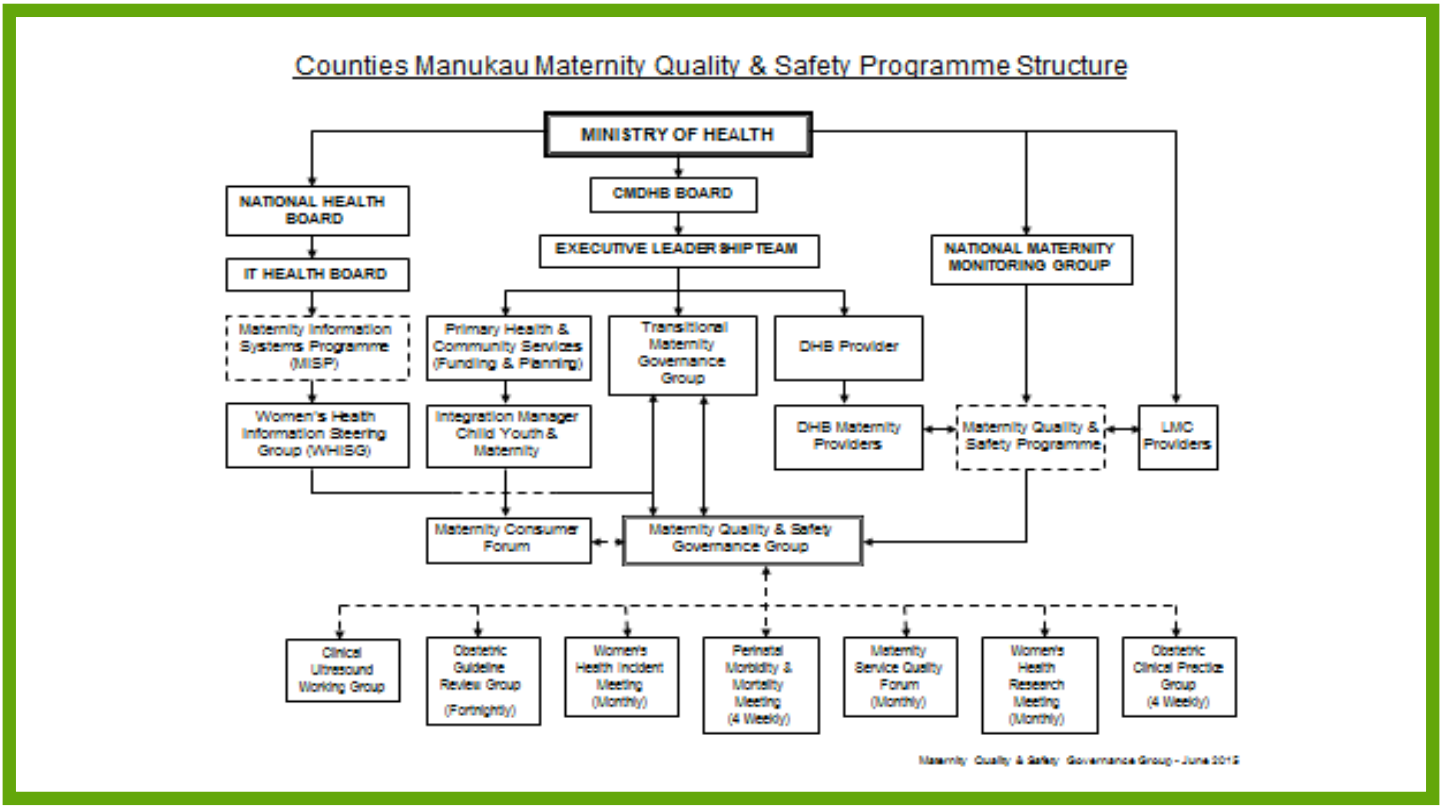
There were a number of quality forums that were in place prior to the implementation of the MQSP. They have been absorbed into the structure shown in Figure 3 and report through to the MQSGG. These include the Women's Health Incident Meeting, Perinatal Morbidity and Mortality Meeting, Maternity Service Quality Forum, Obstetric Guideline Group, Obstetric Clinical Practice Group and the Clinical Ultrasound Working Group.

The Maternity Service Quality Forum has its own work plan developed in accordance with the Women's Health Quality Framework 2014/15 for DHB provided services (see Appendix 2). This work plan is overseen by the Women's Health Divisional Leadership Group who meet on a monthly basis.

As outlined in the Background section the MQSGG was established just before the External Maternity Care Review recommendations were being implemented. A Maternity Review Project Board was set up to oversee the implementation of the External Maternity Care Review's findings. While there was a separate work plan for this work many of the recommendations were focused on improving the quality of maternity services in the district and the experience of women birthing in CM Health facilities and therefore dovetailed into the work in the MQSP.
In order to ensure the work plans were aligned, the MQSGG reported through to the Maternity Review Project Board.

At the end of 2014 the formal project that implemented the external review panel's findings began transition to business as

Figure 3. Counties Manukau Maternity Quality and Safety Programme Structure



Note: Hard lines represent reporting lines. Dotted lines demonstrate linking/relationship

usual. Currently there is a Transitional Maternity Review Project Board (TMRPB) in place while a new governance group is established for Child, Youth and Maternity services more broadly. The MQSGG currently reports monthly to the TMRPB which in turns reports to the Executive Leadership Team (ELT). Once the overarching Child, Youth and Maternity Governance Group is established the TMRPB will be dis-established and the MQSGG will report through to the overarching governance group.

Additional funding for the MQSP has allowed CM Health to appoint a MQSP co-ordinator, support the formation of a regular consumer forum as well as fund a maternity services information directory and a guide to community maternity prescribing booklet for DHB Maternity staff, self-employed LMC midwives and Primary Care.

Key Roles and Groups Supporting Quality and Safety Work

- *Maternity and Quality Safety Co-ordinator.* This appointment, made in Dec 2014 for a fixed term and commenced early January 2015, was established to support the management and implementation of the MQSP across the CM Heath district. The position involves participation in or leading projects that are part of a sector wide maternity strategy and covers service development, clinical leadership and communication involving initiatives to further improve maternity quality and safety.
- *Service Development Manager Maternity Services.* This role was created in 2014 after the dis-establishment of the Women's Health Portfolio Manager role. The role was established in January 2015 to move the work from the work streams formed under the recommendations of the external maternity review into business as usual. There is a strong emphasis on stakeholder engagement with an aim of integrating services and their development between DHB and primary care.
- *Self-employed LMC midwife* was contracted, from February 2013-June2015, to promote and support self-employed LMC midwives to provide self-employed services in high deprivation areas. Some of this function will be replaced by clinical champions within primary care.
- *Perinatal Midwife Specialist* co-ordinates the local monthly Perinatal Morbidity and Mortality meetings, which includes hospital staff as well as community based clinicians and

Maternity Quality and Safety Governance Group
From back row, left to right: Christine Tokoara, Sue Tutty, Larissa Pereira, Kara Okesene-Gafa, Lesa Freeman, Adrienne Priday, Ann Konz, Sarah Tout, Amanda Hinks, Lyn Stark, Thelma Thompson. Absent: Amanda Jeffries, Helenmary Walker, Janine Clemons Megan Tahere, Philippa Anderson, Sarah Wadsworth, Vanitha Kalra

consumer. This role also provides continuity and support for the women and their families who have had a perinatal loss.

- *Administrator* supports the MQSGG meeting and updates the actions in the Maternity Quality and Safety Work Plan.
- *Health Intelligence and Informatics Team* and *Population Health Team* provides data analysis support for the MQSP.
- *Clinical Quality and Risk Manager* Women's Health and Kidz First.
- *Access Holders* meetings monthly with CM Health funding neutral administrator and facilitator to support.
- *Consumer Panel* made up of 13 diverse CM Health consumer members and supported by an independent facilitator.
- *Primary Maternity Liaison Group* convenes to promote integrated communication between CM Health and primary services.
- *Maternity Workforce Group* made up of seven self-employed LMC midwives representative of the seven geographical areas in CM Health alongside several employed staff from all maternity areas. The Midwifery Workforce Group commenced in August 2013 to work on the recommendations from the Maternity Care Review Report (Oct 2012). The vision the Midwifery Workforce group is to have the "Appropriate workforce capacity across the maternity care continuum to provide quality care that is women centred and which reflects the NZ Maternity Model of Care". The members represent ideas from their area at the meetings and feedback, and also lead and evaluate proposed modifications/changes to current practices/processes.

The main areas of work have been:

- To assess and project the areas where self-employed LMC midwives are needed.
- Ongoing support for new self-employed LMC midwives and graduate self-employed LMC midwives to the Counties area.
- Communication guides to assist in using the Referral guidelines.
- To assess and project the employed workforce requirements.

Specific Quality Initiatives Related to NMMG Recommendations and Clinical Indicator Findings

Review of the National New Zealand Maternity Clinical Indicators, in conjunction with the NMMG recommendations and locally sourced quantitative and qualitative data, have driven the quality improvement activity undertaken in 2014/15 year.

The NMMG priority areas for action include:

1. Timely registration with a self-employed LMC midwife.
2. Variation in gestation at birth rates of induction of labour and caesarean sections monitored
3. National consistency in provision of co-ordinated maternal mental health services.
4. Reduce the number of primary maternity ultrasounds.
5. Connecting and supporting maternity consumer representatives.
6. The New Zealand Maternity Clinical Indicators.

The MoH has developed a set of clinical indicators, some of which are based on the standard primiparae in an attempt to allow meaningful comparison across DHBs, and some which reflect the experience of all women who birthed, both by DHB of residence and hospital of delivery. It is important to note that while the MoH has chosen the 'standard primiparae' in an attempt to allow comparison, obesity and deprivation are not adjusted for. A summary of the 2012 data for women living in Counties Manukau birthing anywhere as well as those women who birthed at Middlemore Hospital is provided in Appendix 3.

The following sections describe in more detail the activity underway in Counties Manukau to address the NMMG priority areas and the areas where the New Zealand Maternity Clinical Indicators have shown women living in Counties Manukau, or birthing at Middlemore, are different from the rest of New Zealand. In addition initiatives driven by local identification of salient issues (such as contraception) are also detailed detailed in the following section.[16]

Timely Registration for Antenatal Care

CM Health has long recognised that too many women are registering late for antenatal care. National Institute for Health and Care Excellence (NICE) guidelines recommend that antenatal care should be started in the first trimester and preferably before 10 weeks.[17] This is reflected by the Perinatal and Maternal Mortality Review Committee (PMMRC) recommendation that women should commence antenatal care before 10 weeks. The rational for this recommendation is that it

enables the woman's maternity provider to undertake a full assessment, complete screening bloods and provide the woman with appropriate information about her pregnancy. The NMMG has focused on ensuring registration by 12 weeks gestation and the DHB is required to report on this in the annual plan.

A standard primiparae living in Counties Manukau is significantly less likely than the New Zealand average to have registered for antenatal care in the first trimester (see Appendix 3). MAT data for 2013, showed that 47.4% (2727) of women living in Counties Manukau women registered with an LMC[18] by the end of their first trimester (13+6/40). This is similar to 2011 and 2012 data. As discussed previously this dataset does not include data about the timing of registration for women accessing DHB maternity services and therefore does not accurately re-

16 This includes review of local Healthware data, local analysis of NMDS data, issues identified by internal review processes as well as opportunities for improvement identified by clinical staff.
17 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
18 Most will be self-employed LMC midwives but data collected from LMC obstetricians and LMC GPs.

flect the timeliness of registration as women who register with a self-employed LMC midwife may well be different from women who use DHB services. It is likely that these numbers under estimate the issue with timeliness of registration.

Challenges to collecting timely accurate registration data

- CM Health does not have visibility of when a woman registers with a self-employed LMC midwife. The MoH does provide this information retrospectively (currently the most up to date information is for 2013). This should improve once the Maternity Clinical Information System (MCIS) is implemented.
- Women often see their GP to confirm their pregnancy but the DHB does not have the means to capture this information. It is expected this will change with the introduction of the MCIS which is currently being implemented in Counties Manukau.

It has been recognised locally that a number of women arrive unbooked and/ or unregistered with a self-employed LMC midwife at our facilities; approximately 28 a month. On investigation a high proportion of women had engaged for pregnancy care with their GP but had not accessed a maternity provider for registration and care.

As a result of recognising the issue data has been collated prospectively since March 2013 from 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. On investigation the unbooked women fell into two categories;

- Women who were registered with a provider and may have been booked at another DHB;
- Women who were unregistered and had not received any care from a maternity provider during their pregnancy.

The geographical areas highlighted where women were more likely not to have registered for antenatal care prior to the third trimester or birth were in Mangere and Manurewa.

What have we done this year to support women with accessing Maternity Care in Counties?

- Implementation of GP referral pathways so women can be navigated to a self-employed LMC midwife to enable registration by 12 weeks gestation (see Appendix 4)
- A strategy to integrate self-employed LMC midwives with GP practices has been underway for the past two and a half years to enable women to access a self-employed LMC midwife at her medical home.
- A system to refer women to a self-employed LMC midwife from the DHB maternity services was commenced in September 2012 and has contributed to an increase in women cared for by a self-employed LMC midwife
- A continuity model of care was implemented in January 2013 in the CM Health community midwives service. The same midwife provides all of the woman's antenatal and postnatal care. This was supported by a proactive approach to 'did not attend' (DNA) at antenatal clinics and a 'not at home postnatally' process which encouraged midwives to provide the woman's home as a place of care option.

- A drop in centre in Otara and Mangere where women can self-refer to the maternity services. There are plans to develop this in the Manurewa area.
- The drop in centre in Otara is above a GP surgery and has both DHB and self-employed LMC midwives working in collaboration so women have a choice as to what model of maternity care they would prefer as suitable for their needs.
- A media campaign has been commenced in May 2015 entitled “Best for Baby Best for you” which is aimed at informing pregnant women and their whaanau about the importance of early pregnancy care for both their health and that of their baby (see Appendix 5) http://wakinggiants.co.nz/a-fresh-take-on-pregnancy-care/

Rates of Induction of Labour and Caesarean Sections

It is recognised that caesarean section and induction rates have been increasing in recent years. It has been signalled by the NMMG that they are interested in better understanding the reasons for planned early birth (e.g. induction, elective caesarean sections).

Caesarean Sections

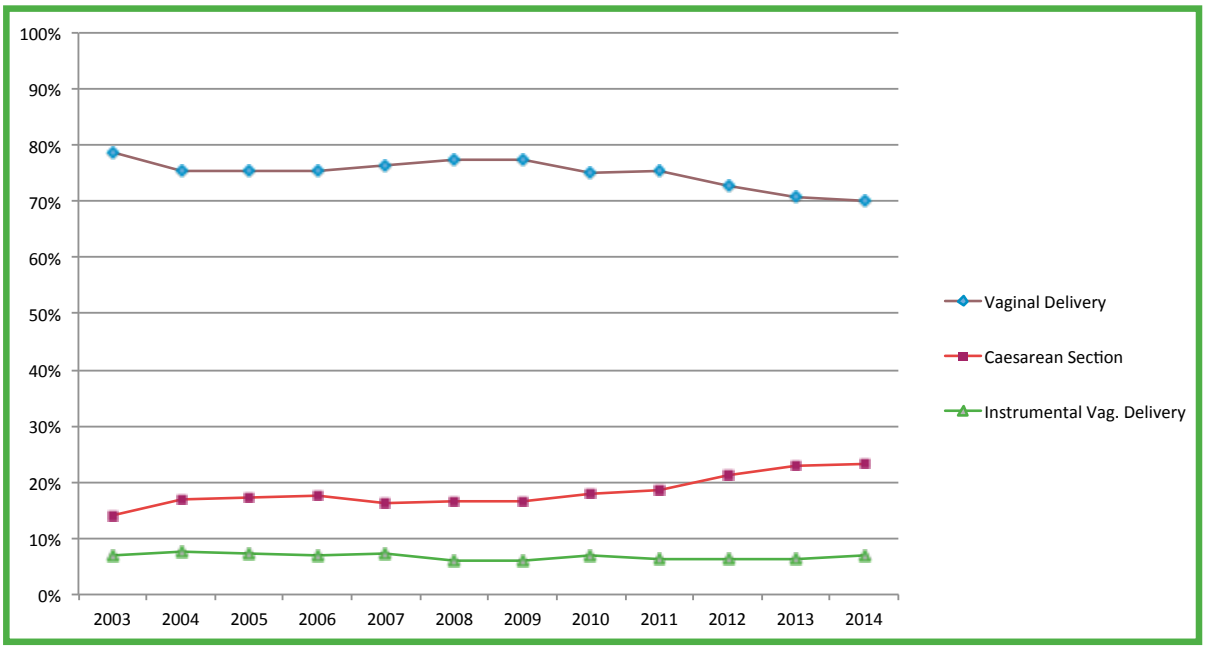
Clinical Indicator 4 (Rates of caesarean section for Standard Primiparae) is higher for women living in Counties Manukau or birthing at Middlemore Hospital, but not statistically significantly higher, than the New Zealand average (see Appendix 3).

The vast majority of all women who birth at CM Health facilities do so by normal spontaneous birth (70%) (see Table 8). In 2014 23% of women birthed by caesarean section and the percentage of women having caesarean sections has been increasing since 2010 (see Figure 4).

Table 8. Birthing method for all women who deliver at a CM Health facility, 2014

BIRTHING METHOD	TOTAL	% OF TOTAL
Vaginal Delivery	5107	70.0%
Caesarean Section	1681	23.1%
Instrumental Delivery	503	6.9%
Total	**7291**	**100.0%**

Figure 4. Mode of delivery for all women birthing at CM Health facility, 2003-2014



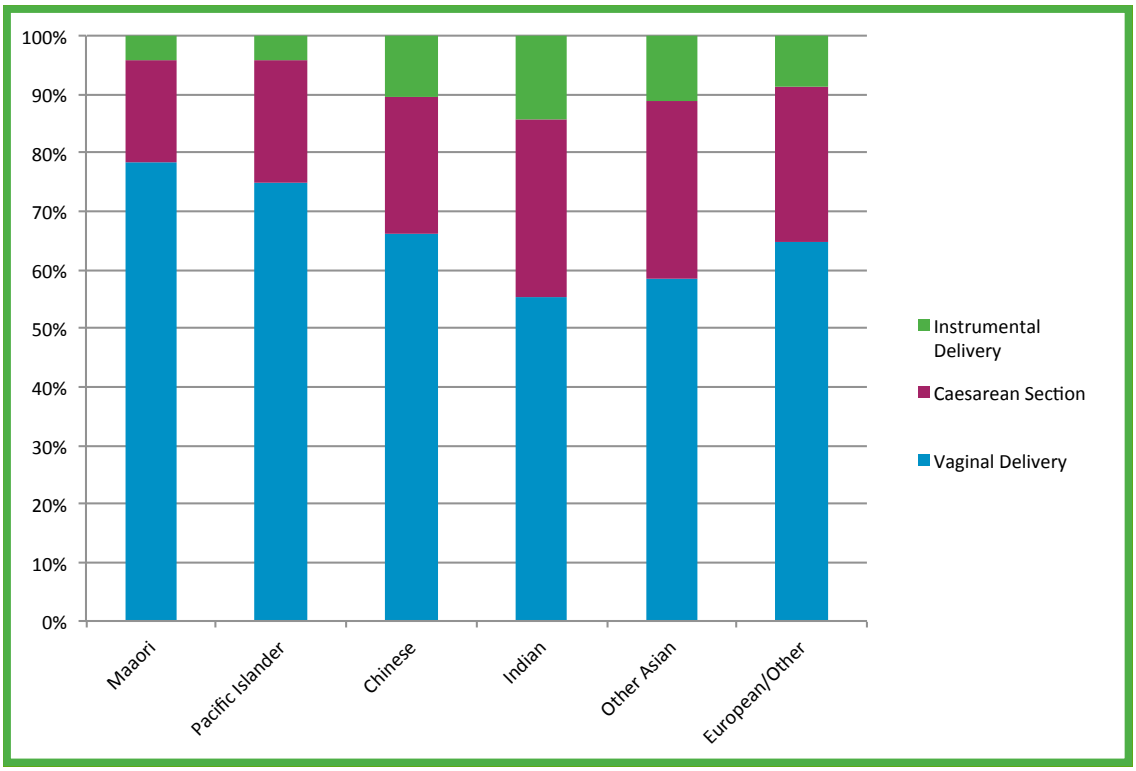
Source: Healthware. Extracted by Health Intelligence and Informatics 2015.

Mode of delivery also varies by ethnicity. In 2014 78% of Maaori women and 75% of Pacific women who birth at a CM Health facility had their babies by vaginal delivery. Indian women have the highest percentage of deliveries by caesarean section (30%) and instrumental vaginal delivery (14%) and the lowest percentage of vaginal deliveries (56%) (see Figure 5).

The percentage of women birthing by vaginal delivery at Counties Manukau decreases with increasing age and the caesarean section rate increases (see Figure 6).

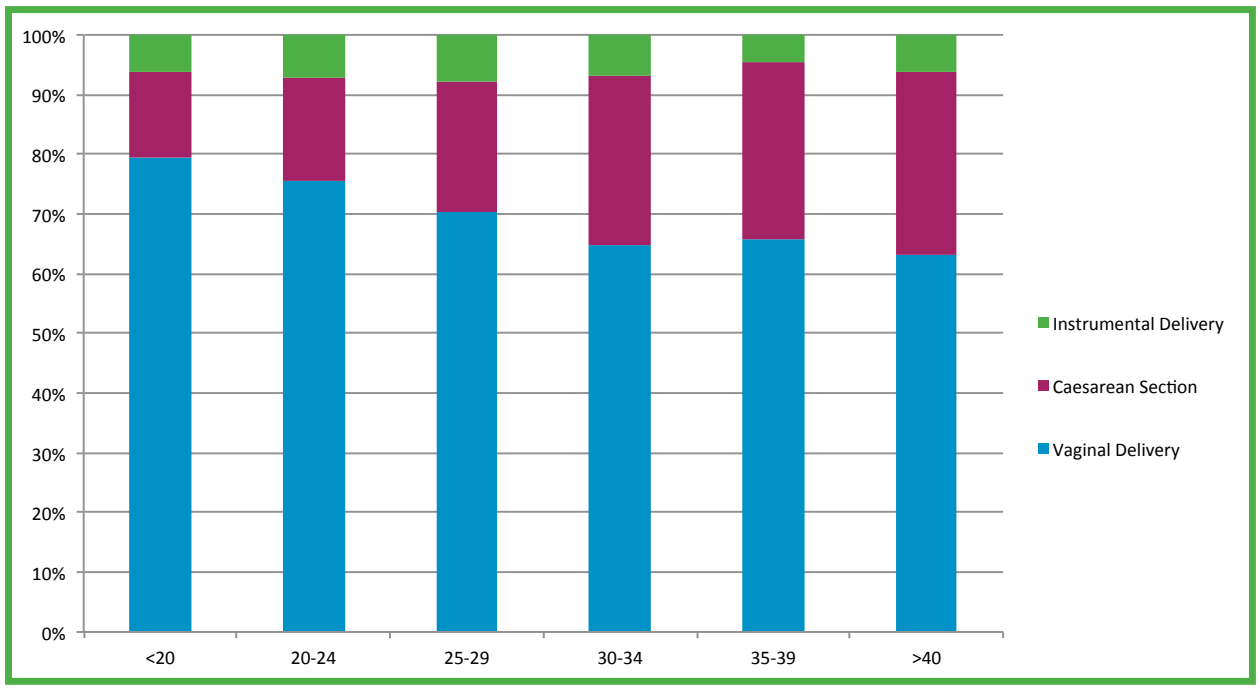
In 2014 80% of women less than 20 years of age birthed by vaginal delivery, 14% by caesarean section and 6% by instrumental vaginal delivery compared to women over 40 years where 63% had spontaneous births, 31% by caesarean section and 6% by instrumental vaginal delivery.

Figure 5. Mode of delivery for all women birthing at a CM Health facility, by ethnicity 2014



Source. Healthware. Extracted by Health Intelligence and Informatics 2015. Ethnicity is preferred.

Figure 6. Mode of delivery, by age group, for all women birthing at CM Health facilities, 2014



Source: Healthware. Extracted by Health Intelligence and Informatics 2015.

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.[19]

The percentage of women birthing by vaginal delivery after one previous delivery by caesarean section has fluctuated from 2011 to 2014. In 2014 33% of women who had previously had a baby born by caesarean section went on to have a vaginal delivery post caesarean section (see Table 9).

Table 9. Women who had a vaginal birth following a Caesarean Section, 2011-2014

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%
2014	Jan-Jun	170	88	34%
	Jul-Dec	196	88	31%

Source: Health Intelligence and Informatics extracted 2015. 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.

What have we done to review Caesarean Section rates?

CM Health is starting to try and understand these trends better. 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.

Future plans to improve data collection and classification of caesarean section rates:

- Health Intelligence and Informatics is planning to implement the Robson criteria in order to clarify the reasons for caesarean section over the next six-12 months.
- Implement the MCIS which will enable rich data for analysis.
- The introduction of an electronic operation note which may provide more information about the indication for caesarean-sections in the near future as the indication for the caesarean will be written on the form.

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 restriction, diabetes, maternal medical complications, intra-uterine death, decreased liquor, prolonged latent phase and large for dates.

Clinical Indicator 5 (Induction of labour among standard primiparae) is lower for women living in Counties Manukau than the New Zealand average and statistically significantly lower than the New Zealand average for women birthing at Middlemore (see Appendix 3). Local data from CM Health facilities, presented below, shows that inductions have been increasing.

Table 10. Induction of Labour by parity as a percentage of births for all women delivering at a CM Health facility, 2010-2014

Year	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	7.4%	702	8.6%	1301	8148	16.0%
2011	643	7.9%	792	9.7%	1435	8125	17.7%
2012	794	9.8%	872	10.8%	1666	8065	20.7%
2013	757	10.0%	840	11.0%	1597	7380	22.0%
2014	774	10.6%	869	12.0%	1643	7291	22.5%

Source: Healthware. Extracted by Health Intelligence and Informatics 2015.

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

What have we done to review induction rates?

Increasing inductions may be driven by the clinical needs of our population but the impact on workload and an evaluation of best practice needs to be considered. A new regional induction of labour guideline (between Auckland Metro DHBs) has been developed to reduce local variation and support evidence based practice.
The guideline was introduced at Middlemore Hospital in June 2014.

A three month retrospective audit was undertaken on inductions undertaken January-March 2014 and was completed in July 2014. The aim was to ascertain the clinical practice of inductions in CM Health facilities. The audit found that the reasons for inductions were appropriate and in line with the *"The Auckland Consensus Guideline on Induction of Labour"*. (see Appendix 6). Future audits of CM Health practice will be against the regional induction guideline.

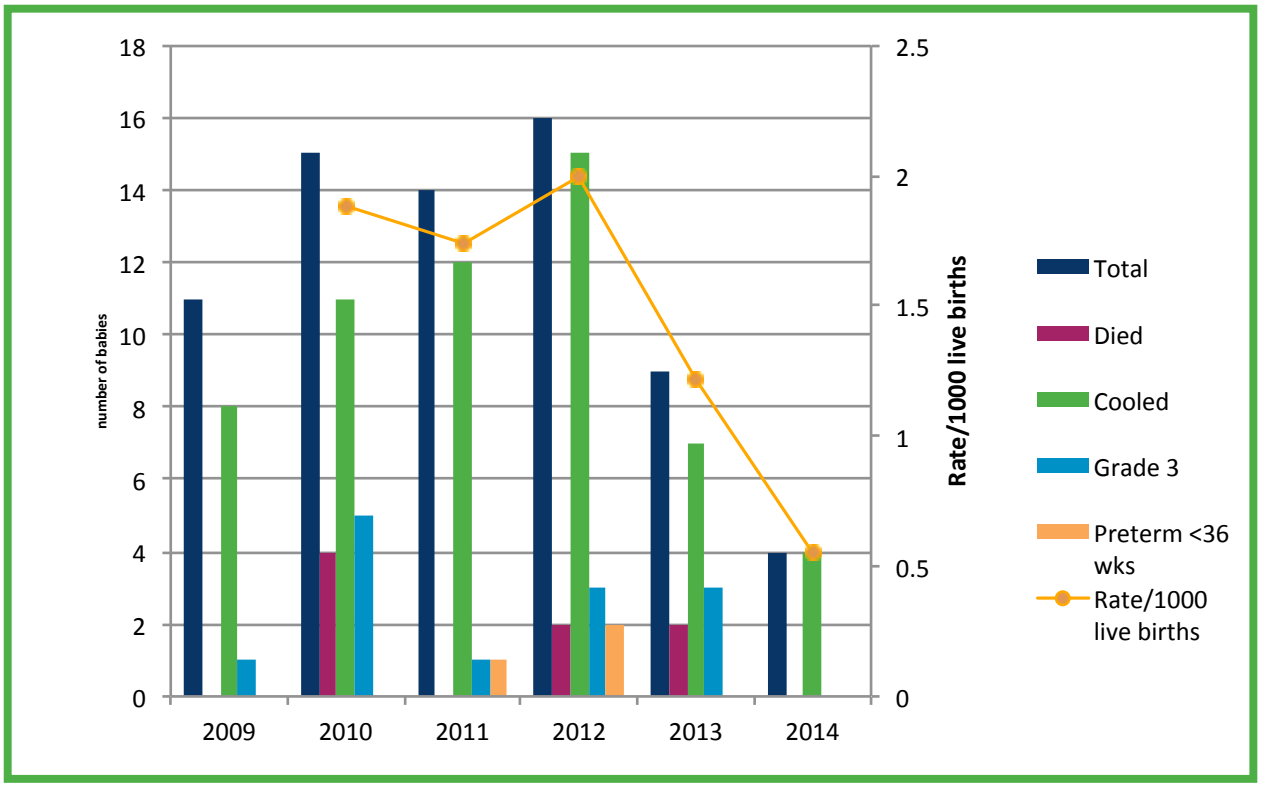
In addition to the induction audit all births at 34-36 weeks were reviewed in 2013 in order to understand the reasons for births at this gestation. There were 395 women in 2013 who birthed a baby/babies between 34-36 weeks gestation at a CM Health facility (~5% of women birthing). The majority of births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

Other Considerations

While concerns have been expressed about the rising caesarean section and induction rates it is worth noting that during this same period hypoxic ischaemic encephalopathy (HIE) rates have decreased. Figure 7 shows the total number of babies admitted to the neonatal unit at MMH from 2009-2014 with HIE. In 2013 and 2014 all the babies were > 36 weeks, most babies were cooled over the five year period with all four cases of HIE cooled in 2014. The total number of babies admitted with HIE peaked in 2012 at 16 cases and has been declined over the last two years with only four babies with HIE admitted in 2014.

While it is uncertain at this time why the number of babies with HIE has decreased so dramatically in 2013 there are several possible contributory factors including earlier recourse to delivery by caesarean section, more liberal use of scalp lactate sampling for abnormal cardiotocographs (CTGs), earlier identification of SGA babies and earlier induction of labour for these babies.

Figure 7. Hypoxic Ischaemic Encephalopathy (HIE), Middlemore Hospital, 2009-2014



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

National Consistency in Provision of Co-ordinated Maternal Mental Health Services

Both the NMMG and the PMMRC have identified that having maternal mental health services available, to women who need them, is critical in ensuring the safety of these women and their babies. The NMMG has identified three key areas of work which include supporting better knowledge in the maternity sector of mental health services available; improved timeliness of access for women and improved integration between maternity and mental health services.

Counties Manukau Maternal Mental Health Team provide specialist care for women who are pregnant or up to 12 months post-partum, and are experiencing a moderate to severe mental health problem where the mental health problem adversely impacts upon their pregnancy or abilities to fulfil the roles and responsibilities associated with motherhood.

The Maternal Mental Health Team is based at the same site as the Counties Manukau child, adolescent and family mental health services (Whirinaki). The multidisciplinary team includes psychologists, occupational therapists, social workers, nurses and a psychiatrist. The referrals are received through the single point of entry via the adult mental health services. Referrals to this service can be self-referrals from consumers, clients, general primary care providers, maternity services or any agencies who have identified a need for further assessment and treatment.

The services provided include;

- Acute assessment and treatment of mental illness;
- Ongoing case management;
- Liaison and referral to other agencies;
- Therapy for specific mental illnesses;
- Pre-pregnancy/preconception consultation;
- Case consultation to the adult mental health services around specific perinatal issues;
- Case consultation to GPs and other primary care providers including maternity services;
- Duty function of telephone support to facilitate access to appropriate services.

The liaison between maternity services and maternal mental health has been identified as a key factor in improving outcomes for women in the perinatal period experiencing a mental illness. This has been a consistent recommendation from various relevant reports such as the Maternal Mortality Report, Healthy Beginnings document and the Review of the Counties Manukau Acute Respite services.

Although the existing relationship between maternity providers and maternal mental health is robust, the Acute Perinatal and Infant Mental Health Project has made resources available to further strengthen and develop these pathways.

What has changed in 2014 for women in the Counties Manukau catchment area in terms of access mental health services?

- Access to an inpatient mother and baby bed, located in Starship Children's Hospital. This is a specialist facility for women requiring therapeutic input in an acute mental health setting.
- Increase in the number of respite beds from three to four in Awhi Rito, a new custom built facility.
- Increase in the home-based packages of care.
- Flexi- fund options to overcome barriers to accessing mental health care.
- Increase in the clinician numbers within the maternal mental health team which allows for greater ability to develop specific liaison roles in areas of high need.

The following points outline the current interface between maternity services and the Maternal Mental Health services.

- Monthly Maternal Mental Health clinic at the Pukekohe maternity unit.
- Presence of Maternal Mental Health psychiatrist and team manager at the Counties Manukau MQSGG.
- Joint work with maternity services on the Acute Perinatal Infant Mental Health Project to develop the model of care and service delivery specifications.

- Counties Manukau Maternal Mental Health team delivering a full day training programme to the maternity service providers.
- Presence of midwife representative at the inpatient mother and baby unit multi-disciplinary meeting every week.
- Working on First 2000 days project to develop resources that can be used widely by General Practice and maternity care providers in the Counties Manukau area.
- Identifying gaps in the services and improving communication to consider ways of managing these limitations.
- Development of the Vulnerable Infant Forum coordinated monthly by Manurewa Child Youth and Family, with representation from the CM Health Community Midwifery Service, Maternity Development Services Manager and Maternal Mental Health services.
- Introduction of Te Ao Marama, a vulnerable women's forum with representation from the CM Health Community Midwifery Service, CM Health Social Workers; CM Health Child Protection Team representative; CM Health CYF Liaison Social Worker and other services supporting the cases presented including Maternity Development Services Manager and CM Health Maternal Mental Health services.

Understand the Variability of Primary Maternity Ultrasounds

One of the NMMG's priority areas is to investigate the national variability in equity in access to primary referred maternity ultrasounds, including cost, timing and quality. There are concerns that in some DHBs antenatal ultrasounds are provided through private providers and women are required to pay a co-payment. For women with limited financial resources, such as many women living in Counties, this is a significant barrier to accessing routine antenatal scans such as the 18 week anatomy scan.

There are five private community based ultrasound scan providers covering the CM Health area. Anecdotally there is high demand for scanning services which has been driven by previously reported influences:

- Referrals for secondary care consultations for suspected growth restriction require a completed GROW chart;
- Clinical guidelines regarding managing obesity during pregnancy, post-maturity and suspected growth restriction;
- Consumer demand;
- Early pregnancy screening;
- Routine requesting of dating scans;
- Quality of Ultrasound visual (recall for further scan);
- Interaction between ultrasonographer and woman (woman informed she will require further scans).

These factors have contributed to an increase in workload and therefore providers are employing more staff to cover the need. This overhead is being passed onto the consumer with the addition of a surcharge to all anatomy scans and nuchal translucency scans for women in the Counties Manukau area. The surcharge ranges from $20-$40. The introduction of a surcharge has caused anxiety among the self-employed LMC midwives who care for the families in Counties Manukau as many of the women giving birth live in the most deprived areas (52.7% Quintile 5) and do not have the financial resources to pay a surcharge.

What has been done to address equity issues in ultrasound provision?

Progress in this area has been slow due to the services being provided by private providers and the need to identify what can be done in this space to provide women with an improved service. We have recommenced quarterly meetings to develop a forum for communication with our providers so we can discuss issues as they arise and determine solutions. The meeting is attended by both a rural based and an urban based self-employed LMC midwife so they can provide their perspective on service quality and provision.

Self-employed LMC midwives and senior medical officers have been requested to support the diligent ordering of ultrasound scans and advise the woman as to when her scan is to be undertaken and what

to do if she is unable to attend. If it is well understood that USS spaces are scarce then if women are unable to attend, for whatever reason (transport issues, labour or birth), they can ask their self-employed LMC midwives to cancel the appointment.

Connecting and Supporting Maternity Consumer Representatives

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. Our maternity consumer panel was set up in November 2014 and consists of a cross section of ages and ethnicities representative of the families living in the Counties Manukau region. The consumer group is supported by an independent facilitator funded by the DHB

The Maternity Consumer Panel comprises 13 women who represent the cultural diversity of Counties Manukau, half of whom need to have used our maternity services during the previous five years. The Maternity Consumer Panel provides advice and feedback on maternity services to the management of CM Health. The advice is to inform the DHB and other providers (e.g. self-employed LMC midwives, general practice) on the design and direction of maternity services, how people can access them and how effective the services are in meeting the needs of women and their whaanau. The panel includes residents from the four localities defined by CM Health (Manukau, East Auckland Mangere/Otara and Franklin) and the mix is representative of the women who utilise maternity services.

The existing group have been meeting quarterly since November but at the meeting in June it was decided we should increase the frequency to eight weekly as there is a lot of interest in engaging the consumer group in testing resources or ideas about service development. The meetings are held in a local community based venue and are fully catered for those who attend.

The consumer panel have been instrumental in informing the 'Best for Baby Best for You' early engagement social media campaign which encourages a community centred approach to promoting the importance of early engagement for pregnancy care with a self-employed LMC midwife. The group has also been informed about sudden unexplained death in infancy (SUDI) prevention work and where to find beds and pepi pods for babies, screening and management of anaemia and been given the opportunity to contribute to the DHB's audit of patient experiences.

What has the panel been involved with this year?

The panel has provided feedback and contributed to date on the following projects;

- 'The Best for Baby Best for You' media campaign; informing the community and pregnant women about the benefits of early engagement for pregnancy care.
- The content of antenatal information packs for women who have midwifery care with a DHB midwife.
- Providing advice about how best to engage pregnant women's interest in research participation in Counties.
- Contributing to the readability and how we can attract consumers to the content of the MQSP Annual Report.

Maternity Consumer Panel

Perspective from Maternity Consumer Panel member

Talofa, Kia Ora, Hello…my name is Adele Muller, mother of 5 (ages ranging from 13 - 1), 33 years young, of Pacific Island, Maori & European decent. I was fortunate enough to be part of the consumer's panel in February of this year. During the short time I have been part of this group I have met a lovely group of intelligent ladies whom I have shared my experiences, opinions and feelings with on maternity.

After having the MQSP Co-ordinator explain to me what the panel was about I knew I couldn't give up the opportunity, especially since health is my passion.

The material we are currently working towards has been enjoyable, some improvements have been identified for expectant mums and families with early pregnancy care being such an important message. I find it exhilarating knowing my involvement with the panel may influence the design and direction of maternity services within CM Health which in turn may see improvements on how services could be more effective for the community.

I am sure we as a consumer panel will continue to do great things.

Other Opportunities for Consumer Feedback

Every woman who births at CM Health facilities is sent out an e-mail with a link to a consumer experience survey which is reviewed by the Consumer Experience Co-ordinator and escalated if required.

Twice weekly all women, within postnatal facilities, are provided with a form to give feedback about their consumer experience. This information is reviewed and entered into a central electronic data base. All concerns are addressed in accordance with CM Health's complaint policy and guideline. Outcome data from the consumer experience survey and the feedback forms is reported in the monthly divisional report.

Blood Transfusion and Post-Partum Haemorrhage

CM Health's definition of a post-partum haemorrhage (PPH) is an estimated blood loss of 500mls or greater in the first 24 hours following birth and is a potentially life threatening complication of birth. Clinically it can be difficult to accurately estimate the amount of blood loss therefore the requirement for blood transfusion has been considered by the MoH, in the Clinical Indicator development, to be a more objective measure of whether there was blood loss during or following birth.

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, hypertensive disorders, induction of labour and, augmentation of labour with oxytocin.[20] In addition placenta praevia, history of previous PPH, obesity, high parity, Asian or Hispanic race, precipitous labour, first stage of labour longer than 24 hours, uterine over distention, uterine infection, and use of some

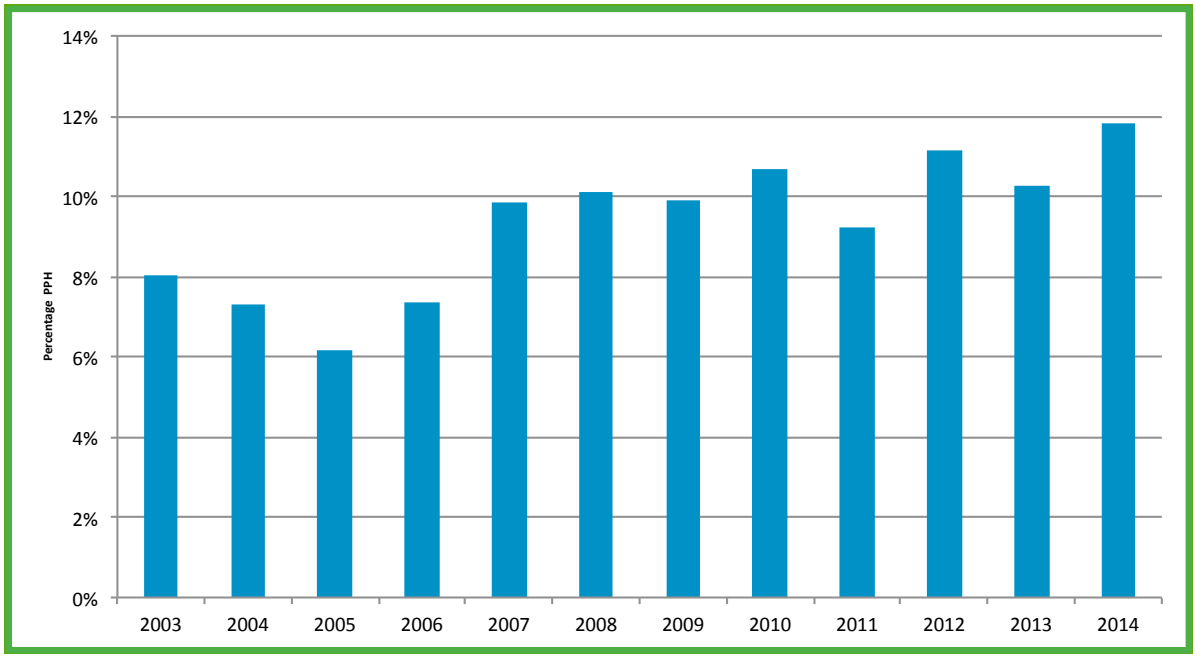
20 UpTodate. Risk factors for postpartum haemorrhage. Accessed 8/7/2014

drugs, such as antidepressants, have been associated with PPH.[21]

Clinical indicators 11 (blood transfusion with caesarean section) and 12 (blood transfusion with vaginal birth) reflect the requirement for blood transfusion during birth admission. Women living in Counties Manukau and/or delivering at Middlemore Hospital have higher rates of blood transfusion during birth admission than that of the New Zealand average in 2013 (see Appendix 3).

In addition we have reviewed the Healthware data for women delivering at a CM Health facility who have a PPH. The percentage of women having a PPH is shown in Figure 8 as a percentage of all women birthing at a CM Health facility.

Figure 8. Percentage of Post-Partum haemorrhage of all women birthing at CM Health facilities, 2003-2013



Source: Healthware. Extracted by Health Intelligence and Informatics 2015.

In 2014 12% of all women birthing at a CM Health facility had a PPH (Table 11).

Table 11. Percentage of post-partum haemorrhage of all for women birthing at CM Health facilities, 2003-2014

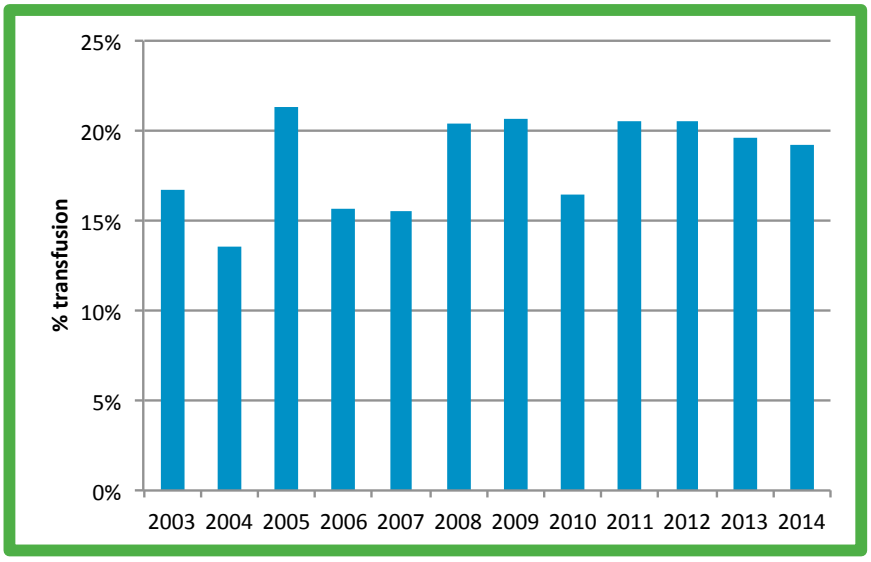
YEAR	PPH CASES	ALL DELIVERIES	% OF ALL DELIVERIES
2003	521	6505	8%
2004	493	6763	7%
2005	428	6968	6%
2006	575	7821	7%
2007	802	8149	10%
2008	827	8179	10%
2009	797	8056	10%
2010	872	8148	11%
2011	750	8125	9%
2012	899	8065	11%
2013	758	7380	10%
2014	860	7291	12%

Source: Healthware. Extracted by Health Intelligence and Informatics 2015.

21 UpTodate. Risk factors for postpartum haemorrhage. Accessed 8/7/2014

Of those women who had a PPH while birthing at a CM Health facility 21% received a blood transfusion (Figure 9).

Figure 9. Percentage of women, who have a post-partum haemorrhage, who require a blood transfusion, 2003-2014



Source: Healthware. Extracted by Health Intelligence and Informatics 2015.

The majority of PPH occur in Pacific women (49%) and are more likely to occur after the third stage (see Table 12).

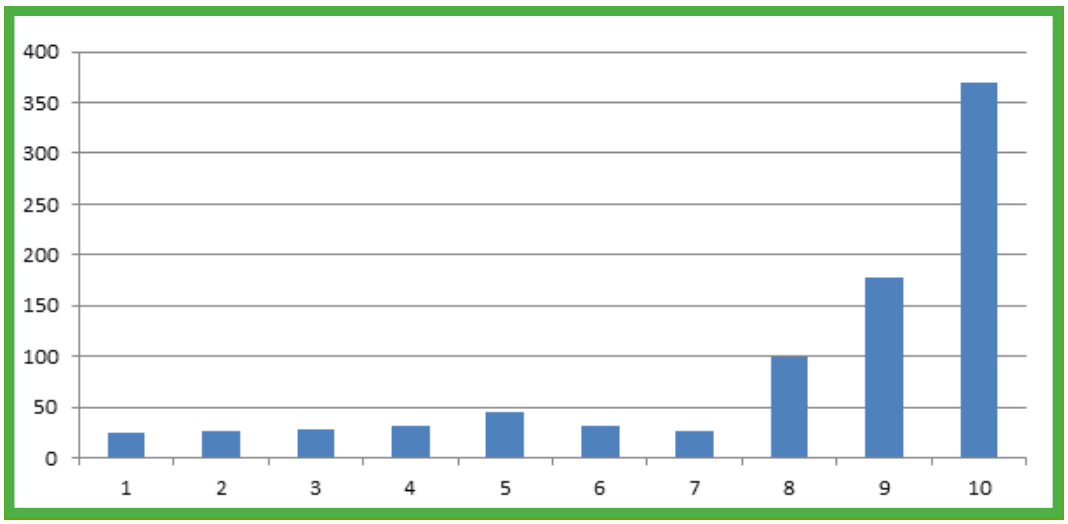
Table 12. Percentage and number of Post-Partum haemorrhage of all for women birthing at CM Health facilities, by ethnicity, 2014

	DELAYED AND SECONDARY POSTPARTUM HAEMORRHAGE	OTHER IMMEDIATE POSTPARTUM HAEMORRHAGE	POSTPARTUM COAGULATION DEFECTS	THIRD-STAGE HAEMORRHAGE	TOTAL	% OF TOTAL
Maaori	6	122		25	153	18%
Pacific Islander	22	368		34	424	49%
Chinese		17	2	1	20	2%
Indian	2	59		6	67	8%
Other Asian		36		3	39	5%
European/Other	5	132		20	157	18%
Grand Total	**35**	**734**	**2**	**89**	**860**	**100%**

Source: Healthware. Extracted by Health Intelligence and Informatics 2015. Ethnicity preferred.

The majority of PPH occur in women in living in decile 9 and 10 (see Figure 10).

Figure 10. Number of Post-Partum haemorrhage of all for women birthing at CM Health facilities, by decile 2014



Source: Healthware. Extracted by Health Intelligence and Informatics 2015.

The decision to provide a blood transfusion post-delivery is influenced both by the degree of blood loss but also the pre-labour haemoglobin level. As we outlined in last year's report late booking is an issue for our population for many reasons one of which is that it makes the management of chronic anaemia challenging. A significant number of our women are anaemic at booking and without the opportunity to improve this antenatally, for the same blood loss at birth, 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 primiparae.

What has changed in the last year in identifying and treating anaemia in pregnancy?

The following practices have been undertaken in 2014/15 to identify and treat anaemia in pregnancy:

- Including serum ferritin to booking bloods to identify Fe deficiency earlier in pregnancy;
- Managing low ferritin levels earlier in pregnancy;
- Providing more advice about oral iron and which to use for specific situations;
- Developing a new guide-line for the management of anaemia in pregnancy;
- Utilising visual resources to enable women to understand what is meant by 'low iron levels' and what dietary changes can support raising levels along with supplementation;
- Developing information for clinicians about oral iron and which supplements are subsided.

- Presentation by a Director of Nutrition and Dietetics at the Perinatal Maternal Mortality Review meeting about iron and pregnancy and how a low iron level during pregnancy can contribute to delayed learning ability in childhood.
- Introduction of Ferinject I.V. iron onto the Hospital Medicines List (HML) and support for its use in the hospital for treatment of significant anaemia/not responding to oral therapy.
- Commencing a Day Assessment Clinic IV Iron Clinic twice weekly in May 2015.

- Conducting an audit of discharge haemoglobin, ferritin and iron medications;
- Developing an anaemia in pregnancy and iron therapy information resource for both women and healthcare professionals;
- Investigating DHB subsidising oral iron prescription cost;
- Introduction of the maternity early warning score (MEWS) chart to quantify blood loss more accurately.

Woman receiving Ferinject at Day Assessment Clinic

"I remember starting to feel really tired all the time. I was always sleeping. My midwife said it was probably because my iron was low. I tried taking the iron tablets but they did not work. I moved a few times so lost things. My midwife suggested I have an iron injection straight into my blood. This had to be done in hospital. I wouldn't have gone as I am frightened of needles and did not know what to expect. The community health worker picked me up and put me at ease so I felt ok going with her. When I got to the hospital my midwife was waiting for me on the ward. It took about 3 – 4 hours so I was a bit bored but my midwife kept me talking then I had a sleep…"

Third and Fourth Degree Tears

Perineal trauma is one of the most common complications of childbirth. Obstetric anal sphincter injuries (OASIS), further defined as 3a, 3b, 3c or 4th degree tears, can have a major impact on women's lives, both in the postpartum period and longer term.

The MoH Clinical Indicators 6-9 (see Appendix 3) reflect the degree of damage to the lower genital tract from vaginal birth among standard primiparae. Each of the indicators is intended to reflect different issues and encourages reflection by DHBs on what can be done to improve rates of intact lower genital tract, assess risks to mother and infant before undertaking an episiotomy (i.e. support restricted rather than routine use of episiotomies) and consider factors related to labour management that might impact on third and fourth degree tears.

After reviewing the clinical indicator data for 2012 it was noted that:

- Women living in Counties Manukau or delivering at Middlemore Hospital were significantly less likely to have an intact lower genital tract post-delivery compared to a standard primiparae (Clinical Indicator 6, intact lower genital tract).
- A lower percentage of women living in Counties Manukau or birthing at a CM Health facility had an episiotomy and no third or fourth degree tear after giving birth vaginally compared to the New Zealand average (Clinical indicator 7)
- Women living in Counties Manukau Area or birthing at a CM Health facility had a higher, but not statically significantly higher, percentage of a third or fourth degree tears with no episiotomy following a vaginal birth. This was consistent with the New Zealand average for having both an episiotomy and third or fourth degree tear (Clinical Indicator 9).

We have also examined our local Healthware data for all women birthing at a CM facility in terms of 3rd and 4th degree tears (Table 13). In 2014, 2.3% of women who had a vaginal birth had a 3rd degree tear while 0.14% of women had a 4th degree tear.

A review of births complicated by 3rd and 4th degree tears showed 26% were assisted births (instrumental deliveries either ventouse or forceps) with the reminder occurring after spontaneous vaginal deliveries. Of the assisted deliveries, 77% had an episiotomy. This is encouraging as the practice of episiotomy when performed at an assisted primiparae delivery significantly reduces the risk of an anal sphincter injury.[22,23]

In addition we have also a looked at episiotomies for women who birthed at Middlemore Hospital (ie not including primary units) in 2014. A higher percentage of Indian women had an episiotomy than other ethnic groups (Table 15).

Table 13. Anal Sphincter injuries for all women delivering at CMH facilities, 2003-2014

YEAR	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%	6720	2.3%
2010	142	2.1%	14	0.21%	6618	2.4%
2011	148	2.3%	17	0.26%	6534	2.5%
2012	189	3.0%	14	0.22%	6333	3.2%
2013	185	3.2%	7	0.12%	5725	3.4%
2014	130	2.3%	8	0.14%	5610	2.5%

Source : Healthware ICD 10 code of O702 or O703. Extracted by Health Intelligence and Informatics 2015Vaginal births include normal and operative.

22 Baghestan E, Irgens LM, Børdahl PE, Rasmussen S. Trends in Risk Factors for Obstetric Anal Sphincter Injuries in Norway. Obstet gynecol 2010; 116: 25-33.
23 Jango H, Langhoff-Roos J., Rosthoj S.. Modifiable risk factors of obstetric anal sphincter injury in primiparous women: A population-based cohort study. AJOG. Jan 2014. 59-61.

Table 14. Obstetric anal sphincter injuries (OASIS), by ethnicity for women delivering vaginally at CMH facilities, 2014

ETHNICITY	TOTAL OASIS	TOTAL VAGINAL BIRTHS AT CMH FACILITIES	PERCENTAGE OF TOTAL VAGINAL BIRTHS
Maaori	21	1263	1.7%
Pacific Islander	39	2043	1.9%
Chinese	10	198	5.1%
Indian	22	508	4.3%
Other Asian	11	235	4.7%
European/Other	35	1363	2.6%
Total	**138**	**5610**	**2.5%**

Source: Extracted from Healthware by Health Intelligence and Informatics 2015. Ethnicity is preferred.

Table 15. Percentage of women, who delivered at MMH, who had an episiotomy by ethnicity, 2014

ETHNICITY GROUP	EPISIOTOMIES	TOTAL BIRTHS	PERCENTAGE OF TOTAL BIRTHS
Asian	98	522	18.8%
European	175	1281	13.7%
Indian	182	690	26.4%
Maori	103	1299	7.9%
Other	25	164	15.2%
Pacific Islander	192	2466	7.8%
Total	**775**	**6422**	**12.1%**

Source: Health Intelligence and Informatics 2015. Includes all women birthing at MMH only excludes homebirths and those brought in by Ambulance (BBA). Ethnicity is preferred.

The reason for the low percentage of women living in Counties or delivering at a CM facility who have an intact genital tract is likely to be complex. Known risk factors for OASIS include primiparity, fetal weight, large for gestational age (LGA), body mass index (BMI) and ethnicity.[24] International evidence suggests an additional risk for women of Indian/Asian descent.[25] It is recognised that women birthing at CM Health are from a population living in highly deprived areas, have poor nutrition, high rates of obesity and a higher rate of anaemia which can result in poor quality tissues that may predispose to perineal trauma.

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 birth 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 woman has had a thorough examination including a rectal examination to exclude an OASIS.

There have also been educational sessions for self-employed LMC 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 two years. This is enhanced by the "no blame" culture within the DHB where staff/self-employed LMC midwives are encouraged to report perineal trauma. The more thoroughly the woman 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.

What have we done this year?

In 2014 staff attended the Health Round Table conference and the topic of reducing perineal tears was identified as an area for action in CM Health, the aim being to broaden work from identifying 3rd and 4th degree tears to also focus on prevention of such injuries by minimising perineal trauma at delivery.

Education now involves various risk reducing strategies to decrease perineal trauma. The comprehensive CM Health Perineal Care Guideline to promote evidence based perineal care is now in its final stages of development and includes antenatal advice, ways to manage the second stage of labour, and ways to manage the

24 Ampt AJ, Ford JB, Roberts CL, Morris JM. Trends in obstetric anal sphincter injuries and associated risk factors for vaginal singleton term births in New South Wales 2001-2009. Aust NZ J Obstet Gynaecol. 2013 Feb;53(1):9-16.

25 Ampt AJ, Ford JB, Roberts CL, Morris JM. Trends in obstetric anal sphincter injuries and associated risk factors for vaginal singleton term births in New South Wales 2001-2009. Aust NZ J Obstet Gynaecol. 2013 Feb;53(1):9-16.

perineum after birth and during the postnatal period. An audit reviewing practice of birthing techniques and risk reducing strategies took place in July 2014 and a further follow up audit is proposed in late 2015 to re-evaluate progress.

Other Quality Initiatives

Implementation of the Maternity Clinical Information System

CM Health launched the roll out of the national MCIS in November 2014. A 'soft' launch was chosen to ensure that we could implement the transition from paper clinical records to an electronic record in a controlled way and address any software and business process changes as quickly as possible.

The soft launch started with a small group of women booking with the DHB community midwifery services (with EDD May 15 onwards), increasing to full capacity of DHB bookings from February 2015 (with EDD from June 15 onwards). Booking for women with a self-employed LMC with an EDD from July 15 were entered into the MCIS from March 2015.

To date over 600 Users have been trained including:

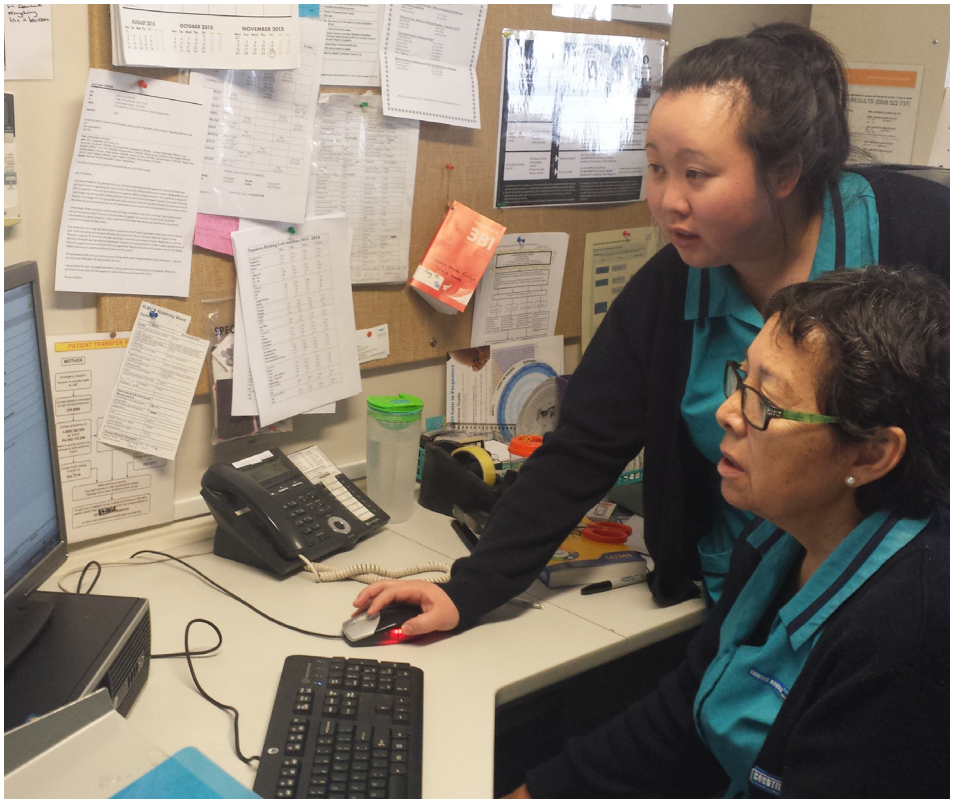
- Community and case loading midwives
- All core maternity unit staff
- RMO and SMO obstetric teams
- Administration and business support staff
- Most self-employed LMC midwives
- Allied health staff, including dieticians, physicians, cultural support,

  Pain team and physiotherapists
- Neonatal unit SMO's, neonatal nurse specialists and registrars and anaesthetists
- Still to train –AUT student midwives, hearing screeners and Regional Public Health nurses(for BCG recording)

As of the end of June:

- 2785 women are recorded in the system
- 106 birthed
- 4 sets of twins
- 15 Caesarean Sections – 2 elective, the remainder emergency

We are expecting the number of births of women in the system to increase significantly from July onwards, and the transition of all women to an electronic record (for their booking and registration, labour and birth and inpatient postnatal period for women under the care of a self-employed LMC midwife) by November 2015. The support requirements and additional staffing numbers will be significant over the next three months. At this stage the important linkages to the self-employed LMC and GP Management systems have not been implemented at the national level. We continue to work with the MoH on the development and implementation of these vital linkages as well as an integrated linkage to the GROW module.



CM Health midwives working together on the Maternity Clinical Information System

Perinatal Review Process

Perinatal mortality is reviewed nationally by the Perinatal and Maternal Mortality Review Committee and presented at a national conference. In addition we have a local perinatal and maternal mortality meeting four weekly where local cases are discussed. The meetings run for four hours and a range of different professionals attend the multidisciplinary meeting.
A Perinatal Midwife Specialist role was established in Counties Manukau in September 2012. This was the first position of its type in New Zealand.

What has been done to improve the management of perinatal deaths?

- Improvement of paper work required for perinatal losses.
- Slow but steady improvement of the area which these families are cared for and we now have a room that has facilities for the support person to sleep, as well as a separate room for whaanau who have comfortable seating, a television, a private space to be and await the baby's arrival.
- A cupboard which contains support resources as well as clothes of appropriate size, quilts, and burial gowns donated that parents can chose from should they need these things.
- Improved methods of transporting a baby in the hospital to protect them against inquisitive glances, as well as to have flexibility for families to transport them how they feel most comfortable.
- A more stream lined contact system for Baby Loss New Zealand to have access to baby to help families with memory making.
- Two study days called 'Precious Lives, Painful Choices' attended by 46 staff members.
- Improvement in the perinatal mortality meeting process, including electronic feedback to all staff including self-employed LMC midwives.
- Improvement of notifications of losses to applicable agencies that may contact parents for things such as immunization/ hearing screens etc. so that the parents are not left to explain that the baby has died.
- Improvement of communication with the coroner to ensure families, who have coroner investigations into the death of their baby , do not receive the results via mail but that this is done in a meeting with the Perinatal Loss Midwife and an obstetrician should they wish for this.
- Teaching to new to service and

Some thoughts from the midwife appointed to a Perinatal Loss Midwife Specialist role.

After I started in this role it quickly became apparent that I was becoming known as the person you least want to meet in the hospital and the staff member that other staff least wanted to see. It became clear that I needed to do a lot of work with staff so they realized that although my presence was not one they wanted (because of the negative links to a recently bereaved family) I would do my best to make their work a little easier.

I have worked extremely hard to improve the service I offer to parents and to staff (self- employed midwives and core midwives as well as doctors). Now when they do have an unexpected diagnosis of an intra-uterine death, or an early pregnancy loss that requires more input than usual, I am one of the first people they contact as they have realized that I have the time to sit with families and offer information, support and if necessary just to be with them. This is a big achievement both because it offers colleagues support as well as ensures families get the time they need to be in shock, and then to slowly come to a place of being able to ask all the questions that are running around in their heads. They receive information, in as gentle a way as possible, which is critical for them to parent their dead or dying baby in a way that they can live without any regrets and feel like they have made the best decisions possible at a time when they are not functioning at their best.

Probably the best endorsement I have had as my role progresses is to have women contacting me when they find out they are pregnant after a loss and sending me photographs of their new live babies. This certainly is the thing that I receive most satisfaction from.

new graduate midwives about perinatal loss and how to care for these families.

- Teaching to house officers, and registrars on how to care for families with early pregnancy losses and over 20 week losses.
- Improvement of follow up rates of families who have had a perinatal loss.

Sudden Unexpected Death in Infancy

CM Health is one of the DHBs that have a significantly higher Sudden Unexpected Death in Infancy (SUDI) rate than the rest of New Zealand, with persisting disparities.

What have we done in the last year?

A significant part of the uptake and implementation of the SUDI / Safe Sleep messaging is through the CM Health Safe Sleep / SUDI Coordinator. This full-time role is dedicated to facilitating and progressing the SUDI Action Plan across CM Health and maintaining strong relationships regionally, and with Whakawhetu and TAHA.

A strong support for reduction of SUDI risk factors is through safe sleep messaging in all primary birthing units and maternity wards, Kidz First and all other child health programmes. This is based on the 'P.E.P.E.' approach which is:

- PLACE baby in own baby bed, face clear of bedding
- ELIMINATE smoking in pregnancy & protect baby with smokefree whanau, whare & waka
- POSITION baby with face upward
- ENCOURAGE and support Mum to breastfed

In the last 18 months more than 40 training workshops have been held in CM Health to educate heath providers involved with families in the antenatal and postnatal period on SUDI training. Going forward two safe sleep online education / e-workshops are available. There is no charge to access and on completion both are certificated and accredited.[26]

The MoH approved workforce training & development courses on SUDI education will be a requirement for all CM Health staff and contractors working in CM Health communities in Maternity or Well Child programmes.

Safe Sleep policy and PEPE messaging is being implemented on all maternity wards and in primary birthing units and was evaluated in a pilot audit in late January 2015. Safe Sleep Audit criteria has been added into the weekly audit schedule for CM Health maternity facilities using the CM Health "Point of Care measurement Tool" (see below under Point of Measurement of Care). Audit data will be collected onto a handheld electronic device weekly and reported monthly to DHB, and 6 monthly at Northern regional and MoH level. To identify babies in unsafe sleeping environments the self-employed LMC midwife/community midwife will, in the first week visit, assesses sleep environment, baby bed and provide safe sleep information and document this has occurred. Whaanau identified with an unsafe sleeping environment for their baby will be referred to the Safe Sleep team where a safe sleep device and bedding will be supplied along with safe sleep education.

Weight Management

Being overweight or obese at the start or during pregnancy are recognised risk factors for a number of complications including gestational diabetes, preterm and post-term birth, induction of labour, caesarean section, macrosomia, stillbirth, and neonatal and maternal death.[27]

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.[28]

In 2014 data collected for all women booking at a CM Health facility showed 1 % of women were underweight, 29% of women had a normal BMI, 23% of women were overweight and 37% of women were obese (see Table 16).[29]

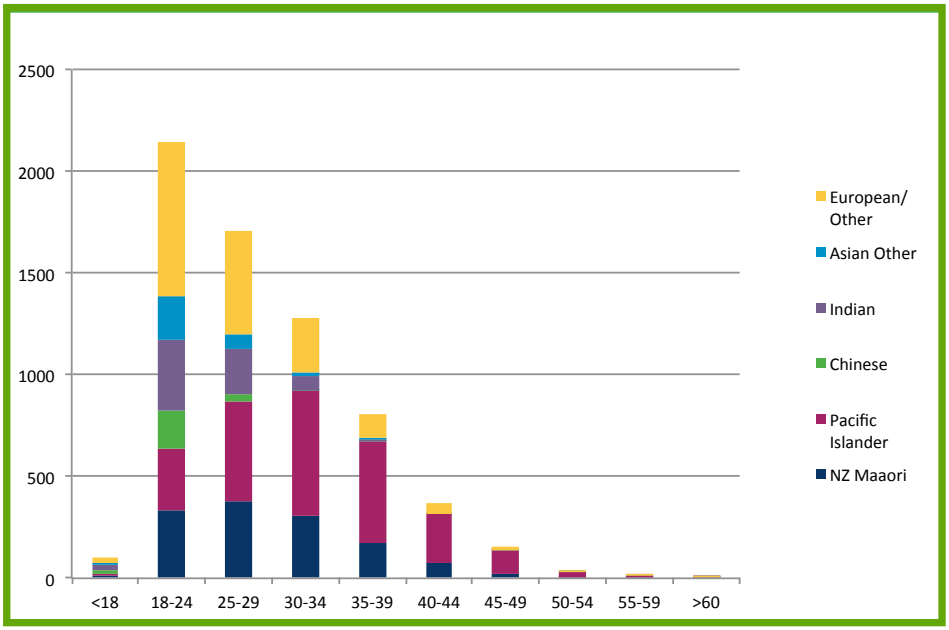
26 : http://learnonline.health.nz/course/categorylist.php?viewtype=course; : http://lms.conectus.org.nz/course/826/sudi-online-workshop; http://www.whakawhetu.co.nz/sudi-training
27 Jackson C. Perinatal Mortality in Counties Manukau. 2011.
28 Jackson C. Antenatal Care in Counties Manukau DHB: A focus on Antenatal Care (pg 120). 2011
29 9.1% unknown

The distribution of BMI varies by ethnicity with 29% of Maaori women birthing at CM health facilities, who had a known BMI, were overweight and 45% were obese, while 21% of Pacific women were overweight and 65% were obese (Figure 11).[30]

Addressing obesity is challenging issue not least as evidence suggests the interventions that are most likely to have the biggest impact sit outside the health sector. Issues such as the wider food environment including the availability and cost of healthy food are significant issues that are beyond an individual's control.[31]

Clinical Indicator 10 (General Anaesthetic for Caesarean Section) is significantly higher than the New Zealand average both for women living in Counties Manukau and women birthing at Middlemore hospital. Work is underway by the anaesthetic department to undertand this better. However the higher rate of Caesarean sections is thought to reflect the rates of obesity in our population making regional forms of anaesthesia technically difficult (as well as late presentation in some emergencies not allowing time for a regional anaesthetic).

Figure 11. BMI by ethnicity at time of booking at CM Health facility, 2014



Source: Healthware. Extracted by Health Intelligence and Informatics April 2015. Ethnicity is preferred.

What we have done this year?

Supported the implementation of the MoH 'Guidance for Healthy Weight Gain in Pregnancy'

CM Health has supported the implementation of MoH 'Guidance for Healthy Weight Gain in Pregnancy'. Work led by the MQSP co-ordinator included ensuring self-employed LMC midwives felt supported in being able to advise women well, particularly with CMH's demographic need. To help with this the MoH was contacted directly and a large order was placed for the resources they provide and our MQSP co-ordinator proceeded to distribute to self-employed LMC midwives as widely as possible.

This involved contacting all three primary birthing units and ensuring laminated copies of the LMC Quick Reference Guide charts, the woman's guidance

Table 16. Booking BMI as a percentage of total deliveries at CM Health facilities, 2014

BOOKING BMI	NZ MAAORI	PACIFIC ISLANDER	CHINESE	INDIAN	ASIAN OTHER	EUROPEAN/ OTHER	TOTAL
<18	10	12	18	24	11	26	101
18-24	334	306	187	345	213	764	2149
25-29	379	491	32	230	71	505	1708
30-34	310	610	7	69	16	269	1281
35-39	177	494	1	14	2	118	806
40-44	71	244	0	4	0	54	373
45-49	19	118	1	2	0	14	154
50-54	4	30	0	0	1	5	40
55-59	1	13	0	1	0	3	18
>60	1	7	0	0	0	1	9
Unknown	225	256	12	39	22	98	652
Total	1531	2581	258	728	336	1857	7291

Source: Healthware. Extracted by Health Intelligence and Informatics 2014. All women birthing at CM Health facility. Note BMI data was not available for all women booked at CM Health facilities

30 Note unknown BMI was excluded from the denominator

31 Swinburn BA1, Sacks G, Hall KD, McPherson K, Finegood DT, Moodie ML, Gortmaker SL The global obesity pandemic: shaped by global drivers and local environments. Lancet. 2011 Aug 27;378(9793):804-14.

chart pads plus a copy of the 'Guidance For Healthy Weight Gain 2014' were available in all clinic rooms as these are well used by self-employed LMC midwives. The resources were also distributed to the community midwife clinic rooms and midwives, local self-employed LMC midwifery groups and some GP practices. They were also disseminated via the Access Holders meetings and all self-employed LMC midwives were informed of the availability through the 'Our Maternity Monthly' eUpdate.

The healthy weight gain chart clearly explains the importance of establishing an accurate baseline recording of weight and not to rely on self-reporting plus it has a simple chart to inform self-employed LMC midwives of the appropriate weight gain to advise women during pregnancy based on their pre pregnancy weight.

A letter was enclosed explaining what the resources were and included the MoH website to enable the midwives and GPs access further resources as required.

Research to Help Understand What Can be Done to Support Healthy Mothers and Babies

CM Health is supporting research to trial new approaches to weight management in pregnancy.
The 'Healthy Mums and Babies Study'(HUMBA), is a randomized controlled trial of a multi-faceted nutritional intervention and probiotics/placebo to reduce gestational diabetes mellitus, pregnancy weight gain and infant adiposity in overweight and obese pregnant women in the CM Health region. HUMBA is a demonstration study that it is hoped will gather useful information around women's diet and physical activity during pregnancy. The study also aims to identify whether intervening with a multi-faceted nutritional intervention, with or without probiotics, will have a positive effect on pregnancy weight gain and optimise infant birth weight.

This is the first study of this kind being trialled in Counties Manukau Health area and recruitment began mid-April 2015. The aim is to involve 220 women in the pilot study. CM Health community health workers have received full training by the National Heart Foundation (Certificate of Nutrition). They have also had full training on healthy conversations to improve health literacy among our population by Gravida (Liggins Institute). They will have a HUMBA standard operating procedure manual and a HUMBA handbook for the women in the active nutritional arm of the trial. The women will receive four community health worker visits to assist them with their diet and physical activity, as well as text messages for encouragement. The women in the best practice arm will receive the MoH pamphlets on 'Eating for Healthy Pregnant Women' and 'Healthy Weight Gain in Pregnancy'. All women will be randomised either probiotics or placebo. The probiotics and placebo will be taken from the date of recruitment and throughout the whole of the pregnancy.

Diabetes in Pregnancy

Diabetes is a significant and growing problem in Counties Manukau due to the challenges our population face with weight control and the associated socioeconomic drivers which can mean choosing less costly high sugar, fat and carbohydrate food and beverages.

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 percentage of women who birth at a CM Health facility identified with diabetes in pregnancy has increased from 3.1% (246) of all births in 2006 to 8% (584) of all births in 2014. The largest volume of diabetes in pregnancy cases continues to be women of Pacific ethnicities with 259 Pacific women identified has having diabetes in pregnancy in 2014 (Table 17).

Table 17. Deliveries identified with diabetes in pregnancy, regardless of domicile of residence, 2006-2014, trend by ethnicity

	MAAORI	PACIFIC ISLANDER	CHINESE	INDIAN	OTHER ASIAN	EUROPEAN/ OTHER	TOTAL	% OF ALL DELIVERIES
2006	42	128	5	22	9	40	246	3.1%
2007	32	167	11	40	10	44	304	3.7%
2008	49	178	9	49	11	60	356	4.4%
2009	46	165	10	42	16	42	321	4.0%
2010	41	200	16	47	24	61	389	4.8%
2011	53	230	11	57	25	77	453	5.6%
2012	66	224	38	87	37	82	534	6.6%
2013	64	210	34	93	33	64	498	6.7%
2014	66	259	33	99	38	89	584	8.0%

Source: Healthware. Extracted April 2015. All women birthing at a CM Health facility regardless of domicile.

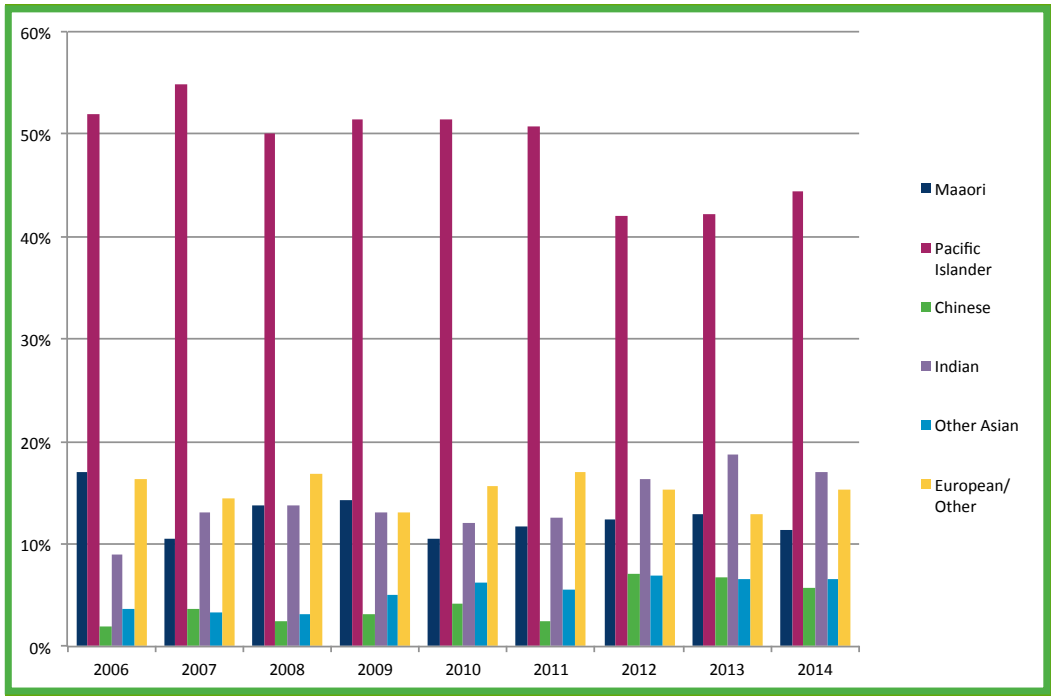
Table 18 and Figure 12 show the percentage of women with DiP by ethnicity. In 2014 44% of women birthing at a CM Health facility with DiP were Pacific, 17% were Indian, 15% European /Other and 11% were Maaori.

Table 18. Percentage of deliveries at CM Health facility identified with DiP, 2006-2014, trend by ethnicity

	MAAORI	PACIFIC ISLANDER	CHINESE	INDIAN	OTHER ASIAN	EUROPEAN/ OTHER
2006	17%	52%	2%	9%	4%	16%
2007	11%	55%	4%	13%	3%	14%
2008	14%	50%	3%	14%	3%	17%
2009	14%	51%	3%	13%	5%	13%
2010	11%	51%	4%	12%	6%	16%
2011	12%	51%	2%	13%	6%	17%
2012	12%	42%	7%	16%	7%	15%
2013	13%	42%	7%	19%	7%	13%
2014	11%	44%	6%	17%	7%	15%

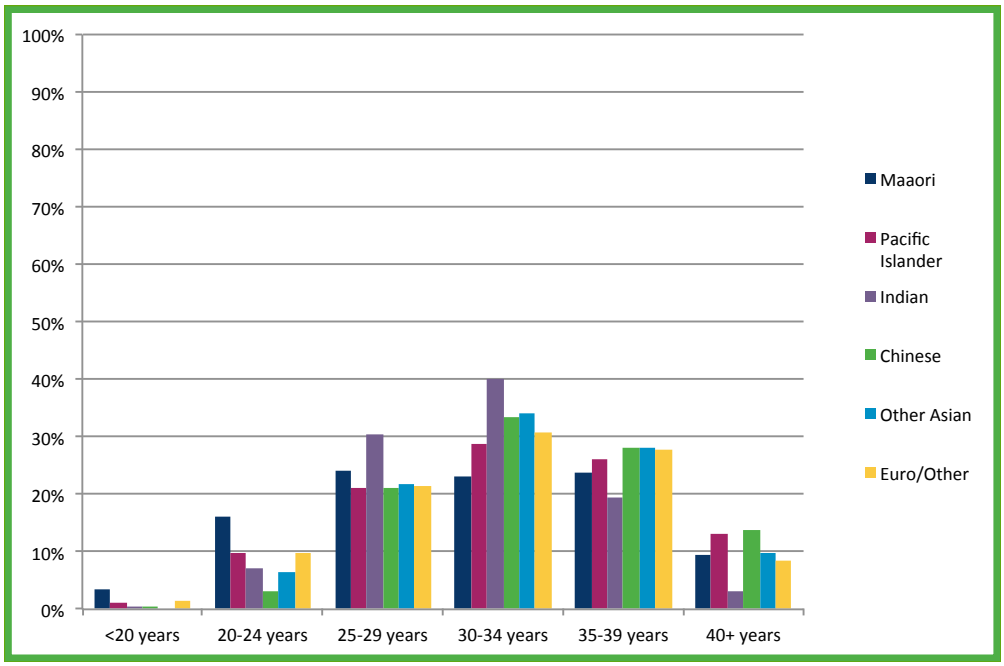
Note: Source Healthware. Extracted by Health Intelligence and Informatics 2015. Percentage is of all women with DiP who birthed at a CM Health facility.

Figure 12. Percentage of women birthing at a CM facility, by ethnicity, identified with DiP, 2006-2014



Note: Source Healthware. Extracted by Health Intelligence and Informatics 2015. Percentage is of all for all women birthing at a CM Health facility

Figure 13. Diabetes arising or pre-existing during pregnancy by age and ethnicity as a % of total women birthing, 2006-2014



Source: Healthware. Extracted by Health Intelligence and Informatics 2015. All women birthing at CM Health facilities

Table 19 shows that a higher percentage of babies of diabetic mothers ended up being admitted to the Neonatal Unit.

Table 19. Percentage of babies that went to the neonatal unit by diabetic and non-diabetic mothers

	Not NNU	NNU	Women	% went to NNU
Diabetic	499	85	584	15%
Non Diabetic	6125	632	6707	9%

Source: Healthware. Extracted by Health Intelligence and Informatics 2015. Deliveries are all women birthing at CM Health facilities

What is new in the management of diabetes in pregnancy?

There has been work undertaken nationally to develop a new algorithm for the diagnosis of diabetes during pregnancy. HbA1c screening has been recently introduced at booking. 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 of labour 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.

In order to have a collaborative approach regionally on 10 March 2015, Counties Manukau Health hosted a Gestational Diabetes Mellitus (GDM) Auckland Regional Meeting at Middlemore Hospital. Twenty-nine specialists in diabetes from Auckland District Health Board DHB, Waitemata DHB and Counties Manukau DHB attended the two hour meeting to discuss the roll-out of the MoH's Screening, Diagnosis and Management of Gestational Diabetes in New Zealand: A Clinical Practice Guideline.

As part of the action plan the group determined that they would reconvene in a year's time to discuss their evaluation of the rollout within their DHBs. Counties Manukau will commence implementing the guideline on the 1 July 2015 meaning all pregnant women will be offered an HBA1c screening blood test before 20 weeks gestation.

Smokefree

Promoting smokefree pregnancies is a key initiative that could have a major impact on improving health outcomes for infants born to women living in Counties Manukau. Smoking during pregnancy is associated with a number of adverse pregnancy outcomes including miscarriage, placental abruption, intrauterine growth restriction, premature delivery,

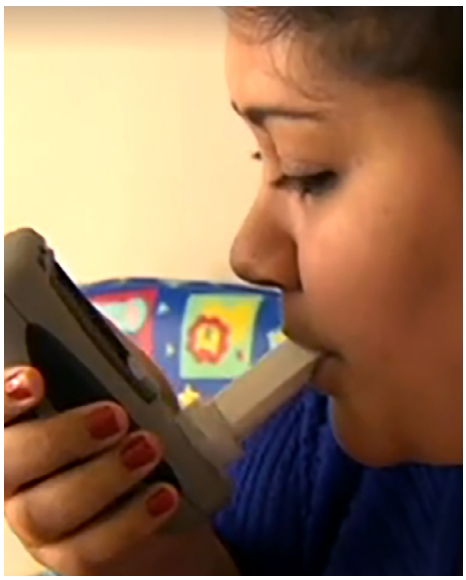
and stillbirth.[32] In addition, smoking during pregnancy has been associated with an increased risk of neonatal death, particularly as a result of SUDI.[33]

There is a national health target which requires 90% of pregnant women to be offered advice and support to quit smoking at registration and booking. In addition there are actions in the Maaori Health Plan around ensuring women are smokefree at two weeks post-partum and for Tamariki Ora providers to support whanau to be smokefree.

There is no system at present that reliably captures smoking status of pregnant women in New Zealand. It is expected the new MCIS will be able to capture and report this data and it is in the process of being implemented in Counties Manukau. Currently smoking data is captured variably in a number of databases. The National Maternity Collection data was provided to the DHB for 2013 but as explained previously this information is not as useful as in other parts of New Zealand because of the comparatively high percentage of women who use DHB services. There are also demographic differences between women who book with different maternity providers that make it likely this data underestimates the smoking prevalence of Counties women.

Smoking status is also captured through discharge coding. Historically this data has been difficult to interpret as while the women who are documented as smokers are well captured it has not been clear what proportion of women have been asked the question and therefore what the denominator should be used.

The data presented below is from the patient details section in the Patient Information System at CM Health. Health Intelligence and Informatics has explored the data sources available and has



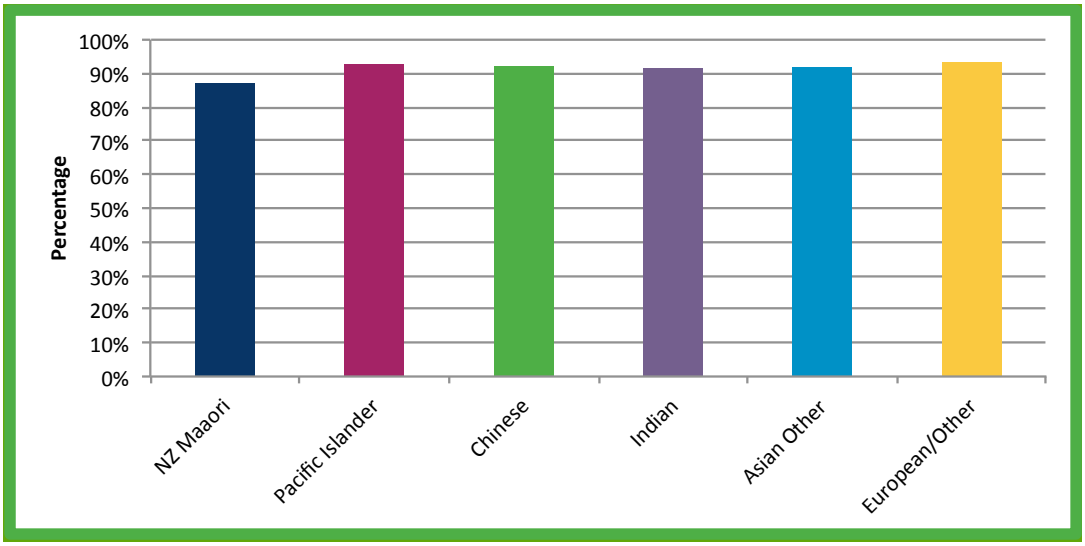
determined this is the most reliable data source they can access for 2014.

There is information available for 92% of women birthing in CM Health facilities in 2014 but there is some variability by ethnicity as shown in Figure 14.

Smoking status at time of admission by ethnicity is shown for women who birthed at CM Health facility in Table 20.[34]

32 Jackson C. Perinatal Mortality in Counties Manukau. 2011.
33 Jackson C. Perinatal Mortality in Counties Manukau. 2011.
34 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.

Figure 14. Percentage of women, who birthed at CM Health facilities, for whom smoking status was recorded, at time of admission, by ethnicity, 2014



Source: Extracted by Health Intelligence and Informatics, from patient detail section of the Patient information system, 2015.

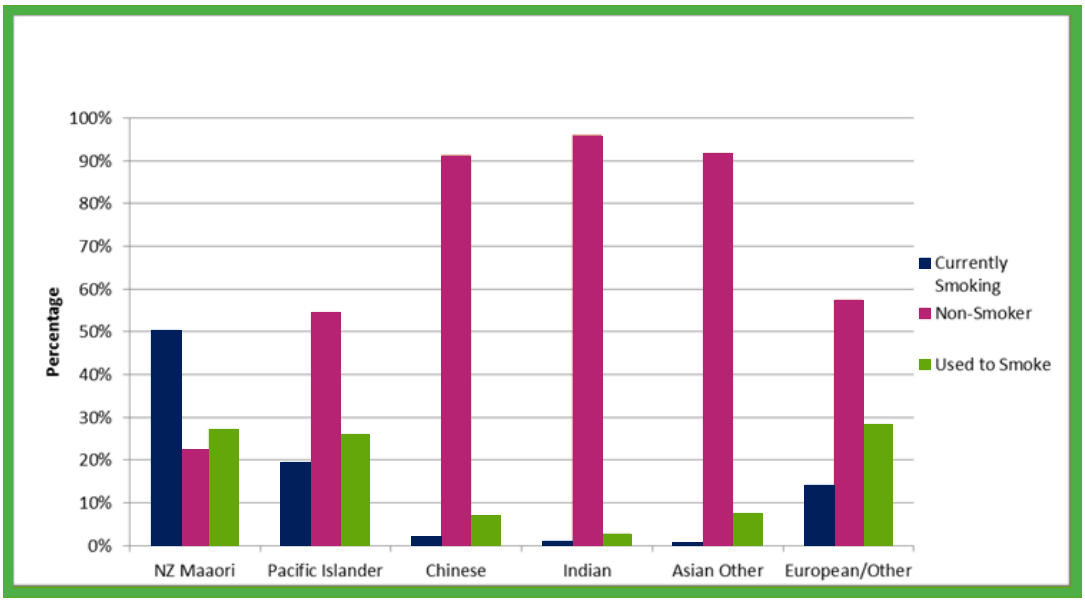
Table 20. Number of women, by smoking status and by ethnicity, who delivered at CM facility, 2014

SMOKING STATUS	NZ MAAORI	PACIFIC ISLANDER	CHINESE	INDIAN	ASIAN OTHER	EUROPEAN/ OTHER	TOTAL
Currently Smoking	722	462	4	7	2	245	1442
Non-Smoker	319	1294	191	641	269	993	3707
Used to Smoke	389	619	14	19	22	487	1550
Total	1430	2375	209	667	293	1725	6699

Source: Extracted by Health Intelligence and Informatics 2015.

Ethnic disparities continue with 50% of Maaori women documented as currently smoking compared to 19% of Pacific Island women, 14% European women while only 1-2% of Asian women are documented as current smokers (Figure 15).

Figure 15. Smoking status at time of delivery CM Health facilities, 2014



Source: Healthware. Extracted by Health Intelligence and Informatics 2014. Note smoking status not available for all women at time of booking.

Table 21. Smoking status for women, by age, recorded at time of delivery for women birthing at CM facilities, 2014

SMOKING STATUS	<20	20-24	25-29	30-34	35-40	>40	TOTAL
Currently Smoking	170	485	405	223	121	38	1442
Non-Smoker	172	711	1110	1059	496	159	3707
Used to Smoke	117	407	451	353	173	49	1550
Total	459	1603	1966	1635	790	246	6699
% currently smoking	37.0%	30.3%	20.6%	13.6%	15.3%	15.4%	21.5%

Source: Extracted by Health Intelligence and Informatics 2015. Note smoking status not available for all women.

Smoking status also varied by age with 37% of women under 20 years smoking at time of admission compared to 15% of those > 35 years of age (Table 21).

Smoking during pregnancy is clearly an urgent issue for Maaori infants and infants of young 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.

What have we done this year?

- Incentive pilot
  - o A new initiative was piloted in 2013/2014 to increase the number of pregnant women in Manurewa being supported to stop smoking. The new approach involved providing vouchers up to $300 in value for a range of baby goods and services over a period of 12 weeks if Smokefree, biochemically validated. This project was funded by the MoH Pathways to Smokefree New Zealand 2025 innovation fund. In June 2014, following the first years trial, it was extended for another two years by MoH and extended to the locality of Mangere and Otara.
  - o To date over 400 women have been referred to the programme and 106 were Smokefree at the one month mark. Many DHBs are now following suit as compared to traditional Smokefree pregnancy services, providing incentives has been shown to double the number referred and triple the chances of success.
- Achieving the new smokefree target
  - o A dedicated position has been established within the Smokefree team to support achieving the new maternity target.
  - o In consultation with key stakeholders, an action plan has been developed to support the target with strategies, resources and training.
  - o A new champion group involving DHB employed and self-employed LMC midwives was formed in April 2015 to lead the way with implementing strategies to support achieving the target.
- Staff training
  - o A one hour training session outlining Smokefree best practice within pregnancy was made available to self-employed LMC midwives.
  - o A four hour training session was delivered twice by Te Hapu Ora midwifery Smokefree training service
  - o An online ABC training is being promoted to midwives in 2015.

Contraception

Unplanned pregnancy is recognised as being common nationally with the Growing Up in New Zealand study reporting that 40% of pregnancies in their cohort were unplanned.[35]

The External Review of Maternity Care recognised that access to contraception is a significant issue for women living in Counties Manukau. The review panel

35 Morton, S.M.B., Atatoa Carr, P.E., Bandara, D.K., Grant, C.C., Ivory, V.C. et al. (2010). Growing up in New Zealand: A longitudinal study of New Zealand children and their families. Report 1: Before we are born. The University of Auckland. Auckland, New Zealand.

recommended that *"Immediate consideration needs to be given to ways of making contraception much more accessible, affordable and available to women in the CMDHB region."*

In response to this recommendation a working group was established with wide representation from the various health care professionals. Initially the group documented a woman's journey, in diagram form, from high school through to the completion of her family to inform possible access to contraception to inform their work-plan.

What have we done to improve women's access to contraception?

- Survey of women on the maternity wards. This survey was undertaken to understand our women's experience and knowledge of contraception and whether their babies were planned. Of the 247 women surveyed, 198 (80%) said that they had had at least one unplanned pregnancy.
- Survey of CM Health staff on the maternity ward. This survey was undertaken to better understand staff's knowledge and confidence of discussing contraception with women. This identified a number of staff who had little or no knowledge about different types of contraception and they were not confident to prescribe.
- An education and training package was developed based on the Family Planning Association's resources but tailored to postnatal contraception. This was made available for all midwives (employed and self-employed)and nurses. This included flow charts on how to prescribe, administer and organise the different methods of contraception. Almost 200 staff members were trained and repeat surveys showed an increase in knowledge and confidence.
- A trial of group contraception sessions for post-partum women was undertaken on the postnatal ward but was poorly attended. Feedback indicated women were not comfortable discussing these issues in a group situation.
- To ensure women's privacy and in respect of the culturally sensitive and personal nature of this topic an information pamphlet was developed to provide a discussion aid to cover all options of contraception when individually counselling women. The leaflet, which has been translated into seven different languages, was distributed to all women's health staff and is available on the intranet and is routinely put in the antenatal information pack provided by CM Health.
- Because it is estimated 30% of women that birth at CM Health facility are seen by a senior medical officer a compulsory contraception field was added to their clinic letter template.
- Improved access to different contraception methods including:
  - Condoms being made available for distribution on discharge from the ward;
  - Further education on prescribing the contraceptive pill and charting and administration of depo-provera;
  - Jadelle insertions prior to discharge;
  - Intra-uterine Contraceptive Device Clinic established to offer outpatient service six weeks postnatally;
  - An improved antenatal referral process to ensure less delays;
  - Developing a puerperal tubal ligation process which particularly serves the grand-multiparous population;
  - A pilot scheme for vasectomy (a more effective, safer and simpler procedure than tubal ligation) was very successful and has been extended and included into the sterilisation referral pathway.
- Free contraceptive training for school based nurses working in secondary schools.
- Reviewing the termination service:
  - Survey of women attending Family Planning for termination was undertaken to

Contraception discussion

understand their preferred location for a termination. Currently terminations are provided as a regional service in Greenlane which necessitates two visits and significant time and cost associated with travelling. Two-thirds of women surveyed stated their preference would be for termination services to be provided locally.

  - Exploring local options for terminations.

- Dedicated sexual health and contraception nurse working on the postnatal wards and now extending to the primary units.

Influenza Vaccination

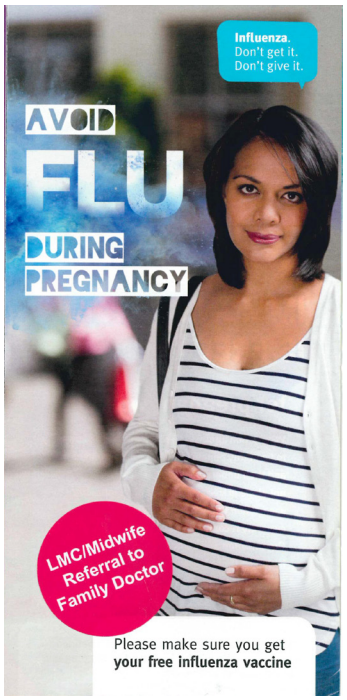
Ensuring pregnant women receive Influenza vaccination is important to protect both themselves and their baby/babies. The MoH funds free influenza vaccination for pregnant women. It is also important that staff are immunised to ensure they do not pass the virus onto women.

At the outpatient facility Manukau Health Park vaccinations were offered to patients and staff and provided by authorised vaccinators for one week in May. Women attending CM Health Obstetric clinics were encouraged to have vaccinations while attending their appointment with their midwife or obstetrician. We also worked alongside employed midwives and self-employed LMC midwives to develop a process to start a conversation about influenza vaccines.

Using the materials developed for pregnant women by the National Influenza Specialist Group stickers stating 'LMC/Midwife Referral to Family Doctor' were produced and provided to all CM Health midwives so they could be placed on the pamphlets as a helpful prompt. It was intended that this process would increase coverage for pregnant women. Flu kits were sourced for both employed and self-employed LMC midwives as many were not provided with flu kits from NISG mail out. All pamphlets and information were made available at the Access Holders meetings and information on how to access further resources was made available on the Maternity Monthly eUpdate to ensure as wide a distribution as possible. CM Health had an advanced communications plan and used a variety of visual display's to promote the flu message 'Don't get it, Don't give it, Get immunised.' Internally CM Health recruited a peer vaccinator work force of 60 nurses supported by Occupational Health staff who had met requirements to be authorised vaccinators. A coffee voucher was made available to all staff that had a flu vaccination. CM Health also extended vaccination services to self-employed LMC midwives, students and contractors on site.

As of 11 June 2015, the uptake of the influenza vaccine by DHB employed midwives was 42%

Referral sticker on MoH vaccine pamphlet and Influenza peer vaccinator



(significantly lower than the organisational totals of 70% for medical, 65% for allied health and 64% for nursing). Despite a robust marketing campaign and availability of vaccination stations across the organisation and shifts (7 am – 11 pm) as well as increased peer vaccinators in the maternity areas, the uptake for midwives has not improved on the 2013 campaign. The lower uptake of the influenza vaccine for midwives is not unique to CM Health and may need to be addressed as a national issue.

Communication Guides to Assist in Using the Referral Guidelines

The communication guides are pathways to work as a communication guide to compliment the MoH Referral Guidelines. The specific areas selected are those which were highlighted to have most of the difficulty in coordination and professional interaction. The guides are designed to facilitate flexibility where existing clinical protocols or guidelines may not be suitable and therefore enable the needs of women to be met.

It is not intended that the communication guides replace the Referral Guidelines (2012) but are used in parallel to enhance the care of the woman and her whaanau/family.

Point of Care Measurements for Safety

In October 2014, CM Health commenced the Point of Care Measurements for Safety project to develop and implement a comprehensive system of safety and quality measures to drive improvement activity with the overarching aim of reducing harm associated with healthcare. The measurement system will complement the current safety measures derived from the global trigger tool, administrative data and incident reporting. The preference for the Point of Care Measurements for Safety is for the use of small scale frequent sampling that would not disrupt the clinical area's workflow and would be performed at the patient's bedside and engage patients and whaanau.

In January 2015, a provisional list of 13 Point of Care Measurements for Safety (including: falls, pressure injuries, health associated infection, medication chart, venous thromboembolism, patient identification, documentation, recognising and responding to clinical deterioration, pain, blood and blood products, nutrition, violence intervention programme and safe sleep) were presented to each division. Each division was then requested to rank their top five Point of Care Measurements for Safety and determine the frequency at which they would be performed on five inpatients.

Botany, Papakura and Pukekohe primary birthing units, Maternity North and South, and Community Midwifery identified five Point of Care Measurements for Safety to be reported on a weekly basis. These included:

- Clinical documentation
- Medication charts
- Violence intervention programme
- Recognising and responding to clinical deterioration
- Safe Sleep

Women's Health further reviewed these five measurements against the United Kingdom's Maternity Safety Thermometer, as well as the Northern Regional Safe Sleep Audit toll and in April/May 2015 piloted the tools.

The Point of Care Measurements for Safety (recently named Care Compass) will be rolled out in July 2015 commencing with Ward 34N (Surgical) as the test ward. The data will be held centrally on a database and reported at a ward, service, division and hospital level on a monthly basis. It is proposed that the Care Compass data will form the basis of the patient safety boards on each ward/unit and these boards will be a focus of the leadership safety walk rounds.

Security

In response to recommendations made following a serious adverse event of a baby being abducted from the maternity ward at Middlemore Hospital a 'Never Leave Your Baby Alone' poster has been developed. This poster provides women with information on how to keep themselves and their babies safe. A4 size laminated posters have been placed in each bedroom and A3 size posters in common areas within maternity, gynaecology and the primary birthing units.

Access to all of the maternity wards and primary birthing units has been improved through swipe card access with one entrance/exit for women and visitors. A window has been installed in the maternity ward adjacent to the public door to allow ward staff and ward clerks to monitor all public thorough fare. Security personnel have been employed (7 am – 9 pm) at the entrance to the maternity wards to sign in and out visitors and this will be in place until an alternative system is implemented of using electronic baby security/alert monitoring devices. The experiences and system improvements have been shared with the Auckland regional maternity hospitals and there is agreement to work jointly on the development and implementation of an electronic alert system.

Virtual Tours of Maternity Facilities

As part of the Maternity Quality Work Plan 2014/15 a working group has been established to review and update the maternity webpages on CM Health internet site and develop virtual tours of the maternity facilities. The aims of the virtual tours are to provide consumers with evidence to promote low risk women to utilise and birth in the primary birthing units, encourage women to register with a lead maternity carer early in their pregnancy, describe service provision and support orientation to each of the maternity facilities. Three meetings were held between the working group and Ko Awatea's Multi-Media Development Team to develop the six minute virtual tours. Collaborative email support sharing scripts and advice also helped with fine tuning production. Filming of each of the facilities occurred in June, with production happening in July in preparation for a planned release the end of August. Everyone involved in this project embraced it with wonderful enthusiasm and their contributions have been greatly appreciated. We are awaiting the final videos, which will be distributed in a number of ways, with great anticipation.

Women's Health and Kidz First Divisional Report

Each month the General Manager, Business Manager and Clinical Quality and Risk Manager produce the Women's Health and Kidz First Divisional Report that is submitted to the Director of Hospital Services and the Hospital Advisory Committee (a subcommittee of the DHB Board). This report is then presented by the General Manager to all of the service managers, senior nurses, midwives and administration team leaders at a monthly briefing session.

Contained within the divisional report is the Women's Health Score Card which in addition to volumes, occupancy, length of stay, human resource information (e.g. leave taken, staff turn-over) provides a section on Improved Quality, Safety and Experience of Care and provides data on the compliance of all of the maternity facilities in the completion of monthly audits such as emergency trolley checks, hand hygiene, occupational health and safety (bi-monthly); as well as data on family violence prevention training, the total percentage of caesarean section and inductions of labour performed, infants exclusively breastfeeding at discharge from Middlemore Hospital (total, Maaori and Pacific) and consumer experience survey responses.

Maternity Monthly eUpdate

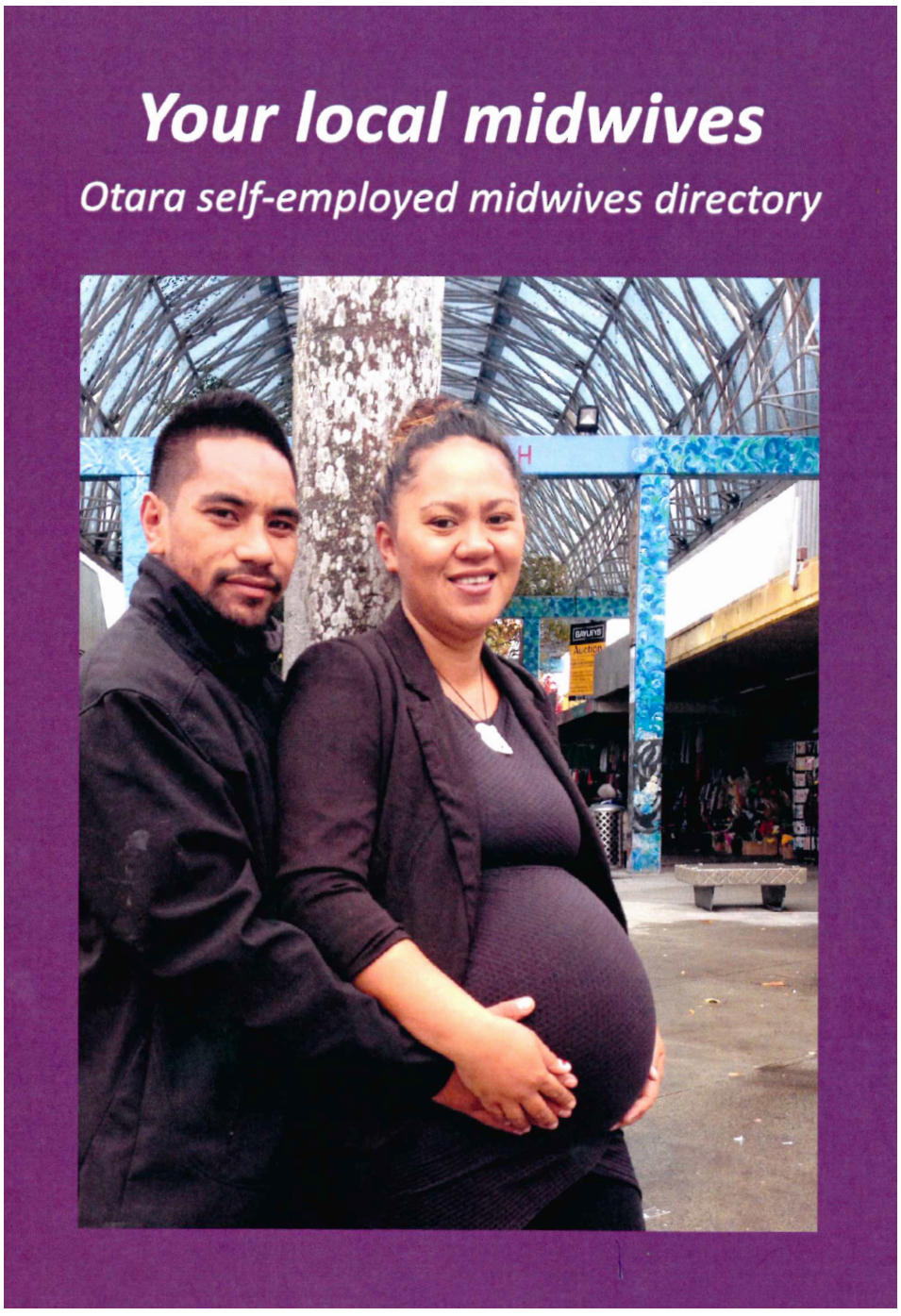
'Our Maternity Monthly' (OMM), CM Health's monthly eUpdate, commenced publication in March

2015 and is produced by the MQSP co-ordinator. It is widely circulated to all CM Health's maternity care providers and is a one-stop-shop for a wide variety of information relevant to all maternity health professionals. It is aimed at improving communication to help towards providing the best possible care for CM Health's women and whaanau. We are digitally monitoring how well read it is.

Maternity Guideline Review

The Obstetric Guidelines Group, a multidisciplinary forum, meets fortnightly to review all midwifery and obstetric guidelines. CM Health uses a document control system which projects out of date guidelines two months before they are due. The group has developed a tracking system to ensure all guidelines due for review are actually reviewed, by whom and when and the updated documents then are signed off by the Maternity Service Quality Forum and are uploaded into the document directory which can be accessed by all staff including Access holders through the VPN that they can be set up with. One guideline that has been recently signed off and published is the:

- Intrapartum Opioid Prescription by Midwives Guideline. To support this guideline it has been recommended that all Counties Manukau midwives complete both the Midwifery Council of New Zealand's prescribing of opioids learning package and assessment tool as well as attending the Midwifery Council's recertification programme Midwifery Practice Day.



The Otara Maternal and Child Health Services Integration Project

The Otara Maternal and Child Health Services Integration Project is a two year project (2014-2016) funded by the Ministry of Health. The project's vision is to:

"Provide the best start in life for children in Otara by providing quality, integrated care which addresses their social determinants of health."

The Three objectives of the project are:

- joined up health and social services,
- planned healthy pregnancies, and
- healthy early years

The project team are implementing some initiatives to support Otara women and children to stay well, through delivering health promotion messages and improving access to prevention services and/or interventions. Work has included developing an Otara self-employed midwives directory and arranging a mix and mingle evening for Otara midwives, GPs and practice nurses to help everyone get to know each other as well as having an education update component.

Regular Meetings, Practice Forums and Education Sessions

- Multidisciplinary review meetings reviewing current practices e.g. Diabetes in Pregnancy Clinic processes
- Weekly cardiotocograph(CTG) monitoring case based teaching and six monthly CTG education
- Weekly paediatric/neonatal liaison meeting
- Education Programme based on MoH priorities; Midwifery Council NZ requirements and needs analysis eg; Violence Intervention programme; BFHI education; Emergencies training; Practical Obstetric Multi-Professional Training (PROMPT); Perineal Repair; Contraception Update; Practical Obstetric Multi-Professional Training Diabetes and Pre-eclampsia update; Preceptor training; Immunisation Course; Maternal mental health workshop; Professional Issues; Bereavement and Loss; SUDI prevention
- All clinical incidents are logged into an Incident Management System electronically as they occur. There are fortnightly incident review meetings with the Clinical Lead, the service manager, the Director of Midwifery, Quality and Risk Manager and the Charge Midwife Managers of all the maternity areas to discuss the more severe incidents as well as overall trends. In addition, there is a monthly Divisional Incident review meeting whereby the data for the preceding month is presented and progress on serious and sentinel events are discussed.

The work-plan for 2015-16

The 2015/16 work plan has been finalised and is presented below. There are a number of pieces of work that will be carried over from the 2014/15 plan as well as a number of new activities.
In 2015/16 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.

Table 22. Counties Manukau Health Maternity Quality & Safety Governance Group Work Plan for 2015-16

OBJECTIVES	MEASURED BY	ACTIONS	TARGET COMPLETION DATE
Work Stream 1: Governance and Clinical Leadership			
Clear direction, purpose for the group and work programme	Work programme agreed and milestones achieved		Ongoing
Ensure the structures and roles are in place to enable the work of the MQSP to continue with ring fence funding.		Development of new clinical governance and organisational structure.	October 2015
Integration of the Transitional Maternity Care Review work into the Maternity Quality and Safety Governance structure		Transfer of the Transitional Maternity Care Review (TMCR) work streams from the TMCR to the Maternity Quality and Safety Governance group	October 2015
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	Targets met	Ongoing
	Budget discussions of allocation of Quality and Safety funding on agenda of MQSGG meetings	Fiscal responsibility fits with overall organisational goals and direction	
Awareness of national priorities	Involvement in MQSGG National meetings/ teleconferences	CM Health is represented at all meetings	As scheduled
	NMMG work-plan priorities are included in CM Health plan	Relevant information/documents are reviewed by MQSGG	
	An Annual Report on maternity services and outcomes		30 June 2016
Appoint a permanent MQSP coordinator role	Function filled	Role advertised	October 2015
		Appointment made	

OBJECTIVES	MEASURED BY	ACTIONS	TARGET COMPLETION DATE
Work Stream 2: Local Communication Systems and Information Sharing			
Professional stakeholders are well informed regarding quality and safety activity and achievements	Measurement of number of hits on eUpdate, Measurement of number of hits on Healthpoint, Web page (SouthNET/Health-point) regularly updated Access Holder representation on various work streams/forums Attendance numbers at Access Holders Meetings	Calendar sharing for meeting, events and education on Access Holders meetings. SouthNET and eUpdate	Ongoing
	Evaluation of stakeholders re information and achievement	Report quarterly to Access Holders meeting re indicators for maternity quality and safety activity. MQSGG plan and Annual Report on CMDHB Website, SouthNET and Healthpoint	
		Annual report presentation	November 2015
Implementation of Maternity Clinical Information System	As per MCIS Implementation Plan	As per milestones in the MCIS implementation plan.	Ongoing
All DHB & Primary Care Health Professionals learn from significant events	Attendance at significant event meetings.	Communicate quarterly the findings and recommendations from Root Cause Analysis investigations of Serious Sentinel Events and departmental reviews.	
Communicate indicators for maternity quality and safety to DHB provider services and primary care and consumers	Include on website – clinical indicators, scorecard info, incident trends, smoking target	Reports posted to Quality page on Women's Health website, Healthpoint and in OMM eUpdate Quarterly summary of maternity quality and safety activity for Consumer Forum To coordinate meeting re mental health involvement in perinatal deaths.	Ongoing

OBJECTIVES	MEASURED BY	ACTIONS	TARGET COMPLETION DATE
Enable feedback from professional stakeholders	Access Holders Meetings	Monthly meetings with Access holders	Ongoing
		Email consultation, outreach and information to all Access Holders	Ongoing
	Monthly outreach visits to access holders/Continuing Medical Education meetings	Explore Healthpoint forum for some communication eg guidelines	Ongoing
	Meet monthly with Clinical Champions in PHOs	Liaison with professional stakeholders undertaken at regular intervals and as opportunities present	Ongoing
Work Stream 3: Data Monitoring			
Oversight of data collection monitoring, reporting and usage	Regular reporting and analysis of national and local clinical indicators	Develop local clinically relevant indicators from available data sources	December 2015
		Undertake consultation with • Casemix and coding • Health Round Table • MoH Clinical Indicators • PMMRC reports and recommendations • BadgerNet once established • Maternal Mental Health evaluation of regional services	March 2016
	Included in Annual Report yearly		June 2016
Monitor the research around Diabetes in Pregnancy 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.	Ongoing

OBJECTIVES	MEASURED BY	ACTIONS	TARGET COMPLETION DATE
Work Stream 5: Sector Engagement			
Robust processes for clinicians to participate in planning and service design	Processes/initiatives are endorsed and approved and decision making recorded in meeting records	Identify process for clinician selection and participation Ensure membership includes Primary Care and DHB representation. Continue with the work streams under the Transitional Maternity Review Project Board until October 2015 when new governance structures and roles established. The work streams include: • Maternity Ultrasound Clinical Working Group • Models of Care and Workforce Working Group • Family Planning, Contraception and Sexual Health Working Group • Regional Early Engagement Group • Vulnerable families	December 2014
The implementation of 2012 Guidelines for Consultation with Obstetric and Related Medical services is reviewed including emergency transport plans	Audit completed and recommendations acted upon	The implementation of 2012 Guidelines for Consultation with Obstetric and Related Medical services is reviewed including emergency transport plans repeat audit Audit transfer of care process from 2012 Guidelines for Consultation with Obstetric and Related Medical services Evaluation of Communication pathways as part of an audit of Referral Guidelines	March 2016 September 2015 June 2016

OBJECTIVES	MEASURED BY	ACTIONS	TARGET COMPLETION DATE
Provide appropriate education sessions for DHB employed midwives, Self-employed LMC midwives, and primary care to reflect current outcome trends and Women's Health Strategy	Priorities identified Package implemented according to scheduled dates	Plan and develop an educational programme for clinicians Topics for consideration include: • Screening and managing anaemia in pregnancy to prevent need for blood transfusion • Communicating our vision and values • Screening and managing gestational diabetes • PROMPT education in primary birthing units supported • The culture of birth in 21st century (discuss place of birth, c section rates, current models of maternity care at CMDHB, honouring our DHB vision and values) • Managing the woman, family AND midwife affected by Post Traumatic Stress Disorder; Debriefing after a perceived traumatic birth experience, caring for the sexual abuse survivor as she plans her labour and birth, and post-traumatic stress. • Clinical Champions in primary care will be organising education sessions for their PHOs focusing on early engagement of pregnancy care, preventing unplanned pregnancies and newborn enrolment.	Ongoing December 2015

OBJECTIVES	MEASURED BY	ACTIONS	TARGET COMPLETION DATE
Work Stream 6: Consumer Engagement			
Improve mechanisms for consumers to provide feedback on services	Provision of a number and variety of mechanisms in which feedback is received	Ongoing bi monthly consumer forums and extraordinarily when needed. 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 Ensure reports /feedback is notified to relevant personnel in DHB	June 2016
Work Stream 7: Quality Improvement			
Review of key target out-comes in addition to business as usual quality activities of the Women's Health Quality Framework	A reduction of numbers of unbooked women presenting in Birthing and Assessment	Three monthly reporting schedule maintained Reported on South Net and circulated to clinicians and clinical champions and other stakeholders	Ongoing
	Early identification of women with iron deficiency anaemia in pregnancy	Develop educational resource for midwives and women for early detection and treatment of iron deficiency anaemia	October 2015
		Education for maternity providers about appropriate investigations and subsequent management of women who are iron deficient	1 July 2015
	Monitoring the number of women receiving an iron infusion.	Socialise clinical guideline for iron prevention and iron deficiency treatment	July 2015
		Evaluation of process for rapid iron infusions via Day Assessment Clinic	December 2015
	Review number of inductions and rational assessed for appropriateness of treatment	Re Audit Induction of Labour against regional Induction of Labour Guideline	June 2016
	Review Number of LSCS performed and rationale are assessed	Identify the two categories of women with the largest increase in CS rates and review them in detail.	December 2016

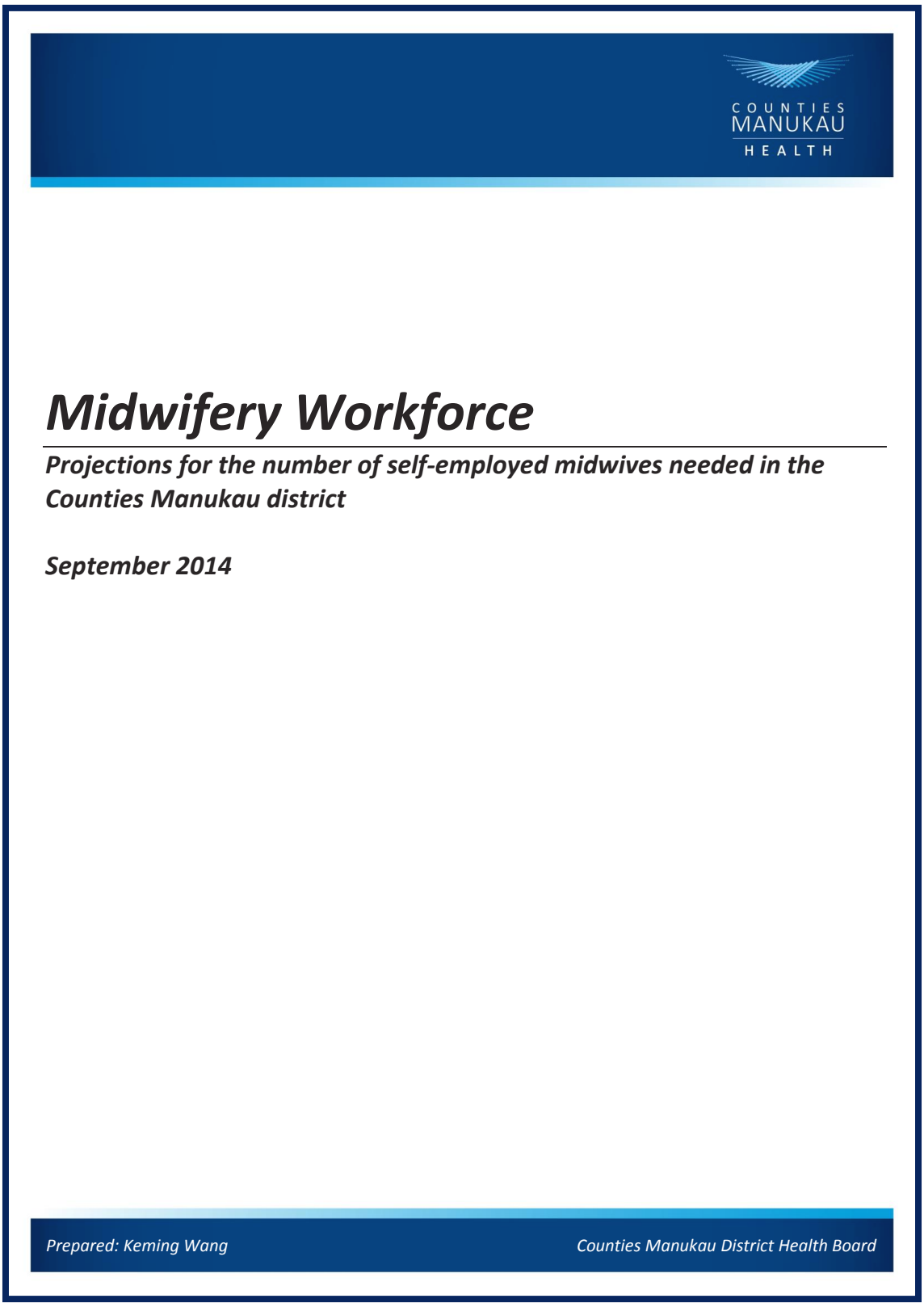
OBJECTIVES	MEASURED BY	ACTIONS	TARGET COMPLETION DATE
Improve the management of first trimester care	Adherence to GP referral pathway	Audit of GP- LMC pathways	June 2016
		Audit Co-located (GP-LMC) models of care for first trimester engagement with LMC in comparison with other models.	December 2015/June 2016
		Continue focus on improving working relationships between general practice and maternity providers in high need localities through facilitated arrangements	On going
		Take learnings from Otara integration project evaluation and use in other geographical areas in CMDHB	June 2016
Improve early engagement with antenatal care	Increase percentage of women registered with LMC by 12 weeks	Current process of referring to self-employed LMC midwives is reviewed and adjusted following implementation of Badgernet.	
		Roll out of early engagement "Best for Baby" media campaign	
		Data requested from MoH for year 2013/14 and 2014/15	ASAP
		Collect data as soon as practicable from MCIS system	December 2015
		Implementation of Clinical Champion roles in Primary care to increase prompt referral to an LMC	
Improve screening for mental health issues.	Appropriate referrals in accordance with the maternal mental health guidelines	Managing maternal mental health during perinatal period guideline implemented	September 2015 and ongoing support and education
		Audit of number of pregnant women screened for mental health issues	December 2015
Liaison roles established in the maternity unit in MMH and in Primary Birthing Unit	Roles in place	Senior midwife meeting to discuss role requirements Consult with other key stakeholders about requirement of role	September 2015
		Develop pathway for liaison roles	December 2015

OBJECTIVES	MEASURED BY	ACTIONS	TARGET COMPLETION DATE
Supporting primary care services which have co-located Midwives		Pilot supporting one primary care practice with a view to roll out to other providers	September 2015
Increase the number of pregnant women who receive influenza vaccine and pertussis vaccination	Increased vaccination rates for pregnant women living in Counties Manukau	Facilitating the process for women to receive MoH education material and clarify process and education of self-employed LMCs, hospital staff re the importance encouraging Pertussis and Influenza vaccination during pregnancy	Ongoing
		Explore options of how uptake for pregnant women could be increased eg community vaccination clinics, up skilling clinic staff to deliver vaccines	March 2016
Increase the number of maternity health professionals who receive the influenza vaccine	Increased vaccination rates for maternity health professionals working in Counties Manuaku.	Explore options to increase the uptake of flu vaccinations amongst Maternity health professionals	March 2016
Provide accessible, acceptable contraception		Increase availability of long acting contraception in Primary Health	
	Attendance at training opportunitites	Provide LARC training opportunities for GPs & Primary birthing unit staff	
	Decreasing unplanned pregnancies	Transition vasectomy pilot into business as usual	
		Implementation of Clinical Champion roles in Primary care to enable prompt access to appropriate and acceptable contraceptive services	
Improve practice to decrease 3rd and 4th degree perineal tears.	Decrease 3rd and 4th degree perineal tears	Re audit following socialisation of guideline of practice for vaginal births used to decrease 3rd and 4th degree perineal tears	December 2015

OBJECTIVES	MEASURED BY	ACTIONS	TARGET COMPLETION DATE
Implement Ministry of Health "Guidance for healthy weight gain in pregnancy"	Women are informed about appropriate weight gain during pregnancy	Survey women about their knowledge of appropriate weight gain during pregnancy	Ongoing
		Establish baseline recording of weight and height currently	Ongoing
	Midwives receiving education about the importance of measured height & weight	Provide education to midwives about the importance of measured height and weight (not relying on self-reported)	August/September 2015
		Provide education for midwives about skills and information to engage women in a conversation about appropriate weight gain during pregnancy	March 2016
		Investigate adding a tick box into the MCIS "Had conversation re weight gain during pregnancy" Yes or No to act as a prompt and allow audit	July 2015
Early diagnosis of undiagnosed type 2 diabetes in pregnancy, and seen in clinic within two weeks	All women with a HBA1c of $\geq$ 50 are identified with booking bloods	Aim to start the HBA1c testing for all women at booking starting July 2015 (deferred from Feb 2015)	Commence July 2015
		Education around the implementation of the screening by HBA1c to all LMCs and GPs.	In progress July 2015
		Implementation of National Guidelines for Diabetes in Pregnancy released December 2014 approved to be implemented in CMH.	July 2015
		HBA1c testing will be included in the Antenatal booking bloods when woman first presents for antenatal care. CMH laboratory forms updated	July 2015

OBJECTIVES	MEASURED BY	ACTIONS	TARGET COMPLETION DATE
Identifying women with HBA1c of 41-49 at < 20 weeks gestation	Guideline followed	Self-employed LMC midwives will be supported with increased education around healthy weight gain in pregnancy to be able to give advice all women during pregnancy including those with HBA1c 41-49	July 2015
		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 identified	Aug/Sept 2015 Feedback 1st October 2nd feedback 1st Jan 2016 3rd feedback 1st April 2016

Appendix 1 — Projections for the number of self-employed LMC needed in Counties Manukau District



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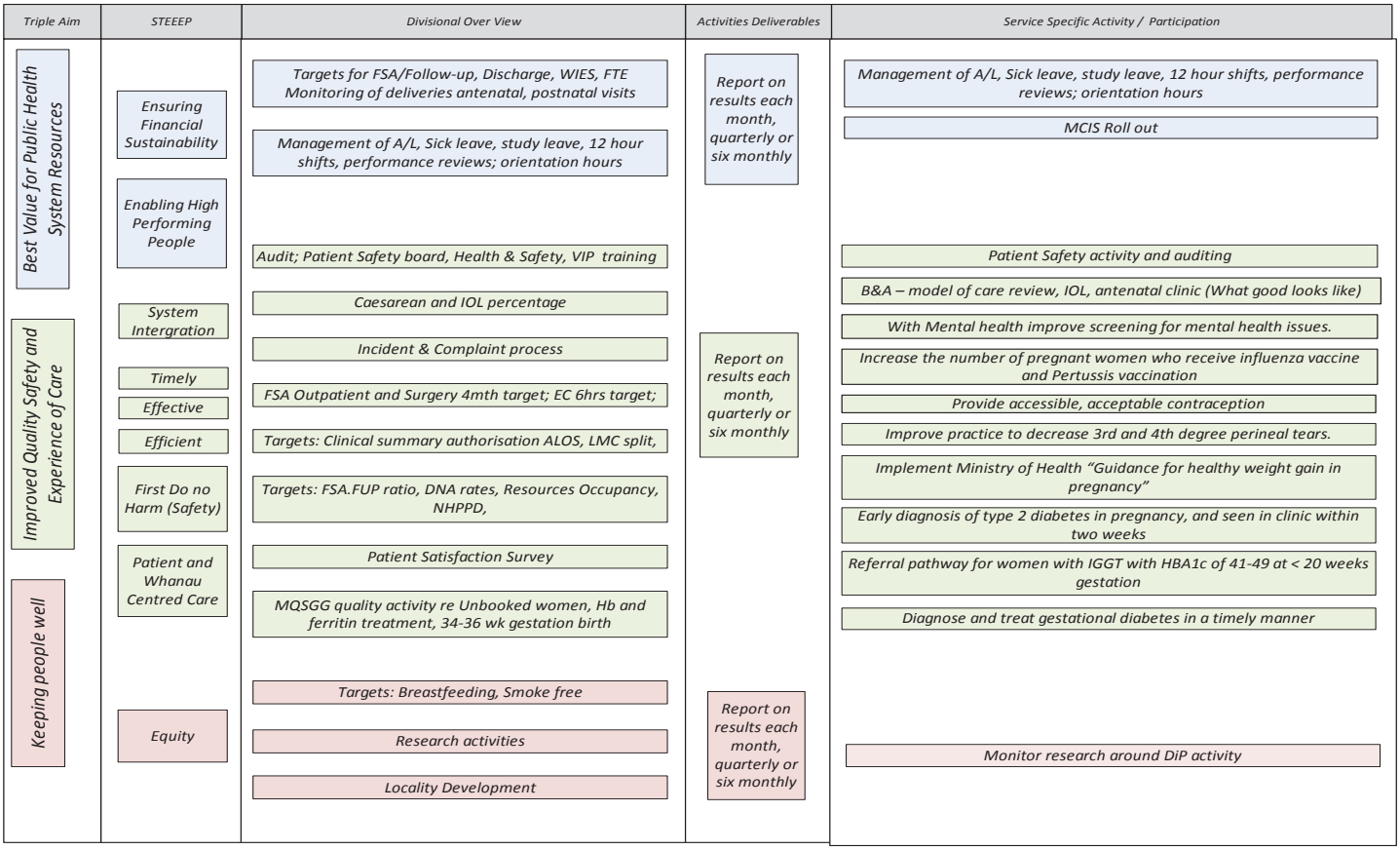
Appendix 2 — Women's Health Quality Framework 2014/15



Appendix 3 — Clinical Indicators

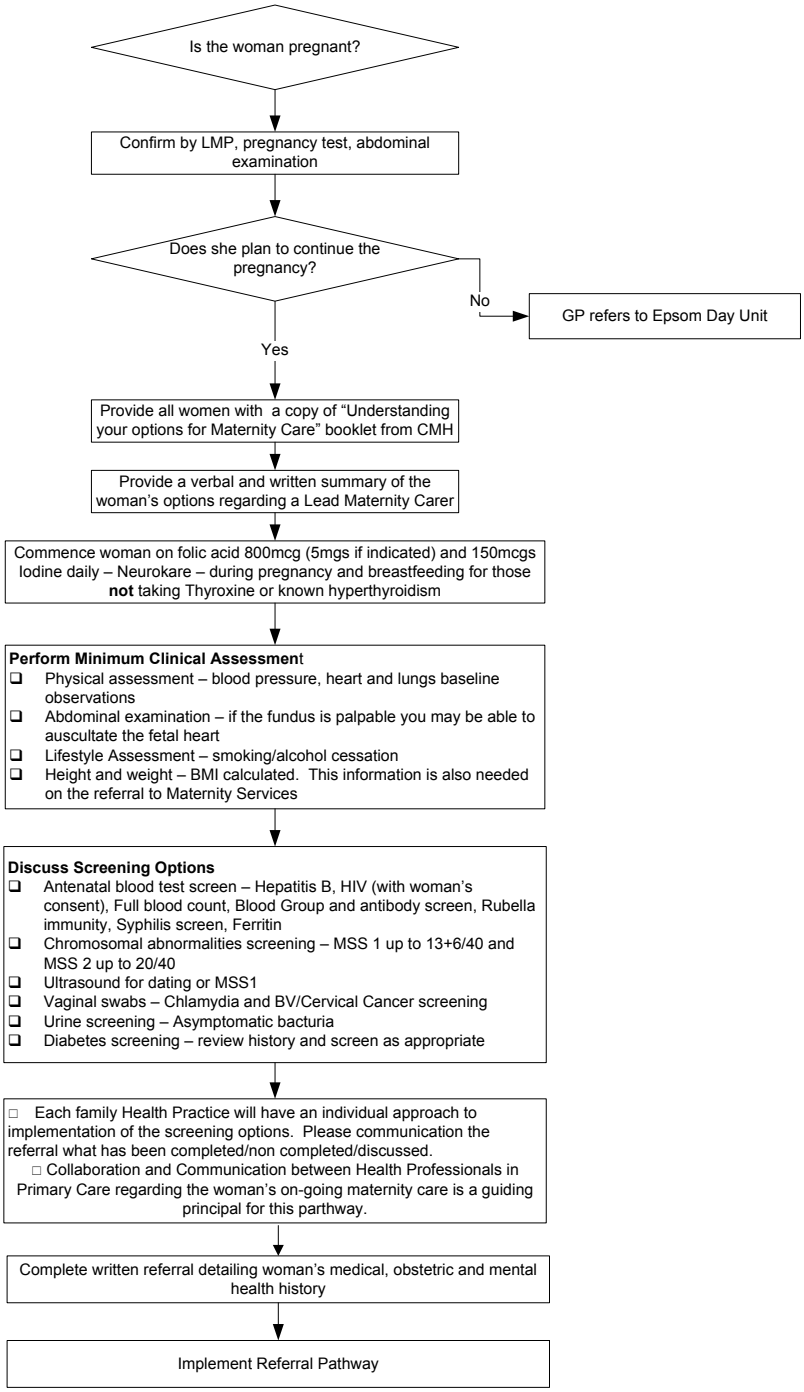
Table. 2012 Clinical Indicators for by domicile of residence (CM) and Middlemore Hospital in 2012

	INDICATOR	CM WOMEN BIRTHING ANYWHERE	MIDDLEMORE HOSPITAL (FACILITIES VIEW)
1	Registration with a Lead Maternity Carer in the first trimester of pregnancy	*47.2%. This is statistically significantly lower than the New Zealand average of 63.5%.	*41.2%. This is statistically significantly lower than the New Zealand average.
2	Spontaneous vaginal birth among standard primiparae	68.2%. This is lower than the NZ average of 68.6% but is not statistically significantly different from the New Zealand average.	63.3%. This is lower that the NZ average of 64.7% but is not statistically significantly different from the New Zealand average.
3	Instrumental vaginal birth among standard primiparae	13.6%. This is lower than the NZ average of 15.3% but is not statistically significantly different from the New Zealand average.	15.9%. This is lower than the NZ average of 17.2% but is not statistical significantly different from the New Zealand average.
4	Caesarean section among standard primiparae	17.4%.This is higher than the NZ average of 15.8% but is not statically significant.	20.2%. This is higher than the NZ average of 17.8% but is not statistical significantly different from the New Zealand average.
5	Induction of labour among standard primiparae	3.4%. This is lower than the NZ average of 4.2% but is not statistically significantly.	*3.2%. This is statistically significantly lower that the NZ average of 4.7%.
6	Intact lower genital tract (no 1st–4th-degree tear or episiotomy) among standard primiparae	*16.5%. This is significantly lower than the NZ average of 28% of women.	*9.9%. This is significantly lower than the NZ average of 22.8%.
7	Episiotomy (and no 3rd- or 4th-degree perineal tear) among standard primiparae giving birth vaginally	18.7%. This is lower than the NZ average of 20.6% but is not statically significant.	20.5%. This is lower than the NZ average of 23.4% but does not reach statistical significance.
8	3rd- or4th-degree perineal tear and no episiotomy among standard primiparae giving birth vaginally	4.4%. This is higher than the NZ average of 3.7% but does not reach statistical significance.	5.2%. This is higher than the NZ average of 4.0% but does not reach statistical significance.
9	Episiotomy and 3rd- or 4th-degree perineal tear among standard primiparae giving birth vaginally	1.9%. This is higher than the NZ average of 1.6% but does not reach statistical significance	2.3%. This is higher than the NZ average of 1.9% but does not reach statistical significance
10	General anaesthesia for Caesarean section	*12.5%. This significantly higher that the NZ average of 8.6%	*14.7%. This significantly higher that the NZ average of 8.6 %
11	Blood transfusion with Caesarean section	3.9%. This is higher than the NZ average of 3.2% and is borderline for reaching statistical significance.	*4.4%. This is higher than the NZ average of 3.2% and is statistically significant.
12	Blood transfusion with vaginal birth	2.0%. This is higher than the NZ average of 1.6% and almost reaches statistical significance.	*2.5% and is statistically higher than the NZ average of 2.0%.
13	Severe Maternal morbidity-diagnosis with eclampsia during birth admission	3 women	3 women
14	Maternal tobacco use during postnatal period	13.6%. This is lower than the NZ average of 13.9 but is not statistically significant.	*15.1%. This is higher than the NZ average of 12.8% and is statistically significant.
15	Preterm birth	7.3%. This is lower than the national average of 7.6% but is not statistically significant	8.5%. This is lower than the national rate of 8.4% but is not statistically significant.

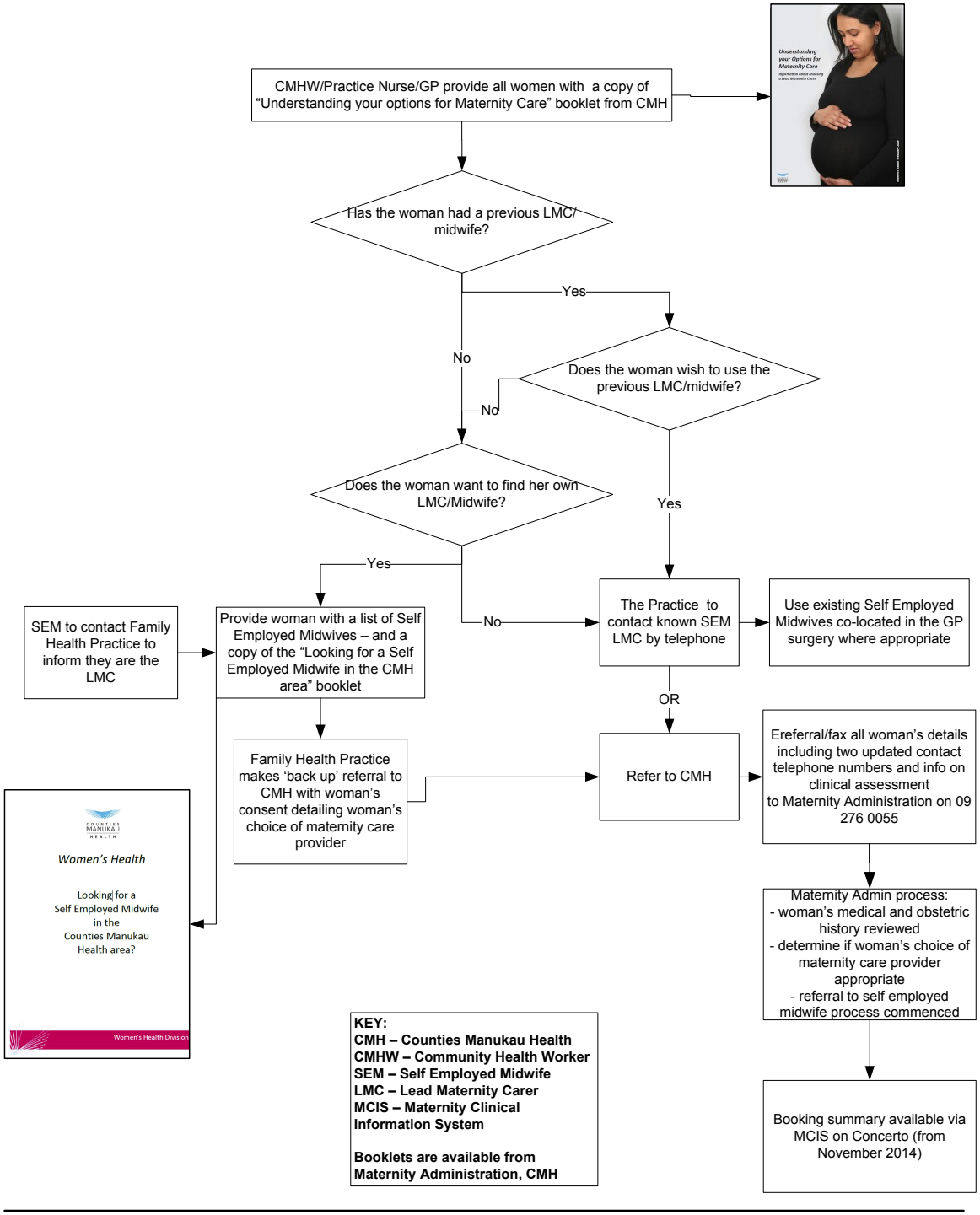
Source: Ministry of Health 2014. New Zealand Maternity Clinical Indicators 2013. Wellington. Ministry of Health.
* Statistically significantly

Appendix 4 — Primary Care pathway

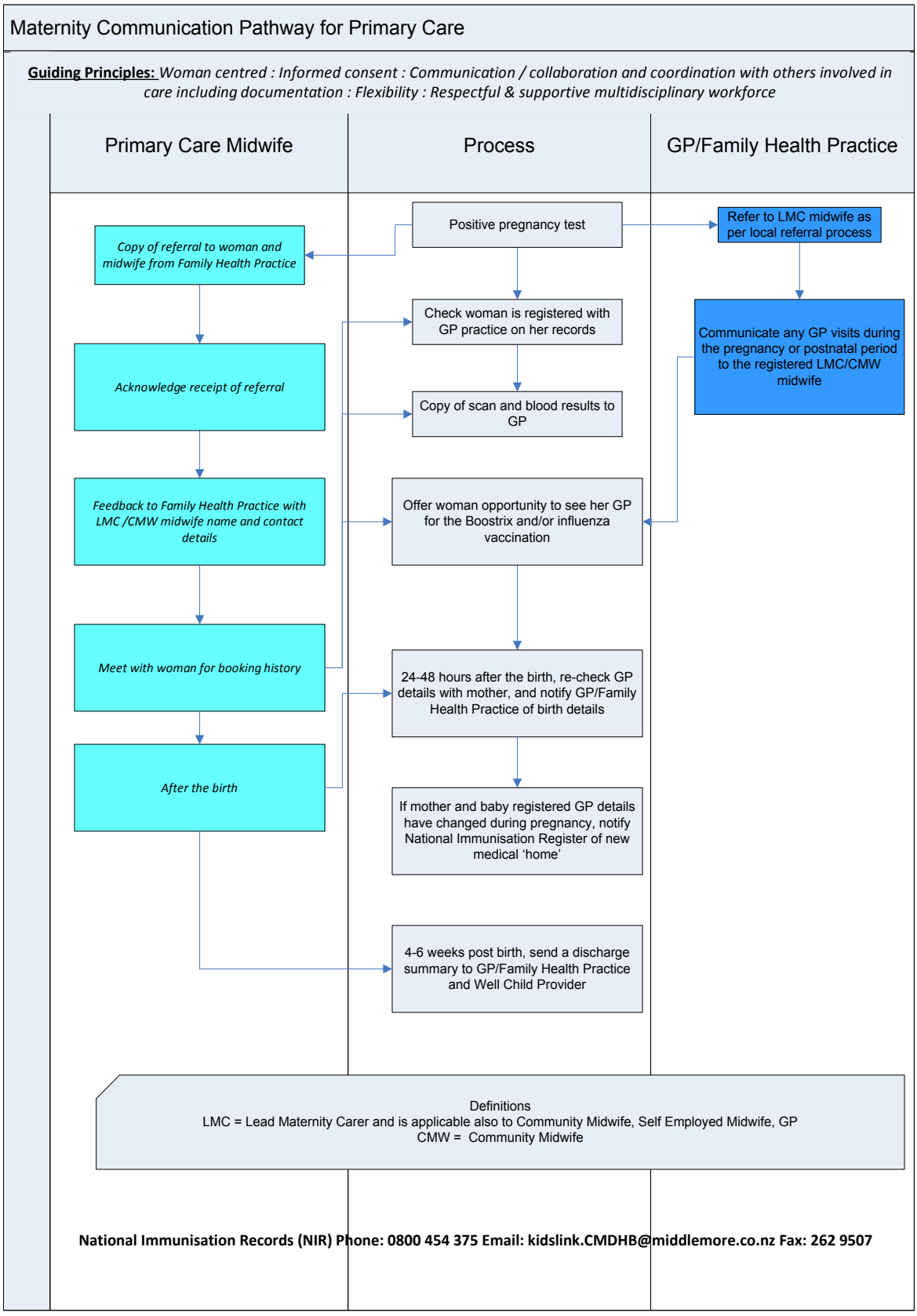
Confirming Pregnancy Pathway for Family Health Practice – Care of Woman at First Contact



Family Health Practice Referral Pathway for Pregnant Women



Primary Care Communication Pathway



Appendix 5 — Details of Early Engagement Work

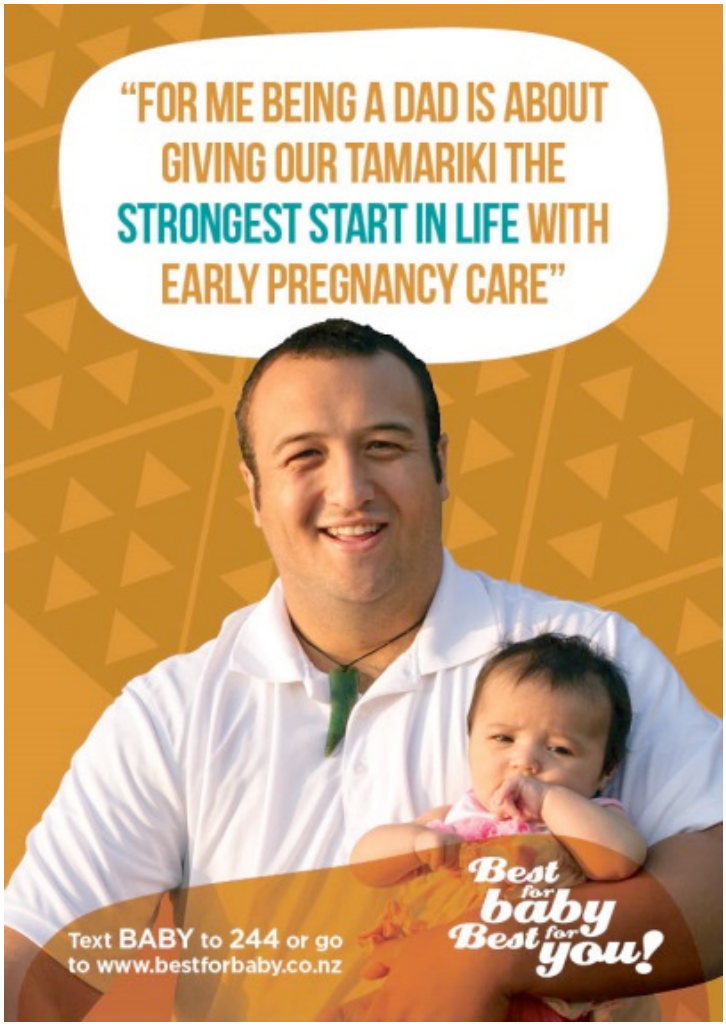
Best for Baby Best for You campaign

Early May saw the launch of a widespread publicity campaign in bus shelters, print media, internet, Pacifica and Māori TV and radio.

This is a media campaign aimed at women, whanau and the wider community to encourage pregnant women to engage early for pregnancy care. Early pregnancy care enables women to access nutritional supplements, advice, support and screening which identify any potential for complications and can support both the mother's health and fetal development. There is evidence to suggest iron deficiency anaemia in pregnant women can predispose their unborn baby to impaired psychomotor and neurocognitive development and immune function.

It is known that 70-80% of our women go to their General Practitioner for their pregnancy test but often these women are then lost to the system. They may present again much later in their pregnancy and are subsequently missing out on opportunities to improve their care, or worse, end up being one of the nearly daily women that arrive at our Birthing and Assessment Unit unbooked.

We are reminding General Practitioners they have a clinical responsibility to ensure pregnant patients find a midwife.



Appendix 6 — Induction of Labour Audit

Induction of Labour Audit
January - March 2014

Objectives

To determine whether the criteria for induction of labour (IOL) at Counties Manukau Health were in accordance with the Draft Auckland Consensus Guideline on Induction of Labour 2014

Background/Rationale

As part of the Maternity Quality and Safety Programme, the Ministry of Health requested each DHB to review and critique their indications for induction of labour. Middlemore Birthing and Assessment is resourced to perform a total of five inductions of labour per day, two in the morning (9am) and two in the evening (7.30pm) with an emergency slot available at midday.

Method

All IDL from 1st January - 31st March 2014 documented in the IOL booking diary in Birthing and Assessment were reviewed by three practitioners (one specialist obstetrician, one house officer, and one charge midwife).
The indications were then grouped into 20 main categories (diabetes, pre-eclampsia, slowed growth/ IUGR, post-dates, reduced fetal movements, spontaneous rupture of membranes/+ meconium liquor, advanced maternal age > 40 years, oligo-hydramnios, fetal demise, abnormal dopplers, hypertension, positive antibodies, antepartum haemorrhage, termination of pregnancy for fetal abnormalities, cholestasis of pregnancy, twins, poly-hydramnios, previous intra-uterine death, large for gestational age, unstable lie, IVF pregnancy, and others).

To ensure inter-rater reliability, all three health practitioners undertaking the audit cross checked the data.

Findings

A total of 538 IOLs were performed over the 3 month period.

On average six IOLs were performed per day, 20% more a day than planned.

The maximum booked on one day was 10, double the number planned.

Of the 90 days audited, on 55 days (61%), B & A carried out more IOL's than the planned 5 per day.

It was identified that 70% of the IOLs were due to the following categories:

INDICATION	NUMBER
Diabetes	106
Slowed growth/IUGR	105
Postdates (41.4 + weeks gestation)	99
Spontaneous rupture of membranes (SROM)	66
Meconium liquor	1
Total	**377**

A further twenty percent of IOLs were due to the following categories:

INDICATION	NUMBER
Advanced maternal age (40plus years)	24
Pre-eclampsia (PET)	19
Oligo-hydramnios	12
Intra-uterine death (IUD)	11
Reduced fetal movements	9
Abnormal dopplers	7
Hypertension	7
Positive antibodies	6
Termination of pregnancy (fetal abnormalities)	6
Antepartum haemorrhage	6
Total	**107**

The other five percent per due to the following categories:

INDICATION	NUMBERS
Large for gestational age (LGA)	6
Previous IUD	5
Cholestasis	5
Twins	4
Polyhydramnios	3
Unstable lie	2
IVF pregnancy	2
Total	**27**

The final 5% (n = 27) were for other reasons that were not categorised (examples include: cancer of the breast, thrombocytopenia, fetal heart tracing abnormality, long latent phase of labour, previous neonatal death)

Strength/Weaknesses

A large sample of inductions was reviewed and accuracy was ensured through the cross checking of the data.

Collecting the data was difficult as it was done manually from the B&A IOL diary and was not available electronically during the time of the audit.

It was difficult to ascertain whether all of the IOL data was captured. There were times when information was deleted and new patient information was pasted over the top of the previous patient's information and some of the documentation was illegible.

Conclusion

It appears from the data that the reasons for inductions were appropriate and in line with the "The Auckland Consensus Guideline on Induction of Labour".

Recommendations

1. Develop a new IOL booking register that has the capacity to capture all of the IOLs booked with standardized booking information that is required for future audits.
2. Develop a guideline around IOL bookings for efficiency and prioritising inductions in a timely manner.
3. Re-audit to check that the reasons for IOL in the future are clinically appropriate in indication and timing.

Audit Completion:
Date 31st July 2014

IOL Audit Acknowledgement:
Anne Konz, Leesa Freeman, Kara Okesene-Gafa and Stacy Wong Chiu

Appendix 7 — Neonatal Outcomes

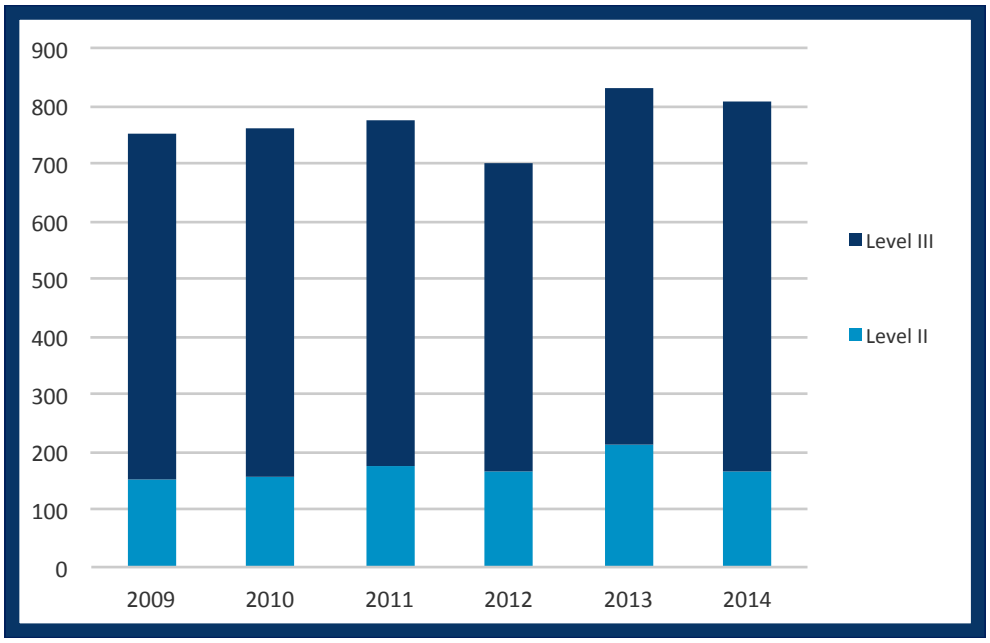
It is important when considering the quality of the maternity services that neonatal outcomes are reviewed as the management of women during pregnancy and labour impacts on the outcomes for their babies.

It is noted that the percentage of premature births in a standard primiparae living in Counties Manukau or birthing in Middlemore Hospital is lower than the New Zealand average (refer to Clinical Indicator section Appendix 3).

Admissions to the Neonatal Unit

The Neonatal Unit at Middlemore Hospital has 38 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 and decreased slightly in 2014 (806 admissions) (Figure 16).

Figure 16. Total admissions to Middlemore Neonatal Unit, Level II & III, 2009-2014

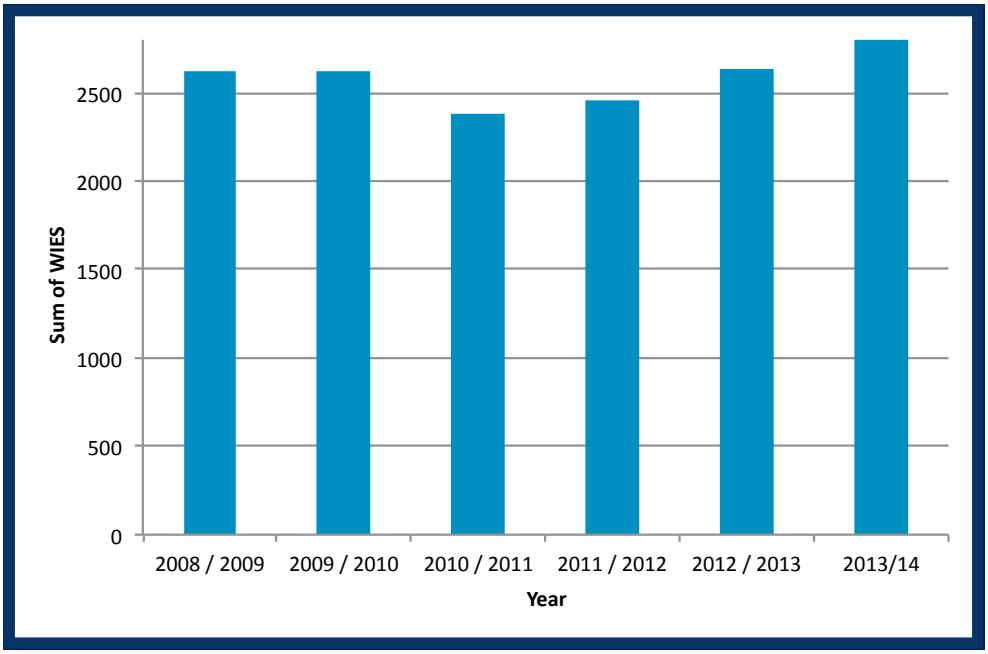


Source: Data provided by Health Intelligence and Informatics 2015. Each baby is only counted once ie if they are transferred from level III to level II they are not counted twice. This is a different data source to the data provided for the 23-31 week infants.

36 WEISS is a method of weighting individual discharges based on complexity.

During this time the WIES[36] value has increased (Figure 17). This suggests that while the number of babies has decreased the complexity of their care has been increasing.

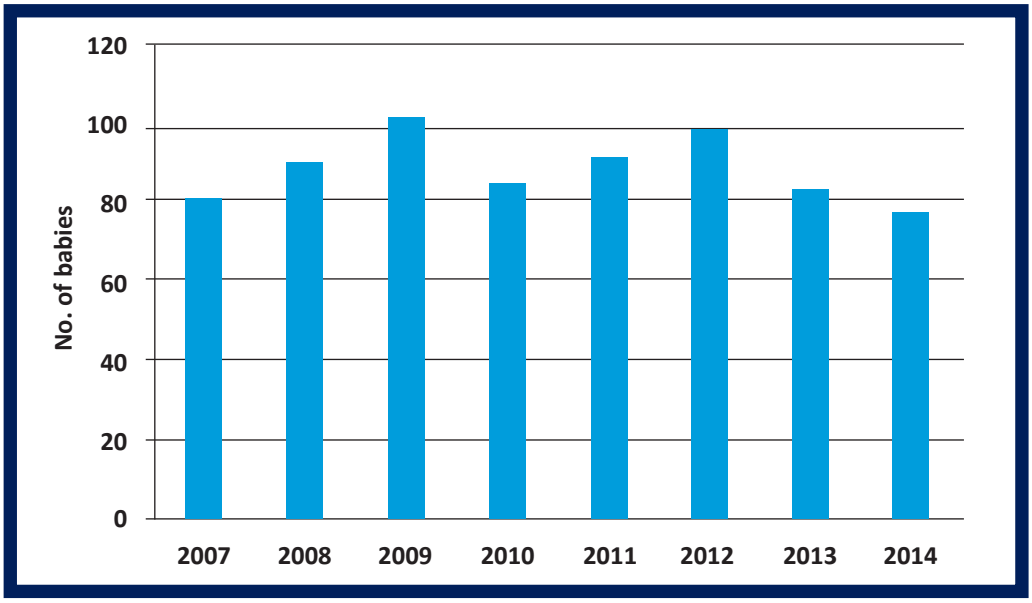
Figure 17. Sum of WIES by Financial Year, 2008/9-2012/13



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).

The number of admissions of babies 23-31 weeks decreased in 2014 compared to 2013 with 78 babies admitted in 2014 compared to 84 in 2013 (Figure 18).

Figure 18. Total admissions to Middlemore Neonatal Unit, gestational age 23-31 weeks, 2007-2014



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

Survival by Birth Weight and Gestational Age

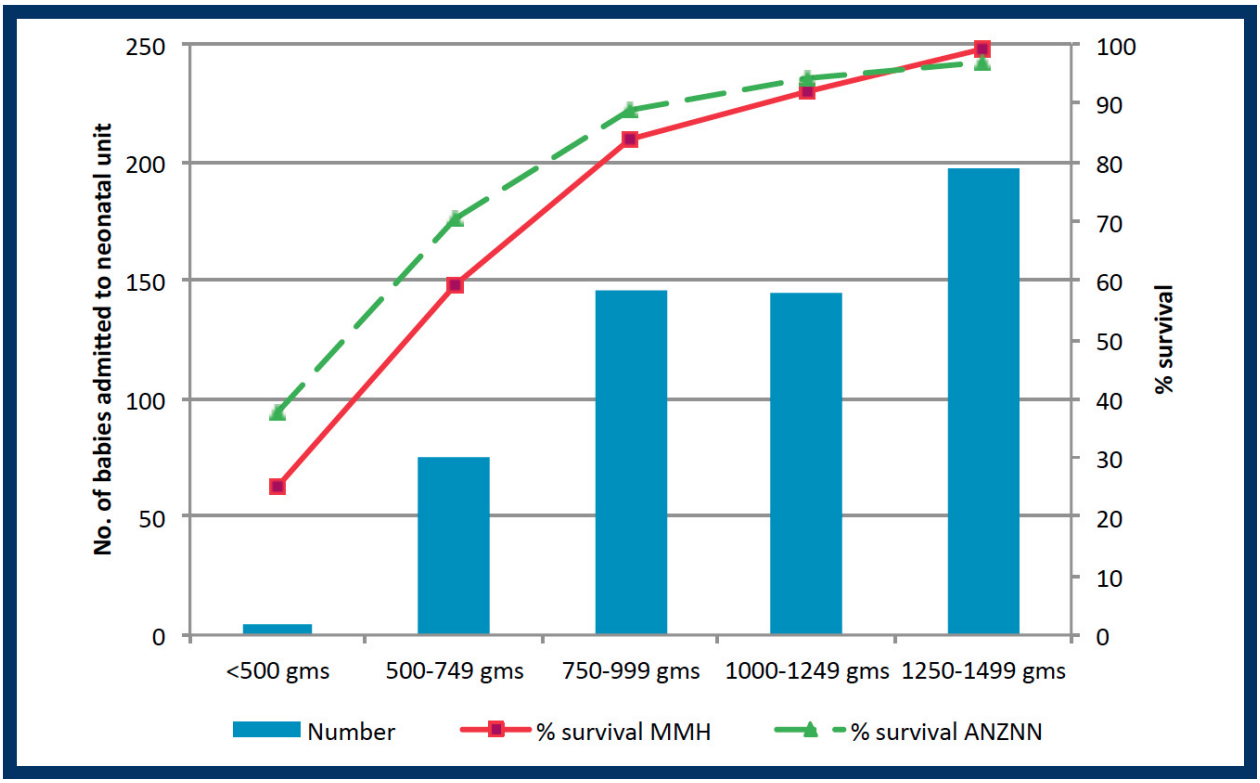
Between 2007-2014 there were four births <500grams, 75 births 500-749 grams, 146 births 750-749 grams and 342 births > 1000 grams. The survival rate for those less 500grams was poor (25%) but, as expected, survival steadily increased as birth weight increased (Figure 19).

Figure 20 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 2007, 2008, 2009 or 2011. There was one baby admitted <500gms in each year 2010, 2012, 2014 who did not survive and one baby admitted <500gms in 2013 who did survive.

Figure 21 shows Middlemore Hospital percentage survival by gestational age compared to the Australian and New Zealand Neonatal Network data.[37]

The total number of admissions to the neonatal unit at 23 and 24 weeks is low (10 and 44 respectively for the seven years 2007-2014). There were no babies of 23 weeks gestation admitted to the Middlemore Hospital Neonatal Unit in 2010 and 2011. In 2012 there were two babies admitted at 23 weeks who did not survive. In 2013 there were three babies admitted to the unit at 23 weeks and one survived and in 2014 there were two babies admitted to the unit at 23 weeks and neither survived. Survival increases with increasing gestation with 99% of 31 week infants surviving 2007-2014 (Figure 22).

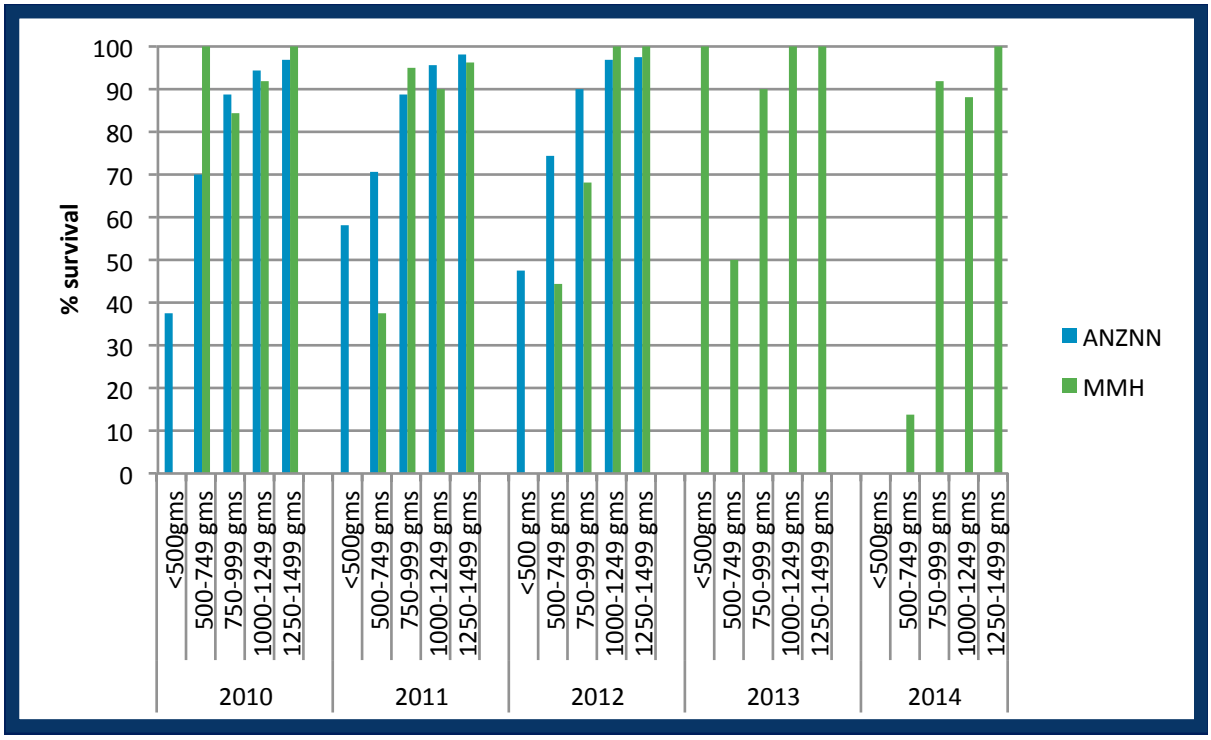
Figure 19. Number of births by birth weight and percentage survival by birth weight, Middlemore Hospital, 2007-2014 compared to ANZNN survival by birthweight 2010



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

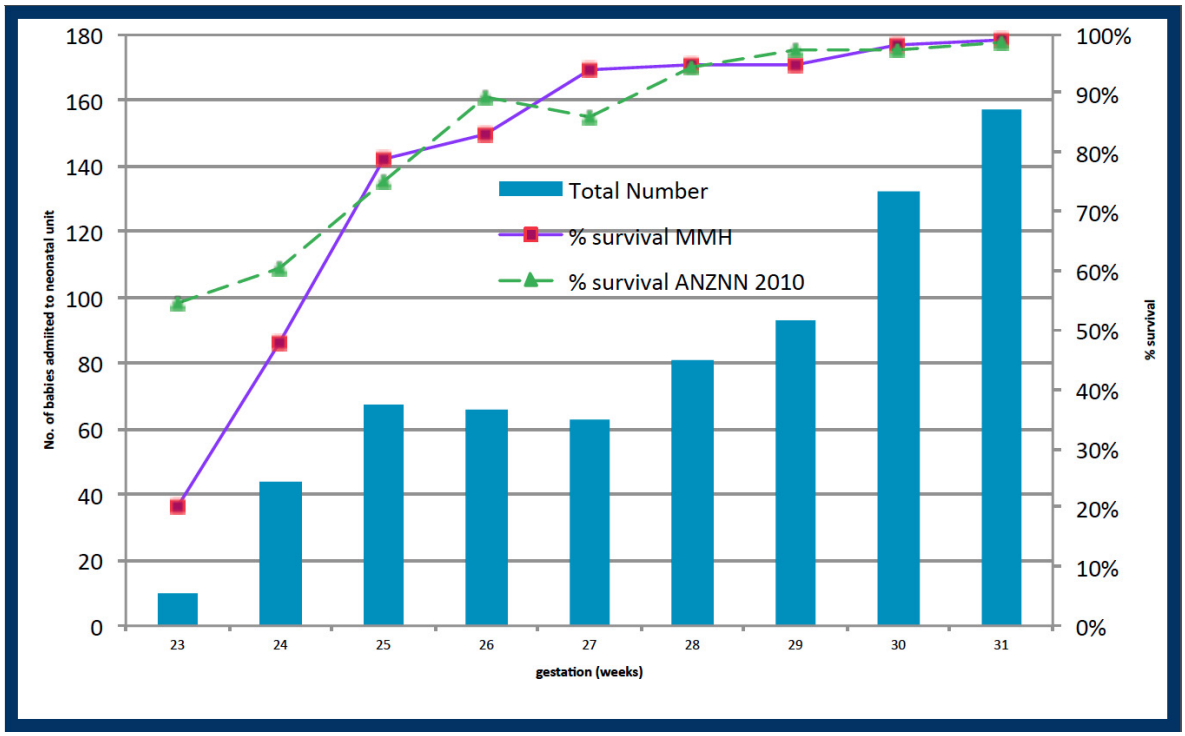
37 The New Zealand and Neonatal Network has complied data from all level III units in Australia and New Zealand contributing since January 1995 with level II units in New Zealand joining in 1998 and 9 Level II units in Australia currently contributing data. Collated by the University of New South Wales.

Figure 20. Percentage Survival by Birth weight, Middlemore Neonatal Unit compared to ANZNN data, 2010 -2012. Middlemore Neonatal Unit data only 2013-2014



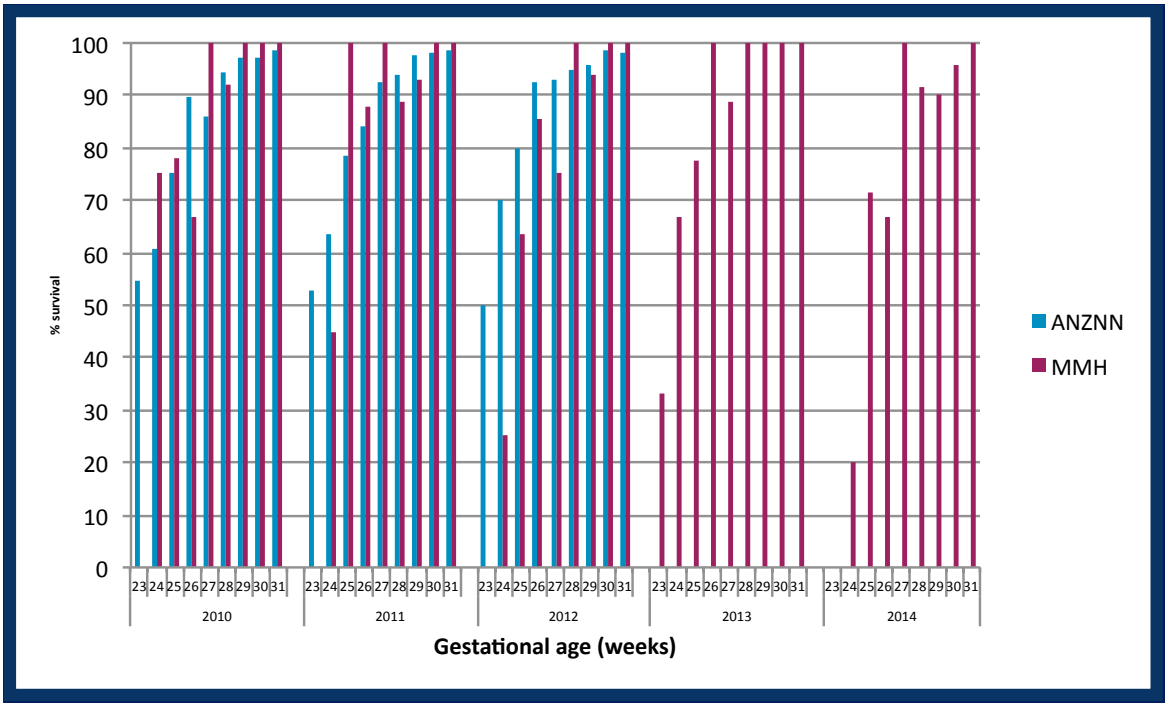
Source: Data provided by Middlemore Hospital Neonatal Unit 2015. Collected as per ANZNN guidelines. Note: ANZNN= Australia and New Zealand Neonatal Network, MMH= Middlemore Hospital.

Figure 21. Number of births, by gestation and % survival, Middlemore Hospital, 2007-2014 compared to ANZNN survival by gestation 2010



Source: Data provided by Middlemore Hospital Neonatal Unit 2015. Collected as per ANZNN guidelines. Note: ANZNN= Australia and New Zealand Neonatal Network, MMH= Middlemore Hospital.

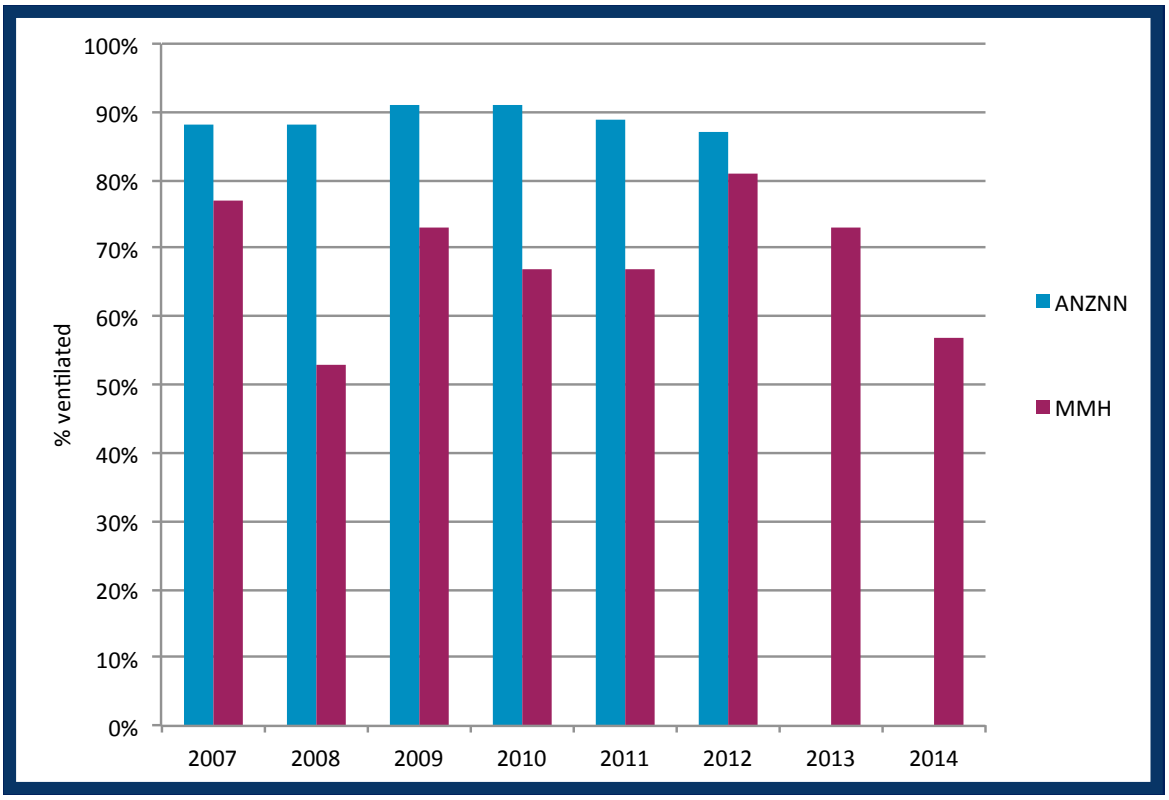
Figure 22. Percentage survival by gestational age, Middlemore hospital compared to ANZNN data, 2010-2012. Middlemore hospital data only 2013-2014



Source: Data provided by Middlemore Hospital Neonatal Unit 2015. Collected as per ANZNN guidelines. Note: ANZNN= Australia and New Zealand Neonatal Network, MMH= Middlemore Hospital.

Figure 23 shows the percentage of 24-27 week neonates ventilated at Middlemore Hospital, 2007-2014. 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.

Figure 23. Percentage of 24-27 week gestation neonates ventilated, 2007-2014.Middlemore hospital compared to ANZNN data, 2010-2012. Middlemore Hospital data only 2013-2014



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

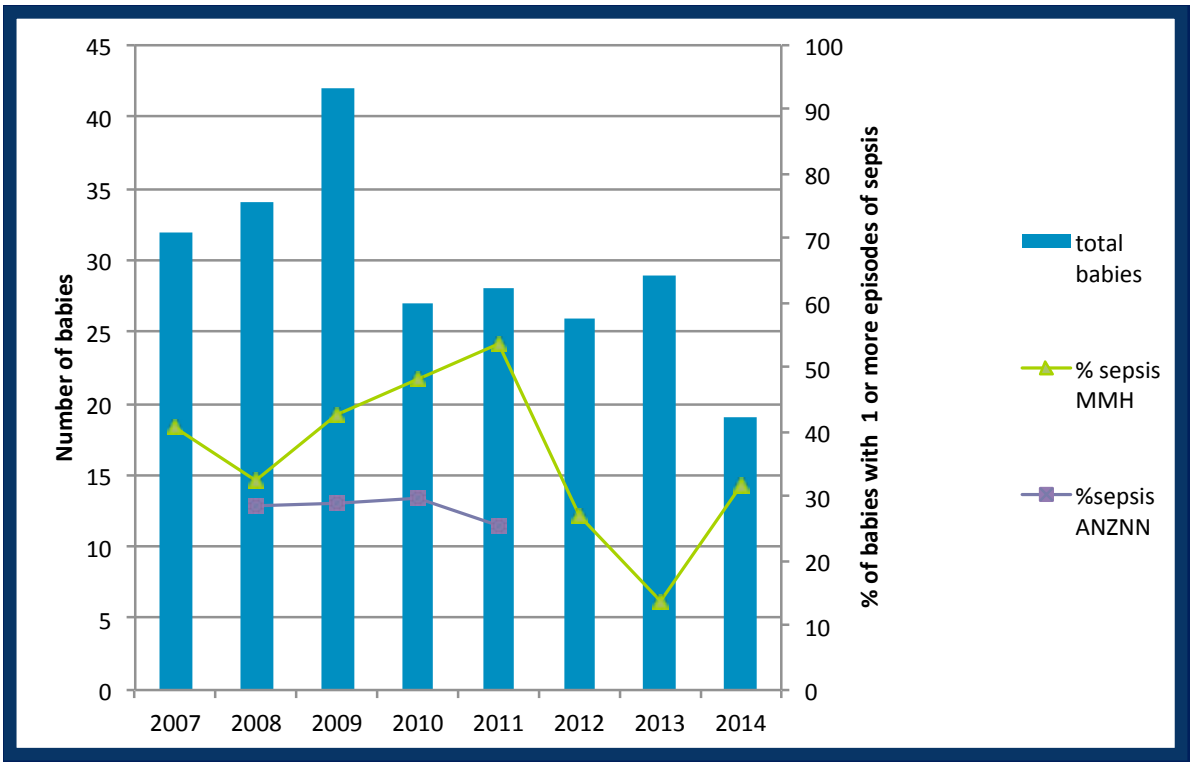
Infection

Infection is a well-recognised cause of morbidity and mortality in preterm infants. Figures 24 and 25 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 than 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 subsequently this decreased to a low of 13.8% in 2013, increasing in 2014 to 31.6%.

The percentage of babies born between 28-31 weeks gestation who had one or more episodes of sepsis appears more stable over the reported time period although the lowest percentage (1.9%) of episodes of infection was also been seen in 2014. There has been a quality improvement initiative undertaken to improve the way central lines were inserted and maintained during this period, Central Line Associated Bacteria (CLAB) which is a regular change of staff shift check and 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 and 2014.

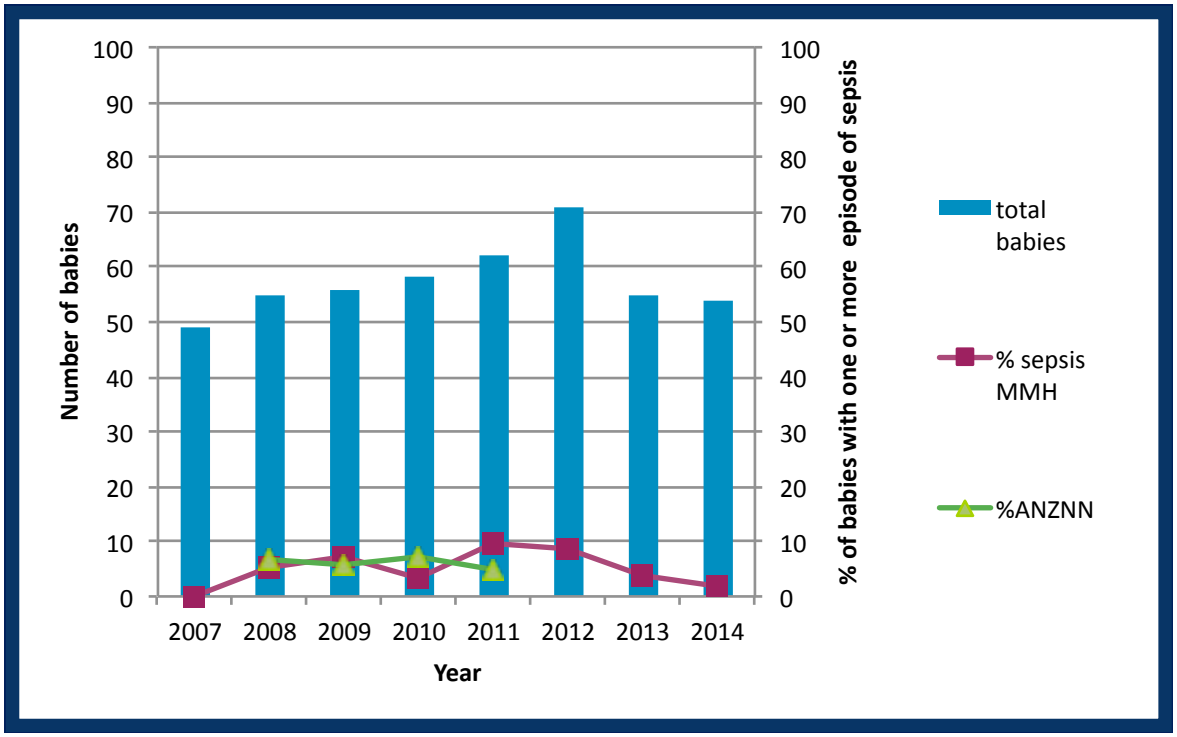
Early onset sepsis is less common than late onset sepsis. Seven percent (n=2) and 8.7% (n=2) of babies less than 28 weeks being admitted to the Middlemore Hospital Neonatal Unit in 2013 and 2014 respectively suffered from early onset sepsis. For babies 28-31 weeks gestation admitted to the Middlemore Hospital Neonatal Unit 2.6% (n=2) suffered from early onset sepsis in 2014.

Figure 24. Number of babies born at < 28 weeks gestation, admitted to the neonatal unit, and the percentage who suffered from one or more episodes of late onset sepsis



Source: Data provided by Middlemore Hospital Neonatal Unit 2015. Collected as per ANZNN guidelines. Note: ANZNN= Australia and New Zealand Neonatal Network, MMH=Middlemore Hospital

Figure 25. 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, 2007-2014. Middlemore data compared to ANZNN data 2008-2011



Source: Data provided by Middlemore Hospital Neonatal Unit 2015. Collected as per ANZNN guidelines. Note: ANZNN= Australia and New Zealand Neonatal Network, MMH=Middlemore Hospital

Meconium Aspiration Syndrome

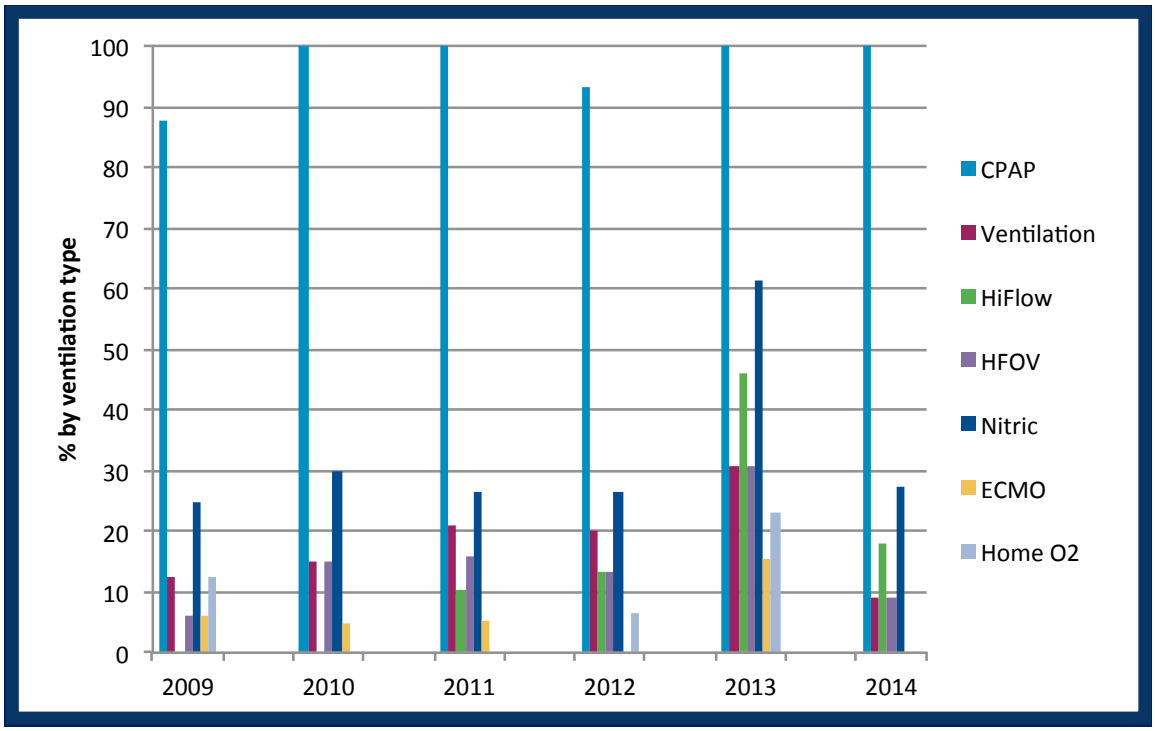
Meconium Aspiration Syndrome (MAS) is characterised by early onset of respiratory distress and chest X-ray consistent with MAS in a meconium stained infant. The severity of MAS can vary from mild respiratory distress to severe respiratory distress requiring more intensive ventilation support. The total number of babies, with MAS admitted to the neonatal unit, is shown in Table 23. Figure 26 shows that most of these babies were managed with Continuous Positive Airway Pressure (CPAP) ventilation. Only one baby died from this condition during this time period and that was in 2012.

Table 23. 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
2014	11

Source: Data provided by Middlemore Hospital Neonatal Unit

Figure 26.Mode of ventilation for meconium aspiration, 2009-2014



Source: Data provided by Middlemore Hospital Neonatal Unit

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 24. The percentage of babies admitted to Middlemore Hospital 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, which was sustained in 2014, 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 week's gestation. The percentage of babies, < 28 weeks gestation, with a grade 3 or 4 interventricular haemorrhage (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 retinopathy of prematurity (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. This however was not the case in 2014.

Table 24. 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%
2014	N/A	4.3%	N/A	39.1%	N/A	23.1%	N/A	23.8%	N/A	21.4%	N/A	7.1%

Source: Provided by the Middlemore Hospital Neonatal Unit 2015. 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 three 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. Overall, in 2014 from the data available, 81.2% of babies of babies were exclusively breastfed at discharge from Middlemore Hospital (79.5% in 2013), 3.3% were artificially fed and 12.6% were partially breastfed.

The data for 2014 is provided below by ethnicity in Table 25. European /Other have the highest rates of exclusive breastfeeding at discharge (88.3%) while Asian have the lowest percentage of exclusive breastfed babies at discharge (76.5%).

Table 25. Breastfeeding at discharge from MMH facility for 2014

ETHNICITY	EXCLUSIVE	ARTIFICIAL	PARTIAL	FULLY
NZ Maaori	81.4%	6.3%	10.3%	4.1%
Pacific Islander	77.6%	5.2%	13.7%	3.5%
Asian	76.5%	4.1%	16.0%	3.4%
Indian	79.2%	1.5%	14.5%	4.7%
European	88.3%	2.2%	6.4%	3.2%
Other	85.6%	0.0%	10.3%	4.1%
Unknown	79.6%	3.7%	16.7%	1.9%
Grand Total	**81.2%**	**3.3%**	**12.6%**	**3.6%**

Source: Healthware. Extracted by Health Intelligence and Informatics 2015 for babies discharged from Middlemore hospital. MMH only incl NNU BFHI Reports - Baby deliveries at MMH

Appendix 8 — Data Sources

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

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 isrecorded, and the completeness and quality of this data is unknown. The event of a stillbirth is recorded in maternal records, but an infant record is not created. Data from the NMDS is not a good source of birthing 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.

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. Self-employed 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 date of birth , antenatal visit data, body mass index, smoking, alcohol use, and parity. In Healthware mothers can be linked to their infants. Data is 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 birth information. There is more information available for women under shared care as most information from GP 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 Patient Information management System (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 birthed, if she subsequently moved residence. Each domicile code can be mapped to a Census Area Unit.

National Maternity Collection (MAT) sources information from 1) clinical and demographic information on all births in a New Zealand 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.

Australian and New Zealand Neonatal Network data (ANZNN) The Australian and New Zealand Neonatal Network 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 neonatal units in New Zealand joined the network and began contributing data.[38]

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

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

Glossary

Assisted vaginal birth A vaginal birth that needs assistance (e.g. forceps, vacuum extraction).

Body Mass Index is a measure of body fat based on height and weight that applies to adult men and women (mass (kg)/(height (m))2

Caesarean section An operative birth through an abdominal incision. This includes emergency and elective, lower segment and classical and it is identified by the presence of any caesarean section clinical code.

CM Health community midwife Antenatal, labour, and postnatal care is provided by a CM Health employed midwife .Care during labour is provided by CM Health employed midwives at Middlemore Hospital or one of the three primary birthing units.

CM Health employed LMC Midwife A midwife who carries a full clinical primary workload including antenatal, intra-partum and postnatal care. Used to describe salaried position in DHB as opposed to LMC midwife who claims off the Section 88 Notice.

Cephalic Head down presentation

Epidural An injection of analgesic agent outside the dura mater that covers the spinal canal. It includes lumbar, spinal (inside the dura mater) and epidural anaesthetics.

Episiotomy An incision of the perineal tissue surrounding the vagina at the time of birth to facilitate delivery, identified by the presence of an episiotomy clinical code.

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

Fellow A doctor who is has usually completed their specialised exams and is completing final year of training requirements

Fully breastfeeding The infant has taken breast milk only, no other liquids or solids except a minimal amount of water or prescribed medicined, in the past 48 hours.

Gravida Number of pregnancies

House officer A junior doctor, in their first 1-3 years of working, who is not yet on a specialist training scheme.

Hypoxic Ischemic Encephalopathy Brain trauma that occurs when there is an insufficient supply of blood and oxygen carried to the brain

Induction of labour An intervention to stimulate the onset of labour by pharmacological or other means, identified by induction of labour clinical codes.

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

Large for gestational age Greater than the 90th percentile for their gestational age.

Lead maternity carer A person who a) is a general practitioner with a Diploma in Obstetrics (or equivalent), a midwife or an obstetrician and b) is either a maternity provider in his or her own right; or an employee or contractor of a maternity provider; and c) had been selected by the women to provide her lead maternity care.

Level II neonatal care - Level 2 units within New Zealand generally care for babies 32/40 weeks and above and babies who have been transferred from Level 3 units after being clinically stabilised. They do not ventilate babies (except in emergencies) and generally use a less invasive form of ventilation . continuous positive airways pressure (CPAP) for babies that are clinically stable. Some Level 2 units provide intermediate (Level 2+) care for babies over 28 weeks.

Level III neonatal care - Level 3 unit provides neonatal intensive care and high dependency care. This means that they have the facilities to care for extremely premature infants (from 24 weeks gestation) and sick babies requiring ventilation, intravenous feeding and other types of intensive care monitoring and treatment.

Live birth The complete expulsion or extraction from its mother of a product of conception, irrespective of duration of pregnancy, which, after such separation, breathes or shows any other evidence of life, such as breathing, beating of the heart, pulsation of the umbilical cord, or definite movement of voluntary muscles, whether or not the umbilical cord has been cut or the placenta is attached. Each product of such a birth is considered liveborn (WHO 1975).

Maternity facility A facility that provides labour and birth services and inpatient postnatal care.

Midwife A person who has successfully completed a midwifery education programme that is duly recognised in the country where it is located and that is based on the International Confederation of Midwives (ICM) Essential Competencies for Basic Midwifery Practice and the framework of the ICM Global Standards for Midwifery Education who has aquired the requisite qualifications to be registered and/or legally licensed to practice midwifery and use the title ‘midwife’; and who demonstrates competency in the practice of midwifery.

New Zealand Maternity Clinical Indicators

SOURCE	INDICATOR	NUMERATOR	DENOMINATOR
LMC Claims (MAT)	1 Registration with a Lead Maternity Carer in the first trimester of pregnancy	Total number of women who register with a Lead Maternity Carer in the first trimester of their pregnancy	Total number of women who register with a Lead Maternity Carer
Hospital Events (NMDS)	2 Standard primiparae who have a spontaneous vaginal birth	Total number of standard primiparae who have a spontaneous vaginal birth at a maternity facility	Total number of standard primiparae who give birth at a maternity facility
	3 Standard primiparae who undergo an instrumental vaginal birth	Total number of standard primiparae who undergo an instrumental vaginal birth	Total number of standard primiparae who give birth at a maternity facility
	4 Standard primiparae who undergo caesarean section	Total number of standard primiparae who undergo caesarean section	Total number of standard primiparae who give birth at a maternity facility
	5 Standard primiparae who undergo induction of labour	Total number of standard primiparae who undergo induction of labour	Total number of standard primiparae who give birth at a maternity facility

	6 Standard primiparae with an intact lower genital tract (no 1st to 4th-degree tear or episiotomy)	Total number of standard primiparae with an intact lower genital tract with vaginal birth at a maternity facility	Total number of standard primiparae who give birth vaginally at a maternity facility
	7 Standard primiparae undergoing episiotomy and no 3rd- or 4th-degree perineal tear	Total number of standard primiparae undergoing episiotomy and no 3rd- or 4th-degree perineal tear with vaginal birth at a maternity facility	Total number of standard primiparae who give birth vaginally at a maternity facility
	8 Standard primiparae sustaining a 3rd- or 4th-degree perineal tear and no episiotomy	Total number of standard primiparae sustaining a 3rd- or 4th-degree perineal tear and no episiotomy with vaginal birth at a maternity facility	Total number of standard primiparae who give birth vaginally at a maternity facility
	9 Standard primiparae undergoing episiotomy and sustaining a 3rd- or 4th-degree perineal tear	Total number of standard primiparae undergoing episiotomy and sustaining a 3rd- or 4th-degree perineal tear with vaginal birth at a maternity facility	Total number of standard primiparae who give birth vaginally at a maternity facility
All women giving birth (MAT)	10 Women having a general anaesthetic for caesarean section	Total number of women having a general anaesthetic for caesarean section	Total number of women who undergo caesarean section
	11 Women requiring a blood transfusion with caesarean section	Total number of women requiring a blood transfusion with caesarean section	Total number of women who undergo caesarean section
	12 Women requiring a blood transfusion with vaginal birth	Total number of women requiring a blood transfusion with vaginal birth	Total number of women who give birth vaginally
	13 Diagnosis of eclampsia at birth admission	Total number of women diagnosed with eclampsia during birth admission	Total number of women giving birth
LMC claims (MAT)	14 Maternal tobacco use during postnatal period	Total number of women identified as smokers at 2 weeks after birth	Total number of women with smoking status at 2 weeks after birth reported
All babies born (MAT)	15 Preterm birth	Total number of babies born under 37 weeks gestation	Total number of babies born (live births)

Non-governmental organisation An organisation that is neither part of government nor a conventional for profit business.

NZDep2013 is an updated version of the NZDep2006 index of socioeconomic deprivation. NZDep2013 combines census data relating to income, home ownership, employment, qualifications, family structure, housing, access to transport and communications. NZDep2013 provides a deprivation score for each meshblock in New Zealand. Meshblocks are the smallest geographical area defined by Statistics New Zealand, with a population of around 60–110 people.

NZDep2013 groups deprivation scores into deciles, where 1 represents the areas with the least deprived scores and 10 the areas with the most deprived scores. A value of 10 therefore indicates that a meshblock is in the most deprived 10% of areas in New Zealand.

It is important to note that NZDep2013 estimates the relative socioeconomic deprivation of an area, and does not directly relate to individuals. NZDep2013 can not be used to look at changes in absolute deprivation over time as 10% of areas will always be the most deprived, relative to other areas in New Zealand. The indicators used to generate the index may also change over time, depending on their relation to deprivation.

The NZDep2013 Index of Deprivation is available on the Ministry of Health website

Partial breastfeeding The infant has taken breast milk and bottle milk in the past 48 hours.

Parity The number of times a woman has given birth, including stillbirths.

Postnatal All pregnancy-related events following birth.

Post-term birth A birth at 42 or more completed week's gestation.

Preterm birth, **preterm labour** Birth or labour before 37 completed week's gestation.

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

Primary maternity facility A facility that does not have inpatient secondary maternity services or 24-hour on-site availability of specialist obstetricians, paediatricians and anaesthetists. This includes birthing units.

PROMPT A one day course managing obstetric emergencies and trauma as part of a multi-disciplinary team.

Referral guidelines Guidelines for Consultation with Obstetric and Related Medical Services

Secondary maternity care facility A facility that provides additional care during the antenatal, labour and birth and postnatal periods for women and babies who experience complications and who have a clinical need for either consultation or transfer (Health Funding Authority 2000).

Self-employed LMC Midwife Midwives claiming from the MoH to provide antenatal, labour and post-natal care using, primarily, a continuity of care model by the same midwife.

Senior Medical Officer Fully trained specialist doctor/consultant.

Spontaneous vaginal birth The birth of a baby without obstetric intervention (i.e. without caesarean section, forceps or vacuum), identified by the presence of a spontaneous vaginal birth clinical code with no concurrent instrumental/caesarean section code. These may include births where labour has been induced or augmented.

STABLE Course A neonatal education programme focussed on the post-resuscitation/pre-transport stabilisation care of sick infants.

Standard primipara Defined by the MoH as a woman aged between 20 and 34 years at the time of birth, having her first baby (parity = 0) at term (37 to 41 weeks gestation) where the outcome of the birth is a singleton baby, the presentation is cephalic and there have been no recorded obstetric complications that are indications for specific obstetric intervention.

Tertiary maternity care facility A facility that provides a multidisciplinary specialist team for women and babies with complex or rare maternity needs; for example, babies with major fetal disorders requiring prenatal diagnostic and fetal therapy services, or women with obstetric histories that significantly increase the risks during pregnancy, labour and delivery (e.g. those who have already had two placental abruptions). Includes neonatal intensive care units.

Third and fourth degree tear A third or fourth degree perineal laceration during birth, identified by the presence of a third or fourth degree of tear clinical code.

Third and fourth degree tears are defined as;

- 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.

Midwifery Workforce

Projections for the number of self-employed midwives needed in the Counties Manukau district

September 2014

Prepared: Keming Wang

Counties Manukau District Health Board

Contents

Preface

The Workforce Project Board was established to address issues and recommendations made by the independent External Review of Maternity Care[1] in the Counties Manukau district. The group is comprised of self employed and Counties Manukau DHB employed midwives. It's function is to provide advice to and complete actions on behalf of the Maternity Review Project Board to address relevant workforce matters from the External Review.

The Workforce Project Board commissioned this report from the DHB to identify how many self employed midwives would be required if 75% of women are to be managed by self employed midwives, where those services are likely to be required between the different localities and consider any other characteristics of the population or workforce that are relevant to the workforce capacity required to improve access to midwives and the ability of pregnant women to engage with a midwife by 12 weeks gestation.

The Workforce Project Board is indebted to Keming Wang, Senior Strategic Business Analyst, Counties Manukau DHB for his expertise in the analysis and forecast modelling of the workforce needs and the pulling together of this report including the graphical presentations.

Any queries or feedback on the report can be emailed to Thelma Thompson, Director of Midwifery, Counties Manukau DHB at thelma.thompson@middlemore.co.nz

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[1] Paterson, R., Candy, A., Lilo, S., McCowan, L., Naden, R. and O'Brien, M. 2012. External Review of Maternity Care in the Counties Manukau District: Counties Manukau District Health Board

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Executive Summary

This report was commissioned by the Counties Manukau Health (CM Health) Maternity Review Workforce Project Board to support recommendations made in the Counties Manukau Health Maternity Review to increase the numbers of self-employed midwives and make maternity care more easily accessible. The intent of the analysis was to assess the existing midwifery workforce capability and capacity using 2013 data and project the future self-employed Lead Maternity Carer (LMC) workforce needs across the district based on 75% of women having their maternity care provided by self-employed LMCs.

The data has been sourced from the CM Health Healthware™ database, and where appropriate and applicable, from National Health data sets, for example, the National Minimum Dataset.

The analysis has highlighted important population trends, variability in the ethnicity mix between locality populations, disparity in areas of workforce workload/caseload and the impact of these on the self-employed LMC workforce capacity and sustainability.

In 2013, the number of births at CM Health facilities decreased by 625 (8%) while the number of deliveries at CM Health facilities reduced by 629 (9%). Over 65% of this reduction came from the most deprived areas of Manurewa, Mangere and Otara, where the majority of the population are Pacific and Maaori. In parallel to this there has been a reduction in the number of women cared for by CM Health staff while the number of women cared for by self-employed LMCs has remained similar. Consequently by the end of 2013, the proportion of women having their maternity care provided by self-employed LMCs increased to 60%. The birth rate for Maaori, Pacific and European/Other groups slowed over the period 2006 to 2013, while above average increases were recorded in the Asian group over the same period.

On average, 60% of pregnant women in Counties Manukau are now managed by self-employed LMCs at registration. However, 60% of women aged 40 years or over are cared for by CM Health employed midwives. This variation is due to the greater likelihood of complications in pregnancies among older women, resulting in a greater demand on CM Health specialist services.

The number of high risk[2] or at risk births have increased over time, whereas the number of low risk births has continued to decline. There is a clear increasing trend for women in the at risk and high risk birth groups to have caesarean sections. While the reasons for caesarean sections are unclear, the impact is that the increase in high risk births and the growing rate of caesareans produces greater demand on maternity services by increasing the workload for midwives, obstetric surgeons and others in the maternity team.

There is significant variation in the annual caseload between midwives, with the average caseload around 42-45 women per midwife. Based on the forecast number of births and 75% of women cared for by self-employed LMCs, we project a shortfall of 25 full-time self-employed LMCs in 2014. Further projections indicate a total of 139-151 self-employed LMCs will be required by 2026. If the ethnic profile of midwives were to match the ethnic composition of the pregnant population, 53 full time Maaori midwives and 61 full time Pacific midwives would be required based on 2013 data, with an annual average caseload of 45 women per midwife.

[2] Risk is categorised using the national Referral Guidelines – see page 10

Births and deliveries

The term 'birth' describes each individual baby born, whereas 'delivery' describes a birth event that may result in more than one baby. For instance, total deliveries at CM Health facilities were 7,325 in 2013, whereas total births from those deliveries were 7426, due to 101 multiple births. On average, 1.3% of all deliveries are multiple births. In addition, the number of births and deliveries varies depending on the *location* of the birth event and the pregnant woman's residency status. For example, actual Counties Manukau total births were 8,340 in 2012, but the CM Health *facility* births were only 8,051.

Counties Manukau births:

a) Includes births by Counties Manukau residents at CM Health facilities or home
b) Includes births by Counties Manukau residents outside CM Health areas (e.g. other DHB facilities)
c) Excludes births at CM Health facilities by non-residents of Counties Manukau
d) Data is obtained from Statistics New Zealand, and includes estimated births by 2012 and birth projections from 2013.

CM Health facility births:

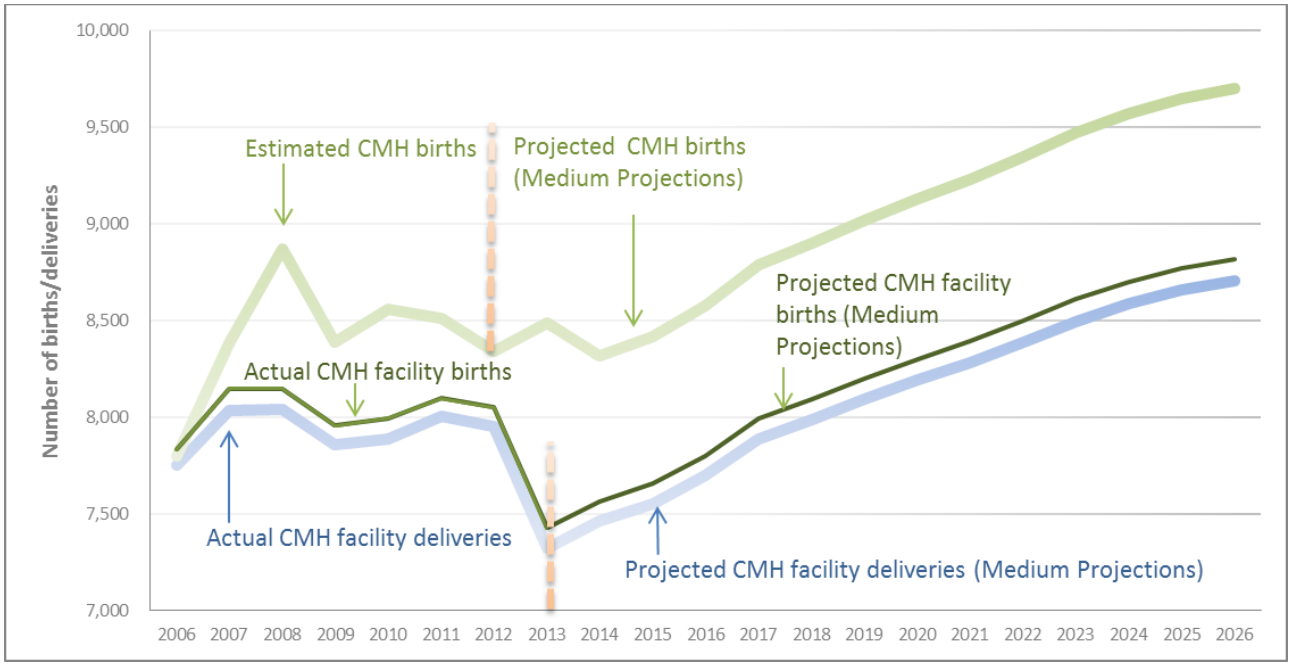
a) Includes births by Counties Manukau residents at CM Health facilities
b) Includes births at CM Health facilities by non-residents of Counties Manukau
c) Excludes births by Counties Manukau residents at other DHB birthing facilities
d) Historical data is from 2006 to 2013, from two data sources: national datasets and from Healthware™ database. Projections for year 2014 and onwards are based on Statistics NZ population forecasts 2013.

CM Health facility deliveries:

a) Includes Counties Manukau residents giving birth at CM Health facilities
b) Includes non-residents of Counties Manukau giving birth at CM Health facilities
c) Excludes Counties Manukau residents giving birth at other DHB birthing facilities
d) Historical data is from 2006 to 2013, from two data sources: national datasets and from Healthware™ database. Projections for year 2014 and onwards are based on Statistics NZ population forecasts 2013.

The estimated number of children under one year old, and by inference the number of births for the population of Counties Manukau each year, has remained fairly constant at about 8,500 since 2009 (thick green line on Figure 1). However, current Statistics New Zealand projections (most recently in 2013, based on the 2006 Census) suggest that this number will gradually climb between 2014 and 2026. The total projected births will be 9,700 in 2026, with a 14% increase in babies born between 2013 and 2026.

Figure 1 Counties Manukau Births vs. CM Health Facility Births and Deliveries (1. CM Health Births- data source from Population Estimates and Projections from Statistics New Zealand for Ministry of Health 2013 version; 2.CM Health Facility births and deliveries 2006-2013.)



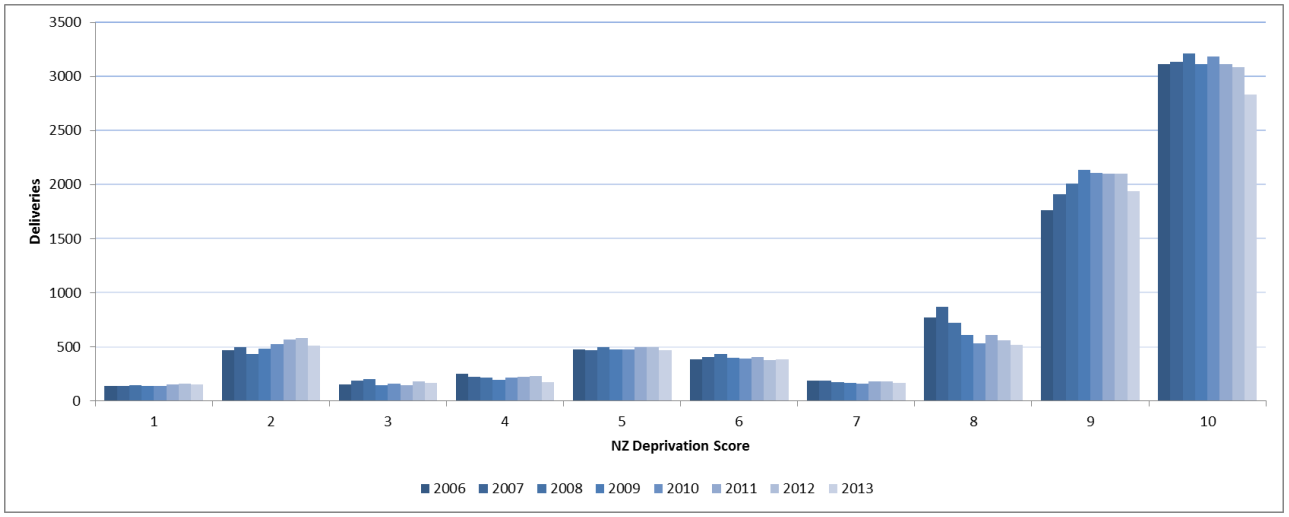
Similar to the Counties Manukau births trend, the total number of births and deliveries in CM Health facilities over the last six years has remained at about 8,050 and 7,950 respectively. However, in 2013, the number of CM Health facility births dropped by 624 (8%), and the number of CM Health facility deliveries dropped by 629 (9%). More than 65% of this decrease is from women living in the most deprived[3] areas of the district (see Figure 2).

A review of deliveries by Counties Manukau residents at other DHB facilities indicates that this decrease in numbers is not because more Counties Manukau women went to other DHBs to give birth. It is due to an overall reduction in births and deliveries. Figure 3, demonstrates that the

[3] NZ Deprivation Index 9 and 10

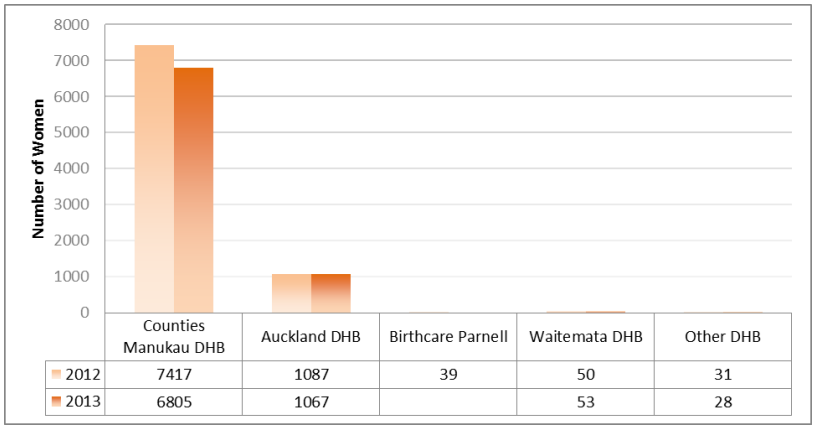
number of Counties Manukau residents giving birth outside of the Counties Manukau DHB area did not change significantly between 2012 and 2013.

Figure 2 CM Health Facility Deliveries by NZ Deprivation Score, 2006-2013



There are a range of possible reasons for the observed reduction in birth numbers. Analysis of national data by the Ministry of Health suggests this change is not confined to Counties Manukau. Given the factors that have contributed to the reduction in birth numbers are unclear, the projections and forecast modelling of the workforce also have an element of uncertainty. The current reduction may affect prior projections due to a decrease in overall numbers but do not alter the rate of future growth. In this modelling exercise, no assumptions have been made for any substantial change to the projections for Counties Manukau births. Updated Statistics New Zealand population figures will be available in 2015 and may be used to refresh the model if there is significant change.

Figure 3 Counties Manukau Women Giving Birth: Location Comparison (source: National Minimum Dataset)

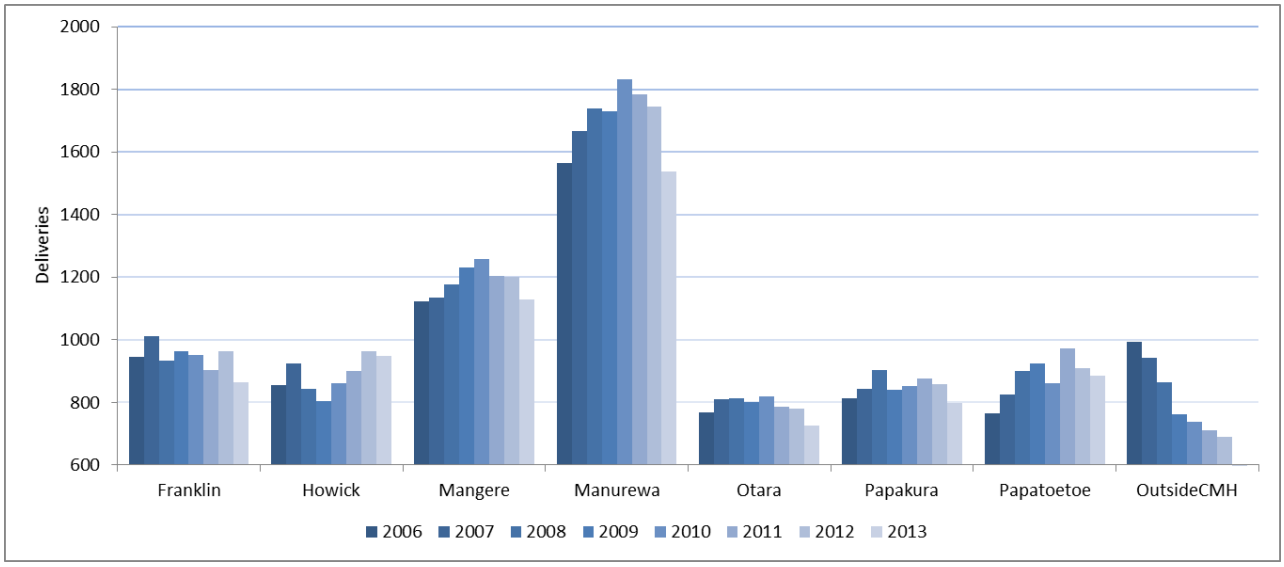


	Counties Manukau DHB	Auckland DHB	Birthcare Parnell	Waitemata DHB	Other DHB
2012	7417	1087	39	50	31
2013	6805	1067		53	28

District variation in deliveries

Although there are only minor variations in the total deliveries for Counties Manukau women over 2006 to 2013, this situation varies by suburb (Figure 4). Manurewa and Mangere have more pregnant women than Franklin and Howick, even though the latter two have a larger land coverage area. Otara is the smallest suburb by land area and has the lowest number of pregnant women, but has the highest *density* of pregnant women per square kilometre. As illustrated in Figure 4, Howick is the only suburb showing an increase since 2010 in the number of deliveries for women in the resident population. There may be a correlation between this figure and the growth in the Asian population particularly in the 20-34 years age group in the area, since 2006. In general, district variation could be explained by ethnicity mix in the population domiciled in the various suburbs.

Figure 4 CM Health Facility Deliveries by Suburb, 2006-2013 (data source-Healthware™ Database)



Ethnic profile of births

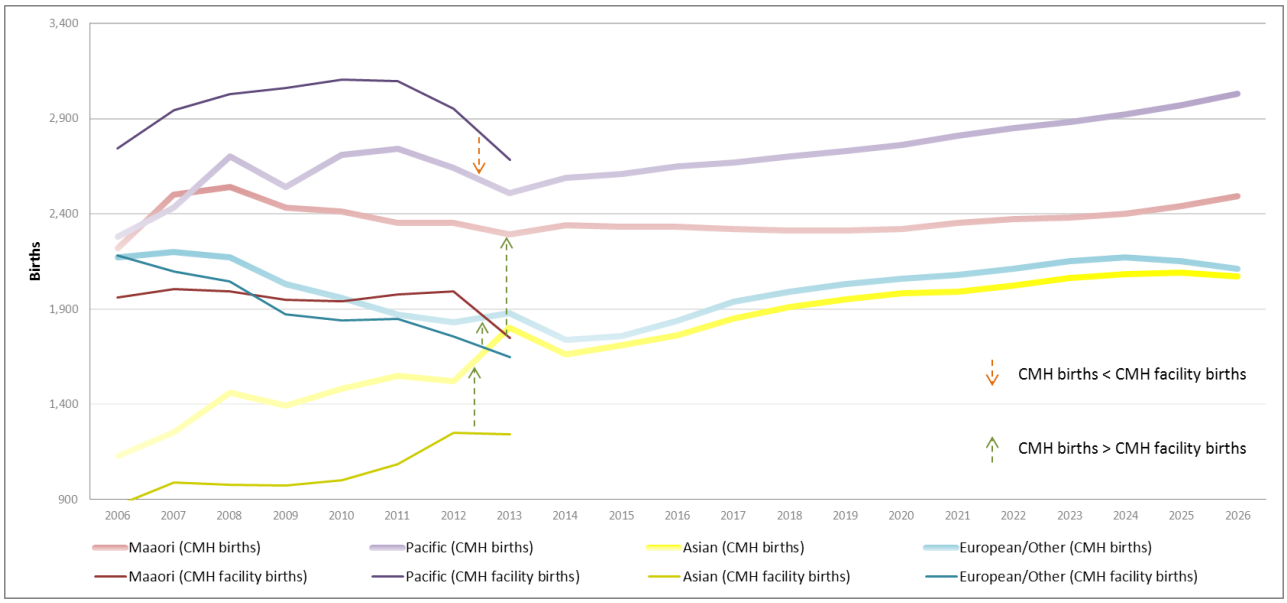
There has been a birth rate decrease in Maaori, Pacific and European/Other groups, while above average birth rates were recorded in Asian groups from 2006 to 2013 (Figure 5). The projected Counties Manukau births for Asian and European/Other groups indicates that they will reduce in 2014 and then increase until 2024, whereas the Maaori group will remain unchanged or reduce slightly through to 2021.

The historical data suggests that there are more Pacific CM Health facility births than Pacific Counties Manukau births (Figure 5). This could be due to:

(a) Database mismatching. It is recognised that health system data tends to 'overcount' Pacific groups and 'undercount' Maaori and Asian groups compared to census data. This can result from miscoding of ethnicity (e.g. someone who self-identifies as Maaori and Samoan in the census and is therefore prioritised as Maaori for health purposes but is recorded as Pacific in health system databases).

(b) Pacific women may like to come to CM Health to give birth though they may live outside CM Health areas. Asian women, on the contrary, may prefer to go to ADHB to give birth rather than use CM Health facilities. This decision may be influenced by which DHB (and therefore by default, which Hospital) their LMC of choice has chosen to have their Access Agreement with eg private specialists tend to work out of Auckland.

Figure 5 Counties Manukau Births and CM Health Facility Births by Ethnicity Groups (1. Counties Manukau Births- data source from Population Estimates and Projections from Statistics New Zealand for Ministry of Health 2013 version; 2. CM Health Facility births- 2006-2013 data source Healthware™ Database)



Nevertheless, the proportion of all women who delivered in CM Health facilities who were identified as Asian has increased from 11% in 2006 to 17% in 2013 (Figure 6). In contrast, the European/Other group decreased 5% from 2006 to 2013. Maaori stayed the same at 25%, with only a 1% drop in 2013. The Pacific group increased from 35% in 2006, to 39% during 2009 and 2011, then decreased to 37% in 2013.

As mentioned previously, there was a significant reduction in CM Health facility deliveries in 2013 compared to 2012. The biggest impact was in the Pacific group (269 fewer deliveries), followed by Maaori (245 less) and the European/Other group (109 less). Deliveries in the Asian Group reduced by six (Figure 7).

Figure 6 CM Health Delivery Ethnicity Composition 2006 vs. 2013

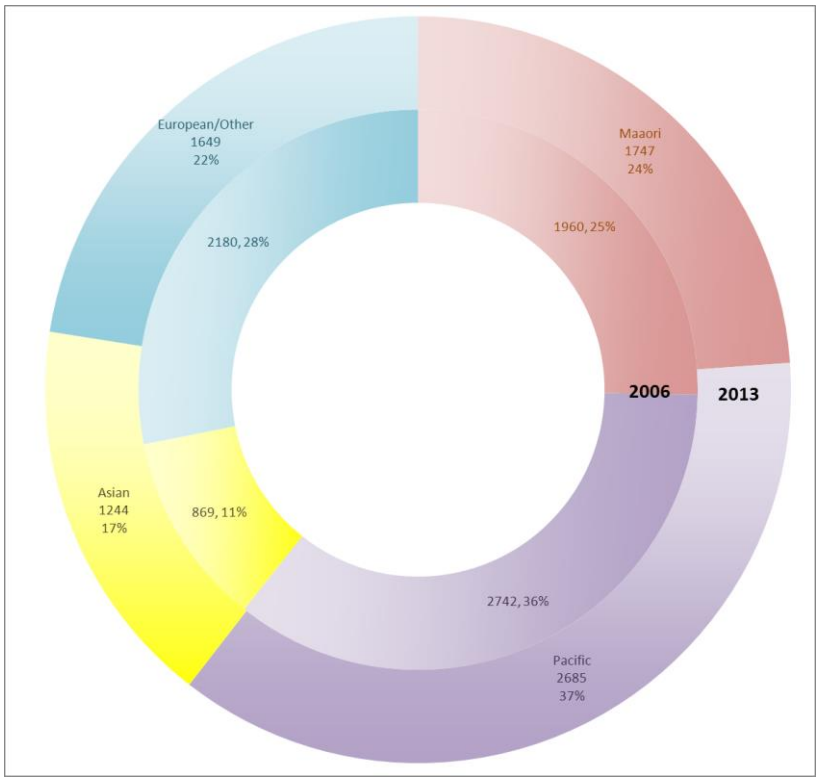
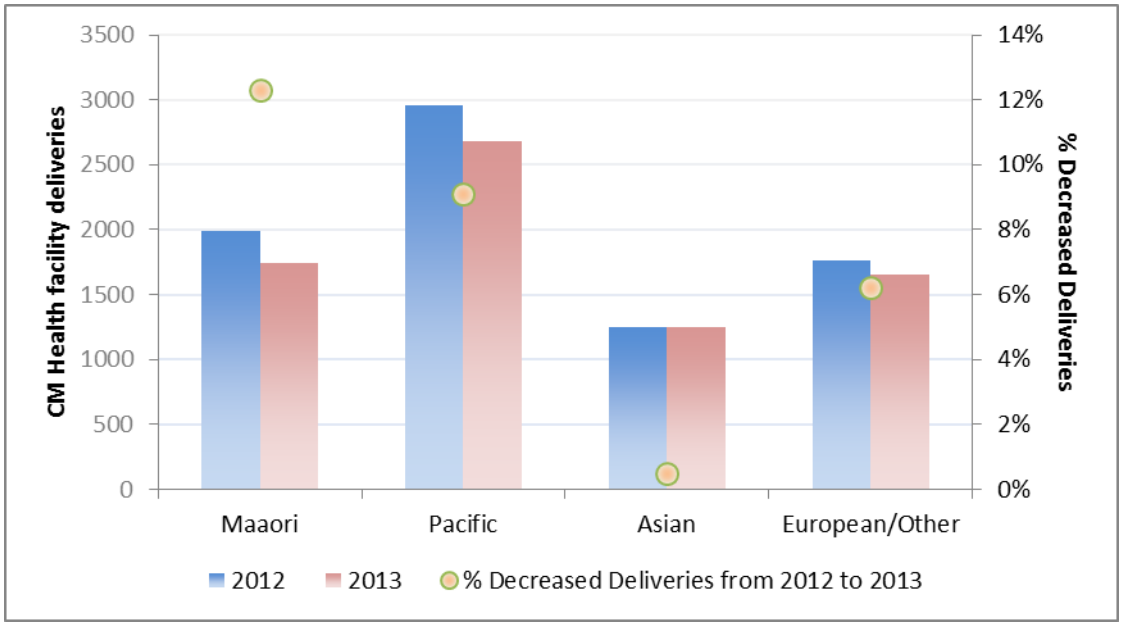


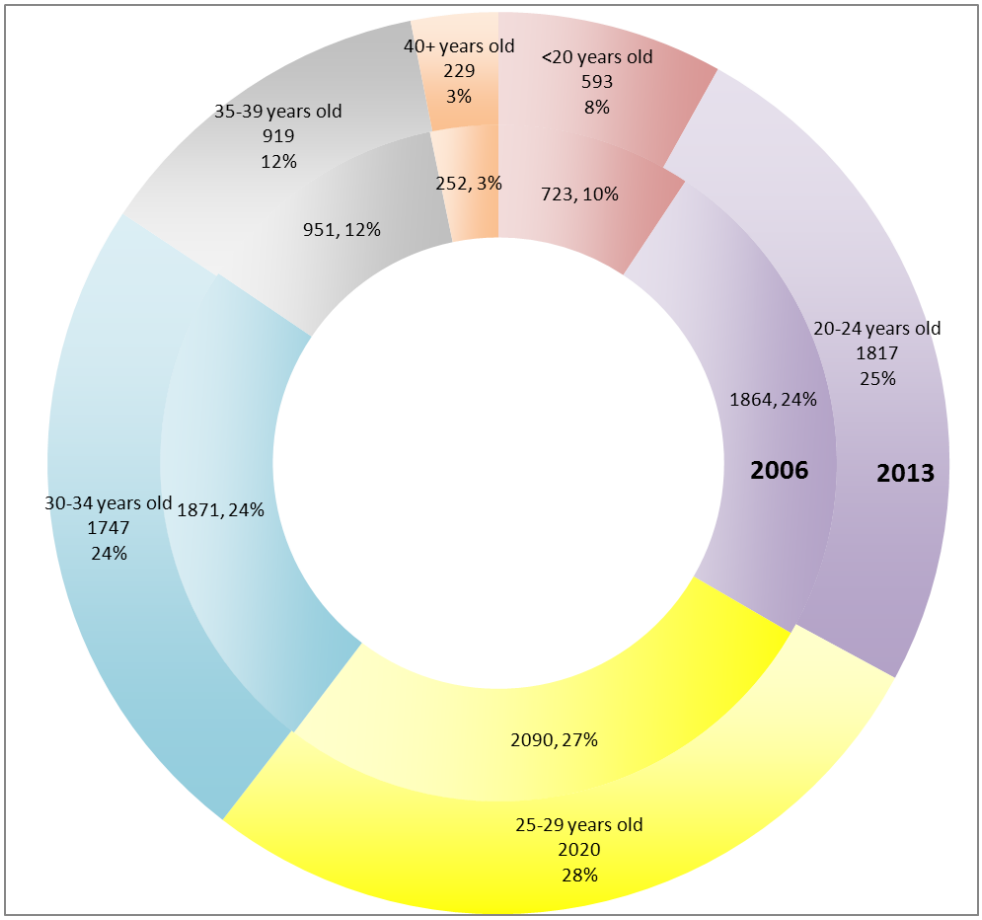
Figure 7 CM Health Facility Deliveries by Ethnicity Groups for Year 2012 and 2013



Age profile of mothers

The age profile of pregnant women changed slightly between 2006 and 2013 (Figure 8). Whilst the proportion of CM Health facility deliveries for women and girls aged under 20 fell during this period, the decrease was marginal with the exception of 2013, when deliveries reduced by 18% (132) from 2012. Similarly, the proportion of pregnant women aged 40 years and over during the 2006 to 2013 year period did not change, although there was a slight decrease in 2013. On average, 60% of pregnant women in CM Health are managed by self-employed LMCs. However, 60% of women aged 40 years or over are cared for by CM Health-employed midwives at registration. This variation is due to the greater likelihood of complications in pregnancies among older women, resulting in greater demand on CM Health staff services.

Figure 8 CM Health Facility Deliveries by Age Groups, 2006 vs. 2013



Maternity risk profiles

Using the national referral guidelines, maternity risk profiles have been created that divide pregnant women into 3 groups[4]:

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.

Data limitations:

1. 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 transfer of care once labour starts is not shown.
2. Self-employed LMCs and CM Health-employed midwives are not captured correctly in the dataset, so the comparison of these two groups will only be for the 2010-2013 period.

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

The data shows the high risk birth group has kept increasing over time, whereas the primary birth figure has continued to decline (Figure 9). The primary birth and at risk birth groups account for the majority of the decrease in deliveries in 2013, however high risk births remain largely unchanged. While data for self-employed LMCs shows a lower case mix due to the data limitations identified above, half of their cases would still be considered at risk, and around half of the high risk women are still cared for by self-employed LMCs (Figure 10). This supports the contention that midwives in CM Health tend to look after more complex cases than would be expected in other parts of the country[1]. 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 11 shows risk by mother's ethnicity in 2013.

Figure 12 shows CM Health facility caesarean deliveries by risk group from 2006 to 2013. There is a clear increasing trend for women in the at risk and high risk birth groups to have caesarean sections. The increase is particularly evident in women cared for by self-employed LMCs where increases have been observed for 4 consecutive years (Figure 13). It is hard to determine if the increased caesarean section rate is due to personal choice or not, as the current system does not capture this information. Whilst 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 14 and Figure 15). For instance, between 2006 and 2013, the number of caesareans in the Asian group rose by 71% while the proportion of caesareans on women in this group increased from 15% to 21% of total caesareans (Figure 16).

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. The health sector requires the capability to manage complex births, and must be able to provide access to appropriate support services.

Figure 9 CM Health Facility Deliveries Risk Level, 2006-2013

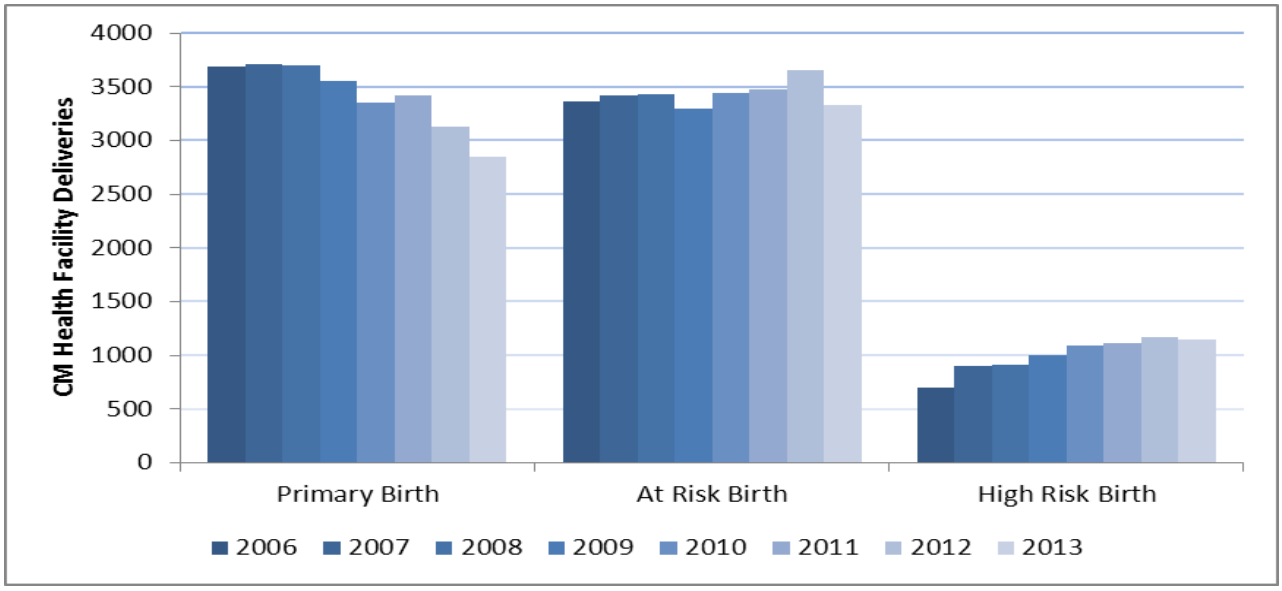


Figure 10 CM Health Facility Deliveries Risk Level by Midwife Type, 2010-2013

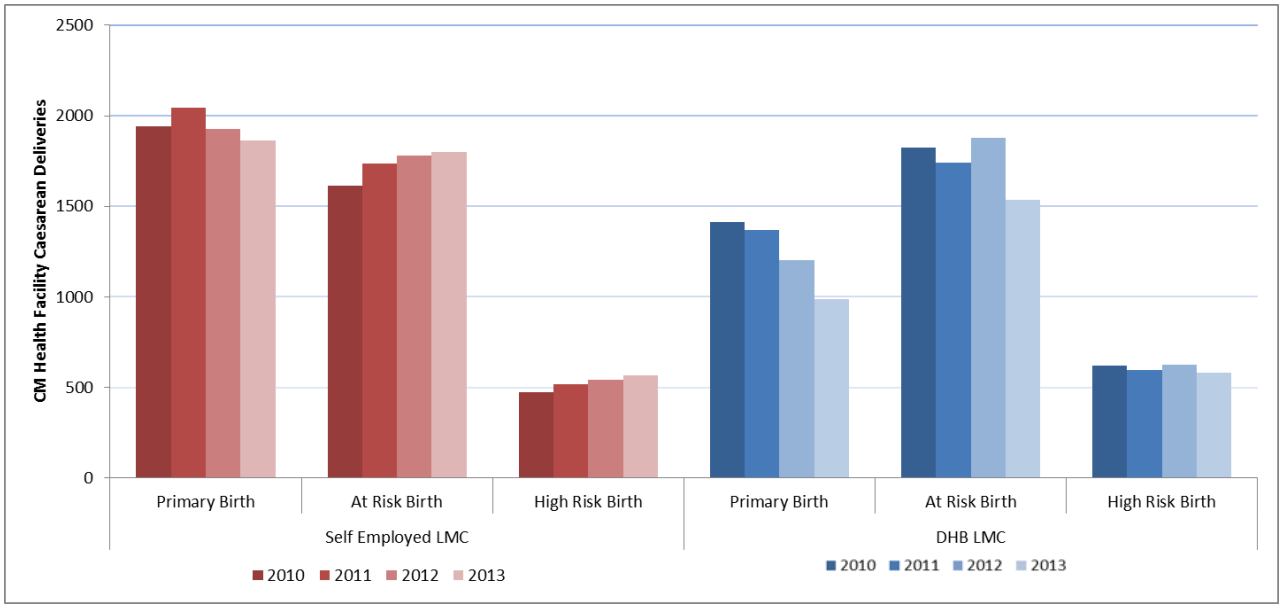


Figure 11 CM Health Facility Deliveries Risk Level by Mother's Ethnicity 2013 (data supplied by Dean Papa)

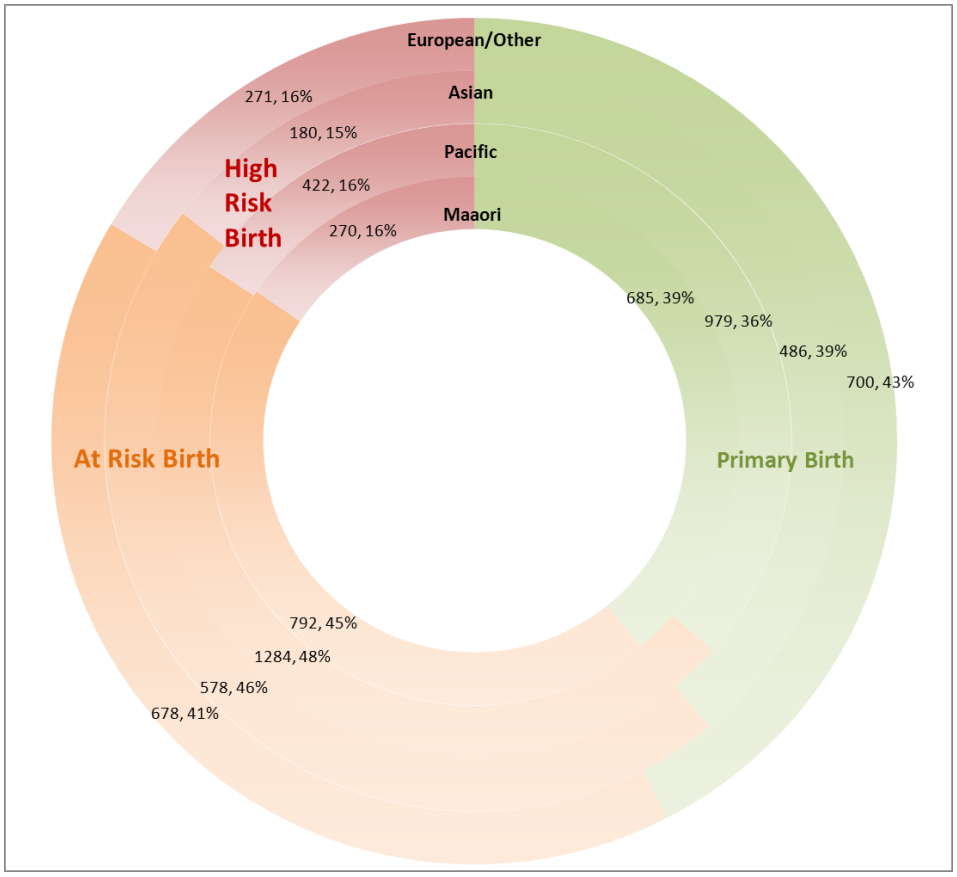


Figure 12 CM Health Facility Caesarean Deliveries Risk Level, 2006-2013

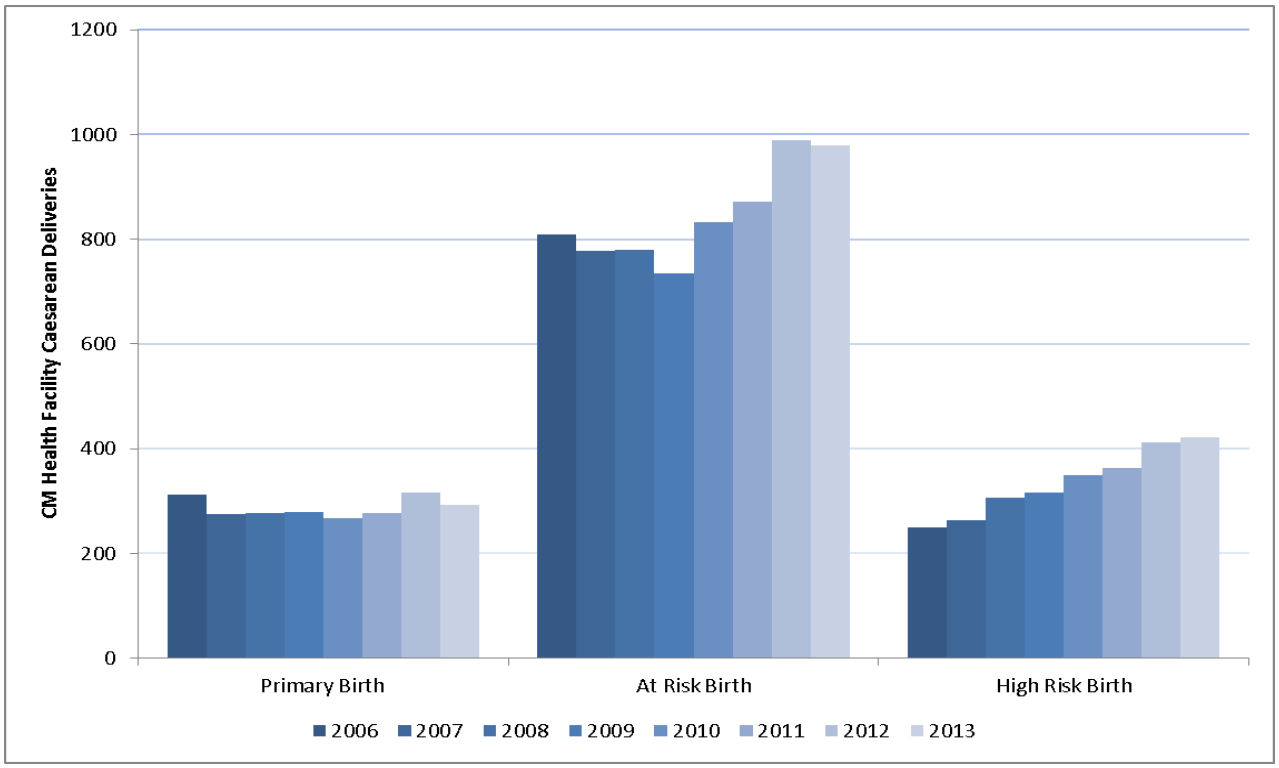


Figure 13 CM Health Facility Caesarean Deliveries Risk Level by Midwife Type, 2010-2013

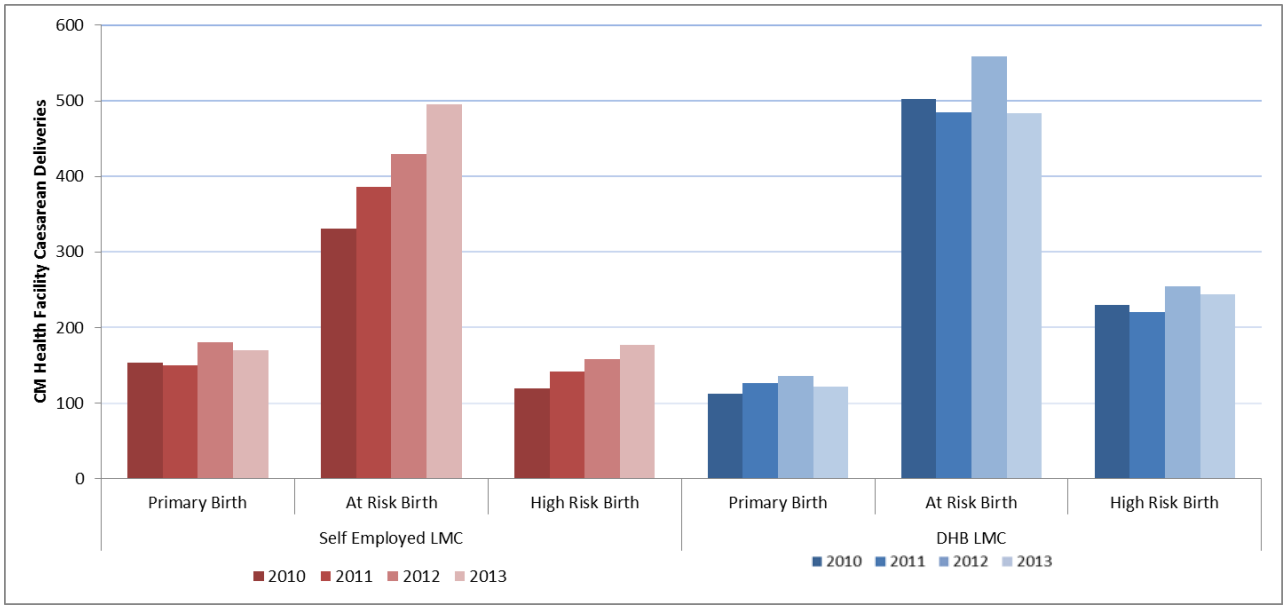


Figure 14 CM Health Facility Caesarean Deliveries Percentage Increase in Number by Ethnicity between 2006 and 2013

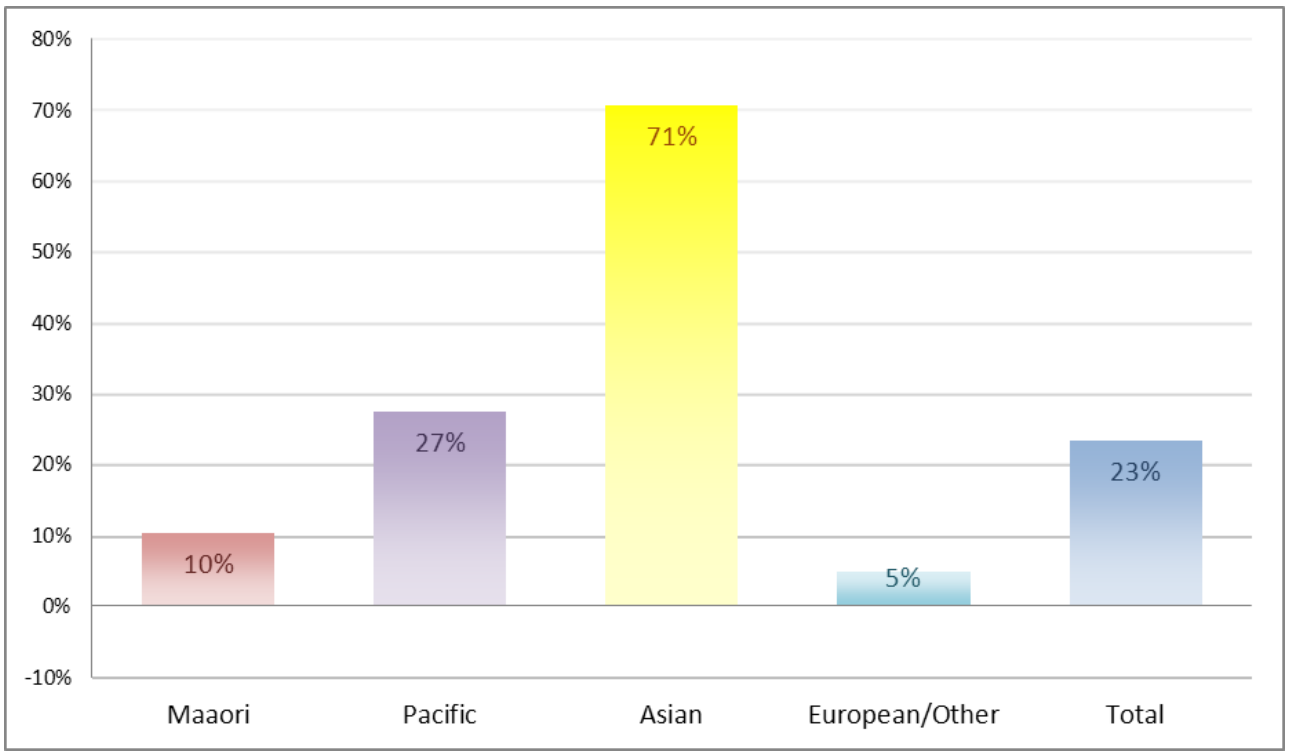


Figure 15 CM Health Facility Caesarean Deliveries by Ethnicity, 2006-2013

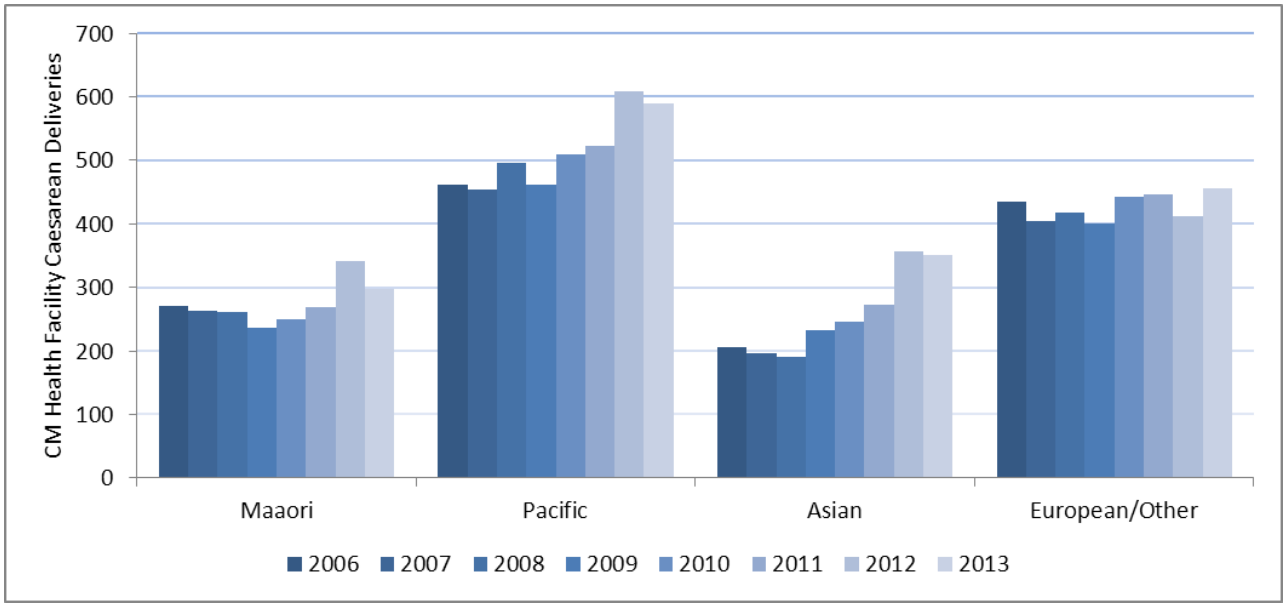
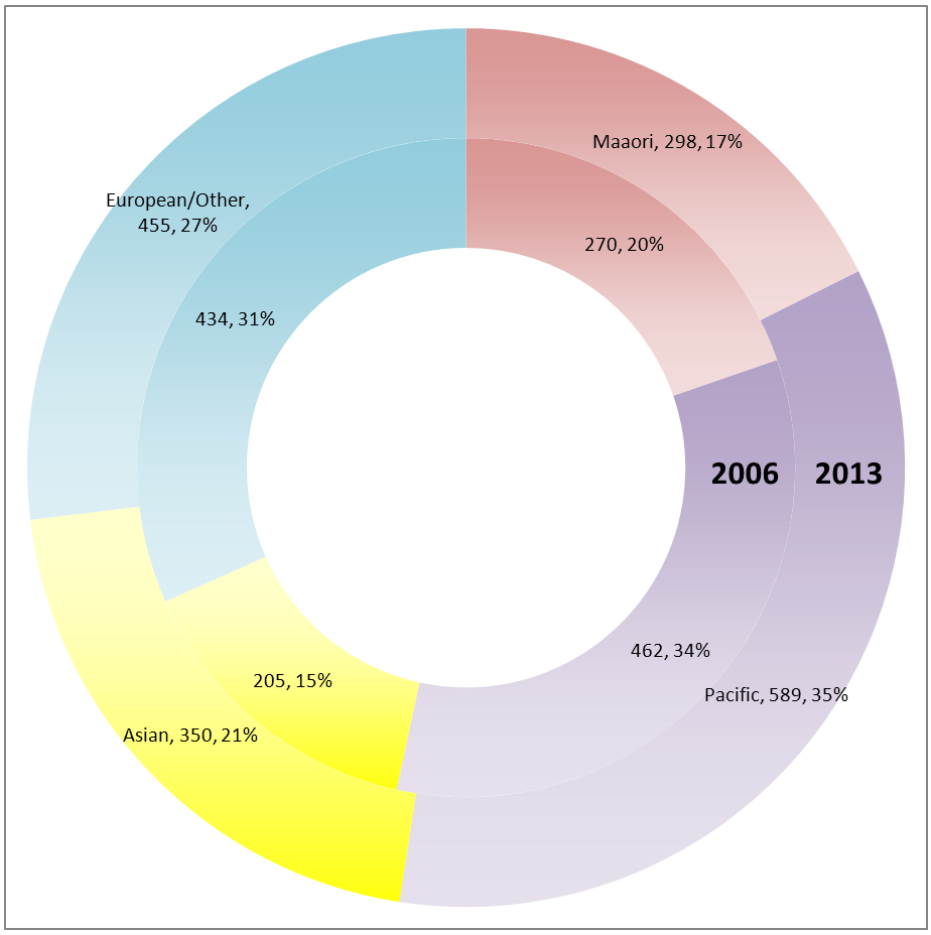


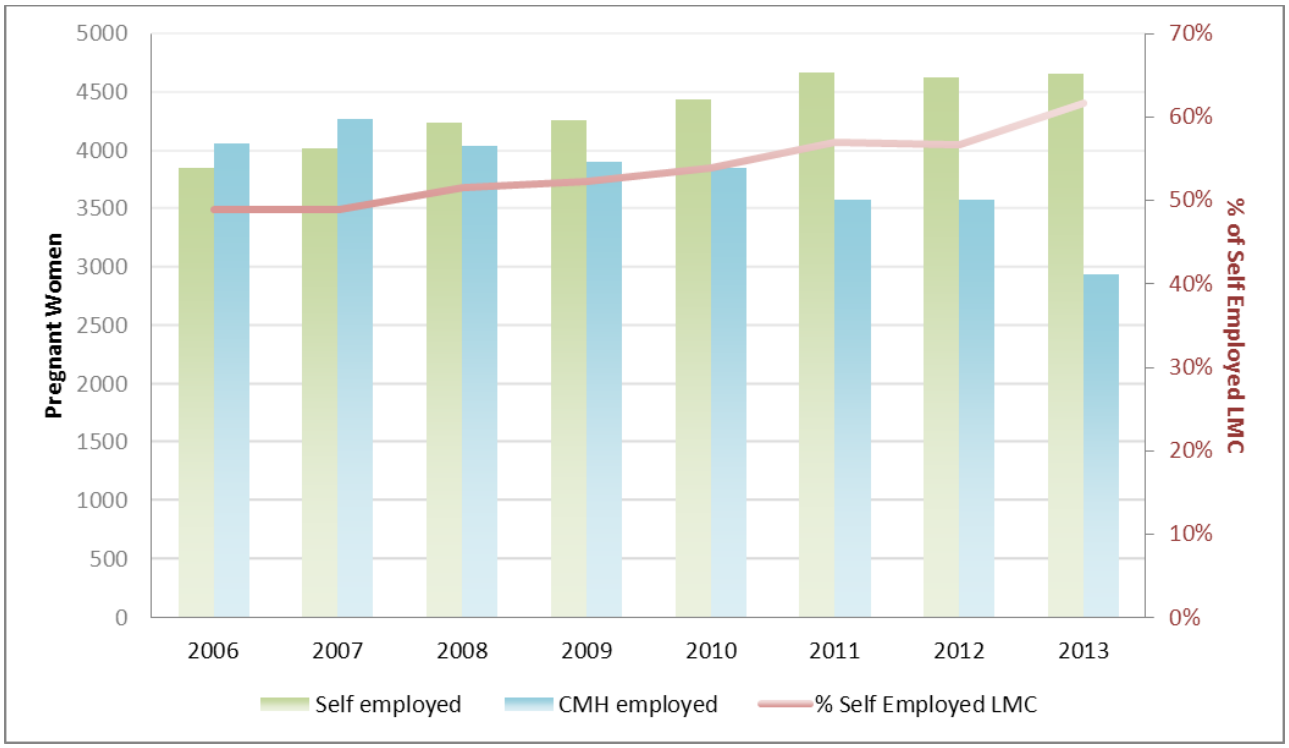
Figure 16 CM Health Facility Caesarean Deliveries by Ethnicity, 2006 vs. 2013



Choice of midwife

From 2006 to 2011, the number of pregnant women managed by self-employed LMCs increased by 21%. The number has been consistent at around 4,600 since 2011. However, the number of pregnant women who received care from CM Health-employed midwives reduced over the period 2008 to 2011. This has resulted in the proportion of women under the care of self-employed LMCs increasing from 57% to 62% (Figure 17).

Figure 17 Type of Midwives for Pregnant Women (data source-Healthware™ Database)



Women in the European/Other group have the highest engagement rate with self-employed LMCs (79%), whereas Pacific women have the lowest rate (52%) (Figure 18). Engagement by Maaori and Asian groups sits at around 58-59%. In the Franklin area, 88% of pregnant women engaged with a Self Employed LMC in 2013 (Figure 19). 60% to 68% of women in the Papakura, Howick and Papatoetoe areas engaged with a self-employed LMC whereas Otara had the lowest proportion at 45%. This is consistent with a high proportion of pregnant women in Otara being Pacific (68%) along with the area's high socioeconomic deprivation profile, both factors associated with lower use of LMCs. Other contributing factors include the availability of DHB services and LMCs choosing to not work in the area.

Figure 18 Self-Employed LMC Percentage Change over Time by Ethnicity (source-Healthware™ Database)

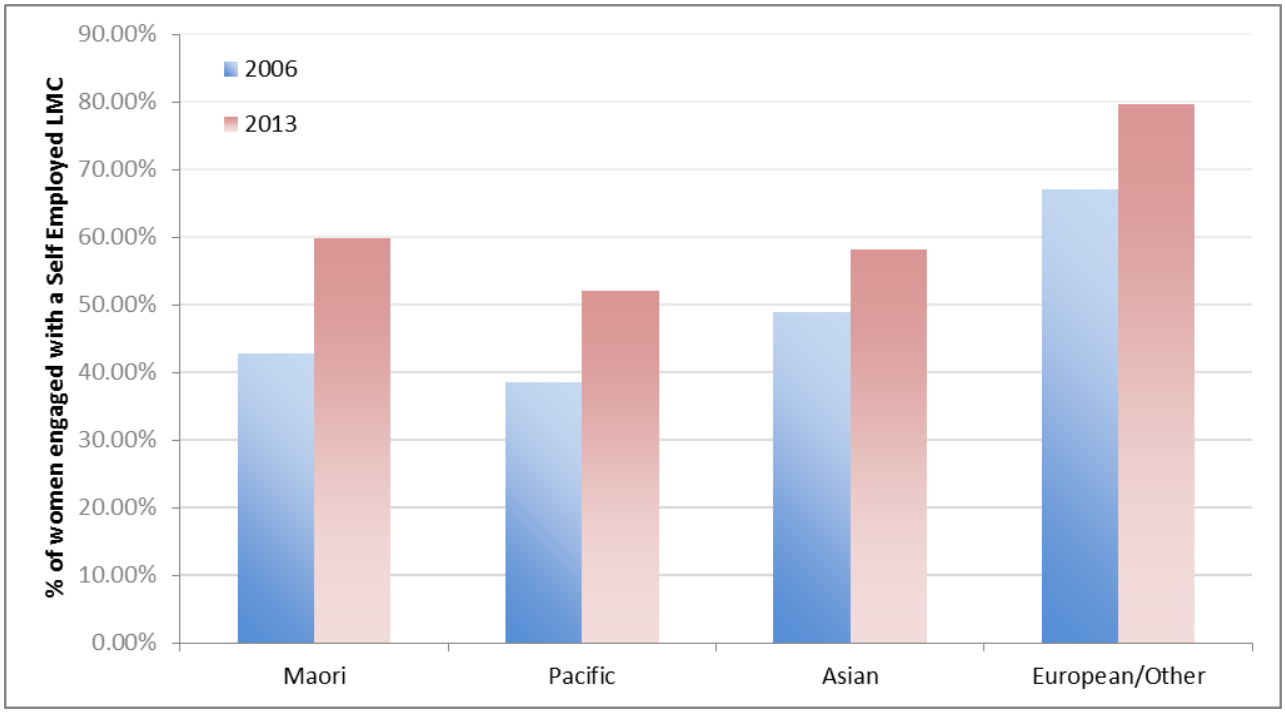
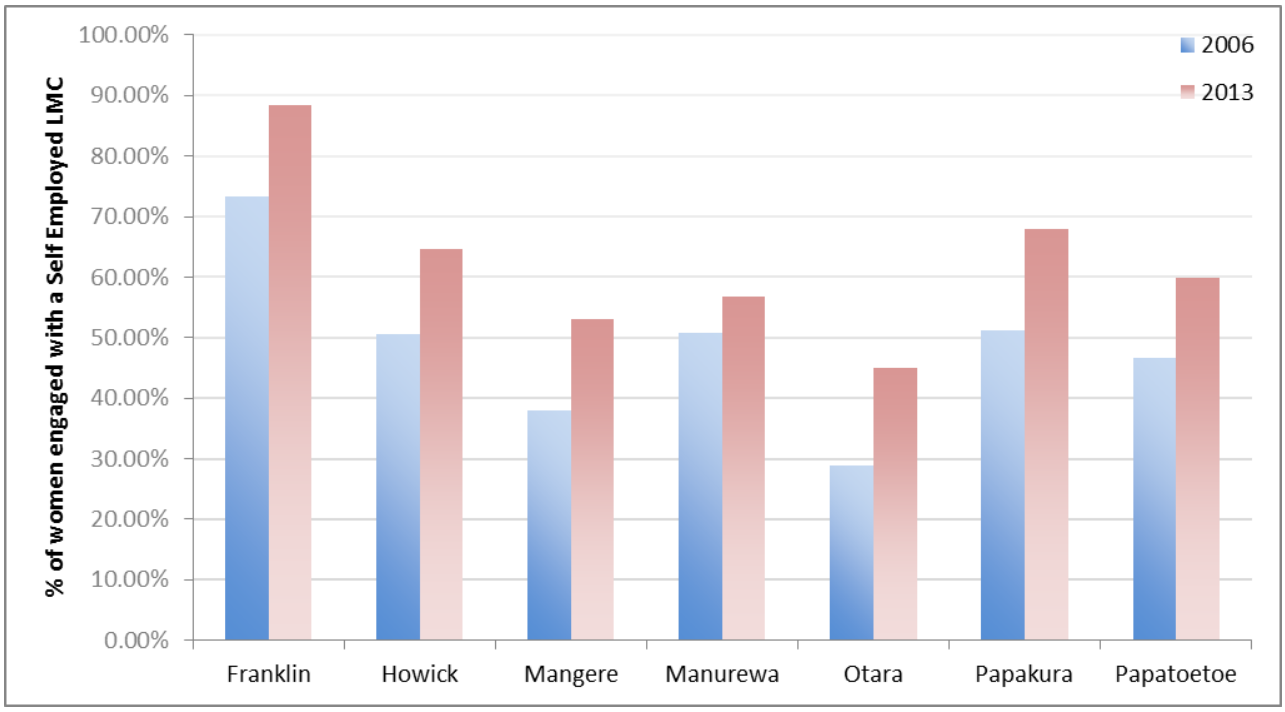


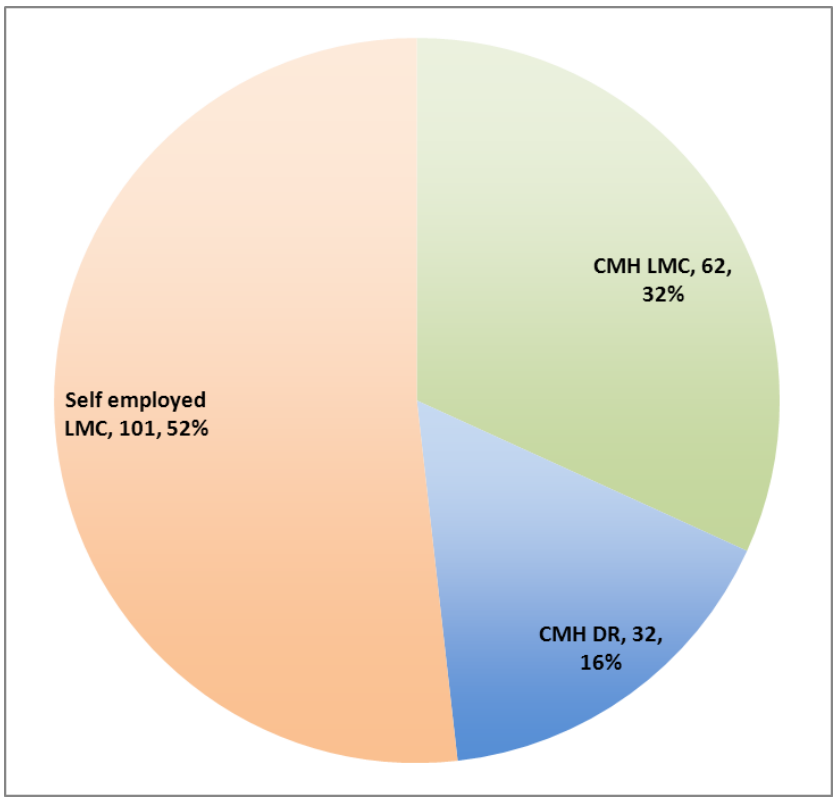
Figure 19 Self Employed LMC Percentage Change over Time by Suburb (source-Healthware™ Database)



Shortage of midwives

Within Counties Manukau, there is significant variability in the annual caseload between individual midwives. Some midwives have fewer than five women in a year, while others can have more than 130 women in the same period. The average caseload is around 42-45. In keeping with national pregnancy models of care, CM Health wishes to increase the coverage of self-employed LMCs to at least 75% of all pregnant women. In 2013, there were 101 self-employed LMCs in CM Health (Figure 20). Assuming a caseload of 45 women per year, providing self-employed LMCs for 75% of pregnant women will require 25 extra full-time self-employed LMCs. By 2026, CM Health will require 139-151 self-employed LMCs to manage 75% of pregnant women. This forecast is for the total number in the self-employed midwifery workforce and makes no adjustment for midwives who leave the workforce, changes in average caseload or changes in the number of non-midwife LMCs.

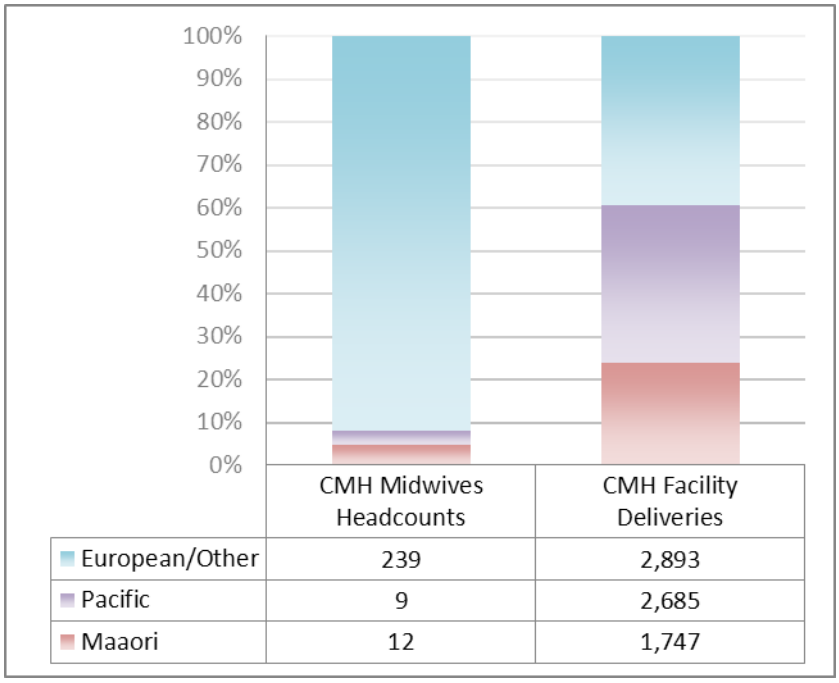
Figure 20 Counties Manukau 2013 LMCs Composition (data source-Healthware™ Database)



There is a significant disparity when comparing midwife ethnicity with the ethnic profile of pregnant women in the Counties Manukau population (Figure 21). Of the total pregnant women in Counties Manukau in 2013, 36% were Pacific and 21% were Maaori. However, only 3% of all

midwives in Counties Manukau are Pacific and 5% are Maaori. If the ethnic profile of midwives is to align with the ethnic composition of the pregnant population, 53 full time Maaori midwives and 61 full time Pacific midwives would be required based on 2013 data, with an annual average caseload of 45 women per midwife.

Figure 21 Ethnicity proportion of Counties Manukau Midwives and CM Health Facility Deliveries in 2013



	CMH Midwives Headcounts	CMH Facility Deliveries
European/Other	239	2,893
Pacific	9	2,685
Maaori	12	1,747

Conclusion

The analysis presented in this report has highlighted the following high level findings to inform strategic planning by the Counties Manukau DHB, LMCs and midwives considering becoming self-employed LMCs in the Counties Manukau district:

- The number of births to Counties Manukau women is in a flat growth period but is forecast to increase from 2017.
- The total number of deliveries in CM Health facilities reduced in 2013 by 6.6% to 7325 deliveries with 60% of the women considered at risk or high risk.
- In 2013, 60% of women were registered with a self-employed LMC. The same number of high risk women were registered with a self-employed LMC as with DHB employed community midwives while more at risk women were registered with self-employed LMCs.
- If 75% of women are to be registered with a self-employed LMC then projections show the number of LMCs in the Counties Manukau area needs to increase across the district by 25 FTEs with most in the Manurewa, Mangere and Papakura areas.
- When compared to the Maori and Pacific ethnicity mix of the Counties Manukau population, there is currently a significant shortage of Maaori and Pacific midwives.
- The number of Maaori and Pacific women engaging with self-employed LMCs is low, along with potential engagement issues with the increasing Asian population. The reasons are complex and not entirely understood but contributing factors include the availability of local self-employed LMCs and clinical complexity.
- There has been a significant increase in at risk and high risk births. In addition, the number of women having caesarean sections has also increased although this report does not make any connection between the increase and the increased risk profile of women in the Counties Manukau district.
- The demands on CM Health staff have increased due to the proportion of women over 40 years old giving birth and the associated increased risk of complications needing support or services provided by specialist services.

Appendix

Table 1 Counties Manukau LMC projections (1. Counties Manukau Births- data source from Population Estimates and Projections from Statistics New Zealand for Ministry of Health 2013 version; 2.CM Health Facility births and deliveries 2006-2013 data supplied by Dean Papa, 2014-2026 projections done by Keming Wang)

		2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
	CMH total births	7,800	8,380	8,870	8,390	8,560	8,510	8,340	8,490	8,320	8,420	8,580	8,790	8,900	9,020	9,130	9,230	9,350	9,470	9,570	9,650	9,700
	CMH facility births (medium)	7,837	8,150	8,149	7,957	7,995	8,102	8,051	7,427	**7,565**	**7,656**	**7,801**	**7,992**	**8,092**	**8,201**	**8,301**	**8,392**	**8,501**	**8,611**	**8,701**	**8,774**	**8,820**
	CMH facility deliveries (high)									**7,753**	**7,846**	**7,995**	**8,191**	**8,293**	**8,405**	**8,508**	**8,601**	**8,713**	**8,824**	**8,918**	**8,992**	**9,039**
	CMH facility deliveries (medium)	7,751	8,033	8,044	7,857	7,887	8,005	7,954	7,325	**7,466**	**7,555**	**7,699**	**7,887**	**7,986**	**8,094**	**8,192**	**8,282**	**8,390**	**8,497**	**8,587**	**8,659**	**8,704**
	CMH facility deliveries (low)									**7,178**	**7,265**	**7,403**	**7,584**	**7,679**	**7,782**	**7,877**	**7,963**	**8,067**	**8,171**	**8,257**	**8,326**	**8,369**
Total midwives required	high							177	163	172	174	178	182	184	187	189	191	194	196	198	200	201
	medium							177	163	166	168	171	175	177	180	182	184	186	189	191	192	193
	low							177	163	160	161	165	169	171	173	175	177	179	182	183	185	186
Required self-employed LMCs (high)	2013 level (60%)							106	98	103	105	107	109	111	112	113	115	116	118	119	120	121
	increase to 75%							133	122	129	131	133	137	138	140	142	143	145	147	149	150	151
	Gaps between 60% to 75%							27	24	26	26	27	27	28	28	28	29	29	29	30	30	30
Required self-employed LMCs (medium)	2013 level (60%)							106	98	100	101	103	105	106	108	109	110	112	113	114	115	116
	increase to 75%							133	122	124	126	128	131	133	135	137	138	140	142	143	144	145
	Gaps between 60% to 75%							27	24	25	25	26	26	27	27	27	28	28	28	29	29	29
Required self-employed LMCs (low)	2013 level (60%)							106	98	96	97	99	101	102	104	105	106	108	109	110	111	112
	increase to 75%							133	122	120	121	123	126	128	130	131	133	134	136	138	139	139
	Gaps between 60% to 75%							27	24	24	24	25	25	26	26	26	27	27	27	28	28	28

Notes:

1. Counties Manukau total births are estimated (2006-2012) and projected (2013-2026) by Statistics New Zealand.
2. CMH facility births and deliveries' projections are based on the historical ratios between total births and facility births or deliveries. The high streams use the five year average ratios from 2008 to 2012. The low streams are based on the ratio of 2013. The medium streams are the average of high and low ratios. If Statistics New Zealand releases a lower birth projection due to the reduction in 2013, users can use the low stream numbers as the new medium projections. In other words, due to the unknown reason for birth reduction in 2013, a valid medium projection of facility deliveries would be in the range of projected medium and low streams.
3. Required midwives are based on a 45 annual caseload per midwife assumption.

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