

ANTENATAL, LABOUR, AND DELIVERY CARE FOR MĀORI: EXPERIENCES, LOCATION WITHIN A LIFECOURSE APPROACH, AND KNOWLEDGE GAPS*

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ABSTRACT

Māori are the Indigenous peoples of New Zealand and comprise around 15% of the total population. This paper reviews literature on antenatal care and care during labour and delivery for Māori, along with Māori experiences, with particular reference to access and knowledge gaps. It also considers the links between access to care and health outcomes for Māori babies from a life course perspective.

The maternity care needs of Māori women are much greater than for non-Māori women and inequalities in birth outcomes between Māori and non-Māori persist. This is in part a reflection of higher prevalence of maternal risk factors. Māori mothers are more likely to have babies at a very young age, have high risk pregnancies, smoke during pregnancy, have health problems such as diabetes during their pregnancies, and be of low socioeconomic status. The situation is further compounded by persistent ethnic inequalities in Māori experiences of and access to maternity services. Despite their high relative needs, Māori women are less likely to receive antenatal education classes and have fewer cumulative antenatal visits than non-Māori women. Māori women have reported lower levels of satisfaction with their antenatal, labour, and birth care and inequities in access to obstetric care as well. Certain key barriers to adequate antenatal care and/or care during labour and delivery have been identified among Māori women, including access to information to make informed choices, insufficient numbers of independent practicing Māori midwives, inadequate access to culturally responsive care including *whānau*¹-centred services, and cost barriers.

Evidence from international studies indicates that multiple conventionally recognized maternal risk factors, even when considered in combination, do not account for the full extent of ethnic disparities in birth outcomes. It has been proposed that the determinants of

ethnic inequalities in birth outcomes are multifactorial and accumulate over the life course of the mother. The implication is that poor access to antenatal care and care during labour and delivery may be only one of a number of important factors that contribute to inequalities in birth outcomes for Māori. In addition, there is strong evidence that adverse birth outcomes, in particular low birthweight, affect a baby's health outcomes in later life. For example, there is much evidence demonstrating the association between low birthweight and hypertension, diabetes, and coronary heart disease in adulthood.

Important knowledge gaps in this field include understanding the extent, underlying contributing factors, and ways to address ethnic inequalities in receipt of antenatal, labour, and delivery care. Research is also required to understand the causes of inequalities in birth outcomes for Māori, and what constitutes optimal antenatal care for Māori from a life course perspective.

Keywords: Māori, maternity, antenatal, prenatal, labour, delivery, life course

1 Extended family

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BACKGROUND

MATERNITY SERVICES AND MATERNITY DATA

New Zealand has free maternity services, which include primary care in the community from midwives and doctors, and hospital specialist or secondary or tertiary care. Maternity services are funded nationally by the Ministry of Health (Guilliland et al., 2010).

The Primary Maternity Services Notice 2007 specifies services to be provided by a Lead Maternity Carer (LMC), including antenatal care and care during labour and delivery. Where the LMC is not able to provide a required aspect of care, they are responsible for ensuring that other providers will (Guilliland et al., 2010). A vision for maternity services was outlined in Section 88 of the Public Health and Disability Act 2000.

Each woman, and her *whānau*, will have every opportunity to have a fulfilling outcome to her pregnancy and childbirth, through the provision of services that are safe and based on partnership, information and choice. Pregnancy and childbirth are a normal life-stage for most women, with appropriate additional care available to those women who require it. A Lead Maternity Carer chosen by the woman with responsibility for assessment of her needs, planning her care with her and the care of her baby and being responsible for ensuring provision of Maternity Services, is the cornerstone of maternity care in New Zealand.

It is intended that each woman has a LMC of her choice who has responsibility for assessing her needs, working with her to plan care for herself and her baby, and providing and coordinating maternity care for up to six weeks after her baby is born. The range of LMC choices include: self-employed midwives, general practitioners, private obstetricians, and staff (obstetrician and midwives) who are employed in district health boards (DHBs). DHBs may provide an LMC midwifery service or a team approach from a number of midwives. Most LMC services are provided in the community, with antenatal care often provided in homes or community clinics. Most women birth in hospitals or primary birthing/maternity units, which are funded by DHBs. Postnatal care is usually provided in the home for

four to six weeks following the birth. LMCs claim their fees from the Ministry of Health via HealthPAC (Guilliland et al., 2010).

Perinatal information about mother and baby is collected through the Maternal and Newborn Information System, which draws data from LMC payment claims and hospital discharge data from the National Minimum Dataset. Perinatal information includes data about the mother (e.g., demographic details and factors relating to pregnancy, labour, and birth) and baby (e.g., birth status, sex, and birthweight). Data is collected for most birthing mothers (Guilliland et al., 2010).

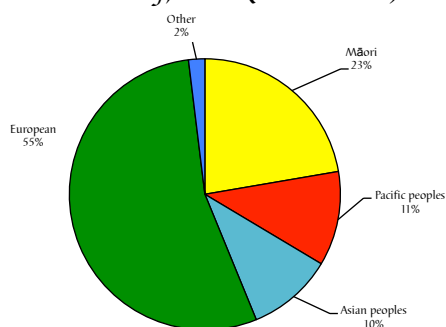
There has been limited reporting despite regular collection of national maternity data. The annual statistical publication series *Report on Maternity: Maternal and Newborn Information* compiled hospital and community-based data for the years 1999–2004. *Hospital-based Maternity Events 2007* (Ministry of Health, 2010a) provides the most recent published data on publicly funded inpatient maternity events in hospitals. Limited provisional 2009 birth registration and hospital based data are also available online (Ministry of Health, 2011).

MATERNITY CARE NEEDS

At the time of the 2006 Census, Māori comprised around 15% of the New Zealand population (Statistics New Zealand, 2007). In 2009, of the 61,649 live born babies registered by Births, Deaths, and Marriages, 23% or 13,676 were Māori babies (Figure 1, Ministry of Health, 2011). The relatively high proportion of Māori babies is driven by a youthful Māori population structure, the resulting greater proportion of Māori women of reproductive age, and a higher Māori fertility rate. In 2007 the crude birth rate for Māori women was 93 births per 1000 reproductive-aged women, compared to a national rate of 69.6 births per 1000 (Ministry of Health, 2010a).

In 2009, Māori women were more likely to have babies at a very young age, which is often framed in the literature as a “risk” factor. Māori women are more likely than non-Māori women to start having babies in their mid-teens to early 20s. For Māori, the number of mothers was greatest in the 20–24 year age group. By comparison, for European

Figure 1. Proportion of Liveborn Babies, by Ethnicity, 2009 (Provisional)



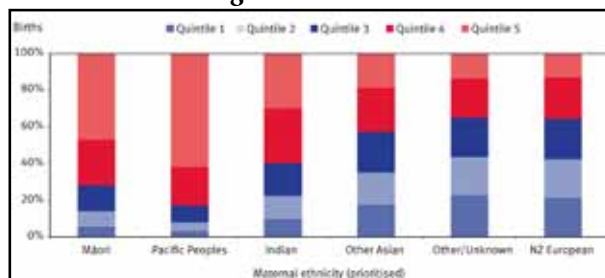
Source: Ministry of Health, 2011

women who comprise 55.5% of mothers overall, the greatest number of mothers were in the 30–34 year age group (Ministry of Health, 2011). In 2007, the median age of Māori mothers was 26 years, compared to 30 years for New Zealand mothers overall (Ministry of Health, 2010a). In 2004, Māori women made up the majority of mothers who had previously given birth four or more times (New Zealand Health Information Service, 2007).

The pregnancies of Māori women have a higher likelihood of being classified as high risk, requiring specialized medical or obstetric advice. They are also often complicated by other maternal health problems such as diabetes and hypertension (National Health Committee, 1999). The smoking rate among pregnant Māori women is very high, a major concern given that tobacco smoking in pregnancy is associated with pregnancy complications, low birth-weight, preterm birth, and health problems for babies later in life (Lumley et al., 2009). Between 2004 and 2007, using data from the 61,000 women who had a midwife as their LMC, 45% of Māori women smoked during pregnancy compared to 16% of *Pākehā* (non-Māori) women (Dixon et al., 2009). However, Māori women had the greatest reduction in smoking at discharge from midwifery care: 20% reduction versus 7% for NZ European women).

Socioeconomic inequalities in birth outcomes are pervasive (Blumenshine et al., 2010). As shown in Figure 2, Māori mothers have greater levels of deprivation (Salmond et al., 2007) than other ethnic groups, with the exception of Pacific Peoples (Perinatal and Maternal Mortality Review Committee, 2010).

Figure 2. Distribution of Deprivation Quintiles by Prioritized Ethnicity (of Mother) among Births Registered in 2008



Source: Perinatal and Maternal Mortality Review Committee, 2010, p15

MĀORI EXPERIENCES OF PREGNANCY, LABOUR, AND DELIVERY CARE

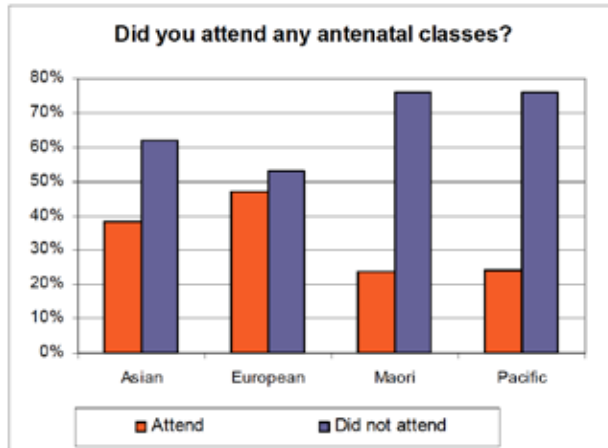
Literature informing this section includes reports of large surveys of New Zealand women who were using maternity services from 1996–2002 and in 2007 (National Health Committee, 1999; Worth, 2002; Health Services Consumer Research, 2008; Dwyer, 2009). Although Māori women were under-represented in these surveys, they provide the most comprehensive quantitative data on Māori women's experiences of care during pregnancy, labour, and delivery. This section also discusses distinct issues in Māori women's experiences of service provision and, in particular, barriers to timely access to high-quality care.

EXPERIENCES OF ANTENATAL CARE

Use of antenatal services

The Growing up in New Zealand study (Morton et al., 2010) found that by the third trimester 98% of women had an LMC, although when women accessed these services was not reported. Despite higher maternity care needs, Māori women access and use antenatal services less than other women (Health Funding Authority, 2000). In 2007 Māori women were significantly less likely than NZ European and Asian women to participate in antenatal classes (Figure 3, Health Services Consumer Research, 2008). The National Health Committee 1999 postal survey found that Māori women were more likely to have fewer antenatal visits than is considered best practice. An accepted benchmark for antenatal visits during normal circumstances

Figure 3. Percentage of Survey Respondents Who Attended Antenatal Classes, by Ethnicity



Source: Health Services Consumer Research, 2008, p. 30

is nine in the first pregnancy and six in subsequent pregnancies; 11% of Māori women had between one and five antenatal visits, compared to 6% of NZ European women (National Health Committee, 1999). Another survey in the same year found that only 10% of Māori respondents participated in antenatal education (Dwyer, 2009).

Access to information to make choices

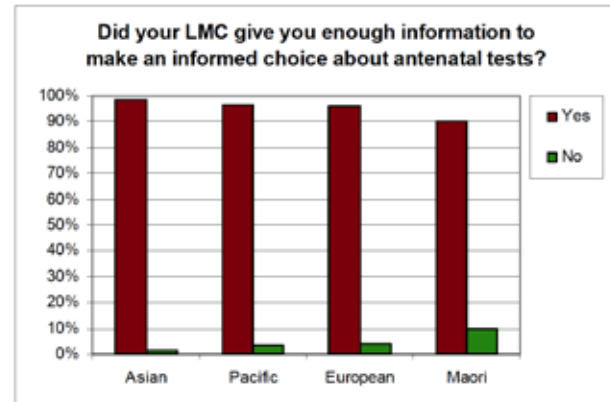
Findings from consultation with Māori women in 1999 (National Health Committee, 1999) indicated that Māori women faced greater barriers than other women to accessing information about choosing an LMC, what to expect during pregnancy, and making key decisions about pregnancy care that would be responsive to their needs. While most Māori women consulted began their care with a general practitioner and were then appointed an LMC, women indicated that it was difficult asking general practitioners for information.

It is important to deliver information in an appropriate way. Communication problems were of particular concern when the provider was non-Māori and when information was not actively provided to women. Māori women indicated that a lack of empathy on the part of providers was a cause of their reluctance to seek clarification when required. They also felt vulnerable to communication failures between providers, in particular general practitioners and midwives (Ministry of Health, 2010b).

In a survey of 30 Māori women, the Ora Toa Māori health service in Porirua found that a com-

mon reason given for not attending antenatal education was not knowing that antenatal classes were available (Dwyer, 2009). Also, as shown in Figure 4, Māori women are more likely than NZ European women to say that they did not receive enough information from their LMC to make an informed choice about antenatal tests (Health Services Consumer Research, 2008).

Figure 4. Access to Information about Antenatal Tests



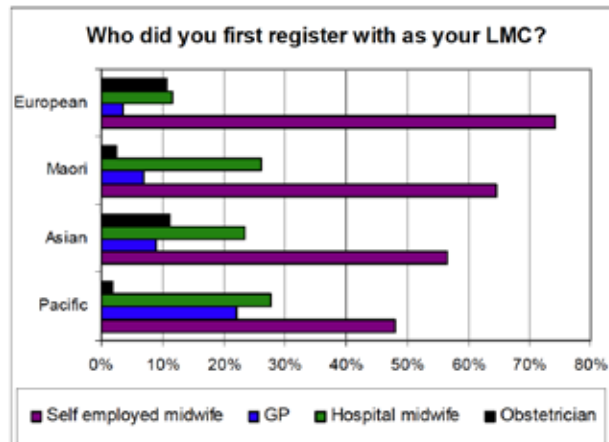
Source: Health Services Consumer Research, 2008, p. 28

Lead maternity care

In 2004 Māori women were more likely than other women to first register with a midwife as their LMC (81.9% compared to 75.3% for all mothers), and less likely to register with an obstetrician (less than 1% compared to 6.1% for all mothers, New Zealand Health Information Service 2007). Figure 5 shows the results of a 2007 survey of 2936 women indicating that the trend continues (Health Services Consumer Research, 2008).

In the 1999 review of maternity services (National Health Committee, 1999), Māori women frequently encountered problems in securing their preferred LMC. Māori women wanted to be confident that their care would be provided by a LMC whose practice was culturally responsive. The women consulted indicated a preference for Māori independent midwives, which is consistent with qualitative studies that have identified Māori women's preference for Māori providers (Ratima et al., 1994; Abel et al., 2003). Unfortunately, the small number of practising Māori midwives severely limits their choice.

In 2010, according to results of the *Midwifery Workforce Report Updated 2010*, 134 (5% of the workforce) gave Māori as their "first ethnicity." A further

Figure 5. First Registration with a LMC by Ethnicity

Source: Health Services Consumer Research 2008, p21

72 midwives (2.7%) gave Māori as their second ethnic group, and four (0.1%) gave Māori as their third ethnic group (Midwifery Council of New Zealand, 2010). There is a clear need to increase Māori representation within the maternity workforce to better address the needs of Māori women.

Availability of appropriate care

Māori women have expressed lower levels of satisfaction with the care they receive during pregnancy than other women. High levels of dissatisfaction have been expressed at being unable to access culturally appropriate maternity care (National Health Committee, 1999).

The National Health Committee review of maternity services found that maternity services lacked awareness of Māori diversity and were unable to respond to that diversity (National Health Committee, 1999). Māori women consulted identified this lack of awareness and capacity to provide appropriate antenatal and delivery care for diverse Māori as “the most serious and persistent issue” (National Health Committee, 1999).

Māori women continue to identify cultural issues as an area of concern in their experience of maternity services, including ignorance, insensitivity, and rudeness (Health Services Consumer Research, 2008). Māori women have expressed their desire for services that meet their cultural needs, including the need for Māori providers, and high levels of dissatisfaction at being unable to access culturally responsive antenatal care and maternity care more generally (Ratima et al., 1994; Ellis, 1998; National Health

Committee, 1999; Worth, 2002). It was found that Māori women living in isolated communities faced particular difficulties in accessing providers responsive to their cultural needs due to a lack of suitable providers (National Health Committee, 1999).

Māori have raised concerns that antenatal classes are culturally inappropriate (De Joux, n.d.; Dwyer, 2009; National Health Committee, 1999). Māori women expressed preferences for:

- culturally appropriate venues
- integration of customary Māori practices (e.g., *mirimiri* and *karakia*) and incorporation of a focus on spiritual needs
- a more informal approach
- inclusiveness of *whānau*
- delivery by other Māori women
- opportunities to share experiences including those of older women
- an increased emphasis on “normal” birth (Abel et al., 2003; De Joux, n.d.; Dwyer, 2009; Ratima et al., 1994).

Māori women have also expressed strong preferences for access to *whānau*-centred services during their pregnancy, that is, services that recognize the value of *whānau* support throughout pregnancy (National Health Committee, 1999; Health Services Consumer Research, 2008).

Cost

Transport, particularly the cost of transport, was identified as a practical barrier to attending antenatal classes (De Joux, n.d.; Dwyer, 2009; Ratima et al., 1994). Focus groups with Māori women from isolated communities have drawn attention to issues of poverty and lack of transport as barriers to accessing antenatal care (National Health Committee, 1999).

EXPERIENCES OF CARE DURING LABOUR AND DELIVERY

Location of labour and birth

In 2007, 95.7% of liveborn babies were born in maternity facilities, with the majority of women birthing in a tertiary (42%) or secondary facility (42%) (Ministry of Health, 2010a). Primary facilities have in-house midwifery care, but do not have on-site obstetric and medical specialists (Guilliland et

al., 2010). It is therefore not surprising that primary facilities have the lowest rates of induction, epidural anaesthesia, and episiotomies. Around half (48.9%) of Māori mothers gave birth in a secondary facility. Māori women are more likely to give birth in primary units than non-Māori women (Ministry of Health, 2010a). Māori mothers are also more likely to be discharged home than non-Māori mothers and have the shortest average length of postnatal stay (1.7 days). Māori babies had the shortest average length of postnatal stay (2.6 days) and NZ European babies had the longest average length of postnatal stay (3.1 days, Ministry of Health, 2010a).

Availability of appropriate care

Māori women consulted during the National Health Committee (1999) review of maternity services identified similar problems with delivery care as with antenatal care: an inability to respond to Māori diversity, lack of *whānau*-centred delivery, and ignorance of cultural issues (Health Services Consumer Research, 2008; Ratima et al., 1994). Problematic delivery care was a frequent area of concern (National Health Committee, 1999) and Māori women were least likely to “strongly agree” that they had been well cared for by their LMC during their labour and birth. Māori women also reported poor communication and coordination of care during labour when care was transferred between providers.

Access to obstetric intervention

In 2009 Māori mothers were more likely to have a spontaneous delivery without assistance (76.5%) than other ethnic groups (e.g., 60.5% of NZ European) and less likely than other ethnic groups to have a caesarean section. In that year, 17.7% of Māori mothers had a caesarean section (11% acute CS and 6.8% elective CS) compared to 28.4% of NZ European mothers (15.0% acute CS and 13.4% elective CS). The rate of assisted deliveries (forceps and vacuum extraction) was higher for NZ European mothers (10.1%) than for Māori mothers (4.6%) (Ministry of Health, 2011). In 2007 the rates of inductions and epidurals were lowest for Māori mothers (15.2 and 15.6 per hundred deliveries, respectively, compared to 21.0 and 31.8 per hundred deliv-

eries for NZ European mothers, Ministry of Health, 2010a).

There are disparities in access to obstetric intervention for Māori women. Analyzing National Women’s Hospital data for the period 1992–1997, Sadler et al. (2002) found that Māori women are significantly less likely to undergo induction of labour, pre-labour caesarean section and operative vaginal delivery. The study included adjustment for a range of factors including age, parity, obstetric risk, and transfer of care. Harris et al. (2007) examined national caesarean section rates for the period 1997–2001. After adjusting for age, parity, deprivation, selected clinical factors, and District Health Board, it was found that non-Māori women are significantly more likely to have a caesarean section than Māori women.

The findings suggest that nonclinical factors are contributing to ethnic disparities in caesarean section rates, and that this is not fully explained by socioeconomic deprivation. While there is evidence of the effectiveness of obstetric procedures during labour and birth in preventing perinatal and neonatal deaths (Darmstadt et al., 2009; Lee et al., 2011), the link between Māori access to obstetric interventions and adverse birth outcomes is unknown.

HEALTH OUTCOMES AND CARE FROM A LIFE COURSE PERSPECTIVE

BIRTH OUTCOMES FOR BABIES

There are persistent inequalities in birth outcomes for babies between Māori and non-Māori in terms of low birthweight, preterm birth, small for gestational age (SGA), stillbirth, and neonatal deaths.

Low birthweight (under 2.5 kg) is linked to perinatal morbidity and mortality (WHO and UNICEF 2004). In 2009, 7.1% of Māori liveborn babies were low birthweight compared to 5.6% of NZ European liveborn babies. The constituents of low birthweight are preterm birth and small for gestational age (SGA). For the period 1996–2006, Māori preterm birth rates were higher than for any other ethnic group (Smylie and Crengle, 2010). For the period 2002–2006, Māori rates of SGA were 50% higher than those of NZ European (Craig et al., 2007). A

study analyzing singleton live births and stillbirths during the period 1980–2001 found that for Māori socioeconomic deprivation had little impact on preterm birth risk but there was a strong association between rates of SGA and deprivation. There were significant increases in rates of SGA with increasing deprivation. The researchers theorized that the socioeconomic gradients in Māori SGA births may be related to maternal smoking and nutrition (Mantell et al., 2004).

Perinatal conditions (mainly premature births) are the major cause of death for Māori and non-Māori infants aged under one year (Robson and Purdie, 2007). A perinatal related death is defined as a death that occurs in the time period from 20 weeks gestation (or if the baby weighs 400 grams or more if the gestation is unknown) to 27 days following birth. Perinatal related deaths include fetal, early neonatal, and late neonatal deaths. In 2008 the perinatal related mortality rate for Māori (10.9 per 1000 births) was only slightly higher than that of NZ Europeans (10.0 per 1000 births). However, the Perinatal and Maternal Mortality Review Committee recommend that perinatal related mortality rates should not be used when considering the association with ethnicity. This is because of differences in the rates for each of the modes of perinatal related mortality: termination of pregnancy, stillbirth, and neonatal death by ethnicity. Māori have lower rates of late termination of pregnancy (0.9 per 1000 births) compared to NZ European (2.9 per 1000 births), and this masks the trends in stillbirth and neonatal deaths. The Māori stillbirth rate (6.1 per 1000 births) is higher than that of NZ Europeans (4.6 per 1000 births), and likewise the Māori neonatal death rate (3.3 per 1000 births) is also higher than NZ Europeans (2.4 per 1000, Perinatal and Maternal Mortality Review Committee, 2010).

For the period 2000–2004, the top three causes of death for infants (aged under one year) were, respectively, perinatal conditions, deaths from unknown causes, and congenital abnormalities. For non-Māori, in that same period, perinatal conditions ranked first, followed by congenital abnormalities and death from unknown causes. Preterm birth was the main cause of mortality from peri-

natal conditions for Māori (Robson and Purdie, 2007). For births registered in 2007 and 2008 combined, the Māori perinatal related mortality rate caused by spontaneous preterm birth and “no obstetric antecedent” were significantly higher than for NZ European. The higher rates of SUDI deaths among Māori babies in 2007 and 2008 are reflected in the differences in mortality due to “no obstetric antecedent” between Māori and NZ European. The Māori perinatal related mortality rates due to congenital abnormality, perinatal infection, antepartum haemorrhage, maternal conditions, “specific perinatal conditions,” hypoxic peripartum, and unexplained antepartum were also higher than for NZ European, but the differences were not statistically significant (Table 1, Perinatal and Maternal Mortality Review Committee, 2010).

HEALTH OUTCOMES LATER IN LIFE

There is evidence that adverse birth outcomes may affect babies’ health outcomes in childhood and

Table 1: Perinatal Death Classification-specific Perinatal Related Mortality Rate (Excluding Termination of Pregnancy) by Maternal Ethnicity (Prioritized Māori, Pacific Peoples)

Perinatal death classification (PDC)	Prioritized Maori n = 30,914			Prioritized Pacific Peoples n = 13,761			Prioritized NZ European n = 62,217		
	n	%	Rate	n	%	Rate	n	%	Rate
Congenital abnormality	35	11.1	1.1	26	15.8	1.9	61	13.7	1.0
Perinatal infection	15	4.7	0.5	5	3.0	0.4	19	4.3	0.3
Hypertension	5	1.6	0.2	9	5.5	0.7	17	3.8	0.3
Antepartum haemorrhage	36	11.4	1.2	20	12.1	1.5	50	11.2	0.8
Maternal conditions	15	4.7	0.5	7	4.2	0.5	10	2.2	0.2
Specific perinatal condition	27	8.5	0.9	16	9.7	1.2	51	11.4	0.8
Hypoxic peripartum	18	5.7	0.6	9	5.5	0.7	30	6.7	0.5
Fetal growth restriction	20	6.3	0.6	7	4.2	0.5	51	11.4	0.8
Spontaneous preterm	68	21.5	2.2	32	19.4	2.3	62	13.9	1.0
Unexplained antepartum	60	19.0	1.9	33	20.0	2.4	86	19.3	1.4
No obstetric antecedent	17	5.4	0.5	2	1.2	0.1	5	1.1	0.1

Source: Perinatal and Maternal Mortality Review Committee, 2010, p. 75

adulthood. A systematic review investigating maternal and child oral health (Oral Health Research Group, 2008) found some indication that preterm birth conferred high risk for developmental defects of enamel, which is associated with early childhood caries. There is clear evidence from systematic reviews of the association between low birthweight and adult hypertension (Huxley et al., 2000) and

glucose intolerance/type 2 diabetes (Newsome et al., 2003). There is consistent evidence of an association between birth weight, and particularly SGA (Leon et al., 1998). Adverse cardiovascular outcomes are associated more with fetal growth than length of gestation, and coronary heart disease incidence and mortality. There is a decline in risk with increasing birth weight, with the exception of babies with the heaviest birth weight who have a slight elevation of risk (Barker et al., 1993; Rich-Edwards et al., 1997). These relationships between birth weight and adult morbidity and mortality have been shown to be especially strong among those who later become obese in childhood and/or adulthood (Eriksson et al., 2001; Frankel et al., 1996; Leon, et al., 1996; Lithell et al., 1996; Rich-Edwards et al., 2005).

These associations are critical given that compared to non-Māori, Māori have higher rates of low birth weight, higher average blood pressure levels, prevalence of raised blood pressure, and have a greater burden of child and adult obesity, diabetes, and cardiovascular disease (Curtis et al., 2007; Harwood and Tipene-Leach, 2007; Ministry of Health, 2008a, 2008b).

ANTENATAL, LABOUR AND DELIVERY CARE AND LIFE COURSE HEALTH

Effective intervention to reduce low birth weight rates could substantially contribute to addressing health inequalities for Māori and improving Māori health throughout the life course. The conventional approach to improving birth outcomes for Māori has been to advocate for improved access to maternity services, in particular antenatal care (Ministry of Health, 2008a). However, an increasing number of international studies have suggested that antenatal care in isolation has little impact on birth outcomes. Recent reviews of the literature have found a lack of high-quality evidence for effectiveness of antenatal classes, and have concluded that the impact of antenatal education is largely unknown (Dwyer, 2009; Gagnon and Sandall, 2007; Koehn, 2002). In reviewing the literature, Dwyer concluded that antenatal education has not been shown to consistently achieve reductions in low birth weight or preterm babies. Four studies were, however, identified that demonstrated a positive impact from antenatal

education on low birth weight or preterm delivery (Albizu et al., 2000; Burton et al., 2000; El-Sabagh, 2002; Tough et al., 2003).

Participants in a worksite antenatal education program had fewer low birth weight and preterm babies (3.1%) than nonparticipants (4.1%) (Burton et al., 2000). Another study found that women with preterm labour were less likely to have participated in antenatal classes (OR=0.56, CI=0.33-0.96) (Albizu et al., 2000). However, another case control study found that attendance at antenatal classes had no impact on preterm delivery, though women with fewer than 10 antenatal visits had the greatest risk of preterm delivery (Tough et al., 2003). A further study using a retrospective comparative design found that women who had attended antenatal classes had a shorter length of time between preterm labour symptoms and hospitalization, and a resulting greater infant gestational age at birth, than those who did not attend. This probably indicates that the women who had participated in classes sought medical intervention early to maintain the pregnancy and therefore delay delivery (El-Sabagh, 2002).

Increasingly, reviews investigating the role of antenatal care in improving birth outcomes have found a lack of sufficiently strong evidence to prove its effectiveness (Alexander and Korenbrot, 1995; Fiscella, 1995; Haws et al., 2009; Hollowell et al., 2011; Menezes et al., 2009; Wisanskoonwong et al., 2011).

A recent Cochrane systematic review (Hodnett et al., 2010) assessed the effectiveness of programs offering additional support (i.e., emotional support, information, or advice) alongside routine care to mothers at high risk of having low birth weight or preterm babies. While the programs were not associated with improved perinatal outcomes, the likelihood of antenatal hospital admission and caesarean birth were reduced for participating mothers.

In 2003 Lu et al. (2003) reviewed original research, systematic reviews, meta-analyses and commentaries for evidence of the effectiveness of antenatal care (risk assessment, health promotion, and medical and psychosocial interventions) in preventing the two contributors to low birth weight: preterm birth and intrauterine growth restriction

(IUGR). The review found that prenatal (aka antenatal) care in its current form is not effective in preventing preterm birth or IUGR. The authors concluded that,

Preventing LBW [low birth weight] will require reconceptualization of prenatal care as part of a longitudinally and contextually integrated strategy to promote optimal development of women's reproductive health not only during pregnancy, but over the life course. (Lu et al., 2003, p. 362)

In a separate article published in the same year, Lu and Halfon (2003) referred to studies that examined the association between multiple risk factors during pregnancy and low birth weight and found that these factors accounted for less than 10% of the variance in birth weight (Bernfield et al., 1996; Cramer, 1995; Goldenberg et al., 1996; Schiono et al., 1997). One of the studies also demonstrated that, after controlling for 46 risk factors, residual disparities in Black-White birth weight remained (Schiono et al., 1997).

Lu and Halfon (2003) proposed that ethnic disparities in birth outcomes require a focus not only on exposures to risk and protective factors during pregnancy, but over the life course of the woman. This is consistent with recommendations from a review of pregnancy outcomes for Māori women for the period 1980–2001 (Mantell et al., 2004). That review, in noting the sensitivity of Māori SGA (small for gestational age) rates to socioeconomic deprivation, proposed that broader social and policy interventions may be more effective for improving birth outcomes than those that are more narrowly pregnancy focussed.

Lu et al. (2010) further developed their thinking and proposed a 12-Point Plan to reduce “Black-White” disparities in birth outcomes in the United States through a life course approach. The 12-Point Plan, as shown below, is based on the understanding that exposures early in a mother's life influence future reproductive potential, and that determinants of ethnic inequalities in birth outcomes are multifactorial and accumulate over the life course of the mother.

According to Lu et al. (2010), from a life course perspective, quality prenatal care is especially important as part of the continuum of health

Figure 6. A 12-Point Plan to Close the Black-White Gap in Birth Outcomes: A Life Course Approach

1. Provide interconception care to women with prior adverse pregnancy outcomes
2. Increase access to preconception care ...
3. Improve the quality of prenatal care
4. Expand health care access over the life course
5. Strengthen father involvement in ... families
6. Enhance coordination and integration of family support services
7. Create reproductive social capital [features of social organization that facilitate coordination and cooperation to promote reproductive health within community] in ... communities
8. Invest in community building and urban renewal
9. Close the education gap
10. Reduce poverty among ... families
11. Support working mothers and families
12. Undo racism

Source: Lu et al., 2010, p. S2-63

care for mothers, and as the starting point for the child's developmental trajectory. The concern is to ensure conditions for mothers and babies over time that will optimize birth outcomes. The focus moves beyond prenatal care, individual behaviour and biomedical approaches to broader strategies to strengthen families and communities and address the wider determinants that drive disparities. Reproductive health is not considered a disconnected stage, but rather an integrated part of the life course continuum, a time when inadequacies in care may contribute to adverse birth and life course outcomes for Māori.

KEY ISSUES AND KNOWLEDGE GAPS

There are many gaps in our knowledge of antenatal, labour and delivery care, and birth outcomes for Māori. We know that Māori mothers and their babies, compared to New Zealand European mothers and babies, experience persistent differentials in low birthweight, preterm birth, SGA, stillbirth, and neonatal deaths. Having a higher prevalence

of maternal risk factors compared to other women means Māori women have greater maternity care needs. Research is required to investigate the extent and causes of ethnic inequalities in birth outcomes in New Zealand, and how to address those causes.

Māori women express lower levels of satisfaction with antenatal, labour, and delivery care compared to non-Māori women. There are few practicing Māori midwives and differences in Māori women's access to services. Māori women receive fewer antenatal services than other women, are less likely to participate in antenatal classes, and receive fewer antenatal visits. Four consistent barriers to care have been identified: access to information to make choices, workforce issues (i.e., insufficient numbers of independent Māori midwives), access to culturally responsive care including *whānau* centred services, and cost.

Research is required to better understand the extent, causes of, and how to address ethnic inequalities in receipt of antenatal, labour, and delivery care. Further, research is needed to explore how these inequalities relate to birth outcomes and what constitutes optimal care. Intervention research is likely to be of particular value to best understand what constitutes best practice for Māori.

Evidence from international studies indicates that multiple conventionally recognized maternal risk factors, even when considered in combination, do not account for the full extent of ethnic disparities in birth outcomes. It has been proposed that the determinants of ethnic inequalities are multifactorial and accumulate over the life course of the mother. The implication is that poor access to antenatal, labour, and delivery care may be only one of a number of important factors that contribute to inequalities in birth outcomes for Māori. How the inequalities experienced by mothers throughout their lives affect birth outcomes for babies and subsequently the babies' health outcomes in later life is unknown.

The relevance of a life course approach is also apparent in considering health outcomes. It is well accepted that adverse birth outcomes, in particular low birth weight, influence a baby's health outcomes in later life. Therefore, there is a need to re-

conceptualize antenatal care and care during labour and delivery within a life course approach. Quality antenatal care and care during labour and delivery will be just one important factor among others that are necessary to ensure optimal reproductive health for Māori women and improved health outcomes throughout life for Māori babies.

Research is required to investigate: life course influences on inequalities in birth outcomes for Māori, the influence of adverse birth outcomes on life course outcomes for babies, the mechanisms by which babies' exposures during their own life course mediate the later life effects of adverse birth outcomes, and the role of antenatal care and care during labour and delivery from a life course perspective. Research findings could usefully inform strategies and actions, possibly aligned with Lu's 12-Point Plan, to reduce inequalities in birth outcomes for Māori.

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