

HEALTH REPORT

Subject: RESPONSE TO QUESTIONS POSED FOLLOWING RECEIPT OF THE PERINATAL AND MATERNAL MORTALITY REVIEW COMMITTEE'S REPORT ON THE CORONERS FINDINGS FOLLOWING TWO DEATHS RELATING TO BREECH BIRTHS

Date: 25 January 2006 **File Ref:** HC30-14-2

Attention: Hon Pete Hodgson (Minister of Health)

Copy to:

PURPOSE OF HEALTH REPORT

To provide you with a response to the questions posed to the Ministry following your receipt of the Perinatal and Maternal Mortality Review Committee's report. The Perinatal and Maternal Mortality Review Committee's report responded to the Wellington coroner's recommendations that both a review of the New Zealand Maternity Services Scheme and a national audit of perinatal morbidity and mortality outcomes are required.

This report is not seeking additional funding for any specific initiative, but presents you with a range of options which you may consider funding in the future, if funding becomes available.

EXECUTIVE SUMMARY

1. Following receipt of the Perinatal and Maternal Mortality Review Committee's (PMMRC's) report, you requested the Ministry provide information on any conclusions that can be drawn on the state of New Zealand's maternity services from analysis of existing data. In addition, you requested the Ministry indicate the feasibility, cost and value of a national collection of perinatal data and whether there is any potential linkage between this proposed database and the perinatal database for outcomes of assisted reproductive technology.
2. The Ministry considers that a comprehensive review of maternity care is not required at this stage. The quality of data which can be used to measure performance is poor, however the information that is available indicates that we

have a maternity service that is delivering maternity care well for most women and babies.

3. The information also indicates there are inequalities in outcomes for some mothers and babies and that workforce pressures are evident.
4. In addressing these inequalities, it will be important to integrate primary maternity care better into Primary care and PHOs, and to ensure that close relationships between midwives and GPs ensure that all women get the best possible care during pregnancy.
5. The Ministry have considered the PMMRC's proposal for a perinatal database of maternal and perinatal deaths and all births. A perinatal database of this type is considered to be feasible and would add value.
6. There are also potential linkages between the PMMRC's proposed database and the perinatal database for children born as a result of assisted reproductive technology.

FINANCIAL IMPLICATIONS

Additional funding is not sought in this report. The report presents you with a range of options which you may consider funding in the future, if funding becomes available.

REPORT

BACKGROUND INFORMATION

1. The Ministry of Health received an embargoed copy of the Wellington Coroner's report on the inquests into the deaths of Saskia Marama Swagerman-Fugle and Cameron Elliot. The Coroner's report was released on 7 November 2005.
2. The Coroner made three recommendations to you in his report. The Ministry of Health provided you with an initial response to these recommendations on 4th November 2005.
3. The Perinatal and Maternal Mortality Review Committee (PMMRC) provided a report to you on 21 December. This report provided advice on the recommendations by the Coroner that both a review of the New Zealand Maternity Services Scheme and a national audit of perinatal morbidity and mortality outcomes are required.
4. The Perinatal and Maternal Mortality Review Committee advised:
 - a) They do not recommend undertaking a review of the New Zealand Maternity Services Scheme until initiatives underway to review education programmes and section 88 notices are completed and a national audit is undertaken.
 - b) Undertaking a thorough retrospective national audit at this time would be labour intensive and require significant resources.
 - c) At this time, they recommend the best use of resources for national audit would be to develop an improved prospective national collection of clinically focussed data on all perinatal and maternal deaths and all births.
5. You requested that the Ministry provide a response following the Perinatal and Maternal Mortality Review Committee's report, specifically:
 - a) To interrogate the existing data sources and draw any conclusions possible from this analysis
 - b) Indicate the feasibility, cost and value of a national collection of all births and perinatal and maternal deaths
 - c) Indicate whether there is any potential linkage between a perinatal database for all births and perinatal and maternal deaths and the perinatal database for outcomes of assisted reproductive technology.

AVAILABLE INFORMATION INDICATING THE CURRENT STATE OF NEW ZEALAND MATERNITY SERVICES

Introduction

6. In comparison with other similar countries the New Zealand Maternity system appears well configured. All eligible women have access to free comprehensive maternity care, provided by highly trained health professionals. Our international rankings for a number of maternity benchmarks are satisfactory but not outstanding. There are a number of problems facing the New Zealand maternity service, but the quality of the data which can be used to measure performance is poor. What information there is indicates that there are inequalities in access and outcomes for some mothers and babies.

Sources of information for this report

7. Some relevant maternity information is collected routinely by the New Zealand Health Information Service (NZHIS). This information is published annually in the Maternity report. The most recent report is 2003¹. Certain parts of this information (National Minimum Data Set data) are more complete and robust than others (HealthPAC data).
8. There have been periodic surveys undertaken of maternal satisfaction with the maternity service. The most recent was 2002². Some other information is collected routinely by NZHIS (Maternal and infant mortality, hospital discharges), and by the Child and Youth Mortality Review Committee. Information from all these sources has been used in this report.
9. This report provides some commentary on the data available. More detailed analysis (for example, statistical significance testing or analysis of differences in international comparisons) has not been completed. Work of this nature would require significantly more time to complete.

Information quality issues

10. The Maternity report draws on data from two principal data sources, namely the National Minimum Data Set (NMDS) and the Maternal and Newborn Information System (MNIS), both held by NZHIS. In New Zealand, information on all patients discharged from a hospital is routinely collected. These records contain a substantial amount of clinical information, including health conditions and procedures that are encoded using the ICD-10-AM 3rd Edition clinical codes. The encoded records are forwarded to NZHIS, where they are checked and validated, and loaded into the National Minimum Data Set.

¹ Maternity Report 2003 Ministry of Health Wellington (pre-publication)

² Maternity survey 2002

[http://www.moh.govt.nz/moh.nsf/238fd5fb4fd051844c256669006aed57/90f1519337f960f8cc256cbe00093a50/\\$FILE/Maternity-Services-Consumer-Satisfaction-Survey.doc](http://www.moh.govt.nz/moh.nsf/238fd5fb4fd051844c256669006aed57/90f1519337f960f8cc256cbe00093a50/$FILE/Maternity-Services-Consumer-Satisfaction-Survey.doc)
faction questionnaire 2002

Maternal and Newborn Information System (MNIS)

11. The MNIS database began collecting data in March 1998. It collects data from two major sources.
 - a) HealthPAC (Health Payments, Agreements and Compliance, previously known as Health Benefits Limited): Data is collected from payment claims submitted to HealthPAC by Lead Maternity Carers (LMCs).
 - b) National Minimum Data Set (NMDS): Data is collected at hospital discharge in the NMDS.
12. HealthPAC manages claims for payment submitted by providers of maternity services. Providers of maternity services are required, under their terms of payment, to submit information regarding the recipient of their services and the nature of care. Considerable amounts of data on community-based care are collected through this mechanism, which provides a unique feature of the New Zealand maternity service data environment.
13. In the MNIS database, each pregnancy is uniquely identified through a combination of the woman's National Health Index (NHI - encrypted), and the expected date of delivery (EDD).

Maternal and Newborn Information System coverage and data quality issues

14. Since claims submitted to HealthPAC form the building blocks of Maternal and Newborn Information System (MNIS), changes to the maternal service claim regime will affect MNIS coverage. For example, data prior to October 2002 reflects claims for payment under arrangements set down in 1998 in the Notice issued pursuant to Section 51 of the Health and Disability Services Act 1993. Under the Section 51 Notice (which continued under the Section 88 Notice until 30 June 2001) it was only possible for MNIS to collect approximately 70 percent of births as a result of a number of non-standard contracts. In July 2002, the Notice (Section 88 of the Health and Disability Act 2000) came into force. The non-standard Lead Maternity Carer (LMC) contracts were terminated in July - September 2002. However, in some cases, dispensations were introduced, which affect data for 2003.
15. For the 2003/2004 data, 86% of women giving birth have their information captured in the MNIS.

Maternity system information available for analysis

16. The information in the Maternity report which has a bearing on maternity outcomes can be classified into three types:
 - a) inputs into the system
 - b) outputs of the system (such as intervention rates and caesarean sections)
 - c) outcomes of the system (such as perinatal morbidity and mortality).

A Inputs into the system

17. This section is concerned with the quality and quantity of the services provided to pregnant women and their babies. Measures which can be used are client satisfaction surveys, workforce numbers, training and composition, service episodes, and the proportion of women receiving continuity of care from a single Lead Maternity Carer (LMC).

Client satisfaction surveys

18. Client satisfaction surveys have been carried out, and the last was in 2002. This survey represents the views of 2909 women who gave birth in New Zealand during February and March 2002. The survey reviewed women's perceptions of maternity services, and measured whether there has been any change since women were last surveyed in 1999. Between 1999 and early 2002, there was little change to the maternity framework. It is therefore assumed that any improvement in the level of women's satisfaction is the result of consolidation of improved service delivery by individual practitioners and providers.
19. The survey identified that the women surveyed consider some key aspects of maternity services as being crucial. Women consider it is essential that they can choose a LMC and that this LMC will then ensure that the woman has many choices in the management of her care and involvement in the decision-making. Women also consider it is essential to have a choice of where they will give birth, have home visits, availability of primary maternity facilities, collegial relationships between LMC and secondary maternity services, and no consumer costs for core maternity services.
20. The survey results give an average improvement of 2%, based on the number of women who agreed or strongly agreed to nineteen questions measuring satisfaction levels. However, the intensity of women's views has increased – the average improvement is 7.4% when only taking those women who strongly agreed. In general, the improvement is consistent across all indicators.
21. It is important to note however that the response rate to the survey was 40%, with a lower proportion of young women and Maori, Pacific and Asian women responding. Therefore, no firm conclusions on the entire population can be made from this data.

Workforce issues

22. Maternity care in New Zealand is provided by a mixture of midwives, General Practitioners and Obstetric specialists. The working arrangements of Lead Maternity Carers (LMC) vary somewhat around the country according to differences in contracts and local practices. In particular, practitioners have various arrangements about teamwork, which may mean that, although there is a named LMC, care is shared between several practitioners. Also, obstetricians and midwives may work either in a hospital or as self-employed practitioners. Private obstetricians are more likely to deal with medium-risk women, whereas hospital obstetricians usually deal with higher-risk women.

23. Over the past decade general practitioners have largely exited maternity care provision as LMC. Most LMCs are midwives or obstetricians, although some GPs continue to provide early antenatal care. This shift, combined with no real growth in the midwifery workforce, has put the LMC workforce under pressure.
24. The breakdown of LMC registrations for 2003 is shown in Table 7.2 following. It should be noted that around 16,000 registrations are missing from this data, so the true proportions may be different to those shown.

Table 7.2: Number and percentage of LMC registrations, by LMC type at first registration and at birth, 2003

LMC type	At first registration		At birth	
	Number	Percent	Number	Percent
General practitioner	3376	7.9	4,990	9.0
Midwife	33,531	78.1	42,228	76.1
Obstetrician	3342	7.8	4,509	8.1
Other/Unknown LMC types	2657	6.2	3,772	6.8
Total	42,906	100.0	55,499	100.0

Data source: MNIS

Midwifery workforce

25. There were 3780 people who held midwifery qualifications in 2004 and met the criteria of an active nurse or midwife. Included in the 3780 were 196 midwives who gained their midwifery qualifications from a direct-entry course. Of that number about two thirds are working in direct or indirect Maternity areas as shown below. Given an expected caseload of 50 to 70 pregnancies a year it would require between 800-1200 FTEs approximately if every woman was to have a midwife for pregnancy related care. There were 2105 caseload and core facility midwives in 2004 (925 + 1180) but the hours worked are not available from this data, so adequacy of midwifery workforce cannot be determined from this data.
26. Midwifery Annual Practicing Certificate data³ does however indicate that the average midwife works a 0.84 FTE (about 4.5 days per week), meaning that there is a very little flexibility in this workforce overall. DHB maternity managers indicate that in some regions, the average FTE is as high at 0.91, leaving little room to provide cover for sickness and leave, given that this is a woman's workforce which would generally have a number of part time workers.

³ Draft New Zealand College of Midwives Midwifery Workforce Report 2002 – 2004 (with preliminary 2005 findings) for the Ministry of Health November 2005 (compiled by Chris Hendry)

Number of active nurses with midwifery qualifications working in nursing and midwifery in New Zealand by work type, numbers, 2004

Source: Nursing Council of New Zealand, 2004.

Work type	Number	Percentage
Midwifery – administration and management	59	1.6
Midwifery – case load (community)	925	24.5
Midwifery – core facility (hospital)	1180	31.2
Midwifery – education	78	2.1
Midwifery – professional advice/policy development	13	0.3
Midwifery – research	9	0.2
Obstetrics/maternity	43	1.1

Note: Subset of original table with nurses excluded

27. In 2004 the average number of live births per LMC midwife was 64 (New Zealand College of Midwives recommendation rate is 50 per FTE midwife). There is currently a reliance on overseas educated midwives to meet workforce shortages.
28. Before 1995 a registered general and obstetric or comprehensive nurse had to undertake further education to gain midwifery qualifications. In 1995 direct-entry midwifery courses became available, allowing New Zealand students to enter straight into midwifery.
29. In 2004 there were 196 midwives who had completed a direct-entry programme; 191 were female, 2 were male and 3 did not indicate their sex. Of these, 97 reported their work type as midwifery case load, and 89 as midwifery core facility, and the rest reported working in midwifery education (5), midwifery administration and management (1), obstetrics and gynaecology (1), and other nursing (3).
30. In 2005 the Ministry contracted the New Zealand College of Midwives (NZCOM) to complete a midwifery workforce analysis, which has provided up to date information on the midwifery workforce. In 2005, 2626 midwives held practicing certificates (not all of these people will be in active practice).
31. Significant findings of the analysis were a shortage of LMC midwives (particularly in some parts of the country including Auckland, Wellington, Lakes and Southland regions) and high workloads for LMCs.

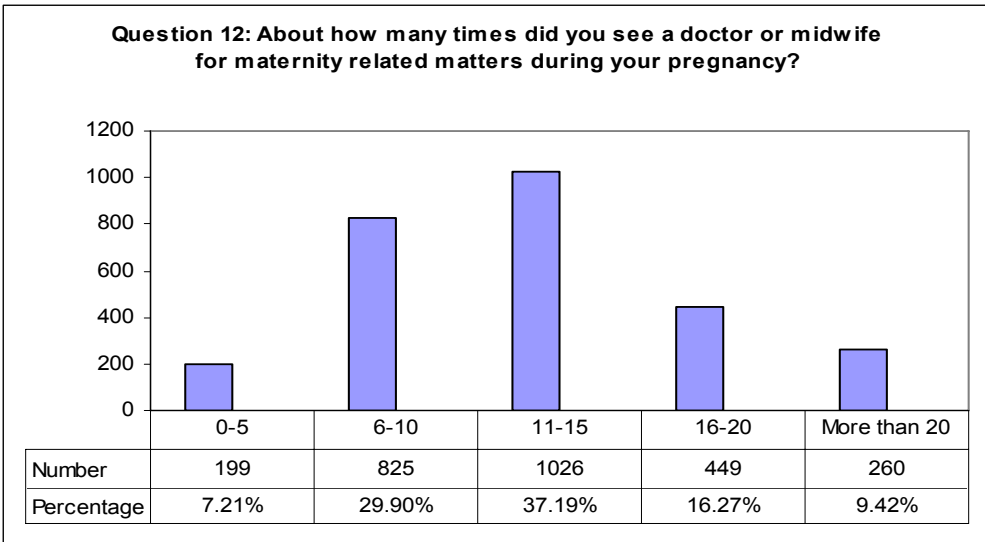
32. There are some immediate solutions to the workforce problem that are currently being actioned, including:
- The recent increase in prices under the Section 88 maternity service notice
 - Review of the service specifications and quality requirements under the Section 88 Notice and ensuring better linkages with primary health provision
 - Work being undertaken by the Midwifery Council, including review of the pre-registration midwifery programmes.

Service episodes

33. The number of episodes of care provided to women and babies provides some measure of the adequacy of the system to meet the needs of the clients/patients.

Antenatal visits

34. Information about the number of antenatal visits provided to women is not identified in the Maternity report. However the 2002 Maternity survey⁴ indicated (Q12 below) that 93% of the women surveyed stated that they had received more than five antenatal consultations, 65% of the women had received more than ten consultations. As in 1999, the most frequently reported category was 11 to 15 visits.



Source: Maternity Survey, 2002

35. International best practice⁵ suggests that seven antenatal visits are adequate for most normal pregnancies (ten for a first pregnancy). These results can give some indication that New Zealand women receive services to at least that level,

⁴ Maternity survey 2002
[http://www.moh.govt.nz/moh.nsf/238fd5fb4fd051844c256669006aed57/90f1519337f960f8cc256cbe00093a50/\\$FILE/Maternity-Services-Consumer-Satisfaction-Survey.doc](http://www.moh.govt.nz/moh.nsf/238fd5fb4fd051844c256669006aed57/90f1519337f960f8cc256cbe00093a50/$FILE/Maternity-Services-Consumer-Satisfaction-Survey.doc)

⁵ Antenatal care - Clinical Guideline 6 NICE October 2003 HMSO

although there is clearly a significant minority (approximately 6%) of women surveyed who claimed not to have received this level of care.

Postnatal visits

36. There is some information from both the Maternity survey and the Maternity report about the number of post-natal visits, although the reliability of this information is unknown, as 28% of home visits remain unreported by MNIS and the maternity survey had a response rate of 40%. Under the Maternity Payment Schedule, Lead Maternity Carers (LMCs) are required to provide five to 10 midwifery home visits. The data available suggest that most women receive between 5 and 10 visits, although the Maternity report data is not consistent with the self reported information from the 2002 Maternity survey.

Continuity of care

37. Most women for whom information is available in the Maternity report (34,008 of 46,110) received care from a single Lead Maternity Carer. This is consistent with the expectations of women identified in the 2002 survey.

B Outputs of the system

Ultrasound examinations

38. Ultrasound examinations are now a common investigative procedure during pregnancy. Recent UK Guidelines⁵ indicate that 3 ultrasounds are sufficient for the majority of normal primary care pregnancies. These are a dating and twin scan at booking (about 8 weeks), a nuchal translucency scan at 11 – 14 weeks and a fetal anomaly scan at about 18 to 20 weeks. Any further scans are generally associated with concerns about fetal wellbeing or growth, and should be undertaken in a secondary care context.
39. The data on ultrasound scans are based on radiologist claims, and about 10,000 women are missing from this data. This means that the numbers need to be interpreted with caution.

Number of mothers having ultrasound examinations, by ethnicity of the mother and number of ultrasound examinations, 2002 and 2003

Year	Status	Number of ultrasound examinations								
		0	1	2	3	4	5-9	10+	Not Stated	Total
2002	Māori	2,157	2,277	1,686	860	426	375	23	0	7804
	Pacific People	1,407	1,121	677	326	147	137	6	0	3821
	Asian	1068	764	564	332	193	194	7	0	3122
	European	4737	5391	5018	3233	1829	1855	115	1	22,178
	Other	565	676	595	377	183	201	5		2602
	Not Stated	244	321	290	175	73	75	2		1180
	Total	10,178	10,550	8830	5303	2851	2837	158	1	40,707
2003	Māori	1182	2790	2327	1187	472	351	9		8318
	Pacific People	661	1654	1167	487	220	143	5		4337
	Asian	721	927	887	556	238	210	8		3547
	European	3073	5155	6545	4573	2316	2013	60		23,735
	Other	470	974	1123	720	385	316	6		3994
	Not Stated	332	581	593	360	177	130	6		2179
	Total	6439	12,081	12,642	7883	3808	3163	94	0	46,110

Data source: MNIS

40. The current distribution of mothers by ethnicity in 2003 is shown below:

Year	Mothers						Total
	Māori	Pacific peoples	Asian	European	Other	Not Stated	
2003	10,785	5740	4697	31,266	1554	539	54,581

Data source: NMDS

41. The above tables indicate that ultrasound examinations are only done on about 60-80% of New Zealand women, and only about half have 2 or 3 scans. While there are legitimate reasons for women to decline to have scans, it is possible that some women are not offered the opportunity. It is reassuring to see that the number of women for whom no scan was done has decreased substantially from 2002 to 2003. There appear to be some discrepancies between ethnic groups, and there is a difference between the percentage of urban (83%) and rural (71%) women having scans. Urban women are also much more likely to have more than 3 scans.

Year	Status	Number of ultrasound examinations							
		0	1	2	3	4	5-9	10+	Total
2002	Rural	3134	3958	3291	1876	945	835	57	14,096
	Urban	7074	6602	5544	3431	1905	1993	101	26,650
	Overseas	8	6	2	2	1	1	0	20
	Unknown	13	19	19	8	7	8	0	74
	Total	10,229	10,585	8856	5317	2858	2837	158	40,840
2003	Rural	2338	4436	4280	2489	1127	917	26	15,613
	Urban	3941	7561	8283	5362	2663	2228	67	30,105
	Overseas	5	8	9	2	1	0	0	25
	Unknown	200	51	61	21	17	16	1	367
	Total	6484	12,056	12,633	7874	3808	3161	94	46,110

Data source: MNIS

42. The current distribution of mothers by rural/urban status in 2003 is shown below:

Year	Rural/urban status			
	Rural	Urban	Not stated	Total
2003	16,997	37,544	40	54,581

Data source: NMDS

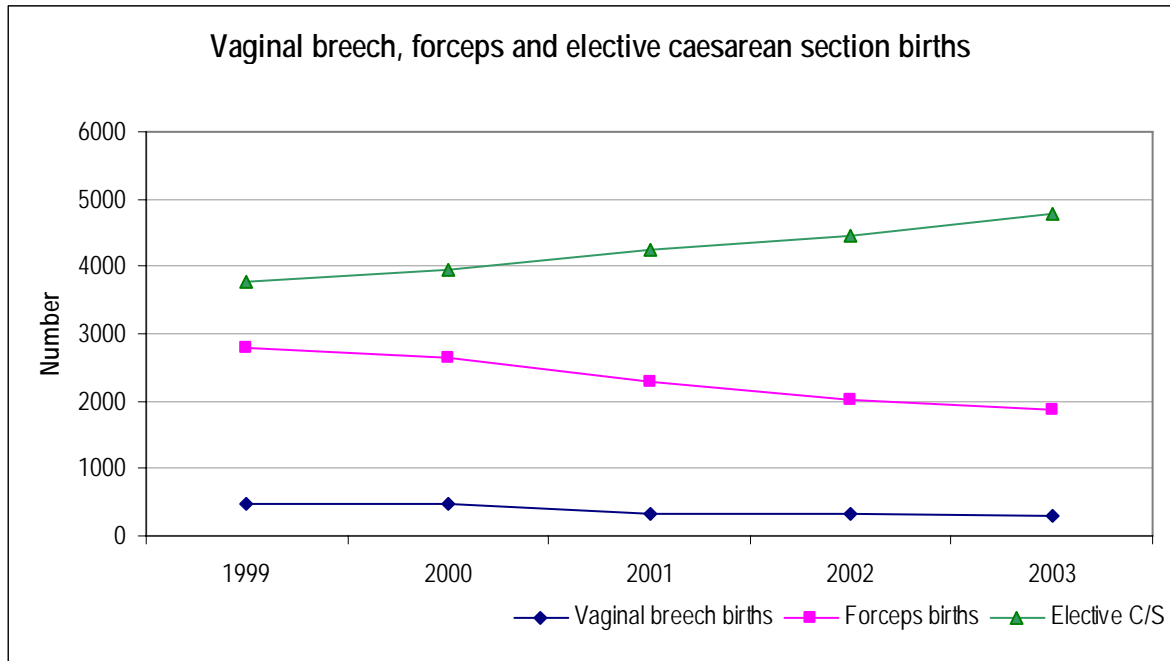
Caesarean section rates

43. Caesarean section is an intervention performed acutely for fetal distress, failure to progress or malpresentation. If performed electively, it is usually for prior caesarean section, known breech or other malpresentation or occasionally for social reasons. The data on caesarean section rates are robust, as it is derived from hospital derived National Minimum Data Set information.
44. In New Zealand the rate of total caesarean sections has increased steadily, from 11.7% of births in 1988 to 23.1% in 2003. A similar trend is observed in many developed countries. In 1985, the WHO issued a consensus statement suggesting there were no additional health benefits associated with a caesarean section rate above 10-15%. There is currently no consensus in New Zealand regarding the optimal caesarean section rate which maximises health outcomes.
45. The percentage of women having caesarean sections has increased slightly from 20 to 23% between 1999 and 2003. Some of this increase has been due to a reduction in “operative births” which includes forceps delivery and assisted vaginal breech delivery. High forceps delivery for malpresentation or prolonged labour is traumatic to mother and baby and caesarean sections are considered by many to be an appropriate substitution, with lower infant and maternal morbidity.

Year	Normal births	Caesarean section			Operative vaginal births				Total
		Total	Acute	Elective	Total	Vaginal breech births	Forceps births	Vacuum extraction	
1999	36,582	10,842	7064	3778	5828	468	2801	2559	53,273
2000	37,601	11,431	7469	3962	5914	469	2642	2803	54,946
2001	36,364	11,891	7634	4257	5550	321	2279	2950	53,805
2002	35,909	12,053	7586	4467	5075	323	2029	2723	53,037
2003	36,784	12,625	7832	4793	5172	304	1881	2987	54,581

Data source: NMDS

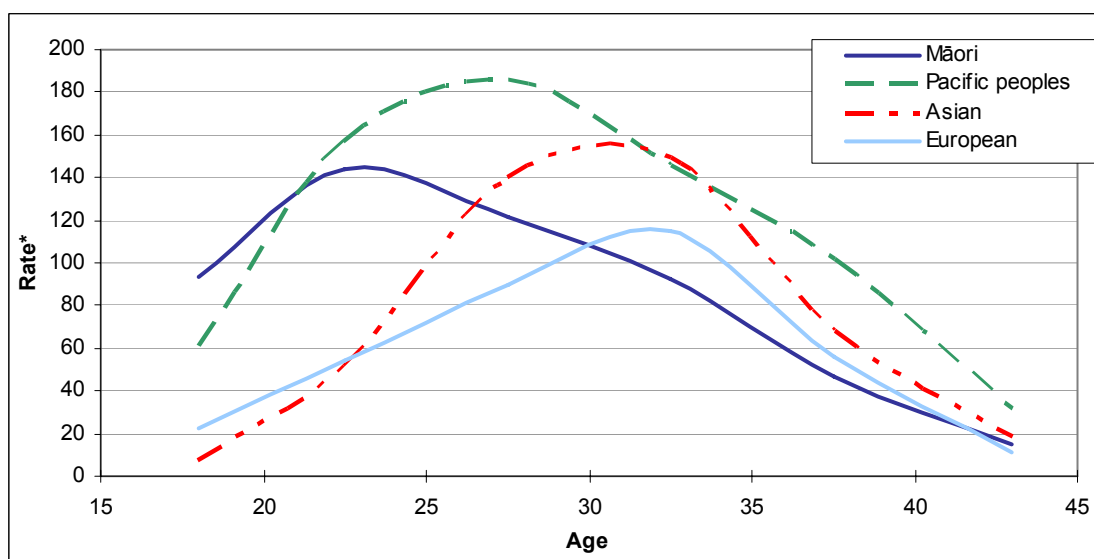
Hospital births



Source: NMDS

46. There are significant ethnic discrepancies in caesarean section rates with European and Asian women having much higher rates (over 25%) than Maori and Pacific women (15 to 18%). A likely explanation is that there is a significant increase in caesarean section rates among older women (rate rises from 15% at 20 years to over 30% at 35 to 40 years). Maori and Pacific women are much more likely to have their babies at a younger age, as shown in Figure 2.2 below. This may be the main driver of the ethnic discrepancy, however maternal cultural preferences and differential access to care cannot be excluded.

Figure 2.2: Birth rate per 1000 women of reproductive age, by ethnicity and age group of the mother, 2003



Data source: NMDS

* Rate per 1000 women of reproductive age

Note: The 'Other' and 'Not Reported' ethnic groups have been excluded from this graph

C Outcomes of the system

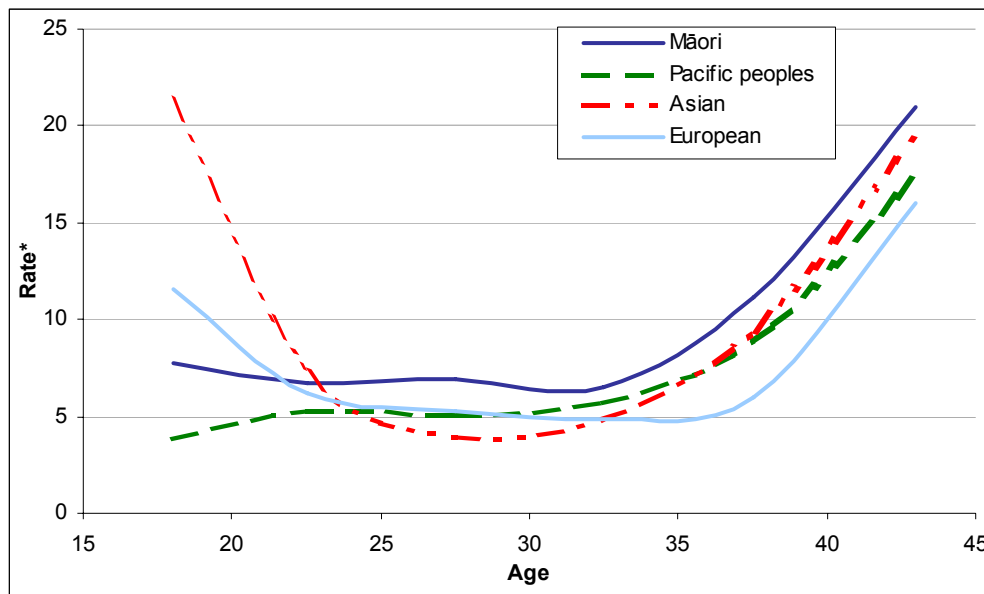
47. The outcomes for which we have information are shown below.

Miscarriage rates

48. Miscarriage is one of the more common complications of pregnancy. Miscarriage is not usually considered amenable to primary prevention, as in up to two thirds of miscarriages, the fetus is absent or abnormal, and a significant percentage of the remainder show chromosomal abnormalities. Miscarriages occurring in the 2nd trimester are more likely to have maternal causes, such as congenital or acquired uterine anomalies, maternal endocrine problems, and possibly bacterial or viral infections such as listeria, cytomegalovirus, herpesvirus, and rubella.
49. Although it is possible that interventions such as folic acid in pregnancy, prenatal genetic diagnosis, and encouraging women to plan their pregnancies between the ages of 25 to 35 may assist in reducing miscarriage. Recurrent miscarriage should be assessed and managed by perinatal specialist teams in tertiary care.
50. In 2003 the miscarriage rates were as shown in figure 2.6 following. It is important to appreciate that not all miscarriages are notified. However it does appear that there are widely varying differences between reported miscarriage rates among young women. The significance of this is unclear, but it may relate to varying degrees of access to miscarriage services or later booking among certain population groups. It may also be a result of inadequate access by young people to reproductive health services⁶

⁶ Ministry of Health. 2003. Sexual and Reproductive Health: A resource book for New Zealand health care organisations. Wellington: Ministry of Health.

Figure 2.6: Rate of hospital miscarriages per 100 mothers, by ethnicity and age group of the mother, 2003



Data source: NMDS

* Hospital Miscarriage Rate per 100 mothers

Note: Hospital miscarriages include all women who are referred to a hospital during a miscarriage. Women who miscarry elsewhere outside hospital and are not admitted to hospital are not included in this data.

Maternal readmission rates for postnatal conditions

51. A number of maternal conditions are reported in the Maternity report. We have data of good quality on these conditions, which is collected mostly from admission to hospital data. The most recent information is from 2003 (Table 5.1 below). The data enable evaluation of trends over the last 3 years. Conditions which are relevant to management of the mother's health in the postnatal period are postpartum haemorrhage, puerperal sepsis, and other puerperal infections, which may be related to the management of labour and delivery, and breast infections, which indicate the degree of support with lactation.

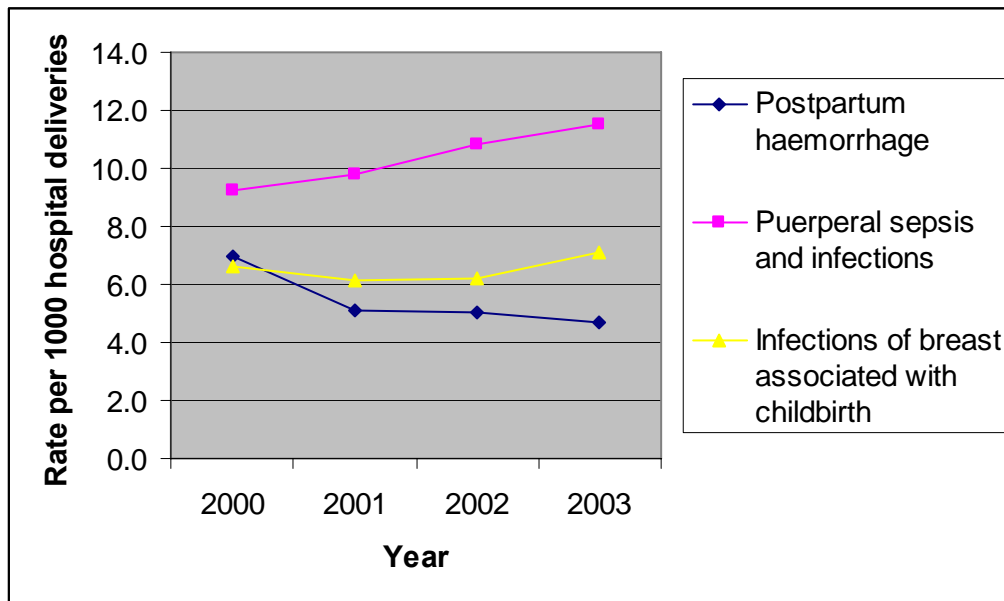
Table 5.1: Postnatal readmissions for mothers with problems relating to pregnancy, by principal Diagnosis (DRGs O04Z and O61Z only), 2003

Principal Diagnosis Name	Readmissions		Average Length of stay	Rate*
	Number	Percent		
Postpartum haemorrhage	259	9.1	1.6	4.7
Puerperal sepsis	235	8.3	2.2	4.3
Other puerperal infections	399	14.0	2.7	7.2
Infections of breast associated with childbirth	391	13.7	2.4	7.1

Note: Subset of original table

52. Over the last three years there have been changes in the rates of these conditions as shown in the graph following. The rate of postpartum haemorrhage is decreasing, infections of the breast are relatively static, but puerperal sepsis and other puerperal infections are increasing. This trend has not previously been noted. The reasons for these changes are unknown, but although the rise in puerperal and other postnatal infection may be in part due

to increasing rates of caesarean section, it suggests that further analysis of infection control in delivery units may need to be undertaken.



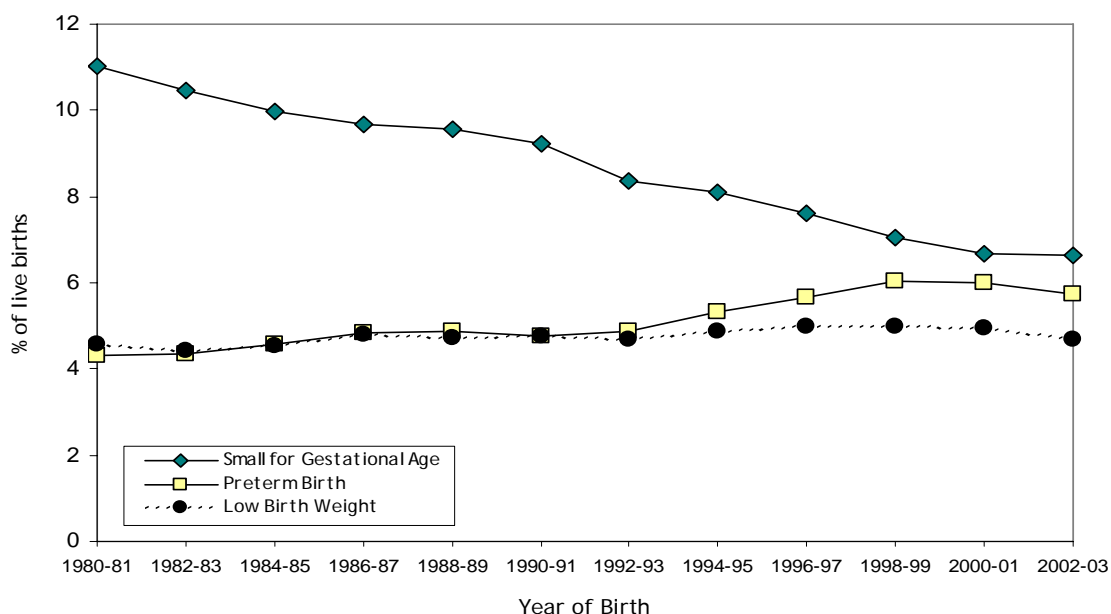
Source: Maternity report 2001, 2002, 2003

Birthweight

53. Birthweight is a composite outcome. It is affected by two variables: fetal growth and fetal age. It is commonly used as a measure of maternity services, because there are a number of pregnancy related factors, which are amenable to intervention, which can lead to high or low birth weight.
54. Fetal growth may have two problems, too big or too small. Small for gestational age (SGA) infants (too small) are at high risk of adverse outcomes such as low blood sugar, and birth asphyxia around the time of delivery. There is some evidence (the Barker hypothesis) that poor fetal growth may permanently alter the metabolic processes, leading to the so called “Metabolic syndrome” in middle age. This is associated with cardiovascular disease and diabetes, and early mortality. The main cause of poor fetal growth is termed “placental insufficiency”, and in most cases the precipitating factors are unknown although this can be related to maternal conditions such as diabetes. Other causes are infections with organisms such as cytomegalovirus, toxoplasma and rubella. Some cases of poor fetal growth can be prevented by ensuring adequate maternal health and nutrition and preventing exposures to known infectious agents, and toxins such as tobacco and alcohol during pregnancy. Antenatal care therefore has an important role to play in the prevention of this problem, but cannot prevent all cases.
55. At the other end of the scale, babies who are born too large are also at some increased risk of poorer outcomes at the time of delivery, especially problems with delivery which may lead to fractures of the upper arm and clavicle. As high birthweight is a common presentation of infants of diabetic mothers, these babies are prone to low blood sugar, birth asphyxia, and respiratory distress, and may have an increased risk of diabetes themselves as adults.

56. Prematurity on the other hand is rarely preventable through antenatal care. The major known causes (only some of which are preventable) are uterine infection, pre-eclampsia, and multiple pregnancy. At the present time the major efforts in this area are early identification of premature labour, and institution of medical management (delaying labour and delivery with bed rest and medication to “buy time” to induce fetal lung maturity with steroids), but transfer of the fetus/infant in utero to a tertiary centre, adequate neonatal intensive care and careful obstetric management to reduce birth trauma to the premature infant are the mainstay of treatment.
57. Recently the New Zealand College of Midwives and the Paediatric Society have collaborated in the development of a protocol for determination of high risk for uterine infection, but it is not clear whether this has been universally adopted. In Vitro Fertilisation (IVF) is also a significant cause of multiple pregnancy and the recent decision to fund a second cycle, and implant only one embryo, is expected to assist with the reduction in multiple pregnancy.
58. Over the last few years there has been little change in low birthweight incidence, but this masks the reduction in Small for Gestational Age (SGA) and the increase in prematurity rates. This is encouraging, and some further progress may be seen as the implementation of the single embryo policy progresses.

Rates of low birthweight categorised by small for gestational age and prematurity

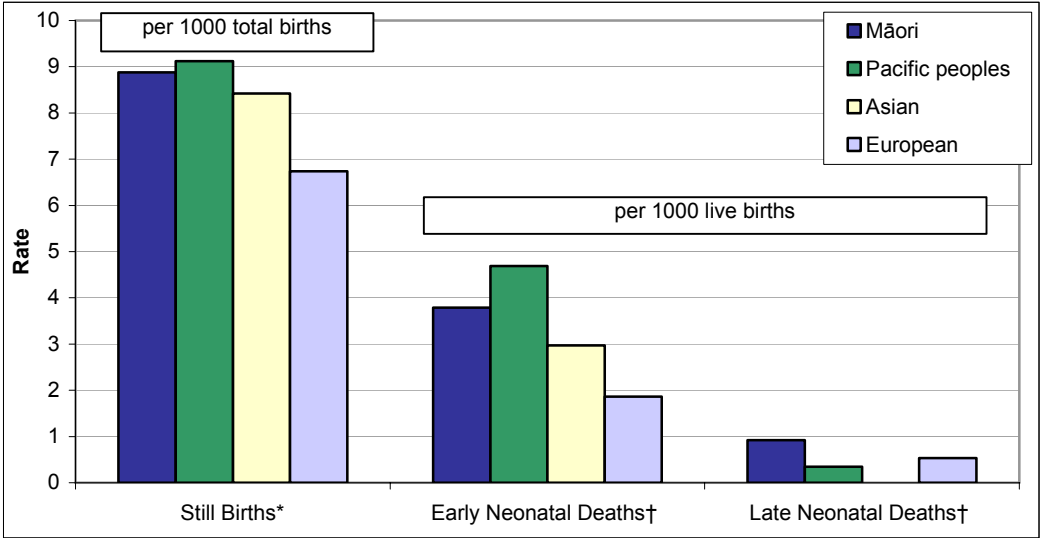


Stillbirths and neonatal deaths (perinatal deaths)

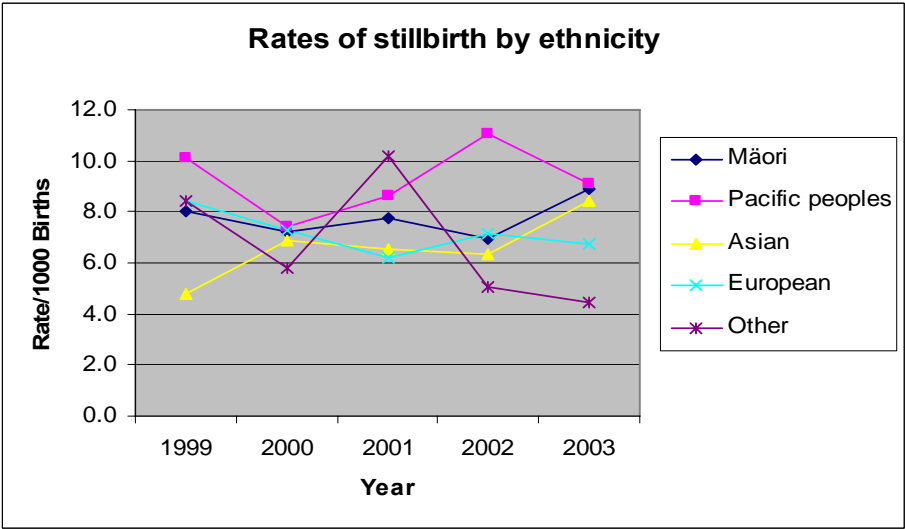
59. Stillbirths are deaths in-utero of fetuses and infants between 20 weeks gestation and term. A significant proportion is of unknown cause, but a proportion of stillbirths are potentially preventable with good antenatal care. Therefore the stillbirth rate is a good indicator of the quality of antenatal care.

60. Neonatal deaths occur once the baby is born. Some of these deaths relate to antenatal factors and some to factors associated with the delivery. Currently in New Zealand there are around 600 perinatal deaths. The data on stillbirths are robust because this information is sourced from Hospitals and the Department of Births Deaths and Marriages. The death rates for Maori and Pacific babies are markedly higher than those for European babies. Older and younger women are more likely to experience a still birth than others.
61. The following figure shows the discrepancies by ethnic group. The reason for the discrepancies between ethnic groups is not known, but likely causes are the increased incidence of diabetes and smoking in Maori and Pacific (diabetes only) women, and differences in access to care, although there is no systematic data on this. The high and rising rates of stillbirth experienced by Asian women are also of concern and warrant further investigation, even though the actual numbers are not high.

Figure 4.6: Rate of in-hospital stillbirths and neonatal deaths, by ethnicity, 2003



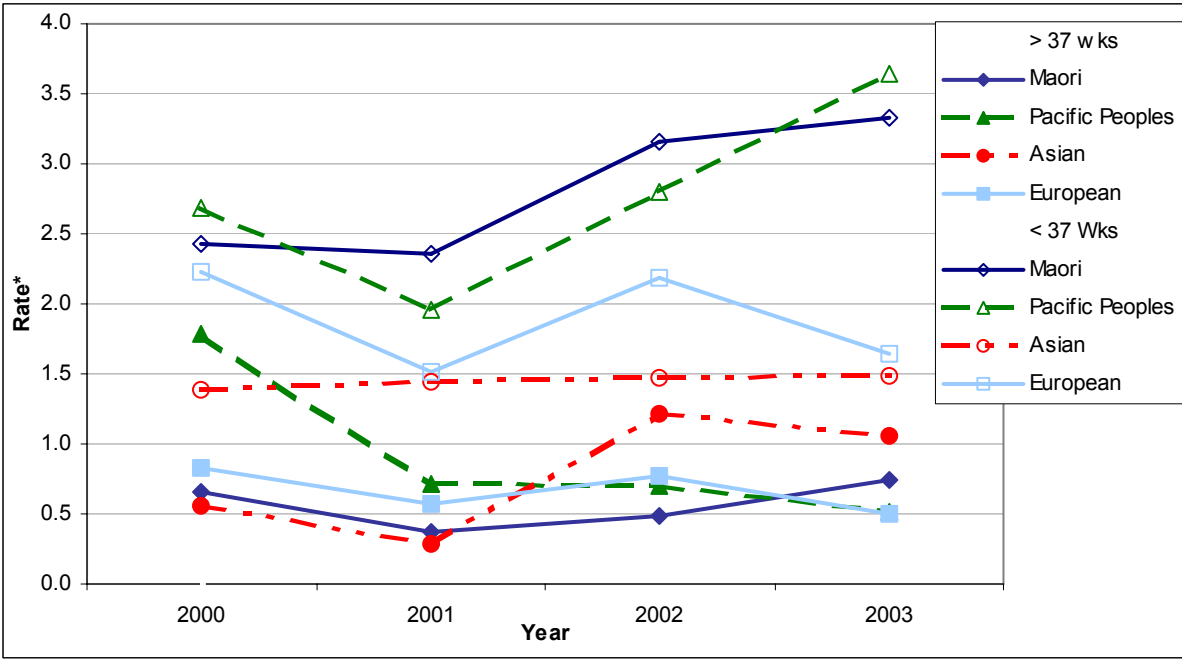
Data source: NMDS
 * Rate per 1000 total births
 † Rate per 1000 live births



Source: MNIS

62. There is some evidence (Figure 4.7) that over the last 3-4 years there has been an increase in neonatal deaths in premature Maori and Pacific babies. However these numbers are small and the interpretation of this trend is unclear. The data shows that the neonatal death rate for term babies is reasonably stable, with a possible downward trend for European babies. As these are the majority of births this trend is likely to be more robust and reliable than the variability seen in the rates for Maori, Pacific and Asian babies.

Figure 4.7: Rate of in-hospital neonatal deaths, by gestational age (under 37 weeks and over 37 weeks) and ethnicity, 2000 - 2003



Data source: NMDS
 * Rate per 1000 total births

Maternal mortality

63. The World Health Organisation define maternal deaths as the death of a women while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and the site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management but not from accidental or incidental causes. In New Zealand there are very few maternal deaths, which vary between 7 (11.7 per 100,000) to 1 (1.7 per 100,000) over the 1990s. The PMMRC is intending to study these deaths to determine whether any systemic issues are demonstrated.

Infant Mortality

64. Infant mortality is a common international benchmark of antenatal and infant care. New Zealand has a low infant mortality, but currently sits in the middle range of the OECD with an infant mortality of 5.2 per 1000 live births.

65. Infant mortality in New Zealand is mainly caused by three types of conditions. These are Sudden Infant Death Syndrome (SIDS), congenital abnormalities, and perinatal conditions, predominantly prematurity, birth asphyxia and infections in the perinatal period. Injury and “other” causes are predominantly related to the older infant and less relevant to maternity services.

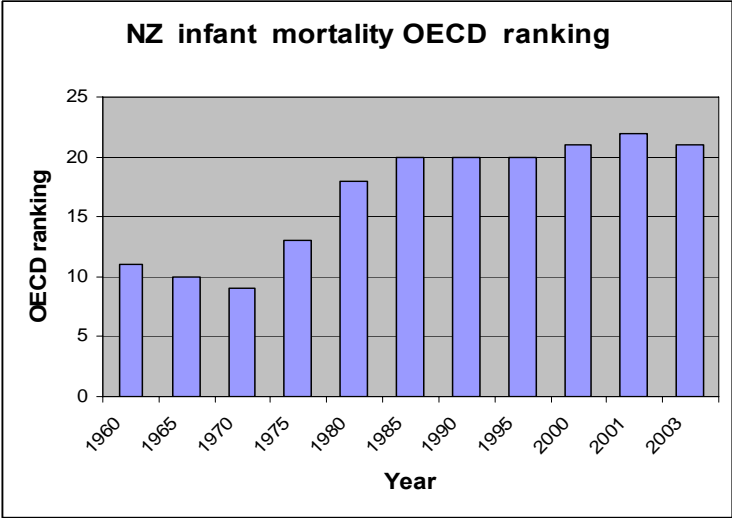
Principal causes of infant mortality, 2000 Source: <i>'Fetal and Infant Deaths 2000'</i> . (Modified)		
Cause of death	Number of deaths	Rate per 1000 livebirths
Infectious diseases	7	0.12
Congenital anomalies	84	1.47
Perinatal conditions	151	2.63
Sudden death, cause unknown (incl. most SIDS)	63	1.11
Accidental (suffocation, strangulation, transport)	13	0.23
Assault (Child abuse)	3	0.05
All other causes	39	0.68
Total infant deaths:	359	6.30

66. Of these groups of conditions SIDS has had the most rapid decline since 1990, when the “Back to sleep” campaign advised parents to sleep their babies on their back. Maori SIDS is still considerably higher than that of other groups, partly due to the high prevalence of maternal smoking in pregnancy, and partly due to the effects of poverty and inadequate information about safe childcare practices. Reduction of maternal smoking during pregnancy is probably the single most important action we could take to further reduce SIDS in New Zealand.
67. The other potential opportunity to reduce infant mortality is to increase folic acid intake by pre-pregnant and pregnant women in order to reduce the prevalence of neural tube defects (Spina bifida and anencephaly). In 1999, the prevalence in New Zealand of neural tube defects at birth (live birth and stillborns) was 5 per 10,000 births⁷. In many countries proposals to undertake fortification of food with folic acid have been debated for almost a decade. In the USA and Canada this has been implemented with a significant reduction in neural tube defects. Promotion of increased folate intake, while of some benefit, is not a viable alternative strategy⁸.
68. This report has already discussed the issue of perinatal conditions. Most of the reduction in deaths for small, premature infants has been due to a gradual reduction in numbers of small for dates infants and neonatal intensive care. As we reach the physiological limits to our ability to push the frontier of neonatal intensive care further, there is a need to move our focus towards the population health initiatives for which there is evidence of effectiveness.

⁷ Improving folate intake in New Zealand: Policy Implications. Occasional Bulletin Number 18. Public Health Intelligence 2003

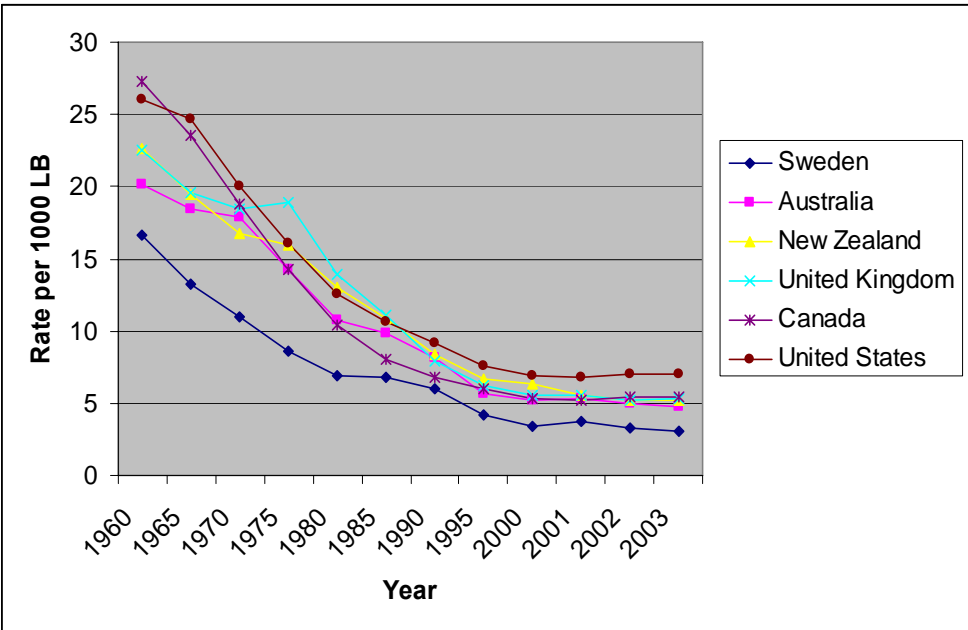
⁸[http://www.moh.govt.nz/moh.nsf/f872666357c511eb4c25666d000c8888/1efb268deda784d2cc256cbe00035ede/\\$FILE/PHIFolicpaper.pdf](http://www.moh.govt.nz/moh.nsf/f872666357c511eb4c25666d000c8888/1efb268deda784d2cc256cbe00035ede/$FILE/PHIFolicpaper.pdf)

69. Over the last 30 years the infant mortality of all OECD countries has reduced significantly. In 1960's and 70s we were around 10th in the OECD for infant mortality. We are currently 21st in the rankings.



Data source: OECD website

70. However, although the New Zealand infant mortality rate has not fallen as rapidly as some, it is similar to many of the countries we compare ourselves with.



Data source: OECD website

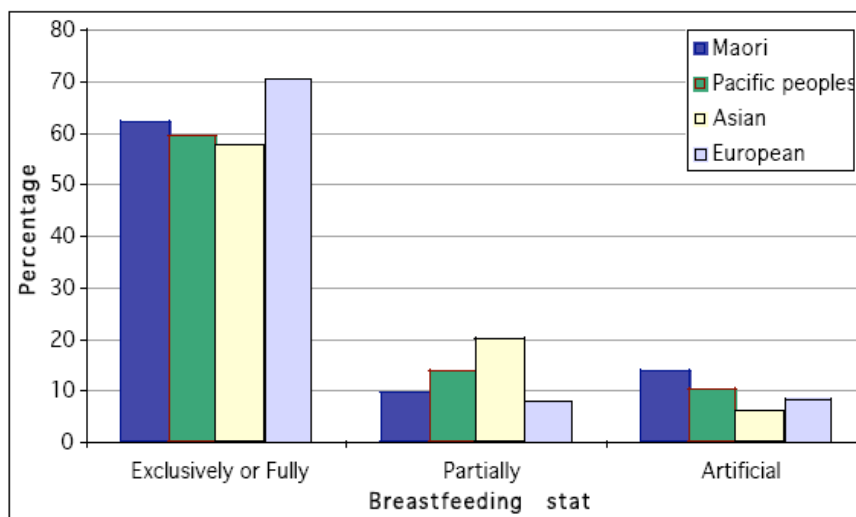
Breastfeeding rates

71. Breastfeeding rates are one of the more important indicators of adequate maternal education and support. They do vary over time according to custom and practice, but over the last two decades there has been a concerted effort made to improve breastfeeding rates, especially full and exclusive rates. There is good evidence that the maternity provider has an impact on breastfeeding

initiation, but other factors outside of the maternity service are probably mainly responsible for continuation.

72. Some of the interventions include the adoption of the Baby Friendly Hospital Initiative (BFHI), and the stricter application of the Code of breast-milk substitute advertising (both WHO initiatives). Both of these initiatives are credited internationally with improvements in breastfeeding rates. These initiatives support the direct approach by health professionals with pregnant and newly delivered women, which pre-empt, identify and manage breastfeeding difficulties and ensure that the mother infant dyad is adequately supported. Breastfeeding rates are not well collected in New Zealand and the information from the Lead Maternity Carer is unreliable, because there is inadequate completeness of the data.
73. The Lead Maternity Carer data suggests that at 2 weeks of age around 60% of babies are fully or exclusively breastfed⁹. Due to the inadequacies of the data it is not possible to adequately determine time trends.

Figure 5.4: Percentage of babies breastfed at two weeks of age, by ethnicity of the mother and breastfeeding status, 2003



Data source: MNIS

Conclusion and recommendations

74. New Zealand has a maternity service which appears to be delivering maternity care well for most women and babies. However the most recent satisfaction survey is three years old, and there have been workforce pressures and some public criticism of the service since that time. Nevertheless in 2002 most of the people who use the service were happy with it, and the information we are currently collecting suggests that we are providing a level of quality which results in good outcomes overall.

⁹ Exclusively breastfed refers to babies that have never, to their mother's knowledge, had any water, formula or other liquid or solid food. Only breast-milk (from the breast or expressed), and prescribed medicines, defined as per the Medicines Act 1981, have been given to the baby from birth.

Fully breastfed refers to babies that have taken breast-milk only, no other liquids or solids except for a minimal amount of water or prescribed medicines, in the previous 48 hours.

75. There are some areas of concern. Outcomes for Maori and Pacific mothers and babies are not as good as the rest of the population. The reasons for this are unclear, but evidence from other areas of health shows that the main reasons for these inequalities are unequal access to care, poorer levels of self care, and lack of information and education about health and health services. Attempts have been made to address this in Primary medical care through the implementation of the PHO concept, and in Well child care through the Well child framework. Both of these approaches address the issue of access by providing additional resources to providers working in areas of greater poverty (as measured by Deprivation index). There is some evidence that this approach is effective, with improving child health outcomes in some areas, and increasing life expectancy for Maori beginning to show in our national health statistics. The rise in puerperal sepsis and other infections is a concern. While some of this rise may be attributed to an increasing rate of caesarean section, it suggests that further analysis of infection control in delivery units may need to be undertaken.
76. Infant mortality is an international benchmark and an excellent composite indicator of the state of our maternal and infant health services. Despite our good position in the world with respect to infant mortality in the middle of the 1960's and 70's, this was lost in the 1980's and 90's and has not subsequently improved. The reasons for this are related to our relatively high SIDS rates and perinatal mortality rates.
77. The perinatal mortality data suggest that there is a need to identify whether the observed trends in Asian stillbirths are valid and if so what might be the causes.
78. We have not yet applied the principles and practice of the primary care strategy to primary maternity care. Additional funding to support improvements in Maori and Pacific maternal and infant outcomes will be required to ensure that an equitable service is provided to these groups. In addition there needs to be better coordination of care across primary care for mothers and babies, and also between different levels of care.
79. While a comprehensive review of Maternity care is not required at this stage, it will be important to integrate primary maternity care better into Primary care and PHOs, and to ensure that close and effective relationships between Midwives and GPs ensure that all women get the best possible care during pregnancy.
80. Better integration between primary and secondary care providers will also be required to ensure that seamless care for the women whose pregnancies need a higher level of care is also provided.
81. The Ministry of Health has committed to undertaking the policy work on better integration of the maternity service, however it is not anticipated that any significant changes will occur before the 2006/07 financial year.

82. There are a number of current programmes that are likely to provide improved maternity outcomes. These programmes already have existing budgets attached to them, but prioritisation may be required to improve outcomes. These include:
- Increasing the breastfeeding support available to Maori and Pacific mothers
 - Repeating the maternal satisfaction survey to measure current satisfaction levels
 - Increasing the implementation of smoking reduction in pregnancy programmes, particularly to Maori mothers
 - Continuing with the proposed development of the perinatal database and the Kidslink-Well child register.
83. There are a number of new initiatives which could be considered for implementation. Policy has been developed on these initiatives, but they have not been prioritised for funding, or funding sought at this stage. These include:
- Review the Maternity funding framework to provide higher levels of funding to practitioners working with mothers in high need areas
 - Develop Quality guidelines and indicators for antenatal care and the management of pregnancy and delivery and link them to the provision of funding through the Section 88 notice
 - Fortify flour with folic acid to reduce the rate of neural tube defects/terminations of pregnancy due to neural tube defects
 - Implement a formal screening programme for Trisomies (Down syndrome)
 - Undertake a public information campaign to inform women about the dangers to the fetus of drinking alcohol during pregnancy.

A NATIONAL COLLECTION OF PERINATAL AND MATERNAL DEATHS AND ALL BIRTHS

History

84. The concept of establishing a national perinatal database in New Zealand is not new. There have been several appeals for a perinatal database since the 1980s. In response to this, a Working Group was formed in 1998 (at the direction of the Health Funding Authority) to consider a proposal to establish a Perinatal Epidemiology Unit in New Zealand. This proposal included the establishment of a national perinatal database.
85. The Working Group produced a report for the Health Funding Authority in March 1999 recommending a New Zealand Perinatal Epidemiology Unit be established (Appendix 1). The Working Group recommended the required database should encompass the period from 20 weeks to 28 days postnatal and be established by the amalgamation of the two electronic databases already in existence: the National Minimum Dataset (held by the New Zealand Health Information

Service) and the claims database held by the Health Funding Authority (Health Benefit Limited – now held in HeathPAC).

86. The Health Funding Authority subsequently prepared a proposal for the Minister of Health, Hon Wyatt Creech (Appendix 2). This report proposed that a perinatal database be implemented through incremental steps, combining existing and additional sources of perinatal data. The Minister approved the general direction described in the proposal. (Health report 991149).
87. The third step of the proposal (following ensuring the accuracy of reporting and the setting up of a governance body) was to combine the existing sources of data to set up an initial perinatal database. This step was achieved by amalgamating the information from the National Minimum Data Set and from HealthPAC's payment claims system to create the Maternal and Newborn Information System (MNIS). The first annual report from the MNIS was released in January 2002.
88. The final step in the Health Funding Authority's proposal for a perinatal database was to identify the requirements for additional data. To implement a perinatal database of the kind the Perinatal and Maternal Mortality Review Committee recommended, this step would have to take place. The emphasis for additional data would be on clinical data that is collected consistently over time.

Feasibility

89. The Ministry of Health considers that the development of a clinically focussed perinatal database is feasible, but would require consultation with the sector to agree on the additional data required and the definitions to be used.

Initial work undertaken

90. Initial work has already been completed on the additional requirements by the Working Party in 1999. The Working Party Report identified, after wide consultation, 43 additional data variables that should be collected for a perinatal database (Appendix 4 of the Working Party report refers).
91. The Chair of the Perinatal and Maternal Mortality Review Committee (PMMRC) has reviewed this list for currency and appropriateness. The Chair has advised that the list appears to be appropriate and in line with what the PMMRC were envisioning. The Chair considers this would be a good starting point for a perinatal database, given some minor adjustments.
92. The PMMRC are currently developing a national database for perinatal and maternal deaths. This database will build on the mortality database of the Child and Youth Mortality Review Committee. Once developed, this database will provide New Zealand with clinically focussed information on all perinatal and direct maternal deaths.

What would be required

93. We would need to collect clinical data from the disparate maternity systems in DHBs. This could be done as part of the second phase of the National Non-admitted Patients Collection, which is currently in development.
94. Section 88 data could then be phased out, as experience shows that this is unlikely to be robust enough, even with ongoing refinement. As purchasing priorities change, Section 88 data would not have the lifespan required for ongoing monitoring.
95. Implementation of the new data requirements would also involve education and practice change for individual clinicians and organisations.

Current data collection

96. Some information on births is already collected by a number of separate organisations. For example, a report commissioned by the Ministry of Health in 2005¹⁰ identified that “All [DHB neonatal] units have some form of perinatal database; unfortunately, these are disparate systems that are unlikely to yield consistent, comprehensive information in a readily accessible form...The Australia and New Zealand Neonatal Network (ANZNN) collects the most comprehensive data regarding neonatal care in New Zealand, in that all New Zealand level two and three neonatal units report to the network. The data is maintained in Sydney...Home Birth Aotearoa also has a long-term database for homebirths to which midwives submit information voluntarily. This data has been used in a review of homebirth outcomes in the New Zealand Medical Journal (Gulbransen, Hilton et al. 1997)”.
97. There is increasing consolidation of software systems amongst perinatal services. Nearly half of DHBs, including 4 of the 6 tertiary hospitals, have purchased, or are upgrading to, Healthware, a software package that has been developed as a perinatal data system (Vass 2005).

Value

98. A comprehensive perinatal database that includes information about all births and perinatal deaths would provide a robust evidence base with which to evaluate the quality and outcomes of the maternity services in New Zealand.
99. The added value of a perinatal database of all births and perinatal and maternal deaths would be the ability to draw evidence based conclusions on individual practitioner and on system performance and identify local and national areas for improvement.
100. Although some mortality data is currently collected, we are unable to draw conclusions with confidence as perinatal mortality is only a subset of the complete range of outcomes from birth. A full set of birth data would enable analysis of morbidity as well as mortality.

¹⁰ Perinatal and Maternal Mortality Review in New Zealand, 2005

Cost

101. The New Zealand Health Information Service (NZHIS) was consulted to investigate estimated cost of a perinatal database. NZHIS have advised that, in the absence of detailed process or technical design, the best basis for estimating likely system costs is to base estimates on recent proposals.
102. Two national collections have recently been scoped and could be used as a basis for comparison. These are the National Non-admitted Patients Collection (NNPAC) and the proposed Organ Donor system.
103. Based on the estimated costs for establishing these systems NZHIS would expect, if funding did become available, that a national system for collection of perinatal data on all births and perinatal and maternal deaths to have a capital cost of between \$2 million and \$4 million, with annual operating costs of between \$1.1 million and \$2.2 million per annum.
104. If you wished to proceed with the proposed perinatal database, this project would be subject to the normal capital approval process.
105. At this stage no estimate can be provided for any cost savings that may arise from adapting existing systems, reuse and repositioning of existing systems and any operating efficiencies that might result.

LINKAGE WITH THE PROPOSED PERINATAL DATABASE FOR CHILDREN BORN AS A RESULT OF ASSISTED REPRODUCTIVE TECHNOLOGY

106. On 16 December 2005 Sector Policy Directorate provided you with a briefing on the progress in implementing a systematic monitoring programme of health outcomes for children born in New Zealand as a result of assisted reproductive technologies (ART).
107. This briefing advised that, as of 1 January 2006, fertility service providers will begin collecting the National Health Index (NHI) number of every ART birth in addition to the information they already collect. The National Perinatal Statistics Unit (NPSU) in Australia collects information on all ART births in New Zealand and will begin collecting the NHI number of children born as a result of ART in New Zealand.
108. The NPSU will provide the collated data to the Public Health Intelligence Unit of the Ministry of Health. The collection of the NHI number will allow this information to be matched to other databases the Ministry holds.
109. There are potential synergies between these two projects. The information collected on ART births could be collated and included in a perinatal database, along with information from other sources such as the congenital abnormality register and the proposed Kidlinsk-Well child register.

IMPLICATIONS FOR REDUCING INEQUALITIES

110. Having comprehensive information available on outcomes of all births will enable the identification of areas of inequality in maternity services and assess its extent and impact. This information will help to inform local and national initiatives to improve maternity services in New Zealand and reduce inequalities within this service.