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## Executive summary

This is the second of two reports on the evaluation of the Midwifery Group Practice Program. The first (interim) report was released for consultation on 10 June 2005. It presented the evidence on the program's clinical outcomes and viability in terms of mothers' acceptance of the midwifery model. This final report follows consultations with stakeholders including consumers, nursing and medical staff and others. It contains the evidence as presented in the interim report, with some minor changes, and a summary of the feedback received.

The evidence presented in this report can be summarised as follows:

- 180 women enrolled in the program during the evaluation period, including 6 who cancelled
- Maternal and child outcomes for the 74 women who gave birth in the simulated Shellharbour Hospital situation ("at SHH") were excellent, with low rates of pain relief, perineal injury and nursery admission
- Clinical outcomes for the program as a whole were very good, comparing reasonably well with historical data from women with low-risk pregnancies who gave birth at SHH in 2003 and very favourably (as would be expected, given the low-risk status of participants) against clinical outcomes from The Wollongong Hospital (TWH) and NSW overall
- There were no differences in clinical outcomes between the trial participants who lived within the SHH catchment and those who lived elsewhere, and few differences between those who gave birth during the first six months of the program and those who gave birth later
- 104 of the 174 mothers (60%) completed an evaluation questionnaire. With few exceptions, they were extremely positive about the program. Even those who were disappointed with some aspects of their care all said they would recommend the program to their friends
- 90% of those who had previously given birth said that the care they received was better than their previous experience/s in giving birth
- 78% said that knowing a doctor was on the premises was very important or important
- A follow-up telephone survey of those women living in the SHH catchment area who said this found that half would be happy to use the program at SHH. The other half would not or were not sure

The quality of antenatal, intrapartum and postpartum care and midwives' decisions about consultation, referral and transfer were closely scrutinised via the peer review process. Based on the reviews and the clinical data, the outcomes of the program can be summarised as follows:

- 38% required no intervention (as specified in the policy guiding the program) and were not transferred out of the program. These mothers could have delivered safely at SHH
- 50% required intervention and were transferred out of the program
- 7% were transferred because intervention may have been required according to the policies of the program. Nevertheless, these women progressed to spontaneous vaginal births
- 5% had clinical indicators for transfer, but were not transferred (in time). Seven of these nine cases were due to light meconium stained liquor that became apparent during the second stage of labour. One was a late request for an epidural block and the other had slow progress in the second stage but gave birth before transfer. In all of these cases, mothers' and babies' health was not compromised. One baby was admitted to the nursery for several hours

Based on this evidence, our conclusions are:

- The Midwifery Group Practice Model as run at the Wollongong Hospital (TWH) works extremely well and achieves good outcomes. Midwives are managing labour safely and making appropriate decisions about transfer. The vast majority of consumers are very satisfied with the service they receive.
- Taking into account the good clinical outcomes, very high levels of consumer satisfaction, short length of hospital stay, and high rates of breastfeeding, the program appears to be cost effective.
- On all of the evidence, it should be continued. The only question is where. There are three options:
  1. At the SHH only
  2. At the TWH only
  3. At both.
- The provision of this model of care at SHH may be viable, sustainable and safe but only if:
  1. The current criteria for entry into, and transfer out of, the program are (at least) maintained and (potentially) expanded, and
  2. Pregnant women are given an informed choice.

Using figures based on the numbers of births at TWH during the period of the MGP trial and the level of acceptance of the MGP model, according to our survey data, we modelled three possible scenarios. These estimate the minimum and maximum number of mothers who would deliver at SHH if the program was transferred there. Based on these scenarios, the minimum number is 57 a year, or a little more than one a week. The maximum number is 239 or a little less than five per week. Whether these numbers represent a viable service at SHH is a judgement best made by others.

Part two of the evaluation sought the views of key stakeholders on these findings and options for the future. Nine separate submissions were received. Stakeholders generally agreed that the issue of safety had been addressed in the evaluation, but identified other issues that had not been covered. Most of these were outside the scope of this report. They included:

- the availability of the ambulance service to provide transfers from SHH to TWH
- the communication difficulties that may arise between birth centre staff and medical staff, who have opposed the establishment of a birth centre at SHH
- the possible effects of changing eligibility criteria on the viability of the program
- the need for maternity services in the Shellharbour region, due to population growth
- equity issues relating to the fact that a range of options for maternity care are recommended in the NSW Framework for Maternity Services and are available to women in other parts of this area health service and in other regions, but not currently in the Illawarra.

Stakeholders also had concerns about the whether the simulation trial conducted at TWH accurately reflected the outcomes that would have been achieved at SHH. In particular, people felt there would be fewer intrapartum transfers if this involved an ambulance journey.

In response to requests for more information on the outcomes for the women who remained low risk and commenced labour 'at SHH', further tables of figures were provided.

The evaluation findings were presented to the Primary Health Care Model Steering Committee on 27 June 2005. After discussion, two resolutions were passed:

1. That continuity of care represents best practice in maternity care
2. That the MGP model is a safe model of care for use at SHH.

The viability of the program, and its future, is now to be considered by a working party established for that purpose.

# 1 Introduction

## 1.1 Background

Shellharbour Hospital (SHH) is a district hospital in the Illawarra region of New South Wales. It is located 115km south of Sydney and 25km south of Wollongong, the regional centre. Until November 2003, SHH provided birthing services for low-risk pregnancies and was equipped with a level 1b nursery for neonatal care. In 2001, there were 424 live births at SHH and NSW public health statistics showed that, on average, health outcomes for mothers and babies were comparable with, or better than, those for the state overall (NSW Health 2002a). These outcomes were consistent with those of other, similar units that accept only low risk patients.

At the time birthing services were closed, only four obstetric specialists were practising in the Illawarra region, and they were unable to provide cover for all shifts at SHH as well as serving Wollongong Hospital (TWH) and Figtree Private Hospital (approximately 5km south-west of TWH). The number of births at SHH declined sharply from an average of 35 per month to just 10 in September and October 2003. Uncertainty about whether a service would be available at SHH, combined with changes in referral patterns by general practitioners and improved facilities at TWH, led to a growing number of women from Shellharbour choosing to give birth at TWH. A total of 272 women who had been booked at SHH in January 2003 subsequently gave birth at TWH; 76 of these transfers occurred as a direct result of ward closure (Heinjus and Goodfellow, 2003).

In July 2003 a steering committee was established to consider the option of establishing a primary care midwifery model at SHH (see Appendix I for membership). This was driven not only by the shortage of medical officers, but also by a growing recognition that such models may be appropriate for women with low-risk pregnancies.

## 1.2 Primary care maternity services

Studies of maternity services across Australia in the past ten years have identified a need for greater access to primary care services for women with low-risk pregnancies (NSW Health, 2003). The NSW Framework for Maternity Services (2002), which arose from these studies and reviews, sets out a philosophy statement for the development of maternity services. This statement acknowledges the rights of consumers to safe maternity care and recognises that continuity of care and consistent information are essential in the provision of appropriate care. It also states that "collaboration between health workers ... plus the development of a competent and flexible workforce are critical factors in ensuring safe services and the availability of a range of models of care" (NSW Health, 2002b).

Safety and satisfaction are the main issues to be addressed in providing maternity care to Australian women (NHMRC, 1996). The concept of safety encompasses the emotional and physical well being of the mother and baby, according to a panel of experts who reviewed childbirth services in the UK. They advised that the achievement of healthy outcomes should not be used as "an excuse for unnecessary interventions and technological surveillance which detracts from the experience of the mother" (Department of Health UK, 1993). Maternal satisfaction with maternity care relates to continuity of care, access to and sharing of information, and control over the birth process. Women value good communication, consistent information, friendliness and genuine interest in their concerns and questions (NSW Health, 2003).

Evidence on the clinical effectiveness of conventional and alternative models of care is available from several recent Cochrane Collaboration reviews of randomised controlled trials, which consider the question from different angles. Overall, the findings indicate that outcomes are similar, but that both conventional and alternative models have slightly elevated levels of risk on some outcome variables and lower risk on others. For example, a review of three randomised

controlled trials showed that antenatal care led by midwives or general practitioners had comparable clinical results to that led by obstetricians (Villar, Carroli, Khan-Neelofur, Piaggio and Gulmezoglu, 2004). There were no detrimental effects on perinatal outcomes, although there were lower rates of pregnancy-induced hypertension and pre-eclampsia in the midwife/GP groups, along with less early diagnosis of foetal malpresentation, indicating a risk of missed diagnoses.

Six trials examined birth centres, which operated within hospital settings but with a philosophical orientation towards birth as a normal physiological process and no routine input by medical officers. The use of birth centres by women with low-risk pregnancies was associated with a small but significant reduction in intervention (including a higher rate of spontaneous vaginal birth and less use of epidural anaesthesia) and greater maternal satisfaction. There was, however, an increased risk of perinatal mortality. The reviewers emphasised the need for vigilance by both caregivers and clients to detect early signs of complications (Hodnett, Downe, Edwards and Walsh, 2004).

Many women were transferred from birth centres to standard care before or during labour because they no longer met the eligibility criteria. Failure to progress, foetal distress and desire for pain relief medication were the most common reasons for intrapartum transfer. Rates of transfer varied between trials from 29% to 77%, and were substantially higher among women having their first babies (primiparous women) than those who had previously given birth. For example, in one Canadian trial, 63% of primiparous women were transferred compared with 19% of multiparous women (overall rate was 43%) (Hodnett et al., 2004).

Continuity of care by midwives has demonstrated benefits for women and babies, including a lower risk of antenatal hospital admission, less use of pain relief drugs in labour, fewer episiotomies (but more tears) and less need for neonatal resuscitation (Hodnett, 2004). Among the 1815 women in two trials included in a recent Cochrane Collaboration systematic review, those cared for by teams of midwives were more likely to be pleased with their care than those given the standard combination of physician and midwife care. There were no statistically significant differences in neonatal outcomes such as Apgar scores, low birth weight or stillbirths/neonatal deaths (Hodnett, 2004). One of the trials, which was conducted in Australia, found significant reductions in costs associated with continuity of care by midwives (Rowley, 1995, cited in Hodnett, 2004). The finding that women cared for by midwives had less need for pain relief was consistent with earlier research and suggests that familiar caregivers are better able than unfamiliar staff to provide appropriate support to women in labour.

A Cochrane Collaboration team is currently reviewing trials comparing midwife-led care with shared (that is, GP and midwife) and medical (that is, obstetrician-led) models of care and is considering more than 50 outcome variables in nine categories, including antenatal, labour and delivery, neonatal, short- and long-term maternal wellbeing, breastfeeding, staff satisfaction and cost-effectiveness (Hatem et al., 2004 (Protocol)). This review is likely to include many of the studies reviewed above, along with additional and new trials focusing specifically on the efficacy of midwife care.

### **1.3 Design of the Midwifery Group Practice model**

The principles of the NSW Framework for Maternity Services (2002), which are based on current evidence, were incorporated into the Midwifery Group Practice (MGP) model developed by the steering committee. The model was also consistent with the NSW Families First Initiative and the main objectives of the NSW Maternity Services Advisory Committee (Heinjus and Goodfellow, 2003). The model was developed following consultation with medical officers, the NSW Ambulance Service, midwives, the Nurses' Association and consumers (including the Maternity Coalition, the Australian Breastfeeding Association and current and past users of local maternity services). Full details of this consultation process have been reported elsewhere (Heinjus and Goodfellow, 2003). Medical clinicians did not support a primary care midwifery model at SHH, but there was some support for such a model at TWH. The ambulance service supported the model in

principle but was unable to commit resources to ensuring that women could be transferred rapidly from SHH to TWH in the event of an emergency. The NSW Nurses' Association, local midwives and consumers were in favour of a midwifery-led model of care.

Two options for maternity services at SHH were explored. The first involved the immediate implementation of the model at SHH, including labour and birthing support by midwives for low-risk women with ambulance transfer to TWH if emergency obstetric or neonatal care was required. The second, which was adopted, consisted of antenatal and postnatal care at SHH (or TWH) with labour and birthing at TWH supported by midwives within the MGP program. This model provided continuity of care while addressing the concerns of medical staff and consumers about the perceived need for on-site medical backup. It was seen as "an interim measure to develop clinical governance, demonstrate clinical outcomes and attract medical confidence" (Heinjus and Goodfellow, 2003, p.18). Therefore, the trial period – 5 July 2004 to 30 June 2005 – was run as a simulation of how the model would work at SHH.

A similar program has been running at Ryde Hospital for one year. Midwifery group practice programs are also being developed for other hospitals in NSW (e.g., Camden in south-western Sydney, Belmont at Newcastle) for the same reasons. Each is being independently evaluated.

The Wollongong MGP program began on 5 July 2004 with a single team of three midwives. In September 2004 a second team was added. Each midwife cares for 40 women per year through pregnancy, labour, birth and the early postpartum period. This model of care is known as 'caseload' midwifery. The primary midwife is responsible for assessing each woman and planning her care. She operates within specified criteria for consultation with and referral to other health professionals. Care is seen as a partnership between the midwife and the pregnant woman. Each midwife is allocated to attend four births a month as her primary caseload and provides backup for her other two team members when they are off duty or unavailable. Salaries are annualised and midwives who take part in caseload work are not placed on the standard roster for the maternity unit.

Pregnant women who fulfilled the Australian College of Midwives criteria for 'low risk' were given information about the MGP program at the antenatal clinic at Wollongong or Shellharbour Hospitals. They could elect to take part. They were told it was a pilot and was being evaluated. Women who developed risk factors or complications during their pregnancy are transferred off the program into routine care, but generally continue to enjoy continuity of care with their primary midwives. Similarly, if complications occurred during the delivery, the patient was transferred to the care of a medical practitioner. The program was also open to women who learned about it in other ways (e.g., word of mouth). The program was and continues to be popular and has a waiting list.

Before and during labour, midwives completed a Management Plan of Pregnancy and Labour, following Australian College of Midwives guidelines for care. The Management Plan was used to record complications identified and outcomes of any consultations. If complications developed, such that the patient needed to be transferred out of the program, the time and the reasons were also recorded in the Management Plan.

#### **1.4 The evaluation**

In December 2004, the Centre for Health Service Development, University of Wollongong, was commissioned to conduct an independent evaluation of the trial program. The aim of this evaluation was to assess clinical standards and outcomes as well as maternal and staff satisfaction with the model. Questions of cost-effectiveness will need to be considered separately by the steering committee and are outside the scope of this report.

Data on clinical outcomes were also sourced from the Management Plans of Labour (jointly with the project manager, Anne Lainchbury). The quality and timing of midwives' decisions about

transfer form part of the clinical outcomes evaluation, providing a simulation of how the program might work if it were conducted at SHH.

The main research questions concern the safety record of the MGP program and whether it could be safely implemented at SHH. This incorporates the issues of whether the selection and transfer criteria are appropriate, the antenatal and intrapartum care provided by the midwives and their record of consultation and transfer when needed. The second question – whether the program could work at Shellharbour – depends not only on the safety record but also on mothers' satisfaction with the program. It also depends on staffing issues, particularly the impact of the program on the group practice midwives themselves.

Outcome measures that can be used as indicators of safety include: the rate of spontaneous vaginal birth; maternal blood loss; transfer rates (antenatal, intrapartum and postpartum); indications for forceps/Caesarean section; baby's birth weight and Apgar scores at one and five minutes; whether resuscitation or continuous positive airways pressure (CPAP) was required; whether baby was admitted to the special care nursery; postpartum complications and referral or readmission of baby or mother. These are standard outcomes measures as used in the annual NSW Mothers and Babies reports published by NSW Public Health and in numerous previous trials (see, for example, Cochrane Collaboration reviews by Hodnett et al., 2004 and Hodnett, 2004, Villar et al., 1998, and the protocol by Hatem et al., 2004).

In the case of intrapartum transfer, the task includes an assessment of the outcomes if the transfer had had to occur from Shellharbour to Wollongong. This includes an assessment in cases in which a transfer was indicated but there was insufficient time, and whether this would have compromised the outcomes. Other important outcomes data include: genital tract status (including use of episiotomy), breastfeeding and mothers' evaluations of their own care and adjustment to motherhood.

## 2 Method

### 2.1 Design

Mothers' satisfaction with care and adjustment to motherhood were assessed with self-report questionnaires. Quantitative and qualitative data were collected. Clinical outcomes were measured by comparing birthing unit data for the MGP with data for SHH and TWH in the year before the MGP commenced. These data were obtained from the report *NSW Mothers and Babies 2003* (NSW Health, 2004). The choice of these historical control groups enables the comparison of MGP clinical data with birth outcomes in the same locations, among women with similar demographic characteristics and, in the case of SHH, low-risk pregnancies. A randomised controlled trial was not considered a feasible design for this evaluation. The quality of decision making regarding care and transfer was assessed by examining records of the peer review process. Staffing issues were addressed in a report to the NSW Nurses Association and Illawarra Health by the project manager (AL) in February 2005, which is summarised below. Qualitative feedback from the midwives will be obtained by interview following the release of this draft report, enabling them to comment both on the findings and on their own experiences of the MGP program.

In the second part of the evaluation the views of key stakeholders (midwives, obstetricians, the Maternity Coalition and others identified through the course of the evaluation) will be sought. Any dissent from the project team's conclusions and recommendations will be noted in the final report.

### 2.2 Participants

#### 2.2.1 Eligibility

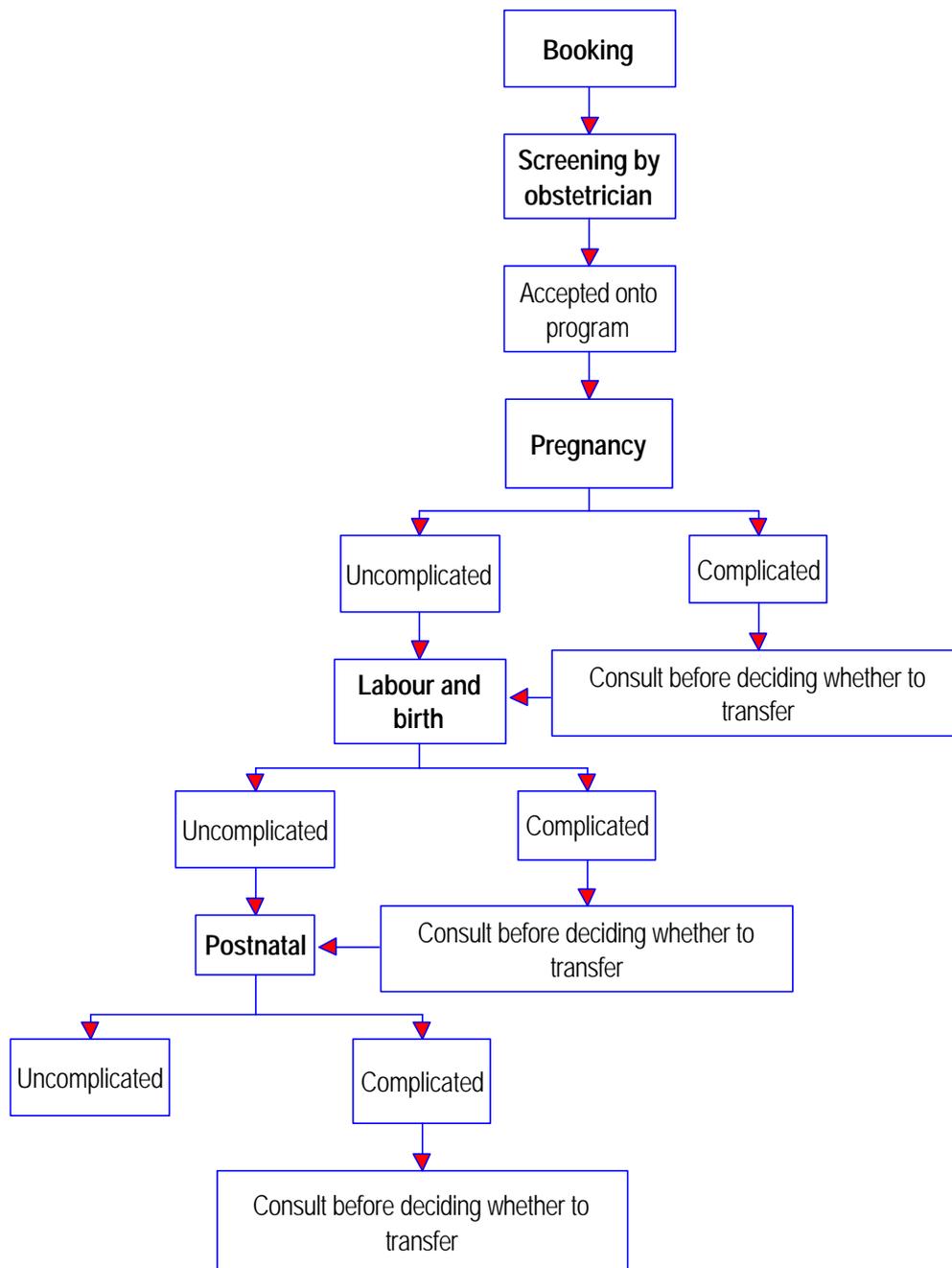
Pregnant women were eligible to take part in the MGP program if they met the Australian College of Midwives Incorporated (ACMI) criteria for 'low-risk' pregnancies (ACMI, 2004). These excluded women with certain medical conditions, such as diabetes mellitus, cardiovascular disease, renal disorders, moderate to severe asthma, previous difficulties with anaesthesia, some infectious diseases and some neurological and psychiatric disorders. They also excluded women with gynaecological disorders and those with an obstetric history that included issues such as active blood group incompatibility, pre-eclampsia or previous Caesarean section.

The ACMI guidelines describe three levels of consultation and referral, which midwives may undertake when an abnormality or complication presents during a woman's care. These are:

- A. Discuss the issue/condition with another midwife and/or with a medical colleague.
- B. Consult with a medical practitioner.
- C. Transfer responsibility for the woman's care to a medical specialist.

At level A, the primary responsibility for the woman's care remains with the midwife. At level B, the woman's situation is evaluated and decisions made about responsibility for care, while at level C medical care is required, although the midwife continues to provide care or support as appropriate (ACMI, 2004). Indications of various medical, gynaecological or previous obstetric issues and conditions may be present at booking, during pregnancy, during labour and birth or in the post-partum period. At each point the guidelines provide information about the appropriate course of action (see Figure 1). These guidelines were followed and consultation, referral and transfer out of the MGP program undertaken when necessary.

**Figure 1 Decision tree used by the program**



Note: Consultation procedures and options are set out in the program guidelines

## 2.2.2 Recruitment

At their booking interviews at Wollongong or Shellharbour Hospitals, eligible women were informed about the MGP program and asked whether they were interested in taking part. They were told this was a trial and would be evaluated, and that the results of the evaluation would be used in determining whether a similar program could be run at Shellharbour Hospital. Because of the high demand for this program, places were not available to all eligible women who wished to participate, and a waiting list was created. A total of 180 were enrolled in the MGP during the evaluation period. There were six cancellations, leaving a total of 174 women who gave birth during the first 10 months of the trial period, 5 July 2004 to 30 April 2005. (The trial is scheduled to continue until 30 June 2005 but only the first 10 months' data are reported here.)

## 2.2.3 Characteristics of the sample

Participants' ages at booking ranged from 18 to 43 years ( $M=28.2$ ,  $SD=5.0$ ). Gestation at first visit ranged from 12 to 38 weeks ( $M=22.1$ ,  $SD=5.8$ ). As would be expected, those giving birth earlier in the trial were more advanced in their pregnancy when booked into the program than those recruited later. Those booked very late in their pregnancy were women who had already had most of their antenatal care with the midwives who then joined the MGP program. The sample was divided equally into women having their first babies ('primips': 87, 50%) and those who had previously given birth ('multips': 87, 50%). (This was not planned, but occurred by chance.)

The MGP program was offered to all eligible women who presented for booking at Wollongong or Shellharbour Hospitals during the trial period, not just those who lived within the Shellharbour catchment area. Seventy-four (42.5%) of the participants lived within the Shellharbour area.

## 2.3 Materials

### 2.3.1 Management Plans of Pregnancy and Labour / Data Collection

A data collection form for clinical information was designed by the project manager (AL). The content and layout of this form mirrored the standard data collection for the birthing unit at Wollongong Hospital, which in turn is based on the Midwives' Data Collection for NSW. Some additional information was collected, including:

- Percentage of antenatal and intrapartum care by primary midwife;
- Details of postpartum care, such as whether it was provided by the primary midwife and the number of home visits made.

Because the trial was intended as a simulation of a midwifery group practice model running at Shellharbour, with no on-site obstetric support, records relevant to the safety of such a model were kept, including:

- Reasons for cancellation or transfer (antenatal, intrapartum or postpartum), if required;
- Reasons for consultation or referral, if required ;
- Whether transfer was indicated during labour but there was insufficient time, and the effect (if any) on outcomes;
- Whether intrapartum transfer (if it occurred) would have compromised outcomes if the woman had had to travel from Shellharbour.

### 2.3.2 Consumer survey

A self-report questionnaire was designed for the evaluation. This was adapted from a survey instrument created for a community midwifery evaluation in Fremantle, WA, and developed for a similar midwifery group practice trial taking place concurrently (commencement date 15 March 2004) at Ryde in north-western Sydney (Thiele and Thorogood, 1998/2001). The purpose of this survey was to collect information about women's evaluations of their own antenatal, intrapartum and postpartum care and their adjustment to motherhood. Satisfaction with various aspects of care was assessed using five-point Likert scales. Mothers were also given the opportunity to provide answers to open questions about what they liked and disliked about their care and to suggest ways in which it could be improved. A copy of the questionnaire is provided in Appendix II.

A script was created for structured telephone interviews with some of the women who had responded to the questionnaire. The script focused on one question: whether women would be willing to use the MGP service if it operated at SHH without on-site specialist medical backup. A copy of the script is provided in Appendix III.

## 2.4 Procedure

### 2.4.1 Ethics

Women took part in the MGP trial on the understanding that clinical outcomes would be evaluated. This was explained at the time of booking, and participation in the program implied consent to take part in the evaluation.

The methods and materials used in the consumer survey were approved by the Human Research Ethics Committee of the University of Wollongong in December 2004. The questionnaire incorporated a consent form for use of medical records for research purposes. Mothers were asked to provide their names and contact details to enable linking of their survey responses with clinical information about their antenatal, labour and postnatal care. This was optional. Those who preferred to remain anonymous were asked to complete three questions about the births of their babies, namely: how labour began; who delivered the baby; and how the baby was delivered. This was intended to enable the researchers to detect any basic differences in clinical outcomes among those who chose to give their names and those who did not. Most participants (86/104, 82.7%) provided their names, allowing their survey data to be linked with their medical records.

### 2.4.2 Data collection and analysis

Detailed records of deviations from the normal during the antenatal, intrapartum and postpartum period for women in the MGP program were kept on the Management Plans described above. These data provided the basis for the evaluation of clinical outcomes.

In addition, 82 cases (47.1%) were subjected to peer review by MGP midwives and other staff of the Wollongong Hospital birthing unit including educators, nurse managers and consultant obstetricians. An obstetrician practising at another hospital within the area health service also agreed to take part in these monthly reviews. Cases were selected for peer review according to the following criteria:

- Any transfers out of the MGP program;
- Any interesting or unusual cases (including sub-optimal outcomes);
- One in five uncomplicated cases.

These criteria were revised in February 2005 to ensure that more of the cases suitable for birthing at Shellharbour Hospital were examined and discussed in greater detail.

Survey data collection commenced after ethics approval was obtained. Approximately 100 questionnaires were posted in January 2005 to women who had been discharged from the MGP program prior to this date. After this, midwives handed questionnaires to mothers on discharge from the program. This occurred until the cut-off date for data analysis for this report, which was the end of April 2005. The questionnaires were designed to be completed independently, but the enclosed information sheet invited women to contact the associate research fellow involved in the evaluation (KW) if they preferred to complete the survey by face-to-face or telephone interview. No participants took up this option. Questionnaires were returned by pre-paid post directly to the evaluation team at the University of Wollongong.

Structured interviews were conducted with a small group of women who returned the questionnaire and provided their names and telephone numbers, in order to ascertain their feelings about giving birth at SHH without specialist medical backup on the premises. Telephone calls to these 23 women were made on two days in May 2005 by two staff members from the University of Wollongong.

Survey and birthing unit data were entered into forms in an Access database and imported to SPSS Version 12.0.1 for analysis. Chi-square tests were used to compare frequencies in different groups or categories. The list of comparisons and significance levels is provided in Appendix IV.

### 3 Results

#### 3.1 Clinical outcomes: Management Plans of Labour

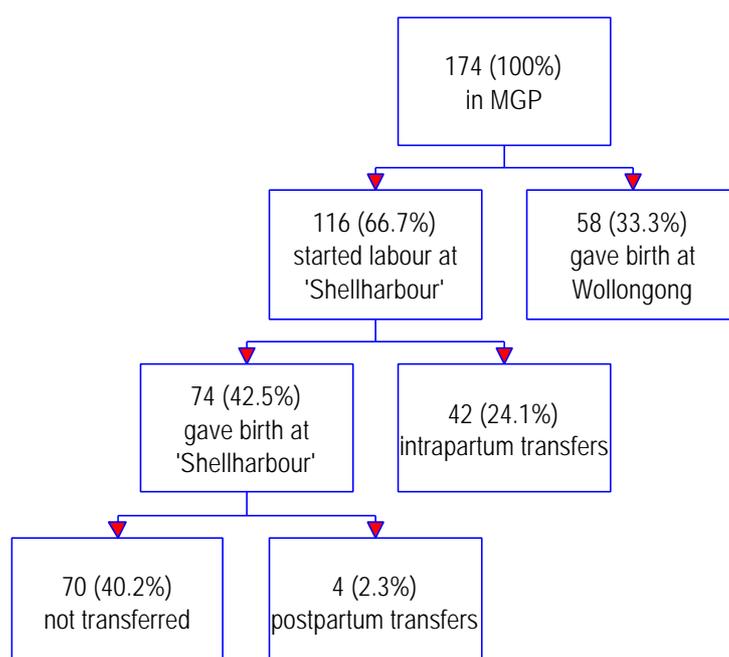
During the trial period, 174 babies were born: 90 male infants and 84 female infants. There were no multiples, stillbirths or neonatal deaths. The primary midwife or a team midwife known to the birthing woman assisted at all but five of the births (169, 97.1%).

Of the original 180 women booked into the program, there were six cancellations: two for medical reasons, two chose other types of care, one moved out of the area and one woman was not compliant with clinic visits and tests.

##### 3.1.1 Transfers

A total of 104 (59.8%) women were transferred to standard maternity care at some point in their pregnancy, labour or postpartum period. These women continued to be cared for by their MGP midwives in addition to the standard care. Figure 2 summaries the transfer outcomes overall and Table 1 presents the reasons for these transfers. All but one of the intrapartum transfers took place with sufficient time, so that it was considered that outcomes would not have been compromised if the women had had to travel from SHH. In one case, the woman was transferred because of light meconium stained liquor but birth was imminent and it would have been inappropriate to put her in an ambulance at that point. In eight cases, an intrapartum transfer was indicated but did not occur because there was insufficient time. Six of these were due to light meconium stained liquor which became apparent during the second stage of labour. One woman requested an epidural too late to be transferred, and another woman was progressing slowly in the second stage of labour but gave birth before transfer would have been possible. In no cases were outcomes compromised because the transfer occurred late or did not occur. (The circumstances of some of these cases were discussed in peer review: see Section 3.2 below.) Taking into account the 70 women who were not transferred and the four transferred after giving birth, a total of 74 babies would have been born at SHH.

**Figure 2** Transfer outcomes for the program



**Table 1 Transfers out of the MGP program<sup>^</sup>**

Transfer	Reason	No.	% of transfer type	% of total births (n=174)
<b>Antenatal</b>	Induction of labour	19	32.7	10.9
	Pre-eclampsia	10	16.9	5.7
	Elective Caesarean for breech	6	10.2	3.4
	Premature labour	5	8.5	2.9
	Medical reasons including gestational diabetes	5	8.5	2.9
	Premature rupture of membranes	3	5.1	1.7
	Large for dates	3	5.1	1.7
	Small for dates	3	5.1	1.7
	Polyhydramnios	2	3.4	1.1
	Elective Caesarean for other reasons	1	1.7	0.6
	High head	1	1.7	0.6
	<b>TOTAL ANTENATAL</b>		<b>58</b>	<b>100.0</b>
<b>Intrapartum</b>	Augmentation	20	47.6	11.5
	Meconium stained liquor	9	21.4	5.2
	Epidural anaesthesia	6	14.3	3.4
	Lack of progress in second stage	5	11.9	2.9
	Maternal condition	1	2.4	0.6
	Other	1	2.4	0.6
	<b>TOTAL INTRAPARTUM</b>		<b>42</b>	<b>100.0</b>
<b>Postpartum</b>	Maternal condition	2	50.0	1.1
	Neonatal condition	2	50.0	1.1
	<b>TOTAL POSTPARTUM</b>	<b>4</b>	<b>100.0</b>	<b>2.3</b>
<b>No transfer</b>		<b>70</b>	<b>100.0</b>	<b>40.2</b>
<b>TOTAL</b>		<b>174</b>		<b>100.0</b>

<sup>^</sup>Care continued with MGP midwives in addition to standard maternity care following transfers.

Consultation with or referral to specialist medical staff was undertaken in the antenatal period for 85 women (48.9%), most often for review regarding induction of labour. Five had a day stay admission to hospital and 11 were admitted overnight or for longer periods. On average, women in the program received about half of their antenatal care from their primary midwife (range 10-90%, mean=56.8%, SD=15.0%). Most women (161, 92.5%) had their midwifery care during labour and birth provided by their primary midwives. Intrapartum consultation with a specialist medical officer was required for 39 (33.9%) of the 115 women who started labour within the MGP program (that is, excluding antenatal transfers). Most (33) of these referrals were for maternal reviews; seven resulted from foetal monitoring. Doctors assisted at 45 of the births (25.9%).

### 3.1.2 Labour and birth

Labour and birth outcomes are presented in Table 2. Almost three-quarters of women in the program had a spontaneous vaginal birth, although the rate for women having their first babies (primips) was much lower than that for women who had previously given birth (multips). Twenty-nine babies were delivered by Caesarean section; of these, nine were planned. There were 18 instrumental births, and all but one of these were to primiparous mothers. Primips were also more likely to require pain relief and/or augmentation of labour than multiparous women.

**Table 2 Labour and birth**

		Primips		Multips		Total	
		No.	%	No.	%	No.	%
<b>Onset</b>	Spontaneous	63	72.4	75	86.2	138	79.3
	Induced	15	17.2	10	11.5	25	14.4
	No labour*	9	10.3	2	2.3	11	6.3
	<b>TOTAL</b>	<b>87</b>	<b>100.0</b>	<b>87</b>	<b>100.0</b>	<b>174</b>	<b>100.0</b>
<b>Augmentation or induction type<sup>#</sup></b>	Oxytocin*	42	48.3	14	16.1	56	32.2
	Prostaglandins*	8	9.2	1	1.1	9	5.2
	Foley catheter	0	0	0	0	0	0
	Artificial rupture of membranes	22	25.3	15	17.2	37	21.3
<b>Pain relief<sup>#</sup></b>	None*	42	48.3	61	70.1	103	59.2
	Nitrous oxide*	37	42.5	24	27.6	61	35.1
	Pethidine*	13	14.9	3	3.4	16	9.2
	Epidural (excluding Caesarean)*	19	21.8	3	3.4	22	12.6
<b>Birth</b>	Spontaneous vaginal birth*	46	52.9	81	93.1	127	73.0
	Forceps	1	1.1	0	0	1	0.6
	Vacuum*	16	18.4	1	1.1	17	9.8
	Emergency Caesarean section*	17	19.5	3	3.4	20	11.5
	Elective Caesarean section	7	8.0	2	2.3	9	5.2
<b>TOTAL</b>		<b>87</b>	<b>100.0</b>	<b>87</b>	<b>100.0</b>	<b>174</b>	<b>100.0</b>

\*Difference between primips and multips is significant,  $p < 0.05$

<sup>#</sup>Categories are not mutually exclusive, therefore no totals are provided

Management of the third stage of labour usually involved controlled cord traction (139, 95.9%, excluding Caesarean section). In two cases there was physiological management of the third stage (1.4%, excluding Caesarean section).

The reasons for interventions in labour and birth are given in Table 3. Most inductions were performed either because the woman was post dates or had pre-eclampsia or gestational hypertension. Vacuum (or, in one case, forceps) delivery was used when the second stage was prolonged or there was evidence of foetal or maternal distress. Seven of the nine planned Caesarean sections were due to the position of the baby (breech or unstable lie). Emergency Caesareans were performed in response to evidence of foetal distress or lack of progress in labour, and occasionally following an unsuccessful attempt to deliver the baby instrumentally.

**Table 3 Reasons for interventions**

Intervention	Reason	No.	%	% of total births (n=174)
<b>Induction</b>	Post dates	15	60.0	8.6
	Pre-eclampsia / gestational hypertension	7	28.0	4.0
	Foetal well-being	2	8.0	1.1
	Small for gestational age	1	4.0	0.6
	<b>TOTAL INDUCTIONS</b>	<b>25</b>	<b>100.0</b>	<b>14.4</b>
<b>Vacuum or forceps</b>	Prolonged second stage	10	55.6	5.7
	Foetal distress	7	38.9	4.0
	Maternal distress	1	5.6	0.6
	<b>TOTAL FORCEPS OR VACUUM</b>	<b>18</b>	<b>100.0</b>	<b>10.3</b>
<b>Elective Caesarean Section</b>	Breech	6	66.7	3.4
	Unstable lie	1	11.1	0.6
	Maternal condition	1	11.1	0.6
	Other	1	11.1	0.6
	<b>TOTAL ELECTIVE CAESAREAN</b>	<b>9</b>	<b>100.0</b>	<b>5.2</b>
<b>Emergency Caesarean Section</b>	Foetal distress	7	35.0	4.0
	Lack of progress in first stage	4	20.0	2.3
	Lack of progress in second stage	3	15.0	1.7
<b>Emergency Caesarean Section</b>	Unsuccessful vacuum or forceps	3	15.0	1.7
	Other	3	15.0	1.7
	<b>TOTAL EMERGENCY CAESAREAN</b>	<b>20</b>	<b>100.0</b>	<b>11.5</b>

A variety of birth positions were chosen (see Table 4). The use of a more active birthing position – that is, not supine or semi-supine – was associated with less use of pain relief and less perineal injury (statistically significant to  $p < 0.05$ ).

**Table 4 Birth positions**

Position	No.	%
Semi-supine	43	29.7
All fours	38	26.2
Lateral	22	15.2
Other / unknown	22	15.2
Supine	13	9.0
Standing	5	3.4
<b>Total<sup>#</sup></b>	<b>145</b>	<b>100.0</b>

<sup>#</sup>Excludes deliveries by Caesarean section

### 3.1.3 Maternal and child outcomes

Maternal outcomes are presented in Table 5. Of the 145 women who did not have a Caesarean birth, 51 (35.2%) had an intact perineum. Nine episiotomies were performed (6.2%). All of these were associated with interventions, including seven with vacuum extraction. There were nine cases of postpartum haemorrhage, seven of which were associated with interventions. Two cases occurred among women giving birth 'at' SHH and one of these would have required transfer. There were five cases of postpartum complications such as infection or mastitis. Women having their first babies were more likely than multiparous women to wish to breastfeed, but also more likely to have a delayed start to breastfeeding, possibly due to their higher rate of instrumental and operative births. Despite this potential difficulty, more than 9 out of 10 women (including primips) who wished to breastfeed were still doing so when discharged from the program.

**Table 5 Maternal outcomes**

		Primips		Multips		Total	
		No.	%	No.	%	No.	%
<b>Genital tract status<sup>#</sup></b>	Intact*	13	20.6	38	46.3	51	35.2
	Graze	9	14.3	21	25.6	30	20.7
	First degree tear	13	20.6	16	19.5	29	20.0
	Second degree tear	17	27.0	10	12.2	27	18.6
	Third degree tear	4	6.3	0	0	4	2.8
	Fourth degree tear	1	1.6	1	1.2	2	1.4
	Episiotomy*	8	12.7	1	1.2	9	6.2
<b>Postpartum haemorrhage</b>	.>=500ml	4	4.6	5	5.7	9	5.2
<b>Postpartum complications</b>	None	84	96.6	85	97.7	169	97.1
<b>Postpartum complications</b>	Infection	1	1.1	1	1.1	2	1.1
	Other	1	1.1	1	1.1	2	1.1
	Mastitis	1	1.1	0	0	1	0.6
<b>Breastfeeding</b>	Intended to breastfeed*	86	98.9	75	86.2	161	92.5
	Initiated within one hour of birth* <sup>^</sup>	38	44.2	60	80.0	98	60.7
	On discharge from program <sup>^</sup>	78	90.7	70	93.3	148	91.9

\*Difference between primips and multips is significant,  $p < 0.05$

<sup>#</sup>Excludes deliveries by Caesarean section. Percentages based on 145 births: 63 primips and 82 multips.

<sup>^</sup>Excludes those who did not intend to breastfeed.

**Table 6 Child outcomes**

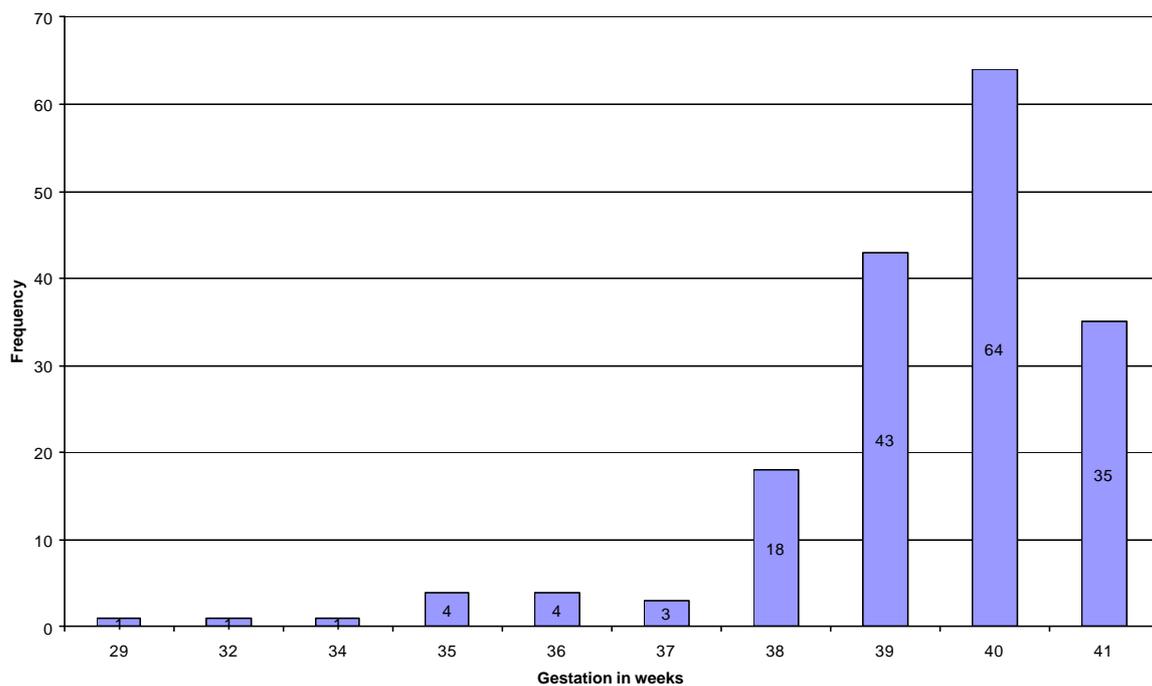
		Primips		Multips		Total	
		No.	%	No.	%	No.	%
<b>Gestation at birth</b>	< 37 weeks	8	9.2	3	3.4	11	6.3
<b>Apgar scores</b>	=4 at one minute	3	3.4	3	3.4	6	3.4
	=4 at five minutes	0	0	0	0	0	0
<b>Weight</b>	<10 <sup>th</sup> centile for gestation	2	2.3	2	2.3	4	2.3
<b>Neonatal care</b>	Resuscitation	5	5.7	5	5.7	10	5.7
	CPAP ventilation	2	2.3	2	2.3	4	2.3
<b>Admission to nursery</b>	Not required	76	87.4	83	95.4	159	91.4
	Premature	5	5.7	1	1.1	6	3.4
	Observations	2	2.3	2	2.3	4	2
	Other	2	2.3	0	0	2	2.3
	Respiratory distress	0	0	1	1.1	1	0.6
	CPAP ventilation	1	1.1	0	0	1	0.6
	Congenital condition	1	1.1	0	0	1	0.6
<b>Length of stay in nursery</b>	>24 hours*	10	11.5	2	2.3	12	6.9

\*Difference between primips and multips is significant,  $p < 0.05$

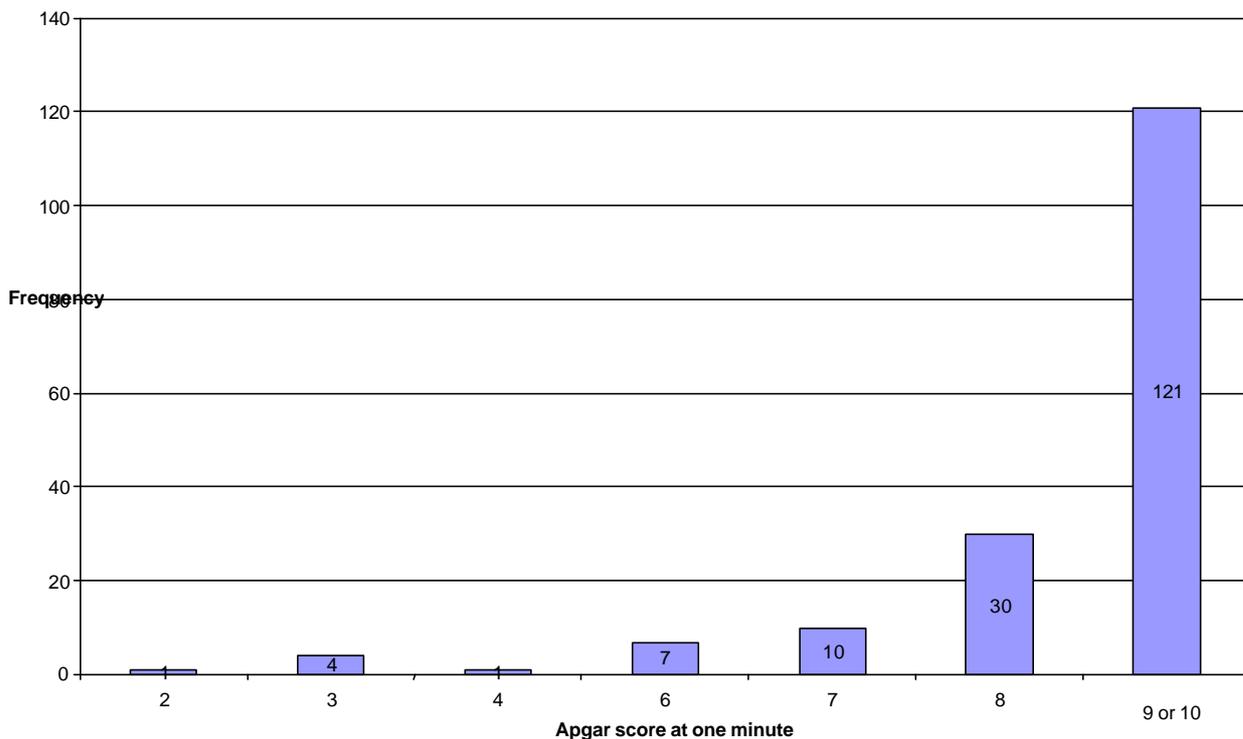
Child outcomes are presented in Table 6. Eleven babies (6.3%) were born before reaching 37 weeks' gestation, which is considered full term. The earliest was born at 29 weeks and the latest at 41 weeks (see Figure 3). Apgar scores, which can range from zero to ten, are used to measure the health of babies at one minute and five minutes after birth. They are based on a number of indicators including breathing and heart function. As Figure 4 shows, most babies born within the MGP program were healthy at birth, with Apgar scores of 10, 9 or 8 (151, 86.8%). Five babies had Apgar scores of four or less at birth, but by five minutes after birth all were doing well (see Figure 5). All but four babies were within a normal, healthy weight range at birth. Four (2.3%) weighed less than 2.5kg, which is the 10<sup>th</sup> centile for weight at full term (37 weeks). The smallest baby weighed 1.7kg and the largest 4.7kg (see Figure 6).

Ten babies required resuscitation and four required continuous positive airways pressure (CPAP) ventilation after birth. None would have been born at SHH, as all had required some form of intervention. There were 15 admissions to the neonatal nursery, most of them (11) first-born babies. The most common reasons were prematurity and observations. Primiparous mothers were more likely than multiparous mothers to have a baby who needed to stay in the nursery for 24 hours or more.

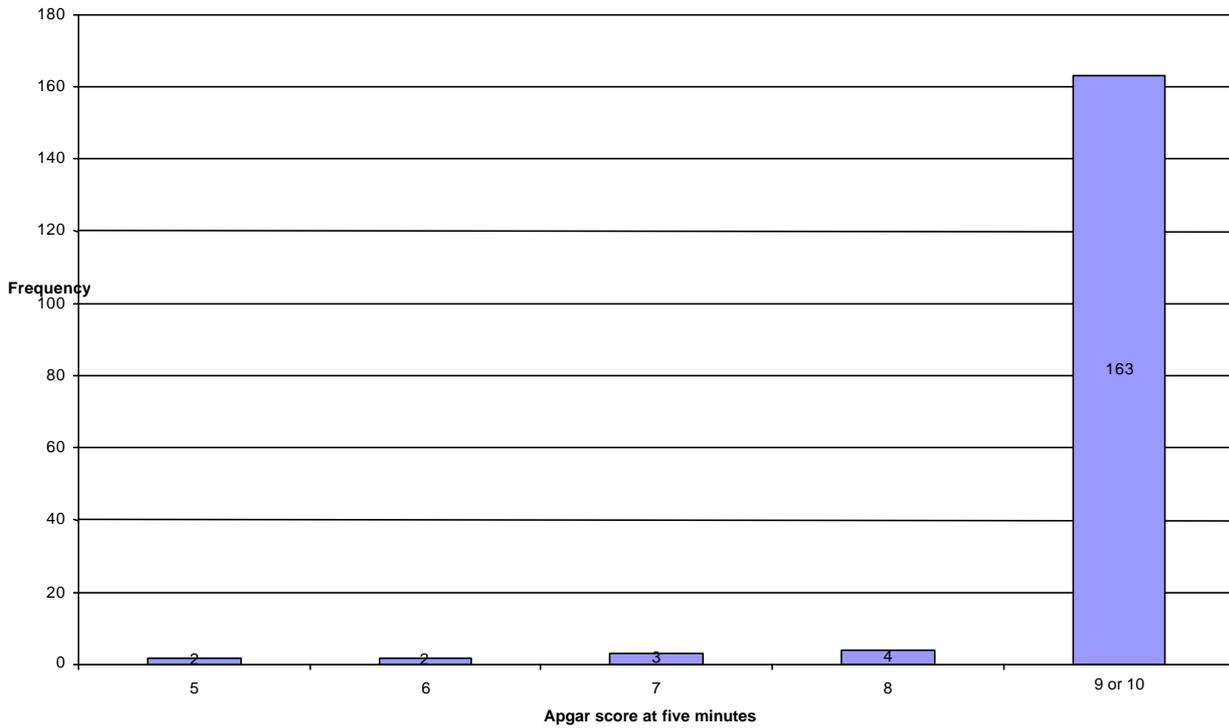
**Figure 3 Gestation at birth**



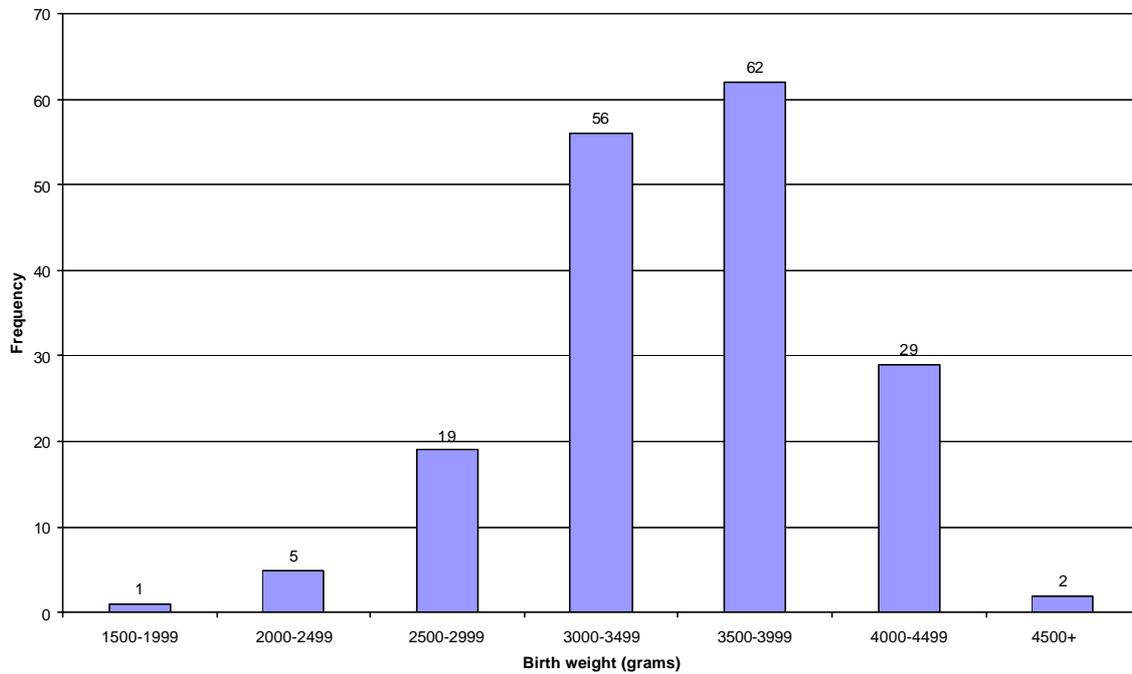
**Figure 4 Apgar scores at one minute**



**Figure 5 Apgar scores at five minutes**



**Figure 6 Birth weights**



### 3.1.4 Postpartum care

One in five women (38, 21.8%) was transferred to SHH for her postpartum care. Most women left hospital on the second day after their babies were born (median value; range 0-9 days). All but three (171, 98.3%) received continuing care in the community from their primary midwives. Postpartum consultation with or referral to a medical specialist was required for six women (3.4%). Two were readmitted for maternal health reasons, and one because of neonatal health. Most women had three home visits from MGP midwives (median value; range 0-6 visits). Women were discharged from the program within 30 days of giving birth, most often when their babies were eight days old (median value; range 0-30 days).

### 3.1.5 Comparison of clinical outcomes with historical data

In Table 7, key clinical outcomes of the MGP program are presented alongside the most recent available figures (2003) from Wollongong and Shellharbour hospitals. These figures, along with NSW state averages provided below, are taken from the report *NSW Mothers and Babies 2003* (NSW Health, 2004). During 2003, the birthing unit at SHH was used exclusively for low-risk pregnancies, while the TWH provided a standard maternity service for women with complicated or uncomplicated pregnancies. Based on the fact that the samples are similar, we would expect the results from the MGP program to be closer to those from the low-risk SHH group than the more mixed TWH sample.

The MGP had a very high rate of spontaneous onset of labour, probably linked with the fact that there were few elective Caesareans performed on participants in the program. The use of oxytocins and/or prostaglandins to induce or augment labour was high compared with SHH, but there was relatively little use of ARM (artificial rupture of membranes). The most obvious difference between the MGP and both previous hospital samples was in the use of pain relief: almost six in ten participants did not use any. While the epidural rates were comparable, the MGP participants were much less likely to avail themselves of pain relief in the form of nitrous oxide ("gas and air") or intramuscular narcotics (e.g., pethidine). The use of general anaesthetic for Caesarean births was also very low within the MGP program. Seventy-three percent of participants had a normal vaginal birth, which is a very high rate (the total rate for NSW in 2003 was 62.8%). This was slightly lower than the SHH rate of 77.2%, however, and the use of vacuum and emergency Caesarean procedures was more comparable with TWH than with the SHH figures.

Maternal and child outcomes within the MGP were good. The rate of intact genital tracts following vaginal births was comparable with SHH and both were better than the state average (27.0%), while TWH performed slightly worse than the state average. Both SHH and MGP had episiotomy rates less than half the state average (15.4%) but there was a high incidence of serious tears in the MGP program. Four of the six third or fourth degree tears occurred with instrumental deliveries. Two would have occurred at SHH.

There were few low birth weight babies born to SHH or MGP patients, and none of these was below 1500 grams. The total number of MGP babies admitted to nursery was comparable with SHH and well below the rate at TWH and the state average (17.7%). The higher incidence of low birth weight babies and admission to special care or neonatal intensive care at TWH probably reflects the fact that this hospital is able to cater for women with higher-risk pregnancies. The rate of premature birth within the MGP fell in between SHH (which was very low at 1.9%) and TWH (9.5%). This is difficult to explain and may be due to random factors or differences in transfer policy between SHH and the current MGP.

**Table 7 Clinical outcomes of MGP program compared with Wollongong Hospital (TWH) and Shellharbour Hospital (SHH) 2003**

		TWH 2003 <sup>^</sup> (n=1936)		SHH 2003 <sup>^</sup> (n=215)		MGP 2004-05 (n=174)	
		No.	%	No.	%	No.	%
Onset	Spontaneous	1282	66.2	156	72.5	138	79.3
	Induced	459	23.7	41	19.1	25	14.4
	No labour	195	10.1	18	8.4	11	6.3
Induction and/or augmentation	Oxytocin/Prostaglandins	677	35.0	59	27.4	65	37.3
	Artificial rupture of membranes	719	37.1	63	29.3	37	21.3
Pain relief	None	164	8.5	26	12.1	103	59.2
	Nitrous oxide	1279	66.1	147	68.4	61	35.1
	IM narcotics	504	26.0	56	26.0	16	9.2
	Epidural/Spinal	551	28.5	41	19.1	42	24.1
	General	116	6.0	7	3.3	2	1.1
Birth	Normal vaginal birth	1300	67.1	166	77.2	127	73.0
	Forceps	31	1.6	2	0.9	1	0.6
	Vacuum	177	9.1	8	3.7	17	9.8
	Emergency Caesarean section	231	11.9	20	9.3	20	11.5
	Elective Caesarean section	195	10.1	18	8.4	9	5.2
Genital tract status	Intact	349	23.1	61	34.5	51	35.2
	Graze/First degree tear	572	37.9	62	35.0	30	20.7
	First degree tear					29	20.0
	Second degree tear	357	23.6	40	22.6	27	18.6
	Third or fourth degree tear	13	0.9	1	0.6	6	4.1
	Episiotomy	219	14.5	13	7.3	9	6.2
Birth weight (grams)	<1000	11	0.6	0	0	0	0
	1000-1499	10	0.5	0	0	0	0
	1500-2499	114	5.8	4	1.9	4	2.3
	2500+	1836	93.2	211	98.1	170	97.7
Gestational age	Less than 31 weeks	19	1.0	0	0	1	0.6
	32-33	25	1.3	1	0.5	1	0.6
	34-36	142	7.2	3	1.4	9	5.2
	37+	1784	90.5	211	98.1	163	93.7
Nursery admission	Special care unit	389	19.8	13	6.1	13	7.5
	Neonatal intensive care	27	1.4	1	0.5	2	1.0

<sup>^</sup>Source: New South Wales Mothers and Babies 2003, NSW Public Health Bulletin Supplement, Volume 15, Number S-5, December 2004.

### 3.1.6 Clinical outcomes for births at Shellharbour Hospital

The Shellharbour MGP currently operates within the standard delivery rooms in the birthing unit at TWH. Nevertheless, the trial was run at this site as a simulation of how the program might operate at Shellharbour Hospital. It has been estimated that intrapartum transfers from SHH to TWH by ambulance could take up to one hour. This estimate takes into account the possible waiting time for an ambulance to arrive at SHH, given that the ambulance service is unable to provide a dedicated vehicle for such transfers.

Table 8 presents clinical outcomes for births at Shellharbour Hospital during the MGP trial. It excludes women transferred out of the program during their antenatal or intrapartum care. According to the conventions of the simulation, women who were not transferred before or during labour were said to have given birth at Shellharbour Hospital.

By definition, all labours at SHH began spontaneously and ended in normal vaginal births. (Any deviation from this would have involved a transfer out of the program.) Less than one third used nitrous oxide and only two women used intramuscular narcotics for pain relief. (Women who requested epidural blocks were transferred intrapartum.) The rate of perineal injury was very low compared with the NSW average (27.0% intact perineum following vaginal birth; NSW Health, 2004). No episiotomies were performed.

Outcomes for the babies were generally very good. Two babies required minor resuscitation at birth, and four were admitted to nursery. In contrast, an average of 17.7% of babies born in NSW in 2003 required nursery care (NSW Health, 2004). Most mothers who wished to do so had the opportunity to start breastfeeding their babies within one hour of birth and more than nine out of ten infants were breastfed at the time of discharge from the MGP program.

**Table 8 Clinical outcomes for births at Shellharbour Hospital<sup>#</sup> (excluding antenatal and intrapartum transfers)**

		'Shellharbour Hospital' (n=74)	
		No.	%
<b>Onset</b>	Spontaneous	74	100.0
<b>Pain relief</b>	Nitrous oxide	23	31.1
	IM narcotics	2	2.7
<b>Birth</b>	Normal vaginal birth	74	100.0
<b>Genital tract status</b>	Intact	30	40.5
	Third or fourth degree tear	1	1.4
	Episiotomy	0	0
	Sutures required	33	44.6
<b>Child outcomes</b>	Resuscitation required	2	2.7
	Apgar $\geq 9$ at one minute	61	82.4
	Apgar $\geq 9$ at five minutes	71	95.9
	Admission to nursery	4	5.4
	Readmitted for neonatal health reasons	0	0
<b>Breastfeeding</b>	Wished to breastfeed	64	86.5
	Initiated within one hour of birth <sup>^</sup>	54	84.4
	On discharge <sup>^</sup>	58	90.6

<sup>#</sup> Births actually took place at Wollongong Hospital but within the MGP program.

<sup>^</sup> Percentages given are based on the number of women who wished to breastfeed.

### 3.1.7 Clinical outcomes for early versus later births

The clinical data presented in this report cover the period from the beginning of the MGP program until the end of its tenth month. The program was evaluated from the first baby born, with no transition period in which to develop and adopt new policies and practices. It is theoretically possible that clinical outcomes might be less positive during such a transition period. If this were the case, outcomes for the MGP may be negatively biased if the transition data were not excluded from the evaluation.

In order to test this hypothesis, clinical outcomes for women who gave birth in the first six months of the program (before the end of December 2004) were compared with those for women who gave birth later (January to April 2005 inclusive). There were no statistically significant differences between the early and later groups in terms of transfer rates, births at SHH or most maternal and child outcomes (see Appendix III for chi-square statistics). There was a trend towards a higher rate of spontaneous vaginal births in the later group (78.4%) compared with the early group (66.2%,  $p=0.07$ , marginally non-significant). Women who gave birth later in the program were less likely to need intervention in the form of vacuum extraction (5.2% versus 15.6% of the early group,  $p<0.05$ ). They also had a lower rate of perineal injury (54.6% intact versus 33.8% of the early group,  $p<0.01$ ), probably because of the lower rate of vacuum extraction. There was also a trend towards less need for neonatal resuscitation in the later group (3.1% versus 9.1% of babies born earlier in the program,  $p=0.09$ , marginally non-significant). These findings suggest some positive developments in care and outcomes as the trial progressed, but indicate that the overall clinical outcomes were not seriously biased by the lack of a transition period.

### 3.1.8 Clinical outcomes for women living within the Shellharbour catchment

Of the 174 participants in the Shellharbour MGP program, 74 lived within the catchment area of Shellharbour Hospital. Within this sub sample, 36 (48.6%) were primiparous and 38 (51.4%) were multiparous. Clinical results for these women, compared with those who lived outside the Shellharbour area, are presented in Table 9. Women living within the SHH catchment area were slightly less likely to have a minor perineal injury (graze) than those living elsewhere (marginally non-significant,  $p=.053$ ). As would be expected, women living locally were more likely to be transferred to SHH for their postpartum care. There were no significant differences between the groups on clinical outcomes, indicating that results for the program overall would not have changed systematically had the trial been limited to those residing within the SHH catchment.

**Table 9 Clinical outcomes for women living within Shellharbour Hospital catchment**

		Lives within SHH catchment (n=74)		Lives outside SHH catchment (n=100)	
		No.	%	No.	%
Onset	Spontaneous	62	83.8	76	76.0
	Induced	7	9.5	18	18.0
	No labour	5	6.8	6	6.0
Pain relief	None	41	55.4	62	62.0
	Nitrous oxide	29	39.2	32	32.0
	IM narcotics	4	5.4	12	12.0
	Epidural/Spinal	16	21.6	26	26.0
	General	0	0	2	2.0
Birth	Normal vaginal birth	55	74.3	72	72.0
	Forceps	0	0	1	1.0
	Vacuum	8	10.8	9	9.0
	Emergency Caesarean section	7	9.4	13	13.0
	Elective Caesarean section	4	5.4	5	5.0
Genital tract status	Intact	30	40.5	49	49.0
	Graze	8	10.8	22	22.0
	First degree tear	14	18.9	15	15.0
	Second degree tear	12	16.2	15	15.0
	Third or fourth degree tear	3	4.0	3	3.0
	Episiotomy	5	6.8	4	4.0
Gestation at birth	< 37 weeks	7	9.5	4	4.0
Apgar scores	=4 at one minute	2	2.7	4	4.0
	=4 at five minutes	0	0	0	0
Weight	<10 <sup>th</sup> centile (2.5kg)	3	4.1	1	1.0
Neonatal care	Resuscitation	3	4.1	7	7.0
	CPAP ventilation	1	1.4	3	3.0
Admission to nursery	Not required	66	89.2	93	93.0
	Stayed longer than 24 hours	6	8.1	6	6.0
Postpartum care	Complications	1	1.4	1	1.0
	Transfer to SHH*	35	47.3	3	3.0

Difference between groups is significant,  $p < 0.05$

### 3.2 Clinical outcomes: Peer review process

A total of 82 cases (47.1%) were reviewed during the eight peer review meetings held between 23 September 2004 and 27 April 2005. Each case was presented by the primary midwife (or, if she was absent, by another team member or the program manager) and then discussed by the other midwives and obstetricians present. In nine cases, care was challenged and recommendations for changes to practice were made. Five of these changes related to the way in which labour was managed; three were policy changes; and one concerned the eligibility criteria for the MGP program. Eight of these nine cases were women having their first babies.

Comments on management, policy or eligibility criteria relevant to the potential for operating the model at SHH were made in a further five cases.

Based on the clinical outcomes and transfer decisions, each case was allocated to one of four groups, namely:

- Group 1 – mother transferred, intervention needed
- Group 2 – mother transferred, intervention not needed
- Group 3 – mother not transferred, intervention needed
- Group 4 – mother not transferred, intervention not needed

The requirement for transfer was judged according to MGP policy, which in turn is based on the policies of the TWH.

As indicated above (Section 3.1), there were eight cases in which transfer was needed according to MGP policy, but there would not have been time to complete a transfer from SHH to TWH. Six of these were due to meconium stained liquor that became apparent during the second stage of labour. One was a late request for an epidural block and the other had slow progress in the second stage but gave birth before transfer would have been possible. There was one additional case in which an intrapartum transfer was made for meconium stained liquor but this case was a multip and birth was imminent, so it would not have been appropriate to put her in an ambulance to travel from SHH to TWH. These nine cases were allocated to Group 4, on the basis that transfer did not occur (or occurred too late) although intervention was needed according to MGP and TWH policy. It should be noted that in all of these cases, mothers' and babies' health was not compromised. One baby was admitted to the nursery for several hours. Table 10 provides a summary of the allocation of cases to these four groups.

**Table 10 Transfer outcomes**

Transfer Outcomes		Intervention required as specified in policy <sup>1</sup>	
		Yes	No
Transfer as per policy <sup>2</sup>	Yes	Group 1 87 (50.0%)	Group 2 12 (6.9%)
	No	Group 3 9 (5.2%) <sup>3</sup>	Group 4 66 (37.9%) <sup>4</sup>

1 Based on clinical criteria as specified in program policy

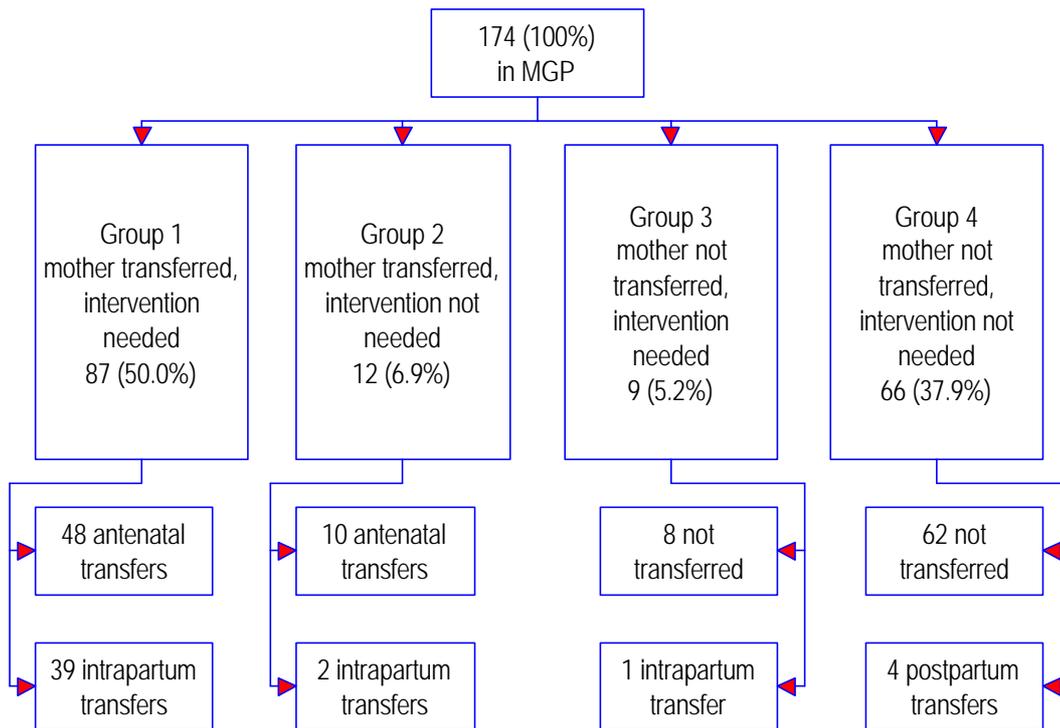
2 Transfer at least one hour before delivery

3 Eight of nine babies had Apgars of 9/9. One had an Apgar of 6/8 and was admitted to nursery. This baby would have been a neonatal transfer if delivered at SHH.

4 Includes four post-partum transfers for complications post-delivery

These results are presented diagrammatically in Figure 7.

**Figure 7 Summary of program outcomes**

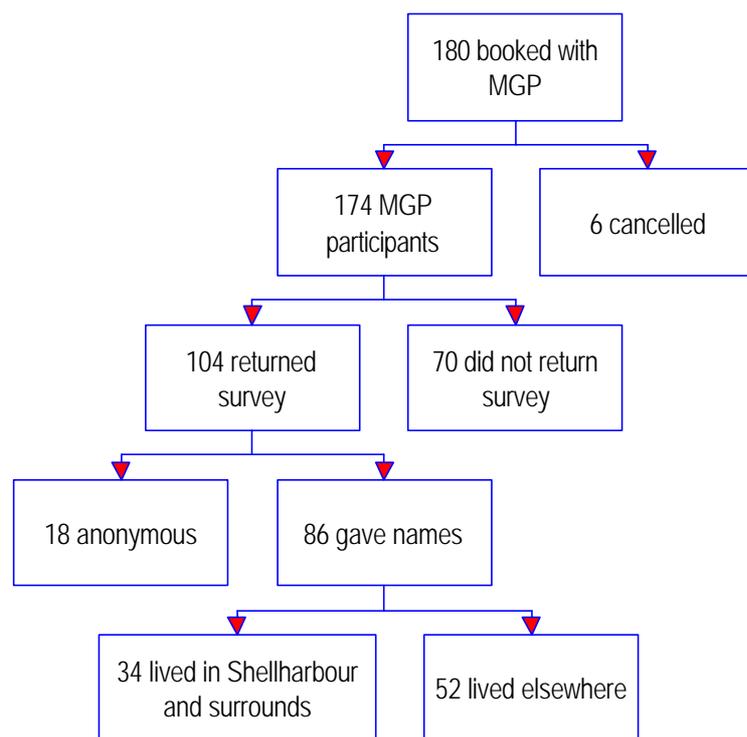


Note: "Need" is defined above as per program guidelines, not on the actual outcomes for mothers or their babies.

### 3.3 Maternal satisfaction: Consumer survey

A total of 104 women (59.8%) returned the questionnaire. Eighteen (17.3%) responded anonymously; all of these answered the final three questions providing basic information about their birth experiences. The remaining 86 (82.7%) women provided their names and addresses, enabling their survey responses to be linked with their medical records. Of these, 34 (39.5%) lived within the SHH catchment area.

**Figure 8 Responses to the survey**



Responses to the survey questions are presented below, in the order in which they appear in the questionnaire. A copy of the questionnaire can be found in Appendix IV.

#### 3.3.1 Before the birth

Most women learned about pregnancy and labour through their midwives (95, 91.3%) and/or books (66, 63.5%). Other important sources of information were prenatal classes, family and friends, and pregnancy magazines (see Table 11). Very few relied on GPs for information, and none consulted obstetricians. This is to be expected, given the nature of the MGP program.

Just under half the women attended childbirth preparation or parenthood classes during their pregnancies (Table 12). Of these, most attended the classes presented by the MGP midwives. Fifty-five respondents did not attend any classes, mainly because they had already done such a course during a previous pregnancy. One in five of these women said their midwives had told them all they needed to know.

The midwives at Wollongong and Shellharbour hospitals were the main sources of information about the MGP program for most of the women (78, 75.0%), following by the media, general practitioners and family and friends (Table 13).

**Table 11 What were your main sources of information about pregnancy and labour? (Tick more than one if necessary.)**

Source	No.	%
Midwife	95	91.3
Books	66	63.5
Prenatal classes	43	41.3
Family and friends	43	41.3
Magazines	24	23.1
General practitioner (GP)	6	5.8
Obstetrician	0	0
Other:		
Previous experience(s)	8	7.7
Own midwifery training	2	1.9
Internet	1	1.0

**Table 12 Did you attend any childbirth preparation or parenthood classes during your pregnancy? (Tick one box.)<sup>^</sup>**

Attended classes	If yes, who taught the classes? If no, why was this?	No.	%	% of total surveys (n=104)
Yes	MGP midwives	34	69.4	32.7
	Wollongong hospital midwives	14	28.6	13.5
	Private midwife	1	2.0	1
	TOTAL ATTENDED CLASSES	49	100	47.1
No	Attended when I was pregnant before	42	76.4	40.4
	My midwife told me everything I needed to know	12	21.8	11.5
	Felt I had enough information already	6	10.9	5.8
	Too far away	1	1.8	1.0
	Other	1	1.8	1.0
	TOTAL DID NOT ATTEND CLASSES	55	100	52.9

<sup>^</sup>Despite this instruction, many did tick more than one box, therefore percentages do not total 100.

**Table 13 How did you find out about the Illawarra Midwifery Group Practice? (Tick one box.)**

Source	No.	%
Wollongong hospital midwives	69	66.3
Media	10	9.6
Shellharbour hospital midwives	9	8.7
General practitioner	8	7.7
Family or friends	5	4.8
Other	3	2.9
<b>TOTAL</b>	<b>104</b>	<b>100</b>

Women were, on the whole, satisfied with their antenatal care (see Table 14). All agreed that they were treated with respect and felt they could ask questions. All but one agreed that they were told everything they wanted to know about the progress of their pregnancies and disagreed that they were treated as ‘just another case’ rather than as individuals. There was less consensus on the questions about the operation of the program. Five women did not meet all three midwives in team before going into labour, seven did not have most of their care with the primary midwife and 17 did not know who to contact if they wanted to change their primary midwives. Some would have preferred more knowledge about tests and examinations (18, 17.3%) and greater participation in decision making (4, 3.8%)

**Table 14 Mothers’ assessments of antenatal care**

Thinking about the antenatal care by your midwife, how much do you agree or disagree with the following statements? (Please circle your answer.)	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
I was treated with respect	100	4	0	0	0
I felt I had too little say in what was decided	2	1	1	22	78
I was told everything I wanted to know about the progress of my pregnancy	91	12	0	1	0
I felt I could ask all the questions I wanted to	100	4	0	0	0
I was treated as ‘just another case’ rather than as an individual	0	0	1	10	93
I met all three midwives in the team before I was in labour	84	15	2	2	1
I had most of my antenatal care with my primary midwife	75	22	5	2	0
I knew who to contact if I had wanted to change my primary midwife	57	30	9	6	2
I would have liked to know more about the tests and examinations that were carried out	2	2	14	28	58

Mothers were invited to state ways in which their antenatal care could have been improved. A total of 79 (76.0%) wrote comments, most of which (63, 79.7%) indicated they were entirely satisfied. Eight women made suggestions for improving antenatal care. Of these, four were concerned with the running of the program, such as long waiting times for clinics or lack of opportunity to meet team midwives. Five would have preferred more information about specific aspects of their pregnancies, and one said that further ultrasound testing may have been beneficial. Two made comments about postnatal care, asking for more help with breastfeeding and a longer stay in hospital respectively. One would have liked more support for her spouse. There were three comments about treatment by doctors. Examples of suggestions are:

“I had some problems near the end of term and I found that the midwives had lost control and it was taken over by doctors I didn’t know. I know they did the best they could to control the situation but I feel the doctors took over.”

“To save both parties asking/restating what the ‘milestones’ are, a simple flow chart of when certain tests, frequency of clinic visits, social afternoons etc against week of pregnancy would help.”

“They did not mention or talk about pain relief during labour.”

### 3.3.2 Labour and birth

More than 90 per cent (94, 90.4) of women said they “knew well” the midwife who cared for them in labour and birth. A further nine (8.7%) knew the midwife “but not very well”. One did not know the midwife, but indicated that this did not bother her. The overwhelming majority of women who responded to the survey were satisfied with their intrapartum care (see Table 15). A few, however, were dissatisfied. These women felt they could have known more about the progress of their labour, had more input into decision making and/or been treated with more respect and individual attention.

**Table 15 Mothers’ assessments of intrapartum care**

Thinking about the labour and birth care, how much do you agree or disagree with the following statements? (Please circle your answer.)	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
I was treated with respect	98	5	0	1	0
I felt I had too little say in what was decided	2	1	8	17	76
I was told everything I wanted to know about the progress of my labour	80	18	5	0	1
I felt I could ask all the questions I wanted to	94	8	1	1	0
I was treated as ‘just another case’ rather than as an individual	1	0	2	13	88

### 3.3.3 After the baby was born

There was dissatisfaction with some aspects of postnatal care (Table 16). In particular, mothers highlighted a lack of rest (86, 82.7%), confusing advice (38, 36.5%) and a need for more information (21, 20.2%). One in ten women would have preferred to stay longer in hospital. All these figures include the ‘neither agree nor disagree’ answers as these may indicate that the respondent was not fully satisfied with care. Overall, however, most women were positive about their care. On the whole they agreed that they were able to get all the help they needed (95, 91.3%) and could get help with breastfeeding when they needed it (87, 83.6%).

**Table 16 Mothers’ assessments of postpartum care**

Thinking about the time after the baby was born, how much do you agree or disagree with the following statements? (Please circle your answer.)	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
I was able to get all the help I needed	70	25	3	4	2
I was able to get enough rest <sup>^</sup>	34	37	15	13	4
I was confused with conflicting advice <sup>^</sup>	8	16	14	25	40
I felt confident as a mother	47	44	8	5	0
I understood very little of what was said to me	0	1	2	36	65
I would have liked to know more about what was happening to me	4	7	10	31	52
I was able to get help with breastfeeding when I needed it <sup>^^</sup>	51	36	6	6	1
I would have liked to stay longer in hospital	4	7	16	30	45

<sup>^</sup>One missing answer. <sup>^^</sup>Four missing answers.

Only seven (6.7%) of the 104 survey respondents indicated that they did not intend to breastfeed their babies. Two thirds (69, 66.3%) said they were confident they could breastfeed, and a further 28 said they thought they'd "give it a try". Of those who planned to breastfeed, 92 (94.8%) were still doing so when discharged from hospital, and 80 babies (82.5%) were still breastfed at the time their mothers completed the questionnaire. Babies' ages at that time ranged from less than one week old to 26 weeks (mean 5.6, SD 6.3).

All but two women felt that their midwives were readily available during their first week at home with the baby (102, 98.1%). Their assessments of their own adjustment to motherhood were more mixed. Forty-six (44.2%) strongly agreed that they "managed well" in the first week at home, 47 (45.2%) agreed, while 11 (10.6%) felt they could have done better. Ratings of midwife support during this period were overwhelmingly positive: 101 women (97.1%) thought this support was excellent or very good, two (1.9%) said it was adequate, while one (1.0%) felt it was inadequate.

Women were asked what other support, if any, should be available. Forty-three women (41.3%) responded to this invitation, of whom 32 (74.4%) said they could not think of anything else they needed. Eleven women (10.6% of those who completed the questionnaire) made suggestions. These were quite varied and centred on issues such as:

- dissatisfaction with inpatient care (3)
- a wish for more or different kinds of postnatal support (3)
- difficulties with breastfeeding (2)
- dissatisfaction with specialist care during labour (1)
- lack of attention to postpartum complications (1)
- a desire for a longer stay in hospital following birth (1).

Examples of comments are:

"I would have liked to continue on with the visits from my midwife for longer, knowing I had my midwife's support there gave me more confidence and eased my mind."

"More support during your stay in hospital. I didn't see any one of the midwifery group while I was there for my two days."

"Breastfeeding advice from hospital midwives needs to be more consistent."

### **3.3.4 Mothers' ratings of experiences overall**

All mothers agreed that feeling comfortable and supported was important, and almost all (102, 98.1%) were satisfied or very satisfied with this aspect of their maternity care (Table 17). Having a relationship with one midwife was also regarded as important, and all women indicated they were satisfied that the MGP provided this. Feelings of control and participation in decision making were also considered important and were, on the whole, satisfactory, although eight women (7.7%) felt this could have been better. Responses to the questions about the availability of doctors on site are discussed below (see Section 3.3.7).

**Table 17 Importance of and satisfaction with various aspects of care: mothers' ratings**

Please rate each of the following statements in terms of its overall importance to your pregnancy and birthing experience. <i>(Please circle your answer.)</i>	Very important	Important	Unsure	Fairly unimportant	Not at all important
Having one midwife I knew	84	18	0	2	0
Feeling comfortable and supported	98	6	0	0	0
Knowing a doctor was on the premises in case of an emergency	49	32	9	8	6
Feeling I was in control in labour and birth	76	22	5	0	0
Feeling I made my own decisions	78	24	1	0	0
How satisfied were you with the following aspects of your pregnancy and birthing experience? <i>(Please circle your answer.)</i>	Very satisfied	Satisfied	Unsure	Fairly unsatisfied	Not at all satisfied
Having one midwife I knew	97	7	0	0	0
Feeling comfortable and supported	100	2	0	1	0
Knowing a doctor was on the premises in case of an emergency	55	35	9	3	2
Feeling I was in control in labour and birth	75	21	5	2	1
Feeling I made my own decisions	79	17	4	2	2

Of the 55 women who had previously given birth, 50 (90.0%) said the care provided by the MGP was better than their earlier experience(s) of maternity care, four (7.3%) said it was the same and one (1.8%) said it was worse. Of the 25 women who received care from midwives' clinics for previous pregnancies, 22 felt the MGP care was better. Of the six women cared for by private obstetricians previously, five felt the MGP care was better and one felt it was worse. All of the women who received shared care previously rated the MGP care as better. This is consistent with previous Australian research that shows high levels of satisfaction with continuity of care models (whether midwifery, private obstetrician or private midwife) and least satisfaction with shared care (Laslett, Brown and Lumley, 1997). Details of previous maternity care providers for these 55 women are given in Table 18.

**Table 18 Maternity care providers for previous birth experiences**

Care provider	No.	%
Midwives' clinic at Wollongong	18	32.7
Shared care (GP and hospital)	18	32.7
Private obstetrician	6	10.9
Midwives' clinic at Shellharbour	4	7.3
Midwives' clinic at another hospital	3	5.5
Doctors at another hospital	2	3.6
Private midwife	2	3.6
Other	2	3.6
<b>TOTAL</b>	<b>55</b>	<b>100.0</b>

### 3.3.5 Qualitative data: mothers' assessments of their care

Women were asked what they liked most about the care provided for this pregnancy and birth. Most took the opportunity to make comments (74, 71.1%). Overwhelmingly, women appreciated the continuity of care which enabled them to build personal relationships with their primary midwives. Many wrote that they felt their midwives genuinely cared about them and treated them as individuals. They felt that the midwives were available when needed, to answer questions or offer reassurance. Words such as 'comfortable', 'relaxed' and 'at ease' were used frequently. Other aspects of the program praised by participants included the support provided to primary midwives and women by other members of the MGP team, the orientation towards birth as a natural and normal process, and the opportunity to be cared for by women. Examples of positive comments are:

"The care was holistic. I was treated as a person with my own individual circumstances. My family was included in care at different stages. My pregnancy was treated as a normal, healthy event."

"I had built a relationship with my midwife and (she) knew my strengths and concerns."

"Having the same midwife is a huge bonus. You get to know each other a bit more on a personal basis which is a comfort in a personal situation such as labour."

"I knew the midwife delivering, I felt in control and relaxed. I felt important to the midwives looking after me! I felt like they really cared about me!"

"All questions were answered very clearly. I knew I could trust the midwife to communicate clearly during labour/birth so I'd be well informed and could make my own decisions and we'd be safe."

"The fact that you saw the same midwives and that you had their number so you could contact them at any time – also that they followed through with the care by conducting home visits."

They were also asked to comment on the things they liked least about their care. Sixty-two women responded to this question (59.6%). More than half of these indicated that there was nothing they disliked (33, 53.2%). The remaining 29 women (27.9% of those who completed the questionnaire) expressed disappointment or concern with aspects of their care, specifically:

- dissatisfaction with intrapartum care by non-MGP staff (7)
- lack of support from hospital staff during inpatient stay (4)
- lack of information about and/or availability of pain relief in labour (4)
- inconsistent advice during inpatient stay (4)
- conflict with MGP or hospital policy (3)
- little opportunity to build relationship with MGP midwife (2)
- lack of privacy in the birthing unit (1)
- excessive prenatal testing (1)
- dissatisfaction with intrapartum care by MGP midwife (1)
- partner not involved enough/dissatisfaction with antenatal classes (1).

Examples of negative comments are:

“My labour progressed very quickly and I didn’t have time to call (primary midwife) before arriving at the hospital. I was disappointed with the way I was treated by another midwife not involved in the program when I arrived at the hospital.”

“Just feeling lonely in hospital, the midwives from the hospital were not very helpful. My baby wouldn’t settle and I didn’t get any rest before coming home.”

“I felt that I disappointed the people caring for me because I wanted drugs. I intended to have a natural birth but I wasn’t coping with the pain.”

“That I couldn’t deliver at Shellharbour Hospital and that the (MGP) midwives didn’t do the care in the hospital. The midwives in the hospital were inconsistent and unattached!”

“I was considered ‘non-compliant’ with protocols and guidelines of the hospital when I made an informed assessment of risk and declined one of the offered screening tests.”

“My husband felt he could have been involved a little more. I wasn’t overly impressed with the antenatal classes.”

When asked whether they would book again with the MGP if they had another pregnancy, 100 women (96.2%) said they would and three (2.9%) said they would not. One declined to answer this question. It was clear from their comments that those who would not book again had had difficult birth experiences, including one emergency Caesarean and a natural birth of a very large baby, which resulted in serious tearing. Comments from those who would prefer not to book again were:

“I may have to have another Caesarean again and would feel more comfortable having immediate access to an epidural and surgery.”

“Traumatic ... birth and not helped afterwards with breastfeeding ... patronising with post-birth care. Very scathing of books I had read. Expected me to know how to deal with a newborn baby when it was a new experience for me.”

“I would be concerned I would be forced to have a natural birth again or that I wouldn’t be given the choice. I would rather not have a Caesarean, however, I am more concerned about the health of my baby. My child ended up in the neo-natal unit ...”

All of the 104 respondents said they would recommend the MGP program to a friend. In their comments, women highlighted what they felt were the benefits of this model. Recurring themes were:

- feeling comfortable with the midwives
- building trust and confidence
- feeling in control, empowered
- receiving personalised care and support, feeling special
- MGP midwives know your history, so no need to repeat everything
- less interventionist and medical, more natural
- professional service and advice.

Examples of comments were:

“It was a really positive experience for my husband and I – we felt supported and cared for and in control of the whole experience.”

“It is more personal than just going to the clinic and seeing a different midwife each time. I also liked that the midwives encourage a more natural birth and lower intervention than obstetricians.”

“Having experienced all types of care, this was the most thorough.”

“Because it’s the way pregnancy should be – one midwife/team all the way through, fantastic support, treated with respect and made to feel empowered. Birth as a positive, natural experience.”

Seventy-one women (68.2%) made comments in response to the question, “Is there anything else you would like to tell us?” Of these, 62 (87.3%) were positive statements about the MGP program. The themes emerging from these comments were consistent with those described above. Many women took the opportunity to name and thank their midwives and praise the program.

The nine critical comments focused on:

- concerns about intrapartum care (3)
- lack of support during hospital stay, including pressure for early discharge (3)
- a desire for better information, including breastfeeding advice (3).

### 3.3.6 Birth and satisfaction outcomes for anonymous and named respondents

Table 19 presents basic clinical data for the 18 women who completed the survey anonymously, alongside the same outcomes (sourced from the Management Plans of Pregnancy and Labour) for the 86 named respondents. It shows that the two groups had similar rates of spontaneous onset of labour, but that the anonymous group experienced more interventions during labour, particularly deliveries by vacuum extraction or Caesarean section.

**Table 19 Birth outcomes for anonymous and named respondents to survey**

		Anonymous (n=18)		Named (n=86)	
		No.	%	No.	%
<b>Onset</b>	Spontaneous	14	77.8	69	80.2
	Induced	3	16.7	15	17.4
	No labour	1	5.6	2	2.3
<b>Birth</b>	Spontaneous vaginal birth	10	55.6	69	80.2
	Forceps	0	0	0	0
	Vacuum	4	22.2	8	9.3
	Emergency Caesarean section	3	16.7	7	8.1
	Elective Caesarean section	1	5.6	2	2.3
	Doctor present at birth	5	27.8	16	18.6

These findings are consistent with the data from the Management Plans of Pregnancy and Labour, which show that those who did not return the questionnaire, or who returned it anonymously, were more likely than named survey respondents to have had a difficult birth experience. They had a lower rate of spontaneous vaginal birth and a higher rate of transfer out of the program. They were more likely to have had a doctor present at the birth (statistically significant to  $p < 0.05$ ).

Anonymous survey responders differed from those who gave their names in their answers to some of the survey questions. Overall, they were somewhat less satisfied with their care. They were less likely to feel they were treated as an individual and that they got all the help they needed. They were less likely to be “very satisfied” with feeling that they were in control and made their own decisions during labour and birth, and more likely to agree that they were “confused with conflicting advice” in the postpartum period. It should be noted, however, that most of these differences were slight: the anonymous responders as a group were less inclined to choose an extreme positive score. For example, while the named responders tended to say they were “very satisfied” with various aspects of their care, the anonymous group were generally “satisfied”. Most (94%) said they would book again with the MGP if they were having another baby, and all said they would recommend the program to a friend.

### 3.3.7 Importance of having a doctor on site: Telephone survey

The viability of operating the MGP model at SH without specialist medical backup on site depends in part on consumer perceptions of risk and how these may affect acceptance of the model.

Forty-nine women (47.1%) who responded to the questionnaire felt that knowing a doctor was on site was very important, and a further 32 (30.8%) said this was important. Ninety women (86.5%) were satisfied or very satisfied with the availability of a doctor at TWH during the MGP program trial. Women having their first baby were less likely than multiparous mothers to feel that this was unimportant or very unimportant and were more likely to be very satisfied with the availability of a doctor during their own labour and delivery (significant to  $p < 0.05$ ).

These responses suggest that women may be less willing to take part in the MGP program if it meant delivering at SHH with no obstetrician on site. There are, however, other ways of interpreting these data. For example, respondents may have felt that by indicating their desire to have medical backup available, this may create political pressure to provide such backup at SHH. Responses may reflect prevailing attitudes about the need to minimise all health risks; women may not see the SHH model as ‘risky’ per se, but merely as ‘more risky’ and therefore a less responsible choice. It was clear that responses were affected by previous experiences, in that multiparous women considered medical backup less important and less satisfactory than those having their first babies.

In order to explore this question in greater depth, a telephone survey was conducted. The sample was restricted to women who:

- lived within the SHH catchment area
- had completed the questionnaire
- provided their telephone numbers
- indicated that knowing a doctor was on the premises was important or very important.

This was a total of 23 women. Two of these numbers (one mobile and one landline) proved to be incorrect at the time of the telephone survey and one other woman could not be contacted despite three attempts over two days. The final sample therefore consisted of 20 of the original 23 women (87.0%).

Clinical outcomes for this group of 23 women were similar to those from the MGP population overall. The rate of spontaneous onset of labour was 73.9% (overall 79.3%) and spontaneous vaginal birth was 73.9% (overall 73.0%). Ten (43.5%) would have been able to give birth at SHH (41.9% overall). Primiparous women were slightly under-represented (47.8% compared with 50% overall). Knowing a doctor was on the premises in case of an emergency was considered very important by 11 women and important by 12 women. Two indicated they would not book again with the MGP; both were interviewed.

Interviews were conducted by two staff of the University of Wollongong and took place on a Friday and the following Monday. A script was written and pilot tested on one respondent to ensure that the question was asked in exactly the same way to each woman. This script, along with comments made by each respondent, can be found in Appendix III.

Ten women (50.0%) said they would be happy to use the program at SHH without a doctor on site. Seven said no and three weren't sure. According to the qualitative data collected, respondents appeared to fall into five groups:

1. Previously nervous about the idea but now, after a good birth experience, feel confident they could give birth at SHH without on-site medical backup (n=4);
2. Previously confident about giving birth at SHH without a doctor on site but now, after a difficult birth experience, feel that on-site medical backup is essential (n=4);
3. Previously unwilling and still unwilling to consider giving birth at SHH without on-site medical backup (n=3);
4. Previously confident and still confident about giving birth at SHH without on-site medical backup (n=6);
5. Undecided (n=3).

Two of the three women who were undecided were at first somewhat in favour of using the MGP program at SHH, but their comments indicated that they had underestimated the transfer time to Wollongong. Both believed it would take only 15-20 minutes to reach TWH in the event of an emergency. When the interviewer said it had been estimated the transfer could take up to an hour, both became less willing to consider birthing at SHH. The other woman who was undecided said her decision would depend on how the pregnancy was progressing. If she could be sure that no problems were likely to arise during labour and birth, she may consider using the service at SHH.

### **3.4 Staffing issues**

#### **3.4.1 Report on pilot roster agreement for midwives**

The project manager (AL) described in detail the impact of the caseload model on the MGP midwives, in her report to the NSW Nurses Association in February 2005. The report addressed workforce issues within the maternity unit, including productivity and hours worked and on call, as well as midwives' expectations and experiences of working within the new model and on an annualised salary. This section summarises the report.

Six midwives were recruited from various parts of the Northern Illawarra Maternity Service to work in the MGP. The first team of three midwives started work in this continuity model of care on 5 July 2004. The starting date of the second team was staggered, and they began work in September 2004. This allowed time for new bookings to build up as pregnant women became aware of the new model, and helped to minimise the effect on the rest of the midwifery workforce of removing six full-time-equivalent midwives (who were not replaced) from the regular birthing unit rosters.

The two teams worked their on-call hours in different ways to suit their own needs. The rosters were designed to provide coverage for clinics, births, home visits and meetings while providing each midwife with an average of four days off per fortnight. The literature on caseload midwifery demonstrates that midwives are less likely to suffer burn out if they work in a way that suits them best (Homer, Brodie and Leap, 2001; McMurtrie, 2004).

An average of 55 antenatal visits were made each week to the clinics conducted by the MGP midwives. This reduced the workload of the remaining hospital midwives, enabling them to cut out

two clinic sessions each week. During the first six months of the MGP program, 99 women gave birth and all but three received intrapartum care from a known midwife from their team of three. Care was provided even when women were transferred and received some of their care from other medical staff. The daily birth rate varied from zero to three women.

Once the woman had been admitted to the postnatal ward, the MGP midwives relinquished primary care until the woman was discharged home. It was initially anticipated that the MGP team members would provide some inpatient care, but this proved impractical and confusing for the ward staff. Early discharge was encouraged, and a quarter of the women who gave birth in the first six months of the MGP program went home either on the day of birth or next day. All but two women received community postpartum care from their MGP midwives. This resulted in a reduction in staffing among the remaining community midwives of one midwife per day, Monday to Saturday, and two on Sundays.

MGP clients were encouraged to ring their primary midwives if they had any concerns. On average each midwife spent 2-4 hours per fortnight on telephone calls from their women. This approach can prevent unnecessary antenatal admissions to hospital and admission during early labour can be delayed until labour is established if frequent telephone contact is maintained.

Other activities undertaken by MGP midwives included parent craft classes. Four sets of classes, each consisting of three consecutive Saturday mornings, were run during the first six months. This had an impact on the workload of the antenatal clinic staff who would normally have run these classes. An afternoon tea and information session was held for women when they were around 36 weeks pregnant, with two or three midwives present. Midwives also attended weekly team meetings and regular peer review meetings (at least monthly, more frequently when needed). They were removed from the regular rosters and the number of occasional shifts worked by MGP midwives in the birthing unit tapered off as the number of births within the MGP program increased.

Feedback was sought from all six of the midwives via a questionnaire and discussions with the project manager. They were asked about challenges and benefits of working within the caseload model, and invited to suggest ways in which it could be improved.

The midwives were unanimously positive about working in a caseload model, and felt that the increased continuity of care led to far greater work satisfaction than they had previously experienced. The positives far outweighed the frustrations of dealing with a small number of core birthing unit staff who resisted some of the concepts of the new model.

A tally of the hours worked showed that on average MGP midwives worked around 76 hours per fortnight, not including time spent on call (an average of 120 hours per fortnight). It was suggested that the award be reviewed to allow hours spent on call to count towards hours worked. This would help compensate midwives for the restriction placed upon their lifestyles and those of their families. Another issue identified in the consultation process was the need to provide cover for annual leave. A relief midwife would allow for more complete time off as well as covering the 75% of the year when one of the teams is running with two midwives instead of three. The adequacy of the 25% loading was also questioned. Despite the hours worked and on call, the take home pay is less on the annualised salary than it would be on regular shifts.

### **3.4.2 Midwives' views at the end of the trial**

Staffing issues were also addressed during a group interview with all six MGP midwives on 15 June 2005, following the release of the interim report. Midwives were asked about their initial views of the midwifery model, whether these views changed during the trial (and if so, how) and what they would need to make the program work at SHH. Their answers are summarised below.

### 3.4.2.1 What were your initial views on the midwifery model?

Midwives were attracted to working in the model because

- it was well supported by research
- it provided a possible way to reopen birthing services at SHH
- it provided an opportunity for wholistic and continuous care which, they felt, was better for pregnant women and also more satisfying for the midwives.

Some, who had been working at SHH, had become frustrated and bored by the lack of variety in their current work (inpatient postpartum and surgery support only) and wanted to be able to use their full range of skills. Others, who had been working in community midwife practice (antenatal and postpartum support), liked the hours but felt they missed out on the births and meeting the babies.

There was concern about the current standard model of care which was seen as fragmented and not women-centred.

*“Each woman might be looked after by 12 different people ... and it only took one of those 12 people that they didn’t like to spoil the whole experience for them.”*

*“A lot of my work was repairing damage ... emotional damage.”*

The factor that was least influential was the money to be earned as part of the MGP – in most cases, incomes had dropped.

### 3.4.2.2 Have your views changed during the trial? Why/why not?

Midwives agreed that the model had worked ‘better than expected’ and there were more positives than negatives. They particularly enjoyed

- getting to meet the women’s families
- being able to follow the women through the whole experience of pregnancy, labour, birth and the early postpartum period
- the variety of work
- the support provided by other team members
- the flexibility to schedule appointments at times convenient to them
- the sense of autonomy and control over one’s working arrangements.

*“It can look like broken work throughout the day ... but that can be a benefit.”*

*“I love the unpredictability of it.”*

*“This is a fantastic way of getting everything, without having to do regular shifts.”*

Certain things were essential to make the MGP work for them. These were

- learning to ‘switch off’ during breaks – this could be a challenge when the working day could extend from early morning appointments with postpartum women to antenatal clinics in the evening, with periods in between in which the midwives were not officially working
- strong family support – partners need to be able to accept interruptions to family life

- a close, trusting relationship between team members within the MGP.

This last point was particularly important. The midwives recognised that they depended on each other greatly for support, so it was essential to have a good working relationship between team members. In order to develop these relationships, they had been active in establishing a social life with each other involving their extended families, so that their partners could get to know and support each other.

None of the midwives have small children. They believe the need for flexible working hours and immediate response during on-call periods make this model less suitable (although not impossible) for people with young families.

Midwives also commented on the change in the reactions of non-MGP midwives in TWH birthing unit during the course of the trial. At first they believed they were seen as elitist and too alternative, partly because they had decided not to wear uniforms. They felt there was concern that the MGP midwives may not be working according to policy. This view contrasted with the fact that MGP midwives were very aware of policy and the need to adhere strictly to protocols, and were conscious that their decisions would be examined through the peer review process. The MGP midwives believe that an increasing number of birthing unit midwives are now supportive of the program and that they have 'proved themselves'.

#### **3.4.2.3 Based on the evaluation, what should the future be for the midwifery group practice program?**

Midwives want to run the MGP model at SHH and are confident that they will achieve better outcomes there than they have done at TWH. They would like to see the program offered at both sites, to more women in wider categories of risk. This expanded program would require more midwives. They believe that midwives who are dissatisfied with the current standard model of care would be interested in joining the program, and this would help prevent attrition from the birthing unit.

There was some debate about whether the MGP should accept primiparous women. On one hand, these women are more likely to need transfer. On the other, they were seen as the women who could most benefit from the MGP program. If primips were included it was important that the program ran at both sites, so that continuous care could be maintained for those who were transferred. After some discussion the midwives agreed that they would be comfortable taking on primips who were very confident and committed and well informed about the probability of transfer.

Certain things would be needed for the program to succeed at SHH, namely:

- continued close working relationships between midwives
- an ambulance available for immediate transfers
- major renovations at SHH, preferably with input from the midwives
- a fax machine
- a core midwife on site 24 hours/day to provide backup when needed – this would avoid having to call in another team midwife just in case she was required, which would then disrupt the roster system.

*“Until you get down there and try it, you don’t know how it would go.”*

*“We will never know until we are actually there. The minute we walk in the door (at SHH), how we feel will change enormously.”*

## 4 Discussion

This section repeats the discussion included in the Interim Report that was provided to key stakeholders, including midwives, obstetricians, consumer representatives and others. Section 4.3 below was modified based on that feedback by the inclusion of one additional scenario. The next section (Section 5) summarises feedback received on these and other issues.

### 4.1 Safety

The data presented in this report demonstrate that the MGP is achieving very good clinical outcomes. The midwives are making appropriate and safe decisions about transfer, where needed, and maternal and child outcomes for those who give birth in the simulated SHH situation are excellent. Outcomes from the MGP are comparable with historical data from women with low-risk pregnancies who gave birth at SHH in 2003. The MGP has better outcomes than TWH and the state overall. This is to be expected, given that MGP participants have been carefully screened and selected for their low-risk status. Nevertheless, the results demonstrate that this model is operating safely and effectively for women with low-risk pregnancies. These good outcomes have been achieved despite the fact that the program was evaluated from the very first baby born, without the benefit of a six-month transition period in which to develop and adopt new policies and practices.

There were nine cases in which transfer was required, according to TWH policy, but there would have been insufficient time to transport the women from SHH to TWH before their babies were born. Seven of these cases involved light meconium stained liquor which was detected during the second stage of labour, at a time when ambulance transfer would be inappropriate. It should be noted that the need to transfer for meconium stained liquor is a relatively recent policy of TWH. All nine proceeded to spontaneous vaginal births and in no case was the health of the mother or her baby compromised because the transfer did not happen (or did not occur in time).

The rate of intrapartum transfer may be reduced if the program were moved to SHH. In particular, the use of augmentation and of epidural pain relief may fall. In the labour ward at TWH these options are readily available, whereas at SHH the use of these interventions would require transfer by ambulance.

Antenatal and intrapartum care of the MGP participants have been closely scrutinised via the peer review process. Discussions have focused in particular on midwives' decisions about management and transfer. Peer review has provided an important mechanism for formulating and clarifying policy with regard to issues such as appropriate progress in labour, the ways in which clinical data are gathered and interpreted, and the criteria for inclusion in the MGP program. While it has undoubtedly been challenging for the midwives, it has provided valuable opportunities to enhance their professional skills and build confidence in those skills. The peer review process is considered so useful that it has since been implemented for the general midwifery workforce at TWH.

### 4.2 Viability

The viability of the model will depend, in part, on whether the program can maintain a highly skilled and committed workforce. Midwives' satisfaction with the model, and their beliefs about the sustainability of the current roster system, will be explored by interview as part of the next step in this evaluation.

Maternal satisfaction is another important determinant of viability, and this appears to be very high indeed. Responses to the survey were overwhelmingly positive. Mothers particularly appreciated the continuity of carer, which made them feel 'comfortable', 'at ease' and 'in control' during the stress of labour. Most felt that the program met their need for information and caring support

before, during and after the birth. Even those who were disappointed with some aspects of their care still said they would recommend the program to a friend.

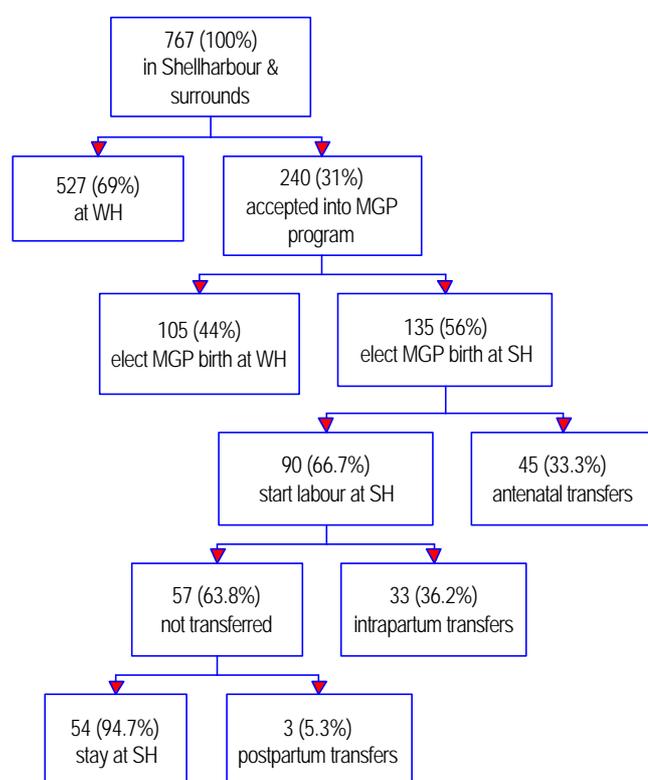
Of the 104 women who completed the questionnaire, 79 (77.9%) said it was important or very important to know that a doctor was on the premises in case of an emergency. As discussed above (Section 3.3.7), this finding can be interpreted in several different ways. For example, women may feel more comfortable with a doctor on site because this is seen as responsible health behaviour that minimises risks to themselves and their babies. This hypothesis appears to be supported by the findings of a small-scale telephone survey that was undertaken to clarify this issue. Half of the women interviewed said they would still choose SHH and the continuity of care midwifery model because they felt the benefits outweighed any risks. The perception of risk among prospective participants may indeed change over time if the program is transferred to SHH and operates successfully and safely at that site.

### 4.3 Modelling future scenarios

A key issue to be resolved by the Area Health Service after the evaluation is complete is the future of the program. This section assumes that the program continues and that the key issue is whether it is provided only at SHH, only at TWH or at both.

The evaluators modelled three scenarios for what might happen in 2005/2006. The first of these is presented in Figure 9. Based on data provided by TWH, a total of 767 women from Shellharbour and surrounds (including towns such as Kiama, Gerringong and Dapto) will deliver at the TWH during 2004/2005. This includes those participating in the MGP program but excludes private patients and women referred to the high-risk clinic. This figure of 767 mothers is the starting point for Scenario 1.

**Figure 9 Scenario 1 – smallest service likely at SHH**



Note: Percentages are those at each decision point.

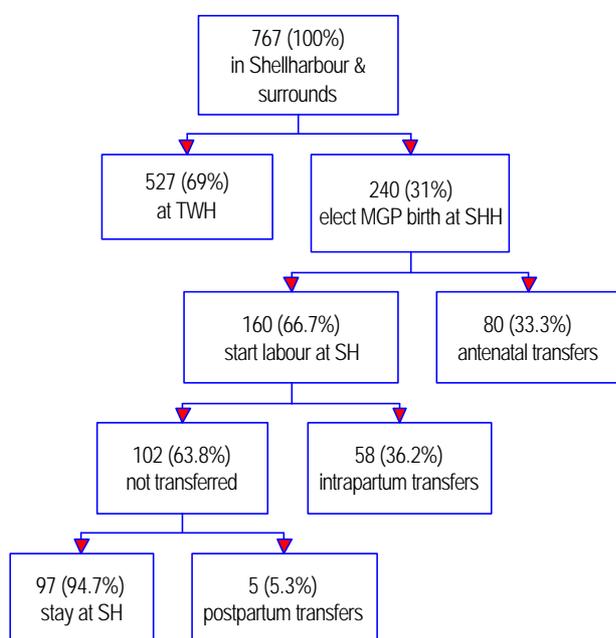
The program currently has the capacity to accept 240 women a year. Scenario 1 assumes that the program is not expanded in 2005/2006, that it is restricted to women living in Shellharbour and surrounding areas<sup>1</sup> and that these women have the option of delivering at either hospital.

In the survey conducted as part of this evaluation, 44% indicated that they would not use the program without a doctor on site. This potentially leaves 135 women who would elect a MGP birth at SHH.

The remainder of the scenario is based on the assumption that the antenatal, intrapartum and postnatal transfer rates remain as they were during the evaluation period. If this proved to be the case, a total of 57 women would deliver at SHH. This is a little more than one a week.

The second scenario is presented in Figure 10. As before, the figure of 767 mothers is the starting point for Scenario 2.

**Figure 10 Scenario 2 – current MGP offered only at SHH**



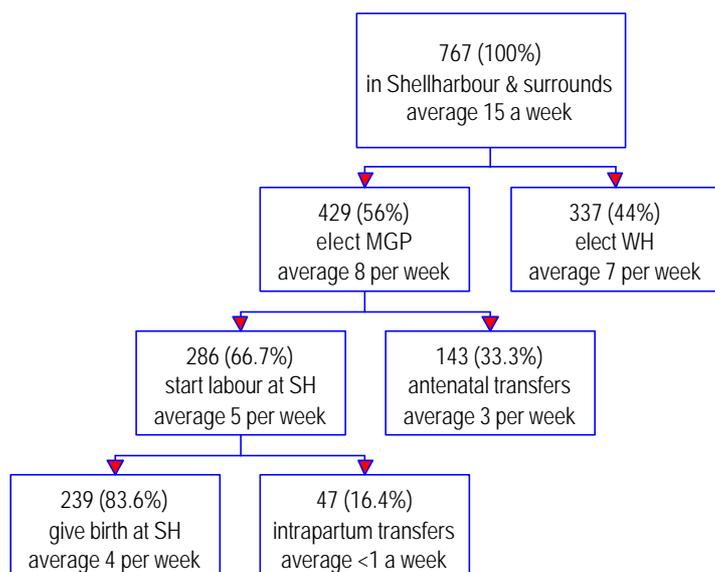
The program currently has the capacity to accept 240 women a year. Scenario 2 assumes that the program is not expanded in 2005/2006, that it is restricted to women living in Shellharbour and surrounding areas and that these women do not have the option of delivering at TWH.

The remainder of the scenario is based on the assumption that the antenatal, intrapartum and postnatal transfer rates remain as they were during the evaluation period. If this proved to be the case, a total of 97 women would deliver at SHH. This is a little less than two a week.

The third scenario is presented in Figure 11. As before, the figure of 767 mothers is the starting point for Scenario 3.

<sup>1</sup> This is not to suggest that another MGP program could not be established for women living elsewhere, simply that the current program capacity is absorbed by women living in the SHH catchment area. If the program continues to accept women from elsewhere, the numbers in the remainder of the scenario would be less.

**Figure 11 Scenario 3 – largest service likely at SHH**



Note: Percentages are those at each decision point.

In Scenario 3, the program is expanded to have the capacity to take all women in the SHH catchment area who elect to use it. In this scenario, women who choose the MGP program do not have the option of delivering at TWH.

Again using the results of the survey conducted as part of this evaluation, this scenario assumes that 44% of women would not use the program without a doctor on site. This potentially leaves a maximum of 429 women who would elect a MGP birth at SHH. However, this estimate includes women who would be ineligible for the program for clinical reasons. The number of women in this category is unknown and so they have all been included, thus inflating the remaining numbers by an unknown amount.

The remainder of the scenario is based on the assumption that the antenatal and postnatal transfer rates remain as they were during the evaluation period. However, this is not the assumption for the rate of intrapartum transfers. As discussed elsewhere, the intrapartum transfer rate during the pilot period was 36.2% of those who started labour in the program. This figure is significantly higher than that reported for the Ryde Hospital program. There are good reasons to assume that, like Ryde, the rate of such transfers would be lower if the program was actually run at SHH and an intrapartum transfer actually required an ambulance transfer. Thus, for the purposes of this scenario, it is assumed that the program at SHH would have a rate similar to that reported for Ryde Hospital (16.4% of those who start labour at the hospital).

If this proved to be the case, a total of 239 women would deliver at SHH. This is equivalent to a little less than five births per week. In this best case scenario, the MGP program would deliver 31.2% of the babies born to women living in Shellharbour and surrounds. But this could only be achieved if the program was not provided at TWH.

## 5 Consultation with stakeholders

The interim report was released for consultation on 10 June 2005. Stakeholders were invited to provide feedback, either by completing the form provided at the end of the interim report or by contacting the evaluators to arrange an interview. The feedback form and interview questions are provided in Appendix V. Nine separate submissions were received.

Stakeholders generally felt that the issue of safety had been addressed by the evaluation. One stakeholder believed it would have been preferable to use an alternative comparison group, namely, women with low-risk pregnancies who gave birth at TWH during the period of the study. Another had some concerns about the ability of midwives to maintain their skills in detecting and dealing with problems that could lead to emergency situations, given that they would be working with low-risk women and so these situations would arise infrequently.

Some stakeholders felt that a more narrow focus on the 116 women who remained 'low risk' and began labour at SHH would be useful. In response, clinical outcomes data were extracted for women who were transferred antenatally (Table 20) and intrapartum (Table 21) and those who gave birth at SHH (Table 22) so that these could be compared.

**Table 20 Clinical outcomes for women transferred antenatally**

		Antenatal transfers (n=58)	
		No.	%
Why transferred	Induction of labour	19	32.7
	Pre-eclampsia	10	16.9
	Elective Caesarean for breech	6	10.2
	Premature labour	5	8.5
	Medical reasons including gestational diabetes	5	8.5
	Premature rupture of membranes	3	5.1
	Large for dates	3	5.1
	Small for dates	3	5.1
	Polyhydramnios	2	3.4
	Elective Caesarean for other reasons	1	1.7
	High head	1	1.7
	TOTAL ANTENATAL TRANSFERS		58
Parity	Primiparous	36	62.1
Antenatal care	Consultation	51	87.9
	Day stay	4	6.9
	Admitted to hospital	11	19.0
Onset	Spontaneous	23	39.7
	Induced	25	43.1
	No labour	10	17.2
Induction and/or augmentation	Oxytocin	26	44.8
	Prostaglandins	9	15.5
	Artificial rupture of membranes	21	36.2

		Antenatal transfers (n=58)	
		No.	%
Pain relief	None	40	69.0
	Nitrous oxide	16	27.6
	Pethidine	5	8.6
	Epidural/Spinal	20	34.5
	General	1	1.7
Birth	Spontaneous vaginal birth	33	56.9
	Forceps	1	1.7
	Vacuum	8	13.8
	Emergency Caesarean section	7	12.1
	Elective Caesarean section	9	15.5
Genital tract status <sup>^</sup>	Intact	14	33.3
	Graze	11	26.2
	First degree tear	6	14.3
	Second degree tear	7	16.7
	Third or fourth degree tear	3	7.1
	Episiotomy	4	9.5
	Sutures required	21	36.2
Postpartum haemorrhage	≥500ml	4	6.9
Gestation at birth	< 37 weeks	11	19.0
Apgar scores	=4 at one minute	4	6.9
	≥9 at one minute	36	62.1
	=4 at five minutes	0	0
	≥9 at five minutes	53	91.4
Weight	<10 <sup>th</sup> centile for gestation	3	5.2
Neonatal care	Resuscitation	6	10.3
	CPAP ventilation	2	3.4
Admission to nursery	Not required	48	82.8
	Premature	6	10.3
	Observations	2	3.4
	Congenital condition	1	1.7
	Other	1	1.7
	Stayed longer than 24 hours	8	13.8
Postpartum care	Complications	3	5.2
	Transfer to SHH	9	15.5
Breastfeeding	Wishes to breastfeed	56	96.6
	Initiated within one hour of birth*	24	42.9
	On discharge from program*	53	91.4
Survey	Returned questionnaire with name	28	48.3

<sup>^</sup> Excludes births by Caesarean section, percentages based on 42 vaginal births

\* Percentages based on the 56 who wished to breastfeed

**Table 21 Clinical outcomes for women transferred intrapartum**

		Intrapartum transfers (n=42)	
		No.	%
Why transferred	Augmentation	20	47.6
	Meconium stained liquor	9	21.4
	Epidural anaesthesia	6	14.3
	Lack of progress in second stage	5	11.9
	Maternal condition	1	2.4
	Other	1	2.4
	<b>TOTAL INTRAPARTUM</b>	<b>42</b>	<b>100.0</b>
Parity	Primiparous	33	78.6
Antenatal care	Consultation	13	31.0
	Day stay	0	0
	Admitted to hospital	0	0
Intrapartum care	Consultation	36	85.7
Onset	Spontaneous	41	97.6
	Induced	0	0
	No labour	1	2.4
Induction and/or augmentation	Oxytocin	30	71.4
	Prostaglandins	0	0
	Artificial rupture of membranes	7	16.7
Pain relief	None	15	35.7
	Nitrous oxide	22	52.4
	IM narcotics	9	21.4
	Epidural/Spinal	22	52.4
	General	1	2.4
Birth	Spontaneous vaginal birth	20	47.6
	Forceps	0	0
	Vacuum	9	21.4
	Emergency Caesarean section	13	31.0
	Elective Caesarean section	0	0
Genital tract status <sup>^</sup>	Intact	7	24.1
	Graze	4	9.5
	First degree tear	3	10.3
	Second degree tear	7	24.1
	Third or fourth degree tear	2	6.9
	Episiotomy	5	17.2
	Sutures required	17	58.6
Postpartum haemorrhage	>500ml	2	4.8
Gestation at birth	< 37 weeks	0	0
Apgar scores	=4 at one minute	2	4.8

		Intrapartum transfers (n=42)	
		No.	%
	≥9 at one minute	24	57.1
	=4 at five minutes	0	0
	≥9 at five minutes	39	92.9
Weight	<10 <sup>th</sup> centile (2.5kg)	0	0
Neonatal care	Resuscitation	2	4.8
	CPAP ventilation	1	2.4
Admission to nursery	Not required	41	97.6
	CPAP ventilation	1	2.4
	Stayed longer than 24 hours	1	2.4
Postpartum care	Complications	0	0
	Transfer to SHH	8	19.0
Breastfeeding	Wishes to breastfeed	41	97.6
	Initiated within one hour of birth*	20	48.8
	On discharge from program*	38	92.6
Survey	Returned questionnaire with name	17	40.5

^ Excludes births by Caesarean section, percentages based on 29 vaginal births

\* Percentages based on the 41 who wished to breastfeed

**Table 22 Clinical outcomes for women who gave birth at SHH**

		Born at SHH (n=74)	
		No.	%
Parity	Primiparous	18	24.3
Antenatal care	Consultation	21	28.4
	Day stay	1	1.4
	Admitted to hospital	0	0
Intrapartum care	Consultation	3	4.1
Onset	Spontaneous	74	100
	Induced	0	0
	No labour	0	0
Induction and/or augmentation	Oxytocin/Prostaglandins	0	0
	Artificial rupture of membranes	0	0
Pain relief	None	48	64.9
	Nitrous oxide	23	31.1
	Pethidine	2	2.7
	Epidural/Spinal	0	0
	General	0	0
Birth	Spontaneous vaginal birth	74	100
	Forceps	0	0
	Vacuum	0	0
	Emergency Caesarean section	0	0
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		Born at SHH (n=74)	
		No.	%
	Elective Caesarean section	0	0
Genital tract status	Intact	30	40.5
	Graze	15	20.3
	First degree tear	20	27.0
	Second degree tear	13	17.6
	Third or fourth degree tear	1	1.4
	Episiotomy	0	0
	Sutures required	33	44.6
Postpartum haemorrhage	>500ml	3	4.1
Gestation at birth	< 37 weeks	0	0
Apgar scores	=4 at one minute	0	0
	≥9 at one minute	61	82.4
	=4 at five minutes	0	0
	≥9 at five minutes	71	95.9
Weight	<10 <sup>th</sup> centile (2.5kg)	1	1.4
Neonatal care	Resuscitation	2	2.7
	CPAP ventilation	1	1.4
Admission to nursery	Not required	70	94.6
	Observations	2	2.7
	Respiratory distress	1	1.4
	Other	1	1.4
	Stayed longer than 24 hours	3	4.1
Postpartum care	Complications	2	2.7
	Transfer to SHH	21	28.4
	Postpartum transfer from MGP care	4	5.4
Why transferred	Maternal condition	2	2.7
	Neonatal condition	2	2.7
Breastfeeding	Wishes to breastfeed	64	86.5
	Initiated within one hour of birth*	54	84.4
	On discharge from program*	58	90.6
Survey	Returned questionnaire with name	41	55.4

\* Percentages based on the 64 who wished to breastfeed

Focusing on the 116 women who started labour at SHH (Tables 21 and 22), it can be seen that the vast majority of the women transferred intrapartum were primiparous and relatively few (24%) of those who gave birth at SHH were primips. More than half did not require pain relief, and the rate of spontaneous vaginal birth was very high (total of 94 births, 81%). Mothers fared well, with very few episiotomies, tears or postpartum haemorrhages. Many of these problems were, as pointed out above, associated with interventions in the group transferred intrapartum. Outcomes for babies were excellent in both groups, and breastfeeding rates on discharge exceeded 90%.

**Table 23 Women who started labour within the MGP, compared with all births at Wollongong Hospital and low-risk births at Shellharbour Hospital, 2003**

		TWH 2003 <sup>^</sup> (n=1936)		SHH 2003 <sup>^</sup> (n=215)		MGP 2004-05 (n=116)	
		No.	%	No.	%	No.	%
Onset	Spontaneous	1282	66.2	156	72.5	115	99.1
	Induced	459	23.7	41	19.1	0	0
	No labour	195	10.1	18	8.4	1	0.9
Induction and/or augmentation	Oxytocin/Prostaglandins	677	35.0	59	27.4	30	25.9
	Artificial rupture of membranes	719	37.1	63	29.3	16	13.8
Pain relief	None	164	8.5	26	12.1	63	54.3
	Nitrous oxide	1279	66.1	147	68.4	45	38.8
	IM narcotics	504	26.0	56	26.0	11	9.5
	Epidural/Spinal	551	28.5	41	19.1	22	19.0
	General	116	6.0	7	3.3	1	0.9
Birth	Normal vaginal birth	1300	67.1	166	77.2	94	81.0
	Forceps	31	1.6	2	0.9	0	0
	Vacuum	177	9.1	8	3.7	9	7.8
	Emergency Caesarean section	231	11.9	20	9.3	13	11.2
	Elective Caesarean section	195	10.1	18	8.4	0	0
Genital tract status <sup>^</sup>	Intact	349	23.1	61	34.5	37	35.9
	Graze/First degree tear	572	37.9	62	35.0	42	40.8
	Second degree tear	357	23.6	40	22.6	20	19.4
	Third or fourth degree tear	13	0.9	1	0.6	3	2.9
	Episiotomy	219	14.5	13	7.3	5	4.9
Birth weight (grams)	<1000	11	0.6	0	0	0	0
	1000-1499	10	0.5	0	0	0	0
	1500-2499	114	5.8	4	1.9	0	0
	2500+	1836	93.2	211	98.1	116	100
Gestational age	Less than 31 weeks	19	1.0	0	0	0	0
	32-33	25	1.3	1	0.5	0	0
	34-36	142	7.2	3	1.4	0	0
	37+	1784	90.5	211	98.1	116	100
Nursery admission	Special care unit	389	19.8	13	6.1	5	4.3
	Neonatal intensive care	27	1.4	1	0.5		

<sup>^</sup> Excludes births by Caesarean section

In Table 23, outcomes for the 116 women who started labour at SHH are compared with data from TWH and SHH in 2003. (The same comparison data are used in Table 7, alongside outcomes from the whole group of 174 MGP participants.) Compared with the low-risk women who gave birth at SHH in 2003, the MGP group had lower levels of intervention, particularly artificial rupture of membranes, pain relief and episiotomy. The rate of spontaneous vaginal birth was very high in both groups (77% and 81% for the SHH and MGP groups respectively), as would be expected with

a low-risk population. Both groups had low rates of perineal injury and very good health outcomes for babies.

Stakeholders highlighted a number of issues not covered by the evaluation. Many of these were outside the scope of the study, which focused on safety and consumer acceptance. These additional issues are, nevertheless, pertinent to the question of whether the MGP model is safe and appropriate for SHH and may be taken into consideration by management in making this decision. The views of stakeholders are summarised below.

1. The safe operation of a birth centre at SHH is in part dependant on having a commitment from the ambulance service to ensuring timely intrapartum transfers from SHH to TWH.
2. Medical specialists (obstetricians, paediatricians and anaesthetists) have consistently opposed the establishment of a birth centre at SHH and this issue has yet to be resolved. A recent review of a birth centre facility in Brisbane found that philosophical differences between birth centre midwives and medical specialists at the supporting hospital led to serious communication problems, mistrust and lack of respect. Similar problems could potentially arise here unless the birth centre gains the full support of medical staff.
3. Until the advent of the MGP, continuity of care was only available to women who wanted and could afford to pay for a private obstetrician. The introduction of the MGP could be perceived as direct competition with private obstetric practices and potentially reduce obstetricians' income from private practice.
4. Cost-effectiveness is important and should be an area for future evaluation.
5. The population of the SHH catchment is growing rapidly, which means there will be an increasing demand for hospital services including maternity in that region. The MGP model is seen as an appropriate way to keep the maternity service at SHH open. Other Area Health Services are implementing the midwifery model as a way of keeping smaller birthing units operating.
6. Women in the Illawarra part of the new Area Health Service have a right to equitable access to appropriate maternity services. The NSW Framework for Maternity Services recommends that a range of services be made available, including continuity of care. Women living in southern Sydney have various options for maternity care, including birth centres and the new home birthing program. Some women from the Illawarra already travel to southern Sydney in order to access these options, which are not available in this region. The MGP at SHH is needed in order to provide an appropriate alternative model of care for women with low-risk pregnancies living in the Illawarra.
7. The midwifery model is potentially more satisfying for some midwives and may encourage them to continue working in the public hospital system instead of leaving the profession.

Stakeholders believed that the simulation (that is, conducting the trial at TWH while pretending labours were taking place at SHH) did not accurately reflect the outcomes that would have been achieved in a birth centre environment. The lack of a transition period, during which outcomes were not evaluated, may also have negatively biased the results. Of the 10 months' data included in the evaluation, only seven months covered the full operation of the MGP with two teams of midwives.

There were more intrapartum transfers than expected. This may have been due to the relatively easy availability of some types of interventions, such as augmentation and epidural anaesthesia. The MGP midwives themselves said they believed there would be fewer transfers for these types of interventions if the program operated at SHH.

At least initially, however, they would be inclined to transfer earlier for other indications where there was a serious risk of problems occurring. They felt this would change over time as they gained experience and confidence in dealing with potential problems in labour. There was some

concern about the transfer criteria, which were based on both the ACMI guidelines and local hospital policies. Conflict between these two sources of information about transfer sometimes created confusion and should be resolved.

Consumers and nursing staff were strongly in favour of implementing the MGP model at SHH. They expressed the view that the midwifery model would be most effective and achieve the best possible outcomes only if implemented at a stand-alone birth centre site. Medical staff believed that the trial had demonstrated that the model could operate safely and effectively at TWH, but were concerned that a move to SHH may compromise these good outcomes.

The evaluation findings were presented to the Primary Health Care Model Steering Committee on 27 June 2005. After discussion, two resolutions were passed:

3. That continuity of care represents best practice in maternity care
4. That the MGP model is a safe model of care for use at SHH.

The viability of the program, and its future, is now to be considered by a working party established for that purpose.

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## **Appendix I Steering committee membership**

Ms D Heinjus / Ms K Olsen Area Director of Nursing - Chair

Ms S Allen Maternal and Child Health, Office of the Chief Nurse – Department of Health

Ms A Shorten Faculty of Health Behavioural Science – Nursing, University of Wollongong

Ms D Cameron, Senior Nurse Manager, Maternity Services, Northern Illawarra Hospital Group

Ms A Lainchbury CNC Maternity Services

Ms M Williamson University of Wollongong

Ms M Johnson Public Relations – Illawarra Health

Dr A James Staff Specialist - Paediatrician

Ms R Whatman NSW Nurses Association

Ms A Goodfellow CNC, Maternity Services, Northern Illawarra Hospital Group

Ms L Metcalf Maternity Coalition

Ms K Buckley Maternity Coalition

Mrs A Scott Consumer Representative

Dr A Dalley Division of General Practitioners

Ms L Hennessy NSW Ambulance Service

Dr G Storey Staff Specialist - Anaesthetics

Prof D Henderson-Smart NSW Pregnancy and Newborn Services Network

Dr R Buist Director of Obstetrics Royal Hospital for Women – PSN Obstetric Representative

Dr W Davis Clinical Director, Maternal and Paediatric Services

Mrs S Browbank General Manager, Northern Illawarra Hospital Group

## Appendix II Consumer survey

### Illawarra Health Midwifery Group Practice

We would like to invite you to tell us about your experiences with the Illawarra Midwifery Group Practice. Your views are important, as they will help us evaluate the Group Practice program, which is currently in its pilot year.

Attached is a questionnaire we would like you to complete. Results from this survey will be used to help decide whether this model of care can be used in Shellharbour next year. The data will also be used by hospital management as part of a quality assurance process to ensure that a high quality service is offered.

Independent researchers from the University of Wollongong are collecting and evaluating this information. All responses will be kept **strictly confidential** by both research and administrative staff.

If you complete the attached questionnaire, this will be taken as a sign of your willingness to participate in this consumer survey.

We appreciate your taking the time to complete this survey, and understand that it may be a lot to ask to fit this into your very busy schedule! You may feel it would be easier to have someone work through these questions with you. If this is the case, please telephone Kate Williams from the University of Wollongong (02 4221 4411), who will make an appointment time to run through these questions quickly with you over the phone or in your home.

**IMPORTANT:** If you feel that this questionnaire raises any concerns for you, including emotional issues, and you wish to talk to someone about this, please do not hesitate to contact the Midwifery Group Practice program director Anne Lainchbury, (02 4253 4281). Any complaints about this research may be directed to the Ethics Officer, Human Research Ethics Committee, University of Wollongong NSW 2522, (02 4221 4457).

## Before the birth

<p><b>1 What were your main sources of information about pregnancy and labour?</b> <i>(Tick more than one if necessary.)</i></p>	<p>Midwife</p> <p>Prenatal classes</p> <p>General practitioner (GP)</p> <p>Obstetrician (specialist doctor)</p> <p>Books</p> <p>Family and friends</p> <p>Magazines</p> <p>Other <i>(please specify)</i></p>	<table border="1" style="border-collapse: collapse; width: 100%; height: 100%;"> <tr><td style="height: 25px;"></td></tr> </table>								
<p><b>2 Did you attend any childbirth preparation or parenthood classes during your pregnancy?</b> <i>(Tick one box.)</i></p> <p>If <b>yes</b>, who taught the classes? <i>(Tick one box.)</i></p>	<p>Yes</p> <p>No</p> <p>Midwifery Group Practice midwives</p> <p>Private midwife</p> <p>Wollongong hospital midwives</p> <p>Other <i>(please specify)</i></p>	<table border="1" style="border-collapse: collapse; width: 100%; height: 100%;"> <tr><td style="height: 25px;"></td></tr> </table>								
<p>If <b>no</b>, why was this? <i>(Tick one box.)</i></p>	<p>My midwife told me everything I needed to know</p> <p>Too far away</p> <p>Did not know about them</p> <p>Attended when I was pregnant before</p> <p>Felt I had enough information already</p> <p>Other <i>(please specify)</i></p>	<table border="1" style="border-collapse: collapse; width: 100%; height: 100%;"> <tr><td style="height: 25px;"></td></tr> </table>								
<p><b>3 How did you find out about the Illawarra Midwifery Group Practice?</b> <i>(Tick one box.)</i></p>	<p>Wollongong hospital midwives</p> <p>Shellharbour hospital midwives</p> <p>General practitioner (GP)</p> <p>Obstetrician (specialist doctor)</p> <p>Media</p> <p>Family or friends</p> <p>Other <i>(please specify)</i></p>	<table border="1" style="border-collapse: collapse; width: 100%; height: 100%;"> <tr><td style="height: 25px;"></td></tr> </table>								

4	Thinking about the antenatal care by your midwife, how much do you agree or disagree with the following statements? (Please circle your answer.)	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
	I was treated with respect	1	2	3	4	5
	I felt I had too little say in what was decided	1	2	3	4	5
	I was told everything I wanted to know about the progress of my pregnancy	1	2	3	4	5
	I felt I could ask all the questions I wanted to	1	2	3	4	5
	I was treated as 'just another case' rather than as an individual	1	2	3	4	5
	I met all three midwives in the team before I was in labour	1	2	3	4	5
	I had most of my antenatal care with my primary midwife	1	2	3	4	5
	I knew who to contact if I had wanted to change my primary midwife	1	2	3	4	5
	I would have liked to know more about the tests and examinations that were carried out	1	2	3	4	5

5 Were there ways in which you felt the antenatal care you received could have been improved?

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## Labour and birth

6	Did you know the midwife who cared for you during labour and birth? (Tick one box.)	Yes, I knew her well	<input type="checkbox"/>
		Yes, but not very well	<input type="checkbox"/>
		No	<input type="checkbox"/>
	If no, did this bother you? (Tick one box.)	Yes, it bothered me	<input type="checkbox"/>
		No, it didn't bother me	<input type="checkbox"/>

7	Thinking about the labour and birth care, how much do you agree or disagree with the following statements? (Please circle your answer.)	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
	I was treated with respect	1	2	3	4	5
	I felt I had too little say in what was decided	1	2	3	4	5
	I was told everything I wanted to know about the progress of my labour	1	2	3	4	5
	I felt I could ask all the questions I wanted to	1	2	3	4	5
	I was treated as 'just another case' rather than as an individual	1	2	3	4	5

**After your baby was born**

8	Thinking about the time after the baby was born, how much do you agree or disagree with the following statements? (Please circle your answer.)	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
	I was able to get all the help I needed	1	2	3	4	5
	I was able to get enough rest	1	2	3	4	5
	I was confused with conflicting advice	1	2	3	4	5
	I felt confident as a mother	1	2	3	4	5
	I understood very little of what was said to me	1	2	3	4	5
	I would have liked to know more about what was happening to me	1	2	3	4	5
	I was able to get help with breastfeeding when I needed it	1	2	3	4	5
	I would have liked to stay longer in hospital	1	2	3	4	5

9	Did you plan to breastfeed your baby? (Tick one box.)	Yes, I was confident I could breastfeed	
		Yes, I thought I would give it a try	
		No, I did not plan to breastfeed	
10	Were you still breastfeeding when you were discharged from the Midwifery Group Practice program? (Tick one box.)	Yes	
		No (please tick box then go to Question 13)	
11	Are you still breastfeeding now? (Tick one box.)	Yes	
		No	

12 Please tell us how old your baby is now or when you stopped breastfeeding. \_\_\_\_\_ months

13	Thinking about your first week at home with your baby, how much do you agree or disagree with the following statements? (Please circle your answer.)	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
	I managed well	1	2	3	4	5
	My midwife was readily available	1	2	3	4	5

14 How would you rate your midwife support during the first week at home? (Please circle your answer.)

Excellent      Very good      Adequate      Inadequate      Very poor

15 What other support, if any, do you feel should be available?

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

## Your experience overall

16	Please rate each of the following statements in terms of its overall importance to your pregnancy and birthing experience. <i>(Please circle your answer.)</i>	Very important	Important	Unsure	Fairly unimportant	Not at all important
	Having one midwife I knew	1	2	3	4	5
	Feeling comfortable and supported	1	2	3	4	5
	Knowing a doctor was on the premises in case of an emergency	1	2	3	4	5
	Feeling I was in control in labour and birth	1	2	3	4	5
	Feeling I made my own decisions	1	2	3	4	5

17	How satisfied were you with the following aspects of your pregnancy and birthing experience? <i>(Please circle your answer.)</i>	Very satisfied	Satisfied	Unsure	Fairly unsatisfied	Not at all satisfied
	Having one midwife I knew	1	2	3	4	5
	Feeling comfortable and supported	1	2	3	4	5
	Knowing a doctor was on the premises in case of an emergency	1	2	3	4	5
	Feeling I was in control in labour and birth	1	2	3	4	5
	Feeling I made my own decisions	1	2	3	4	5

18	<b>Was this your first baby?</b> <i>(Tick one box.)</i>	Yes <i>(please tick box then go to Question 21)</i>	
		No	
19	<b>If you have had a baby before, how do you rate the care provided for this pregnancy and birth against your previous birth experience(s)?</b> <i>(Tick one box.)</i>	Better	
		The same	
		Worse	
20	<b>Who provided the majority of your care for the previous birth(s)?</b> <i>(Tick one box.)</i>	Midwives' clinic at Wollongong	
		Midwives' clinic at Shellharbour	
		Midwives' clinic at another hospital	
		Private midwife	
		Private obstetrician (specialist doctor)	
		Shared care (GP and hospital)	
		Doctors at another hospital	
		Other <i>(please specify)</i>	

21 Please tell us what you liked the most about the care provided for this pregnancy and birth.

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22 What, if anything, didn't you like about the care provided for this pregnancy and birth?

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23 If you had another pregnancy, would you book with the Midwifery Group Practice again? *(Tick one box.)*

Yes  
No

<input type="checkbox"/>
<input type="checkbox"/>

If **no**, why not?

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24 Would you recommend the Midwifery Group Practice program to a friend? *(Tick one box.)*

Yes  
No

<input type="checkbox"/>
<input type="checkbox"/>

25 Why, or why not?

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26 Is there anything else you would like to tell us?

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**CONSENT FOR USE OF MEDICAL RECORDS FOR RESEARCH PURPOSES**

If you wish, you can give your name and contact details here.

**This is optional – you may remain anonymous if you prefer.**

Giving your name would, however, assist in the evaluation. It would enable the researchers to link data from this satisfaction survey with information about patients' birth experiences, via their medical records. If you choose to provide your name and signature here, the medical records of your antenatal care, labour and postnatal care will be used for research purposes only. Our aim is to evaluate the program as a whole, not to analyse people's individual experiences.

*People who respond to this survey will not be individually identified in any of the reports arising from the evaluation.*

**Name**

**Address**

**Telephone number**

**Signature**

**If you prefer to remain anonymous, please complete the following questions about the birth of your baby.**

27	<b>How did your labour begin?</b> <i>(Tick one box.)</i>	Spontaneously	<input type="checkbox"/>
		Induced	<input type="checkbox"/>
		No labour	<input type="checkbox"/>
28	<b>Who delivered your baby?</b> <i>(Tick one box.)</i>	Midwife	<input type="checkbox"/>
		Obstetrician	<input type="checkbox"/>
		Don't know	<input type="checkbox"/>
29	<b>How was your baby delivered?</b> <i>(Tick one box.)</i>	Spontaneous vaginal birth	<input type="checkbox"/>
		Forceps	<input type="checkbox"/>
		Vacuum (suction)	<input type="checkbox"/>
		Planned caesarean section	<input type="checkbox"/>
		Emergency caesarean section (after labour had begun)	<input type="checkbox"/>

**Thank you for completing this questionnaire.**

Please return it in the reply paid envelope provided, or post to:

Reply Paid 71942, Kate Williams, Centre for Health Service Development, University of Wollongong, NSW 2522

## Appendix III Telephone survey script

MGP telephone survey script

Hello, is that \_\_\_\_\_? (Ph. \_\_\_\_\_ )

I'm (name) from the University of Wollongong. I'm ringing about the evaluation of the midwifery program. We received your survey – thank you very much for returning it.

(Wait for response, probably 'that's OK' or similar. She may want to say a few words about the program. If she asks what is happening with the evaluation, say that we are preparing the draft report and it will be given to the steering committee early in June.)

We're ringing a few of the women who returned the survey because we need to clarify the answers to one of the questions. If you have a moment now, I have one quick question to ask you.

(If agrees, continue. If doesn't agree, thank her again for taking part in the evaluation and goodbye.)

The survey asked you to say how important to you certain aspects of your care were. For example, it asked whether having one midwife who you knew was very important, important, fairly unimportant and so on. Do you remember?

(Wait for answer – hopefully 'yes'!)

One of the questions asked whether knowing a doctor was on the premises in case of an emergency was important to you. You indicated that it was important or very important. I was wondering how you would feel about giving birth at Shellharbour Hospital if there was no doctor on site and you had to travel to Wollongong if you needed specialist medical care that the midwives couldn't provide. How would you feel about that?

(Write answers as verbatim as possible.)

(Clarify.) So would you be willing to use the midwifery service if it operated at Shellharbour without a doctor on the premises?

(Write answer. If necessary, prompt: Why is that?)

Thank you. That's all the questions! Thanks very much for helping us. If you have any concerns or want to know more about the evaluation, please get in touch with the manager of the midwifery program, Anne Lainchbury. Her phone number is 4253 4281. Thanks again. Goodbye.

---

(ONLY if she wants to know more about why we are asking this question, say:

You know that the midwifery program at Wollongong is a trial to see whether the same kind of program might work at Shellharbour? One of the questions for the evaluation is whether women would be happy to give birth at Shellharbour if there were no obstetricians on site or on call to attend the birth. Women who needed extra medical care during labour would have to be transferred to Wollongong by ambulance and that could take up to an hour. So obviously there is a risk and we need to know whether women using the service would be comfortable with that risk. It was very difficult to ask that question in a survey situation where you can't ask follow-up questions to clarify the answers, so that's why we are ringing some people to ask them directly.)

(She may then raise the question whether her answer will affect whether the program will run at Shellharbour. In this case, say:

Our report will go to the steering committee and they'll make their recommendations based on all the information they have, including all the clinical information about how the births were managed, mothers' satisfaction with the service and so on. In the end it's up to the hospital management to decide whether the program continues and in what form or what location.)

(Then say thank you again. If you have any more questions feel free to contact Anne. Did you take down her number? (4253 4281) Goodbye.)

## Appendix IV Tables of statistical test results

All p values are based on Chi-square tests of differences in frequency distributions. A p value less than 0.05 is considered statistically significant (that is, there is a 95% likelihood that the observed frequency distribution was not due to chance.)

**Table 24 Labour and birth outcomes for primips versus multips**

		Primips		Multips		p value
		No.	%	No.	%	
<b>Onset</b>	Spontaneous	63	72.4	75	86.2	0.39
	Induced	15	17.2	10	11.5	
	No labour*	9	10.3	2	2.3	
<b>Augmentation or induction type<sup>#</sup></b>	Oxytocin*	42	48.3	14	16.1	0.00
	Prostaglandins*	8	9.2	1	1.1	0.02
	Artificial rupture of membranes	22	25.3	15	17.2	0.19
<b>Pain relief<sup>#</sup></b>	None*	42	48.3	61	70.1	0.00
	Nitrous oxide*	37	42.5	24	27.6	0.04
	Pethidine*	13	14.9	3	3.4	0.01
	Epidural (excluding Caesarean)*	19	21.8	3	3.4	0.00
<b>Birth</b>	Spontaneous vaginal birth*	46	52.9	81	93.1	0.00
	Forceps	1	1.1	0	0	0.32
	Vacuum*	16	18.4	1	1.1	0.00
	Emergency Caesarean section*	17	19.5	3	3.4	0.00
	Elective Caesarean section	7	8.0	2	2.3	0.09

**Table 25 Maternal outcomes for primips versus multips**

		Primips		Multips		p value
		No.	%	No.	%	
<b>Genital tract status<sup>#</sup></b>	Intact*	13	20.6	38	46.3	0.00
	Graze	9	14.3	21	25.6	0.09
	First degree tear	13	20.6	16	19.5	0.11
	Second degree tear	17	27.0	10	12.2	
	Third degree tear	4	6.3	0	0	
	Fourth degree tear	1	1.6	1	1.2	
	Episiotomy*	8	12.7	1	1.2	0.00
<b>Postpartum complications</b>	None	84	96.6	85	97.7	0.80
<b>Breastfeeding</b>	Intended to breastfeed*	86	98.9	75	86.2	0.00
	Initiated within one hour of birth* <sup>^</sup>	38	44.2	60	80.0	0.00
	On discharge from program <sup>^</sup>	78	90.7	70	93.3	0.54

**Table 26 Child outcomes for primips versus multips**

		Primips		Multips		p value
		No.	%	No.	%	
<b>Gestation at birth</b>	< 37 weeks	8	9.2	3	3.4	0.12
<b>Apgar scores</b>	=4 at one minute	3	3.4	3	3.4	1.00
	=4 at five minutes	0	0	0	0	na
<b>Weight</b>	<10 <sup>th</sup> centile (2.5kg)	2	2.3	2	2.3	1.00
<b>Neonatal care</b>	Resuscitation	5	5.7	5	5.7	1.00
	CPAP ventilation	2	2.3	2	2.3	1.00
<b>Admission to nursery</b>	Not required	76	87.4	83	95.4	0.06
<b>Length of stay in nursery</b>	>24 hours*	10	11.5	2	2.3	0.02

**Table 27 Clinical outcomes for early versus later births**

		Early births (n=77)		Later births (n=97)		p value
		No.	%	No.	%	
Onset	Spontaneous	59	76.6	79	81.4	0.69
	Induced	13	16.9	12	12.4	
	No labour	5	6.5	6	6.2	
Pain relief	None	43	55.8	60	61.9	0.42
	Nitrous oxide	28	36.4	33	34.0	0.78
	IM narcotics	9	11.7	7	7.2	0.31
	Epidural	10	13.0	12	12.4	0.90
	Epidural/Spinal for CS	10	13.0	10	10.3	0.58
	General	1	1.3	1	1.0	0.87
Birth	Normal vaginal birth	51	66.2	76	78.4	0.07
	Vacuum	12	15.6	5	5.2	0.02
	Emergency Caesarean section	9	11.7	11	11.3	0.94
Genital tract status	Intact	26	33.8	53	54.6	0.01
	Episiotomy	6	7.8	3	3.1	0.16
Gestation at birth	< 37 weeks	6	7.8	5	5.2	0.47
Apgar scores	=4 at one minute	1	1.3	4	4.1	0.31
	=4 at five minutes	0	0	0	0	na
Weight	<10 <sup>th</sup> centile (2.5kg)	2	2.6	2	2.1	0.81
Neonatal care	Resuscitation	7	9.1	3	3.1	0.09
	CPAP ventilation	3	3.9	1	1.0	0.21
Admission to nursery	Not required	8	10.4	7	7.2	0.46

**Table 28 Clinical outcomes for women living within SHH catchment versus those living elsewhere**

		Lives within SHH catchment (n=74)		Lives outside SHH catchment (n=100)		p value
		No.	%	No.	%	
Onset	Spontaneous	62	83.8	76	76.0	0.28
	Induced	7	9.5	18	18.0	
	No labour	5	6.8	6	6.0	
Pain relief	None	41	55.4	62	62.0	0.38
	Nitrous oxide	29	39.2	32	32.0	0.33
	IM narcotics	4	5.4	12	12.0	0.14
	Epidural	8	10.8	14	14.0	0.53
	Epidural/Spinal for CS	8	10.8	12	12.0	0.81
	General	0	0	2	2.0	0.22
Birth	Normal vaginal birth	55	74.3	72	72.0	0.82
	Forceps	0	0	1	1.0	0.39
	Vacuum	8	10.8	9	9.0	0.71
	Emergency Caesarean section	7	9.4	13	13.0	0.46
	Elective Caesarean section	4	5.4	5	5.0	0.92
Genital tract status	Intact	30	40.5	49	49.0	0.27
	Graze	8	10.8	22	22.0	1.00
	First degree tear	14	18.9	15	15.0	
	Second degree tear	12	16.2	15	15.0	
	Third or fourth degree tear	3	4.0	3	3.0	
	Episiotomy	5	6.8	4	4.0	0.42
Gestation at birth	< 37 weeks	7	9.5	4	4.0	0.14
Apgar scores	=4 at one minute	2	2.7	4	4.0	0.64
	=4 at five minutes	0	0	0	0	1.00
Weight	<10 <sup>th</sup> centile for gestation	3	4.1	1	1.0	0.18
Neonatal care	Resuscitation	3	4.1	7	7.0	0.41
	CPAP ventilation	1	1.4	3	3.0	0.47
Admission to nursery	Not required	66	89.2	93	93.0	0.38
	Stayed longer than 24 hours	6	8.1	6	6.0	0.59
Postpartum care	Complications	1	1.4	1	1.0	0.41
	Transfer to SHH*	35	47.3	3	3.0	0.00

**Table 29 Clinical outcomes for named survey respondents versus anonymous or non-respondents**

		Anonymous or non responders (n=x)		Named responders (n=86)		p value
Transfer	Born at SHH	31	35.2	43	50.0	0.05
Onset	Spontaneous	69	78.4	69	80.2	0.07
	Induced	10	11.4	15	17.4	
	No labour	9	10.2	2	2.3	
Pain relief	None	47	53.4	56	65.1	0.12
Birth	Spontaneous vaginal birth	58	65.9	69	80.2	0.03
	Doctor present	29	33.0	16	18.6	0.03
Genital tract status <sup>^</sup>	Intact	24	35.3	27	35.1	0.98
	Graze	13	19.1	17	22.1	0.66
	First degree tear	14	20.6	15	19.5	0.40
	Second degree tear	11	16.1	16	20.8	
	Third or fourth degree tear	5	7.3	1	1.3	
	Episiotomy	5	7.4	4	5.2	0.59
Neonatal care	Resuscitation	6	6.8	4	4.7	0.54
	CPAP ventilation	3	3.4	1	1.2	0.32
Admission to nursery	Not required	80	90.9	79	91.9	0.82

<sup>^</sup> Percentages are based on the 145 women who had vaginal births.

*Consumer satisfaction outcomes for named versus anonymous respondents to the survey*

Below is the list of questions on which anonymous respondents were less likely than named respondents to select the extreme positive response. Note that in most cases the anonymous respondents were still positive about their care.

- Q4: I was treated as ‘just another case’ rather than as an individual
- Q7: I felt I had too little say in what was decided.
- Q8: I was able to get all the help I needed.
- Q8: I was confused with conflicting advice.
- Q8: I understood very little of what was said to me.
- Q17: Feeling I was in control in labour and birth.
- Q17: Feeling I made my own decisions.

## Appendix V Feedback sheet on the MGP evaluation

I would prefer to be interviewed to give my feedback on the evidence set out in the Interim Evaluation Report. Please contact me to arrange a suitable time.

The evaluation covers all issues relevant to the safety and effectiveness of the program.

Agree

Disagree

Comment

The outcomes presented in the Interim Evaluation Report are:

Better than I expected

As I expected

Worse than I expected

Comment

On the basis of the results reported in the Interim Evaluation Report, I believe that:

1. The Midwifery Group Practice program should be offered only at Shellharbour Hospital
2. The Midwifery Group Practice program should be only at Wollongong Hospital
3. The Midwifery Group Practice program should be offered at both hospitals
4. The Midwifery Group Practice program should close

Comment

Any other comments you would like to make?

**About you**

Name:

Role / organisation:

Telephone numbers (daytime):

Postal address:

Email:

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Please return this feedback sheet to Kate Williams, Centre for Health Service Development, University of Wollongong, NSW 2522. Telephone (02) 4221 4411. Fax (02) 4221 4679. Email: [kathrynw@uow.edu.au](mailto:kathrynw@uow.edu.au)

The closing date for feedback is **Friday 24 June 2005**.

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## **Interview questions for midwifery consultation**

What were your initial views on the midwifery model?

Have your views changed during the trial? Why/why not?

What do you think were the key questions to be answered in this trial? Have they been answered? If not, what other issues were important? How could they be addressed?

Do you agree with the conclusions of the evaluation? If not, how would you interpret the evidence?

Based on the evaluation, what should the future be for the midwifery group practice program?

Anything else you'd like to say about the trial or the evaluation?