

Human
Services



Public Health
and Development Division

Victoria

WUDWAW

“Who Usually Delivers Whom and Where”



Report on Models of Antenatal Care



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Published by the Perinatal Data Collection Unit,
Victorian Government Department of Human Services.
(0610799)
August 1999

WUDWAW

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Report on Models of Antenatal Care

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Acknowledgements

The midwives who routinely complete the perinatal morbidity statistics form on every birth in Victoria are gratefully acknowledged for the extra work they did over the study period. In addition to their usual workload, they made the effort required to extract and interpret information which may not have been readily available at all times.

Input from those involved in altering the computerised forms was essential. Despite the complexity of this process, it was achieved thanks to the expertise and cooperation of the Information Technology personnel.

Many of the staff of the Perinatal Data Collection Unit (PDCU) had to do additional work so that the WUDWAW data could be collated, coded and entered into our computer system for retrieval and final analysis. The Health Information Managers, Odette Taylor, Marilyn Riley and Sonia Palma, were an integral part of the project team. Much of the data entry was done by Jill Wheatley, Debbie Arnold and Linda Botham. We thank these individuals as well as all other members of the PDCU for their input.

Sofia Mercer, the Project Officer from April to November 1997, established the process for ethics approval and networking with the maternity units.

During the study period, the Victorian Clinical Genetic Service managed the Special Initiative grant from the Public Health and Development Division of the Department of Human Services.

Additional financial support for production of this report was provided by the Maternity Service Enhancement Strategy, Department of Human Services.

Foreword

This report primarily contains descriptive data. It is intended that further analyses will be undertaken on request and for future peer reviewed publication. It is hoped that provision of the data in this format will inform those interested in policy development, hospital protocols and guidelines and service planning.

The results of the main study are provided in four sections. Section 1 summarises the information on gestation at first antenatal visit and the accoucheur. Section 2 Univariate Analysis describes the models of care at 20 weeks gestation and their association with some maternal characteristics and obstetric history details that are routinely collected on the perinatal form. In addition, some data are presented to show the category of the hospitals. Some of these variables are, in fact, closely related, such as maternal age and parity (number of births) and hospital category and region of residence.

Section 3 Multivariate Analysis uses logistic regression analysis to determine the significance of the variables described in Section 2, adjusting for the effect of any other variables.

Section 4 Models of Care and Outcomes gives some examples of the type of associations that can be made between a particular model of care and a perinatal outcome. Four outcomes have been examined: gestation at delivery, preeclampsia, onset of labour and birth weight by gestation. We emphasise that an 'association' in this context does not indicate a 'cause' and further work is necessary before detailed interpretation of these findings can be made.

There are many tables in this report, each with 18 rows of data relating to the models of care. Therefore, a fold out section on the back cover lists the models of care to assist the reader.

Jane Halliday
Perinatal Data Collection Unit

Executive Summary

A statewide population-based study was undertaken over a four month period in 1998 by the Perinatal Data Collection Unit, using the form completed for every birth of at least 20 weeks gestation in Victoria.

Cooperation from those completing this form, the midwives (almost always), ensured the success of this project which gathered information on more than 23,000 pregnancies in the four-month study period. The information sought and collected from 109 hospitals was:

- The gestation at the first visit to a doctor or midwife after the pregnancy was confirmed.
- The model of care at 20 weeks gestation.
- The model of care at birth.
- The accoucheur.

This report summarises the models of care component of the project. It was produced on request and with funding from the Maternity Services Enhancement Strategy, Acute Health, to supplement information presented in a Review of Shared Obstetric Care produced by the Centre for the Study of Mothers' and Children's Health. The data collection phase of the project was funded by a Special Initiative grant from Public Health and Development, Department of Human Services.

More than 18 models of care were identified by the project and frequency data are presented on these models of care at 20 weeks and at birth. We have labelled the model involving GP or Specialist Obstetric antenatal care with standard public hospital intrapartum care as 'shifted' care. This differs from the traditional model of shared care because there is no formal arrangement between the antenatal provider of care and the place of birth. It is more frequently used than shared care, but is not used as often as private care throughout pregnancy and birth.

The results are presented in a number of tables, stratified to show the relationship between models of care and a number of different variables relating to maternal characteristics.

Approximately 80% of women first visit a doctor or midwife after knowing they are pregnant, that is, for antenatal care, in the first trimester of pregnancy.

The accoucheur (the assistant person who actually has their 'hands on' at the time of the birth of the baby) is a hospital midwife in 38% of cases and an obstetrician in another 38%. GPs act as the accoucheur in 8% of cases.

There were five models of care being used by 87% of pregnant women at 20 weeks gestation. Seven models accounted for the antenatal care of another 12% of women. Ten more models were each utilised by a small proportion of women, less than 1% and, although these ten models catered for such a small proportion, they were distinct and required consideration as separate entities.

Specialist private obstetric care was most frequently used with 28% of women accessing this model. The model of 'shifted' care was used by 24% of women and shared care another 15%. Standard public hospital care was provided to 20% of women at the time of birth.

There is little movement between models of care at 20 weeks and at birth, although the actual carer may change.

67% of women giving birth in Victoria are admitted as public patients.

Region of residence of the woman is a very important predictor of which model of care is used, because of the location of certain types of hospitals in those regions. Overall, the highlights are the lack of availability of certain models in rural regions, in particular Barwon and Gippsland Regions, and the increased use of the 'shifted' care model, again in Gippsland, Loddon Mallee and Hume Regions.

Women from non-English-speaking backgrounds are accessing public hospital care, whereas Australian, UK and North American born women showed a preference for private obstetric care.

Younger women are accessing public hospital standard care or community-based care such as 'shifted' or shared care, or not receiving antenatal care at 20 weeks gestation. They are also accessing midwife clinics more often than older women. Older women are visiting their GP or obstetrician privately, or accessing the high-risk antenatal clinics.

There are no major differences between women in use of models of care on the basis of their parity versus their gravidity. For instance, a woman with three or more previous births is as likely to use public hospital standard care as is a woman with four or more previous pregnancies.

Woman having their first birth (parity = 0) or whose current pregnancy is their first (gravidity = 1), are accessing private obstetric specialist care more often than woman of higher parity or gravidity. The latter group of women is represented at a higher frequency in the high risk clinics.

At 20 weeks gestation, single women are in public hospital standard care, shared care or not receiving antenatal care, but they are seldom accessing private obstetricians. Married women show a disproportionately high use of private obstetricians. A higher percentage of single, de facto, divorced, widowed and separated women use shared and shifted care when compared with married women.

Multivariate analysis demonstrated that maternal characteristics, such as country of birth, are significant predictors of uptake of the models of care, having taken account of other contributing (confounding) variables.

Women attending the high risk clinics at 20 weeks have a higher proportion of adverse outcomes (pregnancy induced hypertension, preeclampsia or eclampsia, small for gestational age and low birth weight). The converse is also true. Women attending the low-risk models of care (for example, hospital birth centre) have a lower proportion of adverse outcomes.

In conclusion, this population-based study has collected information on important aspects of women's use of antenatal and intrapartum care in Victoria in the late 1990s. The availability of services provided by midwives and doctors and the uptake of these services by pregnant women, is dependent on many interrelated factors. As a result of this study it is now possible to quantify some of these factors. It is hoped that planning and implementation of follow up studies examining the effectiveness and benefits of the different models of care will be facilitated by having these data.

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Introduction to WUDWAW: Who Usually Delivers Whom And Where?

Background

In the 1980s, there was concern with where birthing services were taking place as a result of regionalisation of services and the question of the safety of small maternity hospitals. A shift in interest towards who is delivering services has been raised more recently. This has been demonstrated in a number of publications, such as articles raising concerns over costs of health care and medical indemnity insurance [Richardson 1993; Gillet 1997]; interest in variation in hospital obstetric care and optimal pregnancy management [Hemminki & Gissler 1994; Rosenblatt et al, 1997]; the release of results of international trials of midwifery care [Tucker J et al. 1996] and, the systematic review of alternative maternity services by Waldenstrom & Turnbull (1998).

Important information on service delivery is contained in the Report of the Ministerial Review of Birthing Services [Health Department Victoria, 1990]. As well as information from submissions and consultations with many interested parties, this report includes information obtained from a postal survey to 790 women who gave birth in Victoria in a one-week period in 1989 [Brown & Lumley 1994]. Data and recommendations relating to eight broadly defined models of pregnancy care were presented in the Birthing Services Review.

Since that time, antenatal care has become complex in terms of the large number of different models that have been introduced. It is potentially perplexing as to where, when, for how long and to whom particular models may be available. Shared care has become increasingly common, although not providing the continuity of care or carer that it was originally intended [Brown & Lumley 1993]. Another postal survey to 1,336 women who delivered over a two-week period in 1993 analysed, amongst other outcomes, women's satisfaction with the original eight models of care [Laslett et al. 1997].

Variations on the shared care model have been made in response to the rationalisation of health funding and, to a lesser extent, the needs of Victorian women. New models of care have been developed to accommodate the shift of antenatal care from the hospital to the community. However, a statewide picture of current antenatal care in Victoria has not been available.

Models of care are defined in different ways by different

hospitals and practitioners and, through discussion with a representative sample of people who contributed relevant information on models of care, many more than eight have now been described. In view of the need to understand the utilisation of these various models by women with different profiles as a precursor to facilitating service planning, a large, population-based study was necessary.

Since 1982, midwives have been obliged to complete a separate form for each birth in Victoria and send it to the PDCU. Other states and territories of Australia have a similar form. Some of the other forms have recently been changed to allow for routine collection of limited information on types of antenatal and intrapartum care. However, by using the main body of the form for such data collection, it is not possible to elicit information on the many models of care. In Victoria, we have an 'occasional data' section on our form, which can be used periodically for research. It is this section that could be used for the population-based study on models of care.

The 'occasional data' section of the form has been used for two other studies, one on smoking and alcohol use in pregnancy [Bell & Lumley 1994] and another on ultrasound prevalence and timing in pregnancy [Yates et al. 1995]. These studies have demonstrated the ability to obtain population-based data in detail, if there is a defined time in which a limited, but carefully structured set of questions is asked.

Funding for this study was through a Department of Human Services, Public Health special initiative funding program, and was managed under the auspices of the Victorian Clinical Genetics Service. A grant of \$60,000 was received.

The limitation with designing a questionnaire for this type of exploratory study was not knowing how many different models of care existed. The challenge in the development of the questionnaire was to make it as simple as possible without losing the ability to collect the necessary data to meet the aims and objectives of the study.

Aim and Objectives

The aim of this study was to collect population-based (statewide) descriptive data on current utilisation of different models of antenatal and intrapartum care, the gestation at which women first attended for antenatal care, and the accoucheur at birth.

The objectives were:

- To obtain a greater understanding of the types and use of different models of antenatal and intrapartum care and the personnel involved at different stages of pregnancy and labour, throughout Victoria.
- To support planning of health services by obtaining information on the utilisation by women with different profiles (for example, Mother's country of birth, age, parity, region of residence) of the various models of care.
- To examine some pregnancy outcomes for comparisons between models of care, only where numbers in the comparison groups were large enough for meaningful statistical analysis.
- To provide feedback to individual hospitals, allowing for policy development.

Summary of Process and Timetable

- A Steering Committee was established following funding approval for this study in February 1997. This committee met on 5 June 1997 with representatives from major teaching, private, suburban and country hospitals (see Appendix 1 for membership of the Steering Committee).
- The process of gaining ethics approval and participation began in May 1997 and was completed in February 1998.
- The four study questions were devised and piloted by 13 hospitals and a homebirthing agency during November-December 1997.
- All pilot hospitals were visited by the (new) Project Officer, Irene Ellis, during November and December 1997.
- The main study involved all 109 hospitals in Victoria with maternity beds, Victoria's only freestanding birthing unit and four homebirthing agencies. It ran from 6 April to 30 August 1998.
- Visits to 38 hospitals and one private midwifery practice were undertaken by the Project Officer from February through to August 1998.
- Validation of the main study data began on 5 October 1998 and continued into January 1999. This process involved comparing information reported on the perinatal form with that in the medical record.

The 'Occasional Data' Section

Data on the study population were obtained by asking four questions, the answers to which were recorded by the midwives in the Occasional Data Section of the routinely completed Perinatal Morbidity Statistics Form (Appendix 2). The questions were designed through consultation with a number of experts and a meeting of the Steering Committee.

Figure 1 Occasional Data Section of the Perinatal Morbidity Statistics Form

Amniocentesis – before 22 weeks <input checked="" type="checkbox"/>		Discharg Discharg Died Transferr Mother/E
– at 22 or more weeks <input checked="" type="checkbox"/>		
Other		
Occasional Data (WUDWAW Study, 1998)		
•	<input type="checkbox"/>	<input type="checkbox"/>
•	<input type="checkbox"/>	<input type="checkbox"/>
•	<input type="checkbox"/>	<input type="checkbox"/>
•	<input type="checkbox"/>	<input type="checkbox"/>
Signature at Delivery Date / /		Signat

Appendix 2 shows the entire Perinatal Morbidity Statistics form used in the study period

Ethics Approval

Obtaining ethics approval involved extensive liaison with institutional research and ethics committees. Generally, hospitals gave approval on the basis that the means of data collection was already in place, that is the Perinatal Morbidity Statistics Form; the additional questions were non-invasive; and confidentiality would be maintained by the PDCU.

Three hospitals requested our attendance at their committee meetings, however, the process of follow-up contact, re-submission of the proposal and negotiation, pre-empted the need for attendance at all but one of these committee meetings. **This process of gaining ethics approval for participation began in May 1997 and was not completed until February 1998.**

Financial Implications

More than half of Perinatal Morbidity Statistics forms are computer-generated. The inclusion of four questions in the Occasional Data Section of this form necessitated changes to the computer systems of 18 hospitals. This required time and money. The costs to the project totalled \$3,740 and the time taken to modify the computer systems prevented one hospital from taking part in the pilot study, and delayed the onset of data collection in several others.

Country travel and accommodation during the pilot study and for validation of the data was also costly, although much of this was ameliorated by combining these hospital visits with routine teaching sessions for the PDCU.

Figure 2

February 1997

June 1997

May 1997-February 1998

November-December 1997

January-March 1998

April-August 1998

September 1998

October 1998

November 1998-January 1999

1999

Timeline for WUDWAW

Funding obtained, Project Officer appointed

First Steering Committee meeting

Ethics approval

Pilot phase

Preparation of materials for main study (prompts, forms)

Midwives enter perinatal data, including WUDWAW questions

Forms sent to PDCU

Coding and entry of all data on perinatal forms at PDCU

Data file sent to Health Computing Service for processing

Subfile with data on approximately 23,000 births and WUDWAW information extracted by Health Computing Service and returned to PDCU

Validation, Funding finished

Data analysis

Reports produced

The Pilot Study

The pilot study trialled the four questions to be used in the main study. The principal aim was to determine if the questions elicited the information required. The pilot study also aimed to determine if the list of models of antenatal care fully represented those available to women having babies in Victoria.

The study involved 13 hospitals and a homebirthing agency and was conducted during November-December 1997. These hospitals were chosen to reflect a wide variety of models of care and included both large public and smaller private hospitals, and four hospitals using three different computer systems to collect/record the perinatal statistical information. It was anticipated that 500 completed forms would be received during this pilot phase. In fact, 730 were received. As well as clarifying the questions, the pilot study identified five new models of care specific to individual hospitals and several variations on existing models.

Validation involved the comparison of data from completed forms with what was recorded in the histories. The Project Officer validated 34% (251) of the completed forms against hospital histories.

Results of the Pilot Study

The results presented here summarise the changes that needed to be made to the questions. See Appendix 3 for the final questions.

Question 1

Question 1 needed rewording in order to elicit the information required. The question was changed from: 'What was the gestation in weeks at the first visit to a doctor or midwife for the confinement?' to 'What was the gestation in weeks at the first visit to a doctor or midwife after you knew you were pregnant?'. Women receiving private antenatal care needed to be asked Question 1 as this was not usually recorded in their hospital histories. Initially, this posed a problem for private maternity units, but the midwives devised various means of recording the women's responses to this question, usually before admission. The most successful of these involved collecting the data at the booking-in visit.

Questions 2 and 3

Answering these questions posed few problems, especially when the maternity unit had previously identified and highlighted the models of care specific to

their unit. It was necessary to clarify the various models, as many were defined in different ways by different hospitals and different practitioners. The Project Officer and the midwives from each unit in the pilot study, as well as the midwives in private practice, identified and defined their specific models of care.

New models of care were identified. Some were variations on existing models, such as Shared Care: Hospital Birth Centre with GP, while others were available from only one provider, for example, Care Shared between Obstetrician and Midwife in Private Practice.

Question 4

There was very little confusion over the responses to this question. The hospital midwife was the accoucheur for the majority of births during the pilot phase. The second largest group was the student midwives. This may be a reflection of the timing of the pilot, as the end of November-early December is the time most student midwives are making up their numbers of births preparatory to endorsement.

Difficulties Identified

The pilot study identified the following difficulties:

Communication

- A good deal of the Project Officer's time was spent in networking to ensure that any information regarding the study reached those who needed it most, that is the midwives completing the form or entering the data and the information technology people responsible for changes to the computer systems. No assumption could be made that the information exchanged between the Project Officer and the midwife representatives would always reach the rest of the midwifery staff. The number of staff involved and their accessibility, for example, part-time, agency, bank and night duty staff, combined with an already heavy workload, is the most likely explanation for this. A great deal of time was spent ensuring the majority of staff were aware of the study and that their interpretation of the models was consistent.

Computer generated forms

- The required computer system modifications prevented one hospital from taking part in the pilot study and delayed the onset of data collection for several others.

Summary of the Pilot Phase of the Study

The recruitment of hospitals for participation in this project proved successful. All 109 hospitals in Victoria providing maternity services agreed to participate, as did Victoria's only freestanding birthing unit. Home birth practitioners, both midwives and doctor, all agreed to participate.

The pilot study proved to be extremely worthwhile, in particular in establishing communication strategies. Modification of Question 1 for the main study ensured the most accurate gestation possible would be obtained and the sharing of strategies ensured data were received from all hospitals for this question. The process of defining models of antenatal care proved to be time consuming, although particularly productive. Not only were the definitions clarified with the midwifery unit managers or specific midwives within the hospitals, but an extensive network was developed. These contacts proved very helpful with the running of the main study.

The Main Study

The Final Questions

The final study questions were:

- 1 What was the gestation in weeks at the first visit to a doctor or midwife after you knew you were pregnant?
- 2 What was the model of antenatal care at 20 weeks gestation?
- 3 What was the model of care during labour?
- 4 Who was the accoucheur?

Prior to the commencement of the main study, laminated copies of the study questions with a coding system for the models of care devised during the pilot phase were sent to all birthing units, labour wards and independently practising midwives. This provided ready access to the study questions in a durable form. Notification of the starting date, the rationale behind Question 1, and a WUDWAW newsletter were also sent. The newsletter provided the midwives with feedback from the pilot study. Definitions of the models of care were held by the Project Officer and relevant descriptions were supplied to individual hospitals on request so that they were assured of coding correctly. See Defining Models of Care for detailed descriptions of the models. Below are the prompts supplied with the study questions 2 and 3.

Prompts for Models of Care Questions 2 and 3

Public hospital outpatient: standard care
Public hospital: high risk clinic specialist obstetrician
Public hospital: midwife clinic
Team midwifery in public hospital
Shared care: Public hospital with GP
Shared care: Public hospital with midwife in private practice
Shared care: GP with midwife
Shared care: Public hospital with community health centre
Private obstetrician and private GP
GP private
GP/obstetrician/public patient
Private obstetrician
Midwife in private practice
Hospital birth centre
No care
Shared care: hospital birth centre with GP
Shared care: obstetrician with midwife in private practice
Other: (please specify)

- Data were coded by the staff of the PDCU.
- The study period was 23 weeks, from 6 April to 31 August 1998.
- All hospitals in Victoria providing maternity services contributed. At the completion of the study, forms had been received from these 109 Victorian hospitals. This comprised three major teaching hospitals, 12 suburban public hospitals, 24 private hospitals and one privately run birthing centre (freestanding), 10 country base hospitals, and 59 other country hospitals. Homebirth practitioners also provided data.

Proportional Representation

The number of forms that should be received from each hospital was estimated using the previous years birth figures. Proportional representation of hospitals with completed forms was achieved.

Missing Data

There was only a small proportion of forms with incomplete data (see below). The missing data were not concentrated amongst a few hospitals, but were spread across many.

Validation

The validation process began in the last week of October 1998 and continued part-time into January 1999. This was undertaken to ensure there were no major inconsistencies between midwife reports and the medical record.

Selection of Validation Sample

Ten percent of the histories with WUDWAW data from each of the three major teaching hospitals was examined.

For all other hospitals selected, 2.5% of the forms containing WUDWAW data were validated. The hospitals were selected to represent all categories:

- Teaching 3
- Metropolitan 2
- Private 1
- Country base 4
- Other country 6

Consideration was given to the variety of models of care which would be reported from this selection of hospitals. Only one private hospital was selected as their midwifery unit had a model where the care was shared between obstetrician and a midwife in private practice, as well as the model of care by a private obstetrician. All other private hospitals had the same model of care (Option 12).

A total of 666 births were validated using the medical records.

The Process of Validation

- A list containing mother's Unit Record (UR) number, mother's date of birth and baby's date of birth was generated from the WUDWAW file in the statistical package, SPSS, for each of the selected hospitals.
- The health information units or medical records departments made available the medical records for these births.
- The Project Officer reviewed the medical records at the hospitals and entered the data for the four questions into an Excel file from which a file containing hospital code, mother's UR, Question 1, 2, 3 and 4, and birth order (rank) was created.
- This file was then merged with one created from the WUDWAW file on SPSS (only hospitals used in validation, 8979 records) containing hospital code, mother's UR number, the four study questions, and birth rank. Missing values were assigned and cross tabulations and correlations were performed.
- In all, 16 hospitals throughout Victoria were visited during the validation process. Some of the larger hospitals were visited two or three times.

Question 2

- 76.8% were completely in agreement. Notable differences: the medical record noted 23 (4.0%) occurrences of Shared Care (Option 5) that were entered as Public Hospital Standard Care on the perinatal form. As the usual outcome for Shared Care is transfer into Public Hospital Standard Care for the intrapartum period, it may have been assumed that this was the earlier model rather than scanning the history for the antenatal information. This indicates that there may be under-reporting of the models where the antenatal care was outside the

public hospital setting, but the birth took place there. The same could apply to the 18 (3.2%) cases that were identified as either high-risk clinic or midwife clinic.

Question 3

- 82.8% were completely in agreement. Notable differences: medical record noted 26 (4.5%) cases of Public Hospital: High-Risk Clinic that were entered as Public Hospital Standard Care on the perinatal form and 15 (2.6%) High-Risk Clinic cases that were not recorded as Public Hospital Standard Care in the medical record.
- Although there are some inconsistencies, the responses from the midwives are thought to be the most accurate and, therefore, were not changed to correspond with information in the medical record.

The Models of care

Traditional models of care have been modified to accommodate the move of antenatal care out of the hospital facility into the community. Some of the variations of models were utilised by a very small number of women, however, they were seen as distinct by the providers of this care.

Models of care are defined in different ways by different hospitals and practitioners, and this was confirmed by the pilot study. Each of the hospitals participating in the pilot were visited by the Project Officer either prior to or during the pilot phase. Clarification of the various models of care was made with as many midwives in these hospitals as was possible.

While it was not possible to visit all participating hospitals during the main study collection period, clarification of models of care was continued by phone and/or written contact. Prior to or during the main study period, 38 hospitals were visited and another 27 contacted in writing.

The following definitions of models of care are the result of liaison between the project team and health service providers. The order of the options does not represent anything other than the layout of the laminated prompts form.

Option 1: Public Hospital Outpatient: Standard Care

In this model, women attend the hospital for all aspects of their antenatal care. In the intrapartum period the woman is cared for by the hospital medical and midwifery staff on duty at the time.

Option 2: Public Hospital: High Risk Clinic Specialist Obstetrician

Following identification of a specific obstetric need or complication, such as diabetes or chemical dependence, the woman attends a clinic which provides care and monitoring specific to the identified condition. This care is provided by hospital medical and midwifery staff with particular interest in that condition.

Option 3: Public Hospital: Midwife Clinic

The woman sees one of a group of midwives for her antenatal care and a consultant obstetrician for designated visits. During the intrapartum period, the woman receives care from the hospital midwives, not necessarily one from the midwife clinic. When necessary, the hospital obstetric staff are consulted.

Option 4: Team Midwifery in Public Hospital

This model provides for the woman to be seen by the same team of midwives throughout her entire pregnancy, birth and postnatal period. One midwife from the six to eight person team sees the woman at each antenatal visit. A hospital doctor sees the woman three times during her pregnancy, and again at the birth, only if requested by the midwife.

Option 5: Shared Care: Public Hospital with GP

This model involves the woman visiting the public hospital clinic for specific antenatal visits, usually the first visit and then at 28 and 36 weeks and at term. The majority of her antenatal care is provided by a GP accredited by the specific hospital as a Shared Care practitioner. If the GP has bed rights, he/she attends the birth, if not, the care is provided by hospital medical and midwifery staff on duty.

Option 6: Shared Care: Public Hospital with Midwife in Private Practice (MIPP)

In this model of care, the MIPP contracts with the hospital for a back-up booking and the woman receives some early antenatal care, such as blood and screening tests, through the hospital clinic. The MIPP provides the rest of the antenatal care. This care is continued intrapartum with the labour and birth occurring in the woman's home or in the hospital if the labour becomes complicated.

Option 7: Shared Care: GP with Midwife

As with models 6 and 13, the woman sees a MIPP for care throughout pregnancy, childbirth and postnatal period. In this partnership, the antenatal care is provided by both the GP and the MIPP. This care is continued intrapartum with the labour and birth occurring either in the woman's home or in a hospital with which the GP or midwife is accredited. If the pregnancy or labour become complicated, the midwife consults with the appropriate doctors.

Option 8: Shared Care: Public Hospital with Community Health Centre

As for Option 5, the woman attends the hospital clinic for designated visits and receives the majority of her antenatal care at her community health centre. This model of care is available to women experiencing a normal pregnancy and where an accredited shared care

doctor or midwife is employed at the community health centre. If the doctor or midwife has bed rights at the specific hospital, he/she attends the birth, if not, the care is provided by the hospital staff on duty.

Option 9: Private Obstetrician and Private GP

This model of care involves the woman seeing her GP regularly during the antenatal period, with specific visits to an obstetrician. In the intrapartum period the obstetrician, rather than the GP, is called for any complications or operative delivery, otherwise the GPs called for the birth.

Option 10: GP Private

The woman sees her GP throughout her pregnancy and also for labour and birth. This model is available where the GP is accredited with a particular hospital, and the woman does not require specialist care. If complications arise, the model of care becomes either Option 9 or Option 12.

Option 11: GP/Obstetrician/Public Patient

When a public hospital does not provide any outpatient antenatal care, women attending as public patients are required to obtain this care privately, from either an obstetrician or a GP. During the intrapartum period the woman's care is provided by the hospital medical and midwifery staff working or on call for that day. In smaller public hospitals, the medical staff may include the obstetrician/GP involved with the antenatal care.

We have used the term '**shifted**' care to describe this model which, in some hospitals, represents a shift away from both the traditional model of public hospital standard outpatient care and the accepted form of shared care, although retaining a component of each. In other hospitals, this model of care has been in place for many years.

- This model of care was not described in detail in the Review of Birthing Services in Victoria 1990, although it was noted that limited numbers of women were receiving care from GPs as public patients (with public intrapartum care). Precise estimates of numbers were not available
- This model has developed as a result of many public hospitals closing or privatising their antenatal clinics.
- The woman attending as a public patient is,

therefore, required to arrange her own antenatal visits. These visits are usually with her GP but occasionally with an obstetrician. In many cases, the cost of these visits is fully rebatable through Medicare, however, the fee charged is at the discretion of the doctor.

- Regardless of whether the woman received her care from her GP or through the private obstetric clinic, when she is admitted to hospital for the birth of her baby, she is admitted as a public patient.
- In the hospitals where the clinic is on-site, the woman's care is taken over by the hospital medical and midwifery staff working or on call for that day. Provided the labour and birth progress normally, the midwife or resident attends the mother at the birth of her baby, that is, public hospital standard care.
- In smaller public hospitals, the same carer may be involved throughout the intrapartum period as the hospital medical staff may include the GP(s) involved with the antenatal care.

Option 12: Private Obstetrician

The woman attends her obstetrician in his/her rooms for antenatal care. Care during labour is carried out by the hospital midwifery staff and the obstetrician attends for the birth/delivery.

Option 13: Midwife in Private Practice

The woman attends a MIPP for care throughout pregnancy, childbirth and postnatal period. As this is a partnership, the care is provided in a mutually agreed venue. This care is continued intrapartum with the labour and birth occurring either in the woman's home or in a hospital with which the midwife is accredited. If the pregnancy or labour become complicated, the midwife consults with the appropriate doctor.

Option 14: Hospital Birth Centre

This model of care was chosen by women with uncomplicated pregnancies. While the pregnancy remains uncomplicated, the woman remains in this model. In the Family Birth Centre, the care is provided by a small team of midwives, or the doctor of choice for women who receive care as private patients. The woman attends the Family Birth Centre for all antenatal care and gives birth in the Centre. Any practitioner working in the birth centre does so under the birth centre's philosophy.

Option 15: No Care

Option 16: Shared Care: Hospital Birth Centre with Obstetrician, GP or Midwife in Private Practice

This model is the same as Option 14, however, the antenatal care is shared between the Family Birth Centre midwives and an obstetrician or accredited GP, or a midwife in private practice (MIPP). During the labour and birth, the woman is attended by the birth centre midwives, with the practitioner present for the birth.

Option 17: Community-Based Public Hospital Care

This model involves public hospital staff, obstetricians and midwives, providing antenatal care within a community setting, usually the community health centre. While the pregnancy remains uncomplicated, the woman remains in her community and only attends the public hospital for the birth of her baby. Provided the labour and birth progress normally, the midwife or resident attend the mother at the birth of her baby.

Option 18: Other Models of Care

a Care Shared between a Private Obstetrician and a Midwife in Private Practice

In this model, the woman attends her obstetrician for designated visits and her midwife for the rest of her antenatal care. She is cared for in labour by her midwife, and the birth is attended by the obstetrician.

b Care Shared between a Private Obstetrician and a Midwife.

In this model, the woman attends her obstetrician for designated visits and her midwife for the rest of her antenatal care. She is cared for in labour by her midwife, and this care extends to induction, IV therapy and perineal suturing. The birth is attended by the obstetrician if there is any complication or operative delivery is required.

The difference between these two options is that in the first the midwife is in private practice. She/he may also be employed by the hospital as a staff midwife, but the management of this woman's confinement is her private practice. In the second, the midwife is in the hospital's employ during the time she shares the care with the obstetrician.

c Midwife Managed Care

With this model of care, the woman receives antenatal care from her obstetrician, but once she is

admitted in labour, the allocated midwife provides total care to the mother and baby during labour and birth. This is, of course, dependent on an arrangement between the obstetrician and the woman, and the normal progress of labour. If there is any complication or need for operative delivery, the obstetrician is notified.

d Variations on 'Team Midwifery'

For a suburban teaching hospital, Option 18 was **Caseload Midwifery**. In this model, the woman sees one of a small team (2-3) of midwives for her antenatal care. The woman is also seen by a doctor at the first visit and then again at term. If complications arise during the pregnancy, she is referred to the doctor. During the intrapartum period, one of the midwifery team (usually the woman's primary midwife) cares for the woman and assists her with the birth. The doctor on call, either hospital medical staff or Clinical Assistant, is notified if required by the midwife.

For a country base hospital with a specific midwifery project, Option 18 was **Midwife Care Project**. This model is a form of modified group practice with the Community Midwife having visiting rights at the hospital. Each midwife has her own caseload for antenatal and postnatal care with the on call for labour being shared between the three midwives in the Project. The woman meets all midwives in the program during her antenatal period and sees her midwife either in her home or in the hospital clinic.

There are three streams of care that the woman can follow:

- i Midwife care only. This is for low-risk pregnancy and the first visit is usually at about 16 weeks gestation when the midwife orders pathology or ultrasound investigation as she deems necessary.
- ii Care shared between midwife and obstetrician. This is for women with a poor obstetrical history, but whose present pregnancy progresses normally. The woman visits her midwife for antenatal care and her obstetrician as required.
- iii Obstetric care with midwifery support. The woman sees her midwife as often as she sees her obstetrician for antenatal care, however, the midwife's emphasis is on support.

Results of the Main Study

Number of Questions Answered

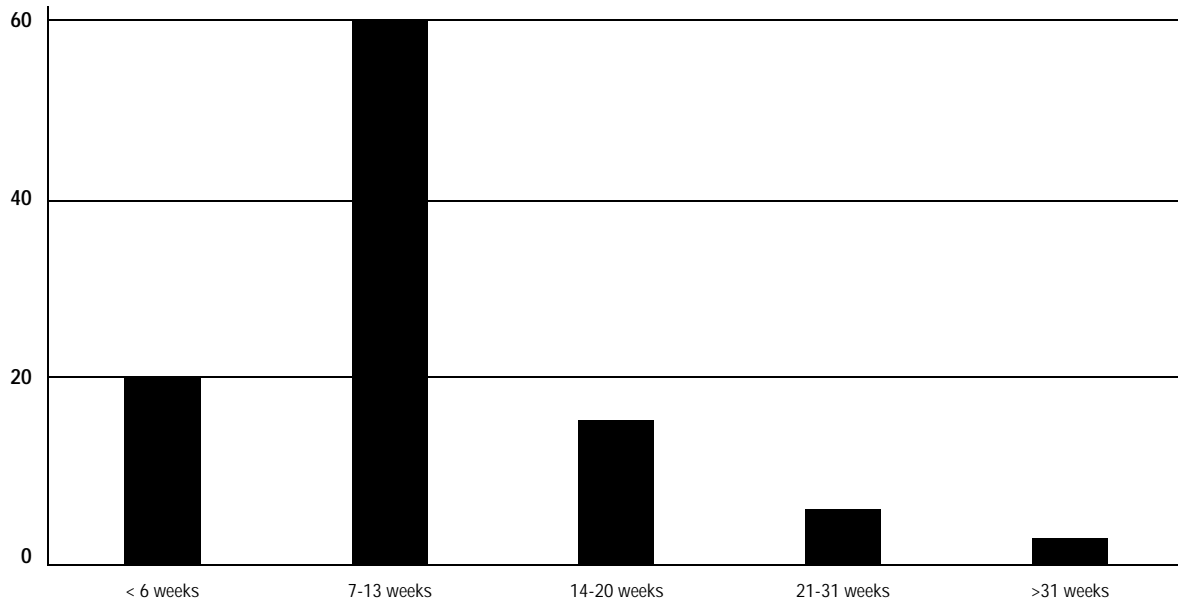
There were 24,538 births in Victoria during the study period. The study received the following responses:

- Question 1-answers received on 22,257 pregnancies (92.1%).
- Question 2-answers received on 23,085 pregnancies (95.5%).
- Question 3-answers received on 23,214 pregnancies (96.1%).
- Question 4-answers received on 23,913 births (97.5%).

Section 1 Summary Results for Questions 1 and 4

Question 1

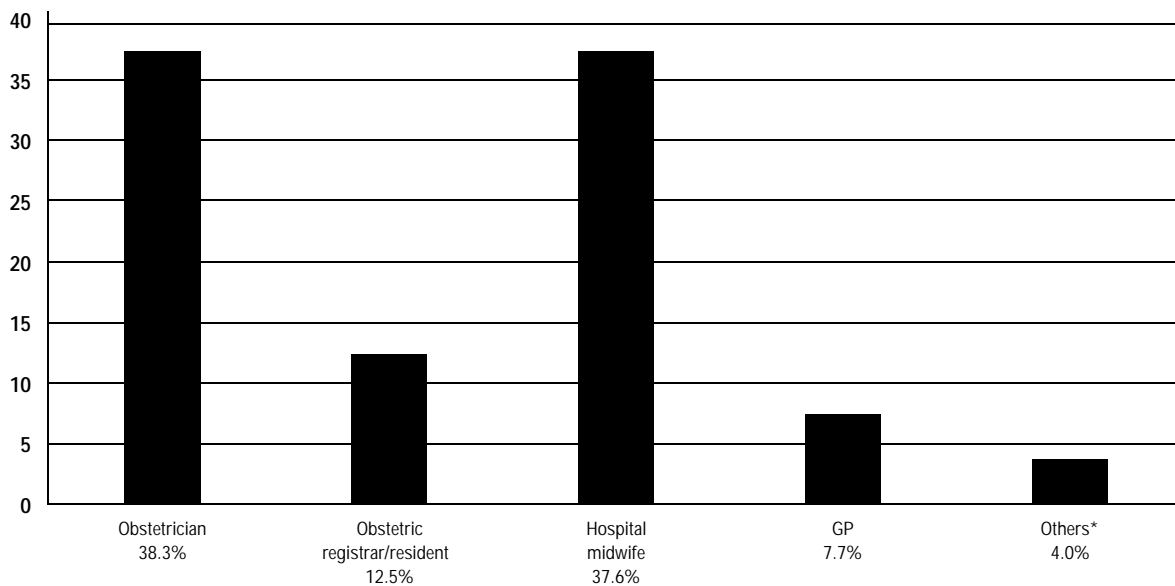
Figure 1.1 Percentage of Women Attending for First Antenatal Visit at Different Gestations



81.5% of women have had antenatal care in the first trimester of pregnancy.

Question 4

Figure 1.2 Percentage of Women and Accoucheur



*'Others' includes medical students, midwives in private practice, self and unknown, each of which contribute less than 2% to the accoucheur figures.

Section 2 Univariate Analysis on Models of Care

Table 2.1 Frequency of Use of Different Models of Care at 20 Weeks and at Birth

OptionNo.	Model of Antenatal Care	Model of Care at 20 Weeks		Model of Care at Birth	
		Frequency	Percent	Frequency	Percent
1	Public hospital outpatient: standard care	3,707	16.1	4,582	19.7
2	Public hospital: high risk clinic specialist obstetrician	481	2.1	599	2.6
3	Public hospital: midwife clinic	483	2.1	478	2.1
4	Team midwifery in public hospital	172	0.7	179	0.8
5	Shared care: public hosp with GP	3,213	13.9	3,263	14.1
6	Shared care: public hosp with MIPP	4	0	1	0.0
7	Shared care: GP with midwife	77	0.3	126	0.5
8	Shared care: public hosp with CHC	157	0.7	33	0.1
9	Private obstetrician and private GP	439	1.9	254	1.1
10	GP private	1,097	4.8	480	2.1
11	GP/obstetrician/public patient	5,586	24.2	5,639	24.3
12	Private obstetrician	6,526	28.3	6,635	28.6
13	Midwife in private practice (MIPP)	27	0.1	23	0.1
14	Hospital birth centre	627	2.7	532	2.3
15	No care	207	0.9	59	0.3
16	Shared care: hospital birth centre with GP	53	0.2	24	0.1
17	Community-based public hospital care	53	0.2	15	0.1
18	Other	176	0.8	292	1.3
	Total	23,085	100.0	23,214	100.0
	Missing	1,069		940	
	Total	24,154		24,154	

CHC = Community Health Centre

- During the antenatal period, Private Obstetrician was the most frequently used model, accessed by 28.3% of women. Intrapartum, this percentage was 28.6%.
- Option 11 'shifted' care, was the next most frequently accessed model at 20 weeks gestation (24.2%).
- Public Hospital models (Options 1, 2, 3, 4 and 17) together provided care for 21.2% of women at 20 weeks.
- When combined, Shared Care models (Options 5-8 and 16) accounted for 15.1% at 20 weeks.
- 85.4%, or 19,652 women, stayed in the same model throughout their pregnancy.

All the following tables refer to frequencies at 20 weeks gestation.

Table 2.2 Hospital Accommodation Status at Birth by Model of Care at 20 weeks

Model of Care	Total	Accommodation Status (Percent)	
		Public	Private
1	3,707	96.0	4.0
2	481	95.4	4.6
3	483	98.3	1.7
4	172	89.0	11.0
5	3,213	97.9	2.1
6	4	100.0	
7	77	98.7	1.3
8	157	94.3	5.7
9	439	17.3	82.7
10	1,097	59.7	40.3
11	5,586	98.3	1.7
12	6,526	2.8	97.2
13	27	51.9	48.1
14	627	91.4	8.6
15	207	95.2	4.8
16	53	86.8	13.2
17	53	96.2	3.8
18	176	80.7	19.3
Total	23,085	66.9	33.1

This information indicates the number of people who are being treated as public or private patients. It does not indicate the insurance status of women in either category. Hospital classification does not always reflect the private or public status of those who receive their services. For example, you can choose to be a public patient in a public hospital, or a private patient in a public or private hospital.

One explanation of private accommodation status in public hospital options is that some women (such as visitors to the country) may not be eligible to hold a Medicare card. Another is that some women want to be able to choose their doctor, but use public hospital facilities.

The 'Where' Component of WUDWAW

Table 2.3 Hospital Category by Models of Care at 20 Weeks Gestation

MOC	Total	Hospital Category (Column Percent)						
		%	Teaching* n=4,853	Suburban** n=6,693	Private*** n=5,587	Country Base n=2,746	Other Country n=3,181	Homebirths n=25
1	3,707	16.1	38.9	19.7	0.1	16.5	1.4	4.0
2	481	2.1	5.2	0.9		5.5	0.4	
3	483	2.1	1.4	3.3		6.5	0.4	4.0
4	172	0.7	2.3	0.3		1.3	0.1	
5	3,213	13.9	20.7	20.4		26.2	3.9	4.0
6	4	0				0.1		
7	77	0.3	0.3	0.5		0.2	0.7	8.0
8	157	0.7	2.7	0.2		0.4	0.0	
9	439	1.9	1.7	1.7	2.2	2.6	1.5	
10	1,097	4.8	0.7	1.0	4.2	7.9	17.1	20.0
11	5,586	24.2	1.4	42.2	0.1	21.0	66.3	
12	6,526	28.3	11.3	5.8	92.9	7.6	6.1	4.0
13	27	0.1	0.2	0.1	0.1	0.0	24.0	
14	627	2.7	8.6	2.5		1.6	0	
15	207	0.9	2.1	0.7	0.1	1.3	0.6	
16	53	0.2	1.0	0.0	0.1			
17	53	0.2	0.8	0.0		0.5		
18	176	0.8	0.7	0.6	0.4	1.0	1.4	32.0
	23,085							

* Teaching = the three major maternity hospitals in Victoria.

** Suburban = these hospital ranged from those with just over 200 births per year to those with nearly 3,000 births per year.

*** Private = these hospitals ranged from those with less than 49 births per year to those with nearly 2,500 births per year.

This table demonstrates the distribution of the models of care across the major hospital categories. Clearly the availability of some models of care is restricted to specific hospital categories, but many are available across all categories.

MOC 1 & 5 Nearly 60% of women attending a teaching hospital accessed one or other of these models.

MOC 5 This model of care was also accessed through country base hospitals.

MOC 2 This model was frequently accessed by women attending either a teaching hospital or a country base hospital.

MOC 3 There was a higher proportion of use of a midwife clinic in country base hospitals.

MOC 11 This model was also used by a higher percentage of women attending suburban and the smaller country hospitals.

MOC 12 As expected, almost all women accessed this model through the private hospitals.

MOC 14 As hospital birth centres are only located in the larger hospitals, that was where these models were accessed.

MOC 16 & 17 These models are only available through the larger hospitals.

The 'Whom' Component of WUDWAW

The following tables refer to demographic characteristics of the women in the study population. It is important to note that at all times the proportion of women in different categories, for example maternal age, marital status and country of birth, is very similar to that reported for the whole of 1997 [The Consultative Council on Obstetric and Paediatric Mortality and Morbidity. Annual Report for the Year 1997]. In other words, the study population is representative of the entire population of women giving birth in Victoria

Table 2.4 Maternal Region of Residence by Model of Care at 20 Weeks Gestation

See Appendices 5 and 6 for maps of Regions and major towns and hospital locations.

Maternal Region of Residence (Column Percent)												
Model of care	Total Women	%	Barwon South-Western n=1,682	Grampians n=983	Loddon Mallee n=973	Hume n=988	Gippsland n=1,160	Western Metro n=3,142	Northern Metro n=3,996	Eastern Metro n=4,295	Southern Metro n=5,060	Other n=806
1	307	16.1	15.9	6.4	4.9	10.8	3.1	28.8	28.9	9.6	12.7	8.8
2	481	2.1	7.1	1.7	0.6	2.0	0.7	2.6	2.6	0.9	1.3	2.6
3	483	2.1	4.6	4.2	0.8	3.8	0.2	2.4	1.0	3.0	0.8	3.8
4	172	0.7	0.9	0.6		0.5	0.1	0.6	0.4	1.0	1.1	1.6
5	3,213	13.9	11.0	27.3	8.5	10.9	4.8	16.0	21.2	10.8	9.9	24.8
6	4	0		0.1		0.1	0	0				
7	77	0.3	0.1	0.2	0.7	0.7	0.7	0.4	0.4	0.3	0.1	0.6
8	157	0.7		1.1	0.1	0.2		0.8	1.7	0.1	0.9	
9	439	1.9	3.0	0.9	3.1	2.2	1.5	2.5	1.2	1.7	1.7	3.5
10	1,097	4.8	7.0	8.2	15.9	24.0	7.2	0.4	0.4	2.0	4.0	13.0
11	5,586	24.2	22.8	22.9	48.7	32.4	76.6	18.3	1.1	23.2	30.0	20.7
12	6,526	28.3	24.5	24.7	13.5	9.0	4.1	22.8	32.5	43.1	31.9	15.3
13	27	0.1	0.1	0.1				0.2	0.1	0.2	0.1	0.4
14	627	2.7	2.7	0.1	0.8	0.5	0.3	2.4	5.1	2.8	3.3	
15	207	0.9	0.4	0.5	0.7	1.5	0.6	1.2	1.6	0.5	0.7	1.4
16	53	0.2		0.1	0.3	0.2		0.3	0.5	0.2	0.2	0.1
17	53	0.2		0.5	0.2	0.1	0.1	0.4	0.6		0.1	0.6
18	176	0.8	0.1	0.3	1.0	0.9		0.2	0.9	0.7	1.1	2.7
Total	23,085	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Comments on Table 2.4

MOC 1	Three rural Regions showed very low use of this model, probably due to lack of access to a public hospital with an outpatient clinic. Eastern Metro Region also showed low use of this model, but high use of Model of Care 12 (Private Obstetrician). Increased use of this model of care was shown by the Western and Northern Metro Regions.	MOC 7, 9 &10	All rural Regions showed a marked increase in use of GP services, in particular, the region of Hume.
MOC 2	Barwon South-Western Region was shown to be using the high-risk clinic model of care more than other regions.	MOC 11	The use of this model of 'shifted' care was increased in Loddon Mallee and Hume, and markedly raised in Gippsland. The Northern Metro Region showed a notably lower than expected use of this model which could be anticipated given their higher than expected use of Model of Care 1.
MOC 3	Barwon South-Western, Grampians, Hume and Eastern Metro Regions all showed a higher percentage of use of this midwife-led model of care where a midwife clinic was available.	MOC 12	The rural Regions of Loddon Mallee, Hume and Gippsland all showed low use of private obstetric services, with Gippsland's use very low. A higher percentage of use of this model was seen in the Eastern Metro Region.
MOC 5	A higher percentage of women from the Grampians and Northern Metro Regions used this model involving shared care with a GP.	MOC 14	The location of hospital birth centres is evident here, with Northern Metro Region showing higher than expected frequency.

Table 2.5 Mother's Country of Birth by Model of Care at 20 Weeks Gestation

Mother's Country of Birth (Column Percent)												
Model of Care	Total n=23,085	%	Australia n=17,644	Oceania n=571	UK incl Eire n=884	Europe n=881	Asia n=1,968	Middle East n=595	North America n=112	South America n=111	Africa n=273	Unknown n=46
1	3,707	16.1	12.3	23.3	10.2	24.9	36.7	39.5	6.3	28.8	33.3	19.6
2	481	2.1	1.9	2.5	1.9	2.3	3.3	3.0		1.8	2.9	
3	483	2.1	2.1	3.3	2.0	2.4	1.8	1.8	1.8	1.8	6.5	
4	172	0.7	0.7	1.2	0.6	0.8	1.2	0.7	0.9	2.7	1.1	2.2
5	3,213	13.9	13.1	13.8	12.4	15.4	18.5	23.0	10.7	18.0	14.7	23.9
6	4	0	0				0.1			0.9		
7	77	0.3	0.3	0.9	0.6		0.2	0.5			.4	
8	157	0.7	0.4	0.7		0.8	2.8	3.0		3.6	1.8	
9	439	1.9	2.0	1.4	2.6	1.7	1.2	0.2		1.8	2.2	2.2
10	1,097	4.8	5.6	3.0	3.8	1.8	1.4	1.2	6.3		1.8	2.2
11	5,586	24.2	25.9	24.3	29.2	20.4	13.9	11.6	17.0	13.5	17.2	17.4
12	6,526	28.3	31.0	15.4	31.2	24.3	15.3	7.7	52.7	18.9	16.5	13.0
13	27	0.1	0.1	0.2		0.2		0.2		0.9		
14	627	2.7	2.7	4.4	4.3	3.3	1.7	1.2	5.4	6.3	2.2	6.5
15	207	0.9	0.7	3.9	0.3	0.6	1.0	3.7			2.9	2.2
16	53	0.2	0.2	0.7	0.2		0.1	0.5	0.9			2.2
17	53	0.2	0.2	0.4		0.2	0.4	1.2			.7	
18	176	0.8	0.8	0.7	0.6	0.9	0.5	1.0		0.9	.4	2.2
Total	23,085	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Comments on Table 2.5

Some of the groupings of country of birth incorporate countries that have very different cultural and religious practices which may influence antenatal care. For instance, Asia includes such distinct countries as Vietnam, India and the Philippines, while the Middle East includes Lebanon, Turkey and Cyprus.

MOC 1	A proportionately higher number of women from non-English-speaking backgrounds are accessing public hospital standard care than Australian, North American and UK born women.	MOC 10	Very few Middle Eastern, Asian and no South American women accessed this model of care.
MOC 2	A higher percentage of Asian and Middle Eastern women are accessing high-risk specialist obstetrician clinics when compared with women from other countries.	MOC 11	A lower percentage of Asian, South American and Middle Eastern women use this model when compared with women from other countries.
MOC 3	A higher percentage of women from Oceania are accessing this midwife-led model when compared with any other group.	MOC 12	A lower percentage of women from non-English-speaking backgrounds use this model of care when compared with women from other countries. A higher percentage of Australian, UK and North American women used this model when compared with others.
MOC 4	Again, Oceanic women showed increased use of this midwife-led model of care, as did Asian and South American women.	MOC 14	Birth centres were used more frequently by women born overseas, in particular North and South America, although Asian and Middle Eastern women used this model with lower than expected frequency.
MOC 5 & 8	A higher percentage of Asian, Middle Eastern and South American women accessed these shared care models when compared with women from other countries.	MOC 15	An increased proportion of Oceanic and Middle Eastern women not receiving antenatal care at 20 weeks in nearly 4% of cases.

Table 2.6 Maternal Age by Model of Care at 20 Weeks Gestation

Model of Care	Total n=23,085	%	Maternal Age (Column Percent)					
			12-19 yrs n=787	20-24 yrs n=3,048	25-29 yrs n=7,498	30-34 yrs n=7,697	35-39 yrs n=3,484	over 40 yrs n=571
1	3,707	16.1	27.9	22.6	16.2	13.3	13.6	15.2
2	481	2.1	3.6	2.6	1.6	2.0	2.1	4.9
3	483	2.1	3.8	2.7	2.4	1.8	1.5	0.5
4	172	0.7	0.5	0.9	0.8	0.7	0.7	0.5
5	3,213	13.9	16.2	18.0	15.7	12.0	10.9	9.1
6	4	0		0	0	0.2		
7	77	0.3	0.4	0.4	0.4	0.2	0.3	
8	157	0.7	1.9	0.8	0.7	0.5	0.6	0.7
9	439	1.9	0.3	0.9	1.5	2.5	2.5	3.7
10	1,097	4.8	3.7	4.3	5.2	4.8	4.2	5.3
11	5,586	24.2	32.9	34.3	27.1	19.9	17.9	16.6
12	6,526	28.3	1.7	6.5	23.8	37.5	40.9	38.9
13	27	0.1		0.1	0.1	0.1	0.3	0.7
14	627	2.7	1.3	2.5	2.6	3.0	2.9	1.9
15	207	0.9	3.2	2.2	0.7	0.5	0.6	0.7
16	53	0.2		0.1	0.3	0.2	0.1	0.4
17	53	0.2	1.0	0.3	0.2	0.1	0.2	0.4
18	176	0.8	1.7	0.8	0.6	0.8	0.7	0.4
	23,085	100.0	100.0	100.0	100.0	100.0	100.0	100.0

- MOC 1, 3 & 11 Younger women tended to use these models when compared to older women.
- MOC 1, 3, 5 & 11 As the age of women increased, the use of these models decreased.
- MOC 9 & 12 As the age of women increased, use of these models involving private care increased.
- MOC 2 High-risk antenatal clinics were used with increasing frequency by the older women.
- MOC 15 A higher percentage of teenage women and women 20-24 years were not accessing these models of care at 20 weeks when compared with older women.

Table 2.7 Parity by Model of Care at 20 Weeks Gestation

Model of Care	Total n=23,085	%	Parity (Column Percent)			
			None n=9,299	One n=8,073	Two n=3,751	Three or More n=1,962
1	3,707	16.1	17.2	14.6	15.6	17.7
2	481	2.1	1.5	2.1	2.4	4.0
3	483	2.1	2.2	2.2	1.9	1.5
4	172	0.7	1.0	0.6	0.6	0.5
5	3,213	13.9	14.3	13.6	13.5	14.2
6	4	0	0		0.1	
7	77	0.3	0.4	0.2	0.3	0.6
8	157	0.7	0.8	0.6	0.7	0.5
9	439	1.9	1.7	2.0	2.2	1.8
10	1,097	4.8	3.6	4.9	6.5	6.5
11	5,586	24.2	22.2	23.7	27.6	29.3
12	6,526	28.3	30.2	30.6	24.0	17.5
13	27	0.1	0.1	0.1	0.1	0.2
14	627	2.7	2.8	2.9	2.6	1.7
15	207	0.9	0.7	0.7	0.8	2.9
16	53	0.2	0.3	0.2	0.1	0.1
17	53	0.2	0.2	0.2	0.3	0.5
18	176	0.8	0.7	0.9	0.8	0.6
	23,085	100.0	100.0	100.0	100.0	100.0

- A higher percentage of women of high parity (and gravidity) are attending high-risk clinics when compared with those of low parity.
- A lower percentage of women of increasing parity use birthing centres and a higher percentage are accessing the community-based model of 'shifted' care.
- There is a linear decline in use of private obstetric care with increasing parity.
- An increased proportion of women of high parity are not accessing these models for antenatal care at 20 weeks gestation.

Table 2.8 Gravity by Model of Care at 20 Weeks Gestation (includes previous pregnancy losses)

Models of Care	Total n=23,085	%	Gravity (Column Percent)			
			One n=7119	Two n=7316	Three n=4486	Four or More n=4164
1	3,707	16.1	16.1	15.3	16.0	17.5
2	481	2.1	1.5	1.7	2.0	3.7
3	483	2.1	2.3	2.1	2.1	1.7
4	172	0.7	0.9	0.7	0.6	0.6
5	3,213	13.9	13.8	14.2	13.7	13.8
6	4	0	0		0	0
7	77	0.3	0.4	0.2	0.2	0.4
8	157	0.7	0.9	0.6	0.6	0.6
9	439	1.9	1.7	1.9	2.1	1.9
10	1,097	4.8	3.9	4.5	5.5	5.8
11	5,586	24.2	22.2	23.4	26.3	26.8
12	6,526	28.3	31.4	30.6	26.0	21.2
13	27	0.1	0.1	0.1	0.1	0.2
14	627	2.7	2.7	2.7	2.9	2.6
15	207	0.9	0.8	0.6	0.6	1.9
16	53	0.2	0.3	0.2	0.2	0.2
17	53	0.2	0.2	0.2	0.3	0.3
18	176	0.8	0.7	0.8	0.8	0.8
	23,085	100.0	100.0	100.0	100.0	100.0

- Women having their first pregnancy were proportionately represented in all major models of care, except for a slight increase associated with private obstetric care.
- With increasing gravity, a lower percentage of women are using private obstetric care.
- A higher percentage of women of high (four or more) gravity use high-risk clinics (similar to that seen for multiparous women) and 'shifted' care when compared to those of lower gravity.

Table 2.9 Marital Status by Model of Care at 20 Weeks

MOC	Total n=23,085	%	Marital Status (Column Percent)				
			Single n=2,572	Divorced, Widowed, Separated n=289	Married n=17,612	De Facto n=2,572	Unknown n=40
1	3,707	16.1	28.5	20.1	14.2	15.7	22.5
2	481	2.1	3.6	3.1	1.8	2.6	
3	483	2.1	3.0	2.4	1.9	2.8	2.5
4	172	0.7	1.4	1.7	.6	0.7	
5	3,213	13.9	18.8	19.0	12.7	17.0	20.0
6	4	0			0	0	
7	77	0.3	0.5	0.3	0.3	0.2	
8	157	0.7	1.3	2.1	0.6	0.3	7.5
9	439	1.9	0.7	0.7	2.3	0.7	2.5
10	1,097	4.8	3.1	4.2	5.0	5.1	
11	5,586	24.2	27.6	34.9	21.4	38.9	17.5
12	6,526	28.3	3.5	7.3	35.2	8.2	17.5
13	27	0.1	0		0.1	0.2	
14	627	2.7	3.0	1.4	2.4	4.7	5.0
15	207	0.9	3.1	1.0	0.5	1.2	2.5
16	53	0.2	0.3		0.2	0.2	2.5
17	53	0.2	0.7	0.3	0.1	0.3	
18	176	0.8	0.7	1.4	0.7	1.2	
	23,085	100.0	100.0	100.0	100.0	100.0	100.0

- At 20 weeks gestation, single women are in public hospital standard care, shared care or not receiving antenatal care, but they are not accessing private obstetricians.
- Married women show a disproportionately high use of private obstetricians.
- A higher percentage of single, de facto, divorced, widowed and separated women use shared and 'shifted' care when compared with married women.

Section 3 Multivariate Analysis

The strongest predictor of the model of care that a woman will have during her pregnancy and birth will depend on the models offered by the hospital she will be attending for the birth. This, in turn, will be highly influenced by where the woman lives. Tables 2.3 and 2.4 identify associations between the model of care and the hospital category or region of residence. These tables show that in some hospitals and for women residing in some regions there is only limited use or availability of certain models of care.

This section provides a summary measure of the maternal characteristics associated with some of the major groupings of models of care. The summary measure we have chosen is the adjusted odds ratio obtained from a forward stepwise logistic regression analysis. Our comparison was 'how do the women who use this model of care compare with the women who use all other models?'

The predictors that were modelled were mother's country of birth, marital status, age group and gravidity. In the modelling process, gravidity was found to be a better predictor than parity, so only gravidity was used in the model.

The reference group for comparison was Australian-born, married women in the 30-37 year age group and who were primigravida.

Model of Care 1: Public Hospital Outpatient: Standard Care (see Figure 3.1)

The women born in Oceania (adjusted odds ratio 2.1 95%CI 1.7, 2.6), Europe (2.8 95%CI 2.4, 3.3), Asia (5.0 95%CI 4.5, 5.5), South America (3.0 95%CI 1.9, 4.5), Africa (3.7 95%CI 2.9, 4.8) and Middle East (5.0 95% CI 4.2, 6.0) were more likely to have this model of care than Australian-born women. The odds decreased with age (from 2.5 to 0.9) but increased with gravidity (from 1.0 to 1.4). Women who were single (2.4 95% CI 2.1, 2.7), divorced, widowed or separated (1.4 95% CI 1.0, 1.8) and de facto (1.3 95% CI 1.2, 1.5) were more likely to have this model than married women.

Models of Care 5, 6, 7, 8 & 16: Shared Care Models (see Figure 3.2)

The women born in Europe (adj OR 1.3, 95% CI 1.1, 1.6), Asia (1.9 95% CI 1.7, 2.1), South America (1.8 95%CI 1.2, 2.9) and Middle East (2.4 95%CI 2.0, 2.9) were more likely to have this model of care than Australian-born women. The odds decreased with age (from 2.6 to 0.7)

but there was no change with gravidity. Women who were single (1.6 95% CI 1.4, 1.8), divorced, widowed or separated (1.7 95% CI 1.3, 2.3) and de facto (1.4 95% CI 1.2, 1.6) were more likely to have this model than married women.

Model of Care 11: Shifted Care (see Figure 3.3)

The women born in Europe (adj OR 0.8, 95% CI 0.7, 1.0), Asia (0.5 95% CI 0.5, 0.6), Sth America (0.5 95%CI 0.3, 0.8), Africa (0.6 95%CI 0.4, 0.8) and Middle East (0.4 95%CI 0.3, 0.5) were less likely to have this model of care than Australian-born women, whereas English-born women were more likely (1.4 95%CI 1.2, 1.6). The odds decreased with age (from 2.1 to 0.7) but increased with gravidity (1.0 to 1.6). Women who were divorced, widowed or separated (1.8 95% CI 1.4, 2.3) and de facto (1.8 95% CI 1.6, 1.9) were more likely to have this model than married women.

Models of Care 9, 10 & 11: Private Care (see Figure 3.4)

The women born in Oceania (adj OR 0.4, 95% CI 0.3, 0.5), United Kingdom (adj OR 0.7, 95% CI 0.6, 0.8), Europe (adj OR 0.4, 95% CI 0.4, 0.5), Asia (0.2 95% CI 0.2, 0.3), Sth America (0.4 95%CI 0.2, 0.6), Africa (0.4 95%CI 0.3, 0.5) and Middle East (0.1 95%CI 0.1, 0.2) were less likely to have this model of care than Australian-born women whereas North American-born women were more likely (1.6 95%CI 1.1, 2.4). The odds increased with age (from 0.2 to 1.7) but decreased with gravidity (1.0 to 0.4). Women who were single (0.2 95% CI 0.1, 0.2), divorced, widowed or separated (0.2 95% CI 0.1, 0.3) and de facto (0.2 95% CI 0.2, 0.3) were less likely to have this model than married women.

Model of Care 15: No Care (see Figure 3.5)

The women born in Oceania (adj OR 5.2, 95% CI 3.3, 8.4), Asia (2.3 95% CI 1.4, 3.7), Africa (4.7 95%CI 2.2, 9.9) and Middle East (7.7 95%CI 4.7, 12.7) were more likely to have No Care at 20 weeks than Australian-born women. The odds decreased with age (from 4.0 to 0.9) but increased with gravidity (1.0 to 4.2). Women who were single (4.9 95% CI 3.4, 7.1) and de facto (2.2 95% CI 1.4, 3.4) were more likely to have this model than married women.

The following figures are a visual interpretation of the significance of the maternal country of birth as a predictor of uptake certain models of care, compared with Australian born women.

Adjusted Odds Ratio and 95% Confidence Intervals for women of Different Countries of Birth, Compared with Australian-Born Women.

Figure 3.1 Model of Care 1

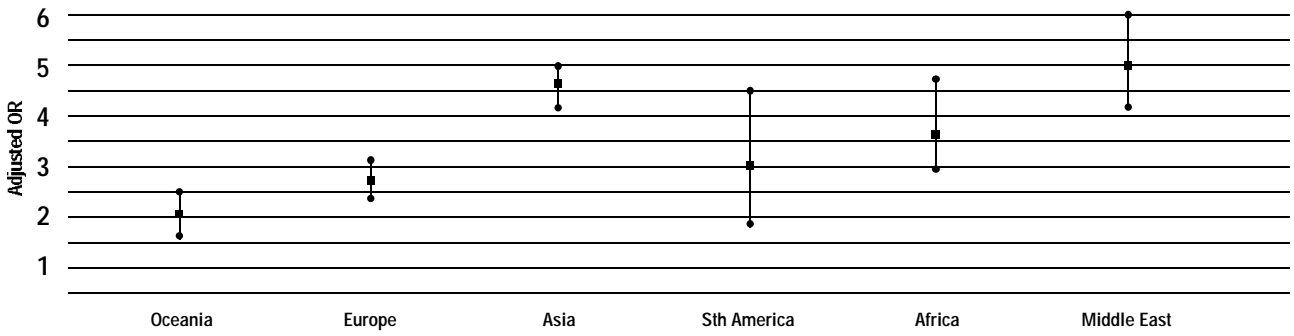


Figure 3.2 Models of Care 5, 6, 7, and 16 (Shared Care Models)

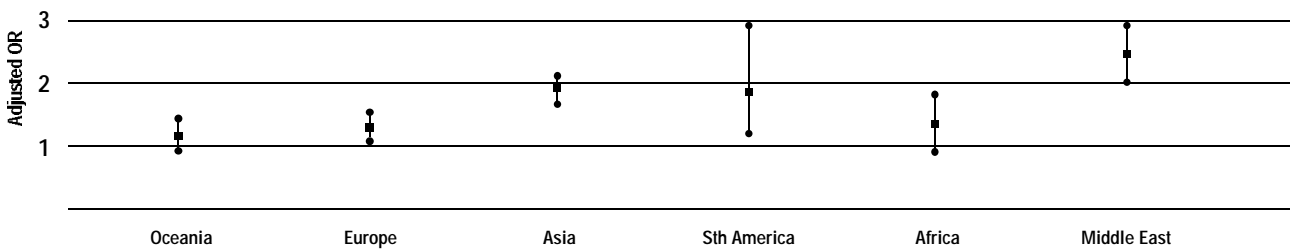


Figure 3.3 Model of Care 11 ('Shifted' Care)

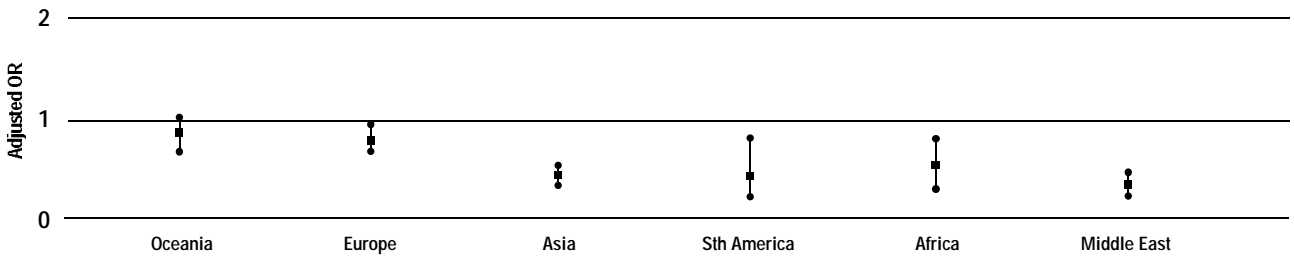


Figure 3.4 Models of Care 9, 10 & 12 (Private care)

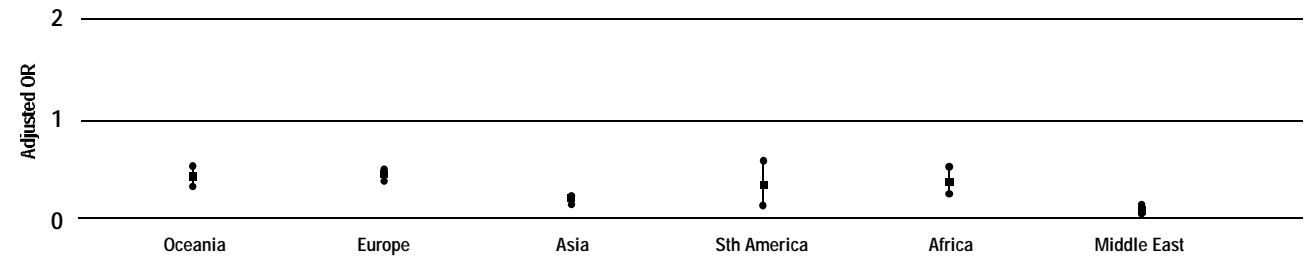
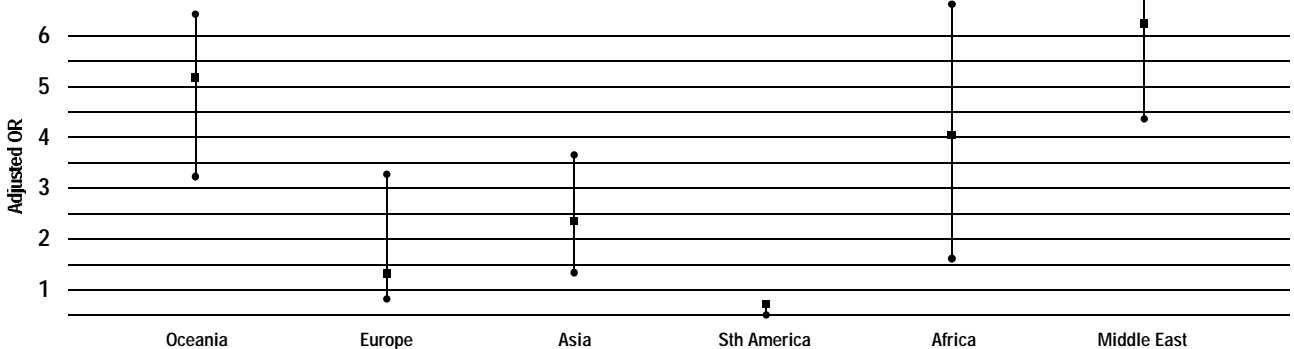


Figure 3.5 No Care



Section 4 Models of Care and Outcomes

This section gives some examples of the type of associations that can be made between a particular model of care and a perinatal outcome. Four outcomes have been examined. The development of pregnancy induced hypertension, preeclampsia or eclampsia were included because they are common complications of pregnancy and are the main reasons for setting up antenatal care clinics originally. The type of onset of labour gives an indication of the intervention rate in each of the models of care, however, it will also be highly dependent on clinical factors. The gestation at delivery and birth weight by gestation are influenced by antenatal

care but again will also be dependent on obstetric history and preexisting maternal medical conditions. It is emphasised that an 'association' in this context does not indicate a 'cause' and further work is necessary before detailed interpretation of these findings can be made.

The measure of association used was relative risk (RR) and the 95% confidence intervals for that RR. For a model of care, the RR gives an indication of how much more likely a woman or her baby is to develop or undergo the outcome, compared to the whole study population.

Table 4.1 Pregnancy Induced Hypertension (PIH), Eclampsia (E) and Preeclampsia (P)

Model of Care at 20 Weeks	Number in each model	Percent in each model	Percent of mass of PIH, E or PE n=1,582
1	3,707	16.1	22.1
2	481	2.1	3.4
3	483	2.1	2.1
4	172	0.7	1.3
5	3,213	13.9	14.2
6	4	0.0	0.1
7	77	0.3	0.2
8	157	0.7	0.8
9	439	1.9	1.6
10	1,097	4.8	4.2
11	5,586	24.2	21.7
12	6,526	28.3	25.1
13	27	0.1	0.1
14	627	2.7	1.5
15	207	0.9	0.7
16	53	0.2	0.1
17	53	0.2	0.4
18	176	0.8	0.6
Total	23,085	100	100

The significant differences when compared to the whole study population were:

MOC 1: There was a higher proportion of women with pregnancy induced hypertension, eclampsia or preeclampsia in this model (RR=1.4 95%CI 1.2, 1.5).

MOC 2: There was a higher proportion of women with pregnancy induced

hypertension, eclampsia or preeclampsia in this model (RR=1.6 95%CI 1.2, 2.1).

MOC 14: There was a lower proportion of women with pregnancy induced hypertension, eclampsia or preeclampsia in this model (RR=0.5 95%CI 0.4, 0.8).

Table 4.2 Onset of Labour

Model of Care at 20 Weeks	Total Number in each model	Percent in each model	Spontaneous Onset* n=11,459	Induced Onset* n=6,270	Augmented Labour* n=2,646	No Labour* n=2,710
1	3,707	16.1	15.7	16.4	17.2	15.5
2	481	2.1	1.3	2.5	1.2	5.3
3	483	2.1	2.9	1.6	1.4	0.6
4	172	0.7	0.7	1.0	0.7	0.3
5	3,213	13.9	15.2	12.8	15.0	10.0
6	4	0.0	0.0	0.0		
7	77	0.3	0.3	0.3	0.5	0.3
8	157	0.7	0.8	0.5	1.1	0.3
9	439	1.9	1.6	2.0	2.0	2.8
10	1,097	4.8	5.5	4.2	4.4	3.2
11	5,586	24.2	26.0	23.4	21.6	21.0
12	6,526	28.3	22.9	32.3	30.1	39.6
13	27	0.1	0.1	0.1	0.1	0.0
14	627	2.7	4.3	1.1	2.2	0.3
15	207	0.9	1.1	0.6	1.1	0.5
16	53	0.2	0.3	0.1	0.3	
17	53	0.2	0.2	0.2	0.5	0.1
18	176	0.8	0.9	0.8	0.7	0.3
	23,085	100.0	100.0	100.0	100.0	100.0

* percent in each model

Compared to the whole study population:

MOC 1: There was a higher proportion of women having an augmented labour in this model.

MOC 2: There was a higher proportion of women having no labour in this model.

MOC 3: There was a higher proportion of women having a spontaneous vaginal delivery in this model.

MOC 5: There was a higher proportion of women having a spontaneous vaginal delivery and augmented delivery in this model.

MOC 9: There was a higher proportion of women having no labour in this model.

MOC 10: There was a higher proportion of women having a spontaneous vaginal delivery in this model.

MOC 11: There was a higher proportion of women having a spontaneous vaginal delivery in this model.

MOC 12: There was a higher proportion of women having induced labour or no labour in this model.

MOC 14: There was a higher proportion of women having a spontaneous vaginal delivery in this model.

Table 4.3 Preterm and Post-term Delivery

Preterm delivery is usually defined as delivery before 37 weeks and post term is greater than 41 weeks.

Model of Care at 20 Weeks	Total Number in each model	Percent in each model	20-36 weeks Percent in each model n=1,450	37-41 weeks Percent in each model n=21,219	> 41 weeks Percent in each model n=415
1	3,707	16.1	26.7	15.4	10.1
2	481	2.1	7.0	1.8	1.2
3	483	2.1	1.3	2.1	2.9
4	172	0.7	0.8	0.7	0.7
5	3,213	13.9	11.9	14.0	16.1
6	4	0	0.0	0	
7	77	0.3	0.3	0.3	0.5
8	157	0.7	0.6	0.7	0.5
9	439	1.9	1.6	1.9	1.4
10	1,097	4.8	2.9	4.8	7.5
11	5,586	24.2	15.2	24.7	28.7
12	6,526	28.3	27.6	28.4	21.9
13	27	0.1	0.3	0.1	0.7
14	627	2.7	1.2	2.8	6.0
15	207	0.9	1.7	0.8	0.7
16	53	0.2	0.1	0.2	
17	53	0.2	0.5	0.2	
18	176	0.8	0.4	0.8	1.0
	23,085	100.0	100.0	100.0	100.0

The significant differences when compared with the whole study population were:

Preterm Births

- MOC 1: There was a higher proportion of preterm births (RR=1.7 95%CI 1.5, 1.9).
- MOC 2: There was a higher proportion of preterm births (RR=3.4 95%CI 2.8, 4.0)
- MOC 3: There was a lower proportion of preterm births (RR=0.6 95%CI 0.4, 0.9)
- MOC 5: There was a lower proportion of preterm births (RR=0.8 95%CI 0.7, 0.9)
- MOC 10: There was a lower proportion of preterm births (RR=0.6 95%CI 0.5, 0.8)
- MOC 11: There was a lower proportion of preterm births (RR=0.6 95%CI 0.5, 0.7)

- MOC 14: There was a lower proportion of preterm births (RR=0.4 95%CI 0.3, 0.7)
- MOC 15: There was a higher proportion of preterm births (RR=1.9 95%CI 1.3, 2.7)

Post-term Births

- MOC 1: There was a lower proportion of post-term births.(RR=0.6 95%CI 0.5, 0.9)
- MOC 10: There was a higher proportion of post-term births. (RR=1.6 95%CI 1.1, 2.3)
- MOC 12: There was a lower proportion of post-term births.(RR=0.8 95%CI 0.6, 0.9).
- MOC 14: There was a higher proportion of post-term births. (RR=2.2 95%CI 1.5, 3.5)

Table 4.4 Small (Birthweight) by Gestational Age

These results are for singleton births only. Multiple births were excluded. Low birth weight (LBW) is defined as a birthweight less than 2,500 grams. Small for gestational age (SGA) is below the 10th percentile based on 'in house' percentile chart (see Appendix 4).

Model of Care at 20 Weeks	Total Number in the Model	Total Column Per Cent	LBW n=1,111	SGA n=2,175
1	3,654	16.1	29.0	20.6
2	438	2.1	5.9	2.7
3	483	2.1	1.2	1.8
4	172	0.7	0.7	0.9
5	3,191	13.9	12.4	15.5
6	4	0.0	0.1	0.1
7	77	0.3	0.5	0.5
8	157	0.7	0.6	0.9
9	430	1.9	1.8	1.7
10	1,085	4.8	3.4	4.6
11	5,520	24.2	16.6	23.9
12	6,387	28.3	23.7	21.3
13	26	0.1	0.5	0.3
14	627	2.7	1.1	2.5
15	206	0.9	1.4	1.7
16	53	0.2	0.1	0.2
17	52	0.2	0.6	0.4
18	175	0.8	0.5	0.6
	22,737	100.0	100.0	100.0

The significant differences when compared with the whole study population were:

Low Birthweight

- MOC 1: There was a higher proportion of LBW babies (RR=1.8 95%CI 1.6, 2.0).
- MOC 2: There was a higher proportion of LBW babies (RR=3.0 95%CI 2.4, 3.8).
- MOC 3: There was a lower proportion of LBW babies (RR=0.6 95% CI 0.3,0.9).
- MOC 10: There was a lower proportion of LBW babies(RR=0.7 95% CI 0.5,0.9).
- MOC 11: There was a lower proportion of LBW babies(RR=0.7 95% CI 0.6,0.8).

MOC 14: There was a lower proportion of LBW babies (RR=0.4 95% CI 0.2,0.7).

Small for Gestational Age

- MOC 1: There was a higher proportion of SGA babies.(RR=1.3 95%CI 1.2, 1.4).
- MOC 2: There was a higher proportion of SGA babies.(RR=1.4 95%CI 1.1, 1.8).
- MOC12: There was a lower proportion of SGA babies.(RR=0.8 95%CI 0.7, 0.8).
- MOC15: There was a higher proportion of SGA babies.(RR=1.8 95%CI 1.4, 2.5).

Appendix 1 Members of the Steering Committee

Dr Robin Bell	Consultant Epidemiologist Perinatal Medicine, Royal Women's Hospital
Dr Christine Bessell	Obstetrician, Director Delivery Suite Monash Medical Centre
Ms Mary Anne Biro	Midwife, Midwife Project Co-ordinator Monash Medical Centre
Dr Stephanie Brown	Research Fellow Centre for the Study of Mother' and Children's Health, LaTrobe University
Ms Rosemary Bryant	Nursing Advisor Health Workforce Unit, Public Health and Development Division, Department of Human Services
Ms Susan Gumley	Midwife, Co-ordinator Community Birthing Project Ovens & King Community Health Service
Dr Jane Halliday	Manager/Epidemiologist Principal Investigator Perinatal Data Collection Unit, Public Health and Development Division, Department of Human Services
Ms Sofia Mercer	Research & Liaison Midwife Project Officer Perinatal Data Collection Unit, Public Health and Development Division, Department of Human Services
Ms Kathleen McLaughlin	Midwife, Senior Project Officer Health Workforce Unit, Public Health and Development Division, Department of Human Services
Ms Joan O'Neill	Midwifery Unit Manager Mitcham Private Hospital
Ms Heather Maddern	Midwifery Unit Manager, Delivery Suite Royal Women's Hospital
Ms Kim Hider	Project Officer Quality Branch, Acute Health, Department of Human Services
Ms Christine Stone	Epidemiologist Perinatal Data Collection Unit, Public Health and Development Division, Department of Human Services
Ms Irene Ellis	Project Officer (from 1st October 1997) Perinatal Data Collection Unit, Public Health and Development Division, Department of Human Services

Appendix 2 1998 Perinatal Morbidity Statistics Form

Hospital: Place of Birth: (Baby) Hospital <input type="checkbox"/> Intended <input type="checkbox"/> Other <input type="checkbox"/> Specify Emergency <input type="checkbox"/> Marital Status: (Mother) Single <input type="checkbox"/> Widowed <input type="checkbox"/> Married <input type="checkbox"/> Divorced <input type="checkbox"/> Separated <input type="checkbox"/> Defacto <input type="checkbox"/> Unknown <input type="checkbox"/> Birthdate: (Mother)			
Hospital Record/Registration Number: Admission Date: Suburb/Town: Postcode: Public/Private Patient: Public <input type="checkbox"/> Private <input type="checkbox"/> Country of Birth: (Mother) Aboriginal: (Mother) No <input type="checkbox"/> Aboriginal <input type="checkbox"/> Torres Strait Islander <input type="checkbox"/>			
PREVIOUS PREGNANCIES: (Excluding this Pregnancy) No previous pregnancy <input type="checkbox"/> 1 Total Number of: Livebirths Stillbirths Abortions - spontaneous - induced Unknown Neonatal deaths Date of Completion of Last Pregnancy: (Month/year) Outcome of Last Pregnancy: Livebirth <input type="checkbox"/> 1 Stillbirth <input type="checkbox"/> 4 Abortion - spontaneous <input type="checkbox"/> 2 Abortion - induced <input type="checkbox"/> 5 Unknown <input type="checkbox"/> 3 Neonatal Death <input type="checkbox"/> 6 Was last birth a Caesarean section? No <input type="checkbox"/> Yes <input type="checkbox"/> Total no. of previous Caesarean sections	LABOUR, BIRTH AND POSTNATAL Labour: Spontaneous <input type="checkbox"/> 1 Induced - medical <input type="checkbox"/> 2 - surgical <input type="checkbox"/> 3 Augmented <input type="checkbox"/> 4 No labour <input type="checkbox"/> 5 Presentation: Vertex <input type="checkbox"/> 1 Other <input type="checkbox"/> 3 Breech <input type="checkbox"/> 2 Unknown <input type="checkbox"/> 4 Type of Birth: Spontaneous cephalic <input type="checkbox"/> 3 Caesarean - no labour <input type="checkbox"/> 4 - labour <input type="checkbox"/> 5 Forceps <input type="checkbox"/> 1 Other <input type="checkbox"/> 6 Vaginal Breech <input type="checkbox"/> 2 Unknown <input type="checkbox"/> 7 If Operative Birth, State Primary Indication: (one only) Complications of Labour, Birth or Postnatal: PPH - primary (600mls +) <input checked="" type="checkbox"/> X Other Date of Discharge: Mother Baby Discharge Status: Discharged Mother <input type="checkbox"/> 1 Baby <input type="checkbox"/> 1 Died Mother <input type="checkbox"/> 2 Baby <input type="checkbox"/> 2 Transferred Mother <input type="checkbox"/> 3 Baby <input type="checkbox"/> 3 Mother/Baby transferred to:	BABY (Complete a separate form in full for each baby of a multiple birth) Birthdate: Sex: Male <input type="checkbox"/> 1 Female <input type="checkbox"/> 2 Indeterminate <input type="checkbox"/> 3 Plurality (e.g. Single <input type="checkbox"/> 1 Twins <input type="checkbox"/> 2 etc.) (this record refers to <input type="checkbox"/> born) Condition: Liveborn <input type="checkbox"/> 1 Stillborn <input type="checkbox"/> 2 Birthweight (grams): Apgar: 1 minute: 5 minutes: Time to Established Respiration (mins.) Resuscitation: Endotracheal Intubation <input type="checkbox"/> 1 Narcotic Antagonist Injection <input type="checkbox"/> 3 Sodium Bicarbonate Injection <input type="checkbox"/> 2 "Frog Breathing" and/or Bag and Mask <input type="checkbox"/> 4 None of Above <input type="checkbox"/> 5 Congenital Anomalies: Cardiovascular CNS Musculoskeletal Gastrointestinal Urogenital Respiratory Skin Other Neonatal Morbidity:	
THIS PREGNANCY Date of LMP: Estimated Gestation (weeks): Maternal Medical Conditions: Diabetes <input checked="" type="checkbox"/> X Cardiac disease <input checked="" type="checkbox"/> X Chronic Renal Disease <input checked="" type="checkbox"/> X Hypertension <input checked="" type="checkbox"/> X Other Obstetric Complications: APH - placenta praevia <input checked="" type="checkbox"/> X - abruptio placentae <input checked="" type="checkbox"/> X - other <input checked="" type="checkbox"/> X Premature rupture of membranes <input checked="" type="checkbox"/> X Pre-eclampsia <input checked="" type="checkbox"/> X Other Procedures and Operations: Cervical suture <input checked="" type="checkbox"/> X Amniocentesis - before 22 weeks <input checked="" type="checkbox"/> X - at 22 or more weeks <input checked="" type="checkbox"/> X Other Occasional Data (WUDWAW Study, 1998)		Signature at Delivery Date / /	Signature at Discharge Date / /

Appendix 3 The Questions-WUDWAW Study

1. What was the gestation in weeks at the first visit to a doctor or midwife after you knew you were pregnant ?

The aim of this question is to determine at what gestation women first obtain antenatal care from a doctor or midwife. This will not necessarily be the gestation at which the pregnancy was confirmed. The relevant information will often be in the history, but it is important to check with the mother, where possible.

The answers to this question will help with the planning of health services such as maternal serum and other prenatal screening tests.

Note: Private patients will all need to be asked this question.

2. What was the model of antenatal care at 20 weeks gestation?

This information should be available from the history. If the model of care received is not listed below, please record as 'other'. A definition of this model of care should also be provided.

- 1 Public hospital outpatient: standard care
- 2 Public hospital: high risk clinic specialist obstetrician
- 3 Public hospital: midwife clinic
- 4 Team midwifery in public hospital
- 5 Shared care: Public hospital with GP
- 6 Shared care: Public hospital with midwife in private practice
- 7 Shared care: GP with midwife
- 8 Shared care: Public hospital with community health centre
- 9 Private obstetrician and private GP
- 10 GP private
- 11 GP/obstetrician/public patient
- 12 Private obstetrician
- 13 Midwife in private practice
- 14 Hospital birth centre
- 15 No care
- 16 Shared care: hospital birth centre with GP
- 17 Community-based public hospital care
- 18 Other: (please specify)

Note: Of the many models of care listed here, it is possible that only a small number will be relevant to any one hospital. This comprehensive list will allow for all hospitals to identify the model/s of care specific to them. This applies to Question 3 as well.

3. What was the model of care during labour?

One of the aims of this question is to determine whether there has been any significant difference in the antenatal

care received. If a woman is transferred from one model to another, before or during labour, the answer to this question will be different from that recorded in Question 2. You are asked to please record the predominant model of care during labour. (It will be apparent from other information on the Perinatal Form if the woman has had obstetric complications requiring transfer from one model of care to another during labour.)

- 1 Public hospital: standard care
- 2 Public hospital: high risk clinic specialist obstetrician
- 3 Public hospital: midwife clinic
- 4 Team midwifery in public hospital
- 5 Shared care: Public hospital with GP
- 6 Shared care: Public hospital with midwife in private practice
- 7 Shared care: GP with midwife
- 8 Shared care: Public hospital with community health centre
- 9 Private obstetrician and private GP
- 10 GP private
- 11 GP/obstetrician/public patient
- 12 Private obstetrician
- 13 Midwife in private practice
- 14 Hospital birth centre
- 15 No care
- 16 Shared care: hospital birth centre with GP
- 17 Community-based public hospital care
- 18 Other (please specify)

4. Who was the accoucheur?

This question refers to the person who performs the delivery, not necessarily the person responsible for the delivery. If you wish to record that a midwife/obstetrician 'double scrubbed' with the student please do so under 'K = Other', although it is assumed that any student would be supervised. 'K = Other' may also be used for variations such as Ambulance Officer.

- A Obstetrician
- B Obstetric Registrar
- C Obstetric Resident
- D Hospital midwife
- E Student Midwife
- F Medical Student
- G Midwife in private practice
- H GP
- I Self
- J Not recorded/not known
- K Other.(please specify)

Appendix 4 Percentile Chart of Weight (gms) for Gestational Age (week)

In-house percentile chart developed from birthweight information on 15 years of all Victorian births (1983-1997) that were to non-Aboriginal, Australian-born women, singleton pregnancies, live births and without congenital malformations, and of a weight of 400 grams and over, or gestation of 20 weeks and more. Separate charts were developed for males and females.

Sex	Gestation Weeks	Number	5th Percentile	10th Percentile	25th Percentile	50th Percentile	75th Percentile	90th Percentile	95th Percentile	99th Percentile
Male										
	20	15	300	308	330	400	490	820		
	21	26	354	360	409	428	461	500	516	
	22	50	408	421	488	530	600	669	742	
	23	77	488	510	550	605	653	740	795	
	24	113	550	572	620	700	780	862	926	3139
	25	148	577	633	715	806	887	981	1,018	1116
	26	178	685	714	809	918	1,016	1,111	1,173	1455
	27	196	629	748	900	1,038	1,174	1,263	1,340	1987
	28	253	816	874	1,020	1,200	1,345	1,508	1,605	3620
	29	307	888	995	1,150	1,322	1,500	1,669	1,738	2937
	30	464	994	1,100	1,299	1,510	1,709	1,918	2,263	3894
	31	548	1,188	1,311	1,511	1,712	1,890	2,100	2,269	3752
	32	831	1,309	1,455	1,669	1,920	2,100	2,340	2,536	3347
	33	1,164	1,486	1,655	1,886	2,097	2,328	2,560	2,700	3354
	34	2,102	1,661	1,845	2,095	2,335	2,577	2,839	3,028	3709
	35	3,370	1,930	2,105	2,350	2,580	2,820	3,070	3,270	3820
	36	7,572	2,165	2,320	2,560	2,810	3,080	3,360	3,580	4060
	37	16,557	2,390	2,555	2,800	3,080	3,370	3,660	3,860	4310
	38	43,984	2,620	2,780	3,025	3,300	3,580	3,865	4,045	4430
	39	67,082	2,785	2,940	3,180	3,450	3,740	4,010	4,190	4550
	40	127,990	2,920	3,070	3,320	3,595	3,890	4,170	4,350	4710
	41	52,277	3,050	3,200	3,450	3,730	4,030	4,315	4,500	4860
	42+	13,764	3,060	3,226	3,490	3,790	4,100	4,415	4,610	5000

Sex	Gestation Weeks	Number	5th Percentile	10th Percentile	25th Percentile	50th Percentile	75th Percentile	90th Percentile	95th Percentile	99th Percentile
Female										
	20	10	300	300	300	383	1166	3474		
	21	19	260	320	370	410	452	480		
	22	43	372	400	470	500	551	626	658	
	23	75	465	490	525	590	642	685	798	
	24	97	435	502	579	660	764	823	867	
	25	99	550	587	694	770	850	934	1,036	
	26	135	582	645	740	841	936	1,049	1,181	2,982
	27	172	638	720	851	969	1,084	1,203	1,359	3,547
	28	198	719	822	929	1,088	1,235	1,418	1,616	3,443
	29	262	809	881	1,097	1,274	1,420	1,564	1,675	3,226
	30	346	939	1,039	1,231	1,410	1,596	1,866	2,771	3,617
	31	444	1,054	1,219	1,403	1,618	1,796	2,038	2,191	3,557
	32	705	1,219	1,385	1,604	1,810	2,040	2,290	2,570	3,230
	33	940	1,352	1,520	1,774	2,000	2,230	2,450	2,640	3,272
	34	1,675	1,608	1,750	1,990	2,225	2,460	2,720	2,935	3,524
	35	2,749	1,820	1,990	2,230	2,470	2,715	2,995	3,200	3,780
	36	6,276	2,040	2,205	2,440	2,705	2,975	3,260	3,460	3,942
	37	14,528	2,285	2,440	2,685	2,950	3,240	3,524	3,700	4,120
	38	40,391	2,510	2,655	2,900	3,160	3,446	3,720	3,900	4,270
	39	64,139	2,665	2,810	3,050	3,310	3,590	3,855	4,020	4,390
	40	126,386	2,810	2,945	3,180	3,440	3,725	4,000	4,165	4,520
	41	50,312	2,920	3,060	3,295	3,565	3,850	4,125	4,300	4,660
	42+	12,520	2,920	3,070	3,330	3,620	3,930	4,220	4,400	4,750

Appendix 5 Hospital by Department of Human Services Region

Region 1 Barwon South-Western

Barwon Health-Geelong
Casterton Memorial Hospital
Colac Community Health Services
Coleraine & District Hospital
Corangamite Regional Hospital Services, The
Lorne Community Hospital
Portland & District Hospital
Terang & Mortlake Health Service
Timboon & District Health Care Service
Warrnambool & District Base Hospital
Western Districts Health Service-Hamilton

Region 2 Grampians

Ballarat Health Services
Djerriwarrh Health Services-Bacchus Marsh
East Grampians Health Service-Ararat
East Wimmera Health Service-Donald, St Arnaud
Edenhope & District Hospital
Hepburn Health Service-Daylesford
Rural North west Health-Warracknabeal
Stawell District Hospital
West Wimmera Health Service-Nhill
Wimmera Health Care Group-Horsham

Region 3 Loddon Mallee

Bendigo Health Care Group
Boort District Hospital
Cohuna District Hospital
Echuca Regional Health
Kerang & District Hospital
Kyabram & District Memorial Community Hospital
Kyneton District Health Service
Mallee Track Health & Community Service-Ouyen
Maryborough District Health Service
Mildura Base Hospital
Mt Alexander Hospital
Rochester & Elmore District Health Service
Swan Hill District Hospital
Wycheproof & District Health Service

Region 4 Hume

Alexandra District Hospital
Alpine Health-Bright, Mt Beauty, Myrtleford
Benalla & District Memorial Hospital
Cobram District Hospital
Goulburn Valley Health

Kilmore & District Hospital, The
Mansfield District Hospital
Nathalia District Hospital
Numurkah and District Health Service
Seymour District Memorial Hospital
Upper Murray Health & Community Services-Corryong
Wangaratta District Base Hospital
Wodonga Regional Health Service
Yarrawonga District Hospital

Region 5 Gippsland

Bairnsdale Regional Health Service
Central Wellington Health Service-Sale
Far East Gippsland Health & Support Service-Orbost
Gippsland Southern Health Service-Leongatha
New Latrobe Regional Hospital-Traralgon
South Gippsland Hospital-Foster
West Gippsland Healthcare Group-Warragul
Wonthaggi and District Hospital
Yarram & District Health Service

Region 6 Western Metropolitan

Mercy Public Hospitals Inc., Werribee Campus
Royal Women's Hospital
Sunshine Hospital
The Northern Hospital
Western Hospital
Williamstown Hospital

Region 7 Northern Metropolitan

Mercy Public Hospital, East Melbourne Campus

Region 8 Eastern Metropolitan

Angliss Health Services, The
Box Hill Hospital
St George's Health Service
St Vincent's Hospital (Melbourne) Ltd
Yarra Ranges Health Service-Healesville

Region 9 Southern Metropolitan

Dandenong Hospital
Frankston Hospital
Monash Medical Centre, Clayton Campus
Monash Medical Centre, Moorabbin Campus
Monash Medical Centre, Sandringham
Rosebud Hospital

Appendix 6 Department of Human Services Regional Maps



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Options for models of care

- Option 1** Public hospital outpatient: standard care
- Option 2** Public hospital: high risk clinic specialist obstetrician
- Option 3** Public hospital: midwife clinic
- Option 4** Team midwifery in public hospital
- Option 5** Shared care: Public hospital with GP
- Option 6** Shared care: Public hospital with midwife in private practice
- Option 7** Shared care: GP with midwife
- Option 8** Shared care: Public hospital with community health centre
- Option 9** Private obstetrician and private GP
- Option 10** Gp private
- Option 11** GP / obstetrician / public patient ('shifted care')
- Option 12** Private obstetrician
- Option 13** Midwife in private practice
- Option 14** Hospital birth centre
- Option 15** No care
- Option 16** Shared care: hospital birth centre with GP
- Option 17** Shared care: obstetrician with midwife in private practice
- Option 18** Other: (please notify)