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Maternity Care Classification System: Maternity Model of Care Data Set Specification national pilot report

November 2014
National Maternity Data Development Project Stage 2

Maternity Care Classification System

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**Please note that there is the potential for minor revisions of data in this report.
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Acknowledgments

Abbreviations

DSS   Data Set Specification

GP   general practitioner

MaCCS   Maternity Care Classification System

MCU   Metadata and Classifications Unit

METeOR   Metadata Online Registry

MGP   Midwifery Group Practice

MMC   Major Model Category

MoC DSS   Maternity Model of Care Data Set Specification

NHIPPC   National Health Information Performance and Principal Committee

NHISSC   National Health Information Standards and Statistics Committee

NMDDP   National Maternity Data Development Project

NPESU   National Perinatal Epidemiology and Statistics Unit

RMO   residential medical officer

Summary

In recent times the options available to women for antenatal care and birth have expanded. This includes the provision of more midwifery-led care models. This diversification creates a need for common terminology in describing and comparing these models and the outcomes for women and their babies. Hence, the Maternity Care Classification System (MaCCS) was developed to classify, record and report data about maternity models of care in Australia.

The MaCCS will produce a data set for reporting on models of care available in each jurisdiction and nationally. As well, the future inclusion of two new data items in the National Perinatal Data Collection to record the model of care for each woman will enable future reporting on outcomes for mothers and babies under different models or by different model characteristics.

The MaCCS was developed as part of the National Maternity Data Development Project (NMDDP), which included a component to design a nomenclature for maternity models of care in Australia. A Maternity Model of Care Data Set Specification (MoC DSS) was then developed to underpin the MaCCS. This DSS contains data elements that capture the characteristics of models, including a Major Model Category (MMC) and a unique model ID. To ensure the data standards were comprehensive and exhaustive, a national pilot of the MoC DSS was conducted. This report provides an account of the pilot process and results.

The pilot was conducted over June to September 2014 in a representative mix of birthing sites. It was specifically designed to test the technical aspects of the data elements rather than to test the complete MaCCS as a classification system. The pilot aimed to ensure a number of things: that permissible responses in the data elements were correct and complete, that there were comprehensive instructions for users, that values for the 10 MMCs were correct and exhaustive and that all models could be assigned to a single MMC.

A total of 46 sites across each jurisdiction in Australia participated, and surveys for 217 maternity models of care were received and analysed. The pilot proved invaluable for refining the DSS. Outcomes included:

- confirmation that the 10 MMCs included in the MaCCS are suitable for classifying all models of care currently in use in Australia, except for 1 emerging model for private obstetrician/private midwife care that will be added to the list of MMCs
- demonstration that the use of data standards alone is not enough to ensure high-quality data collection, particularly when novel concepts are being introduced
- confirmation of the need for a purpose-built electronic data collection tool to improve the accuracy of data collected—and a comprehensive education program to support it.

As a result of the pilot, there were over 50 detailed recommendations made including:

- replacing several data elements in the MoC DSS to address major data quality issues and modifying others, with additional instructions in the user guide
- identifying numerous decision-rules/validation checks for incorporation in the specifications for a future electronic MaCCS data collection tool
- defining the areas of focus for any education and training package that is developed.

When this report was published, the MoC DSS had been endorsed as a new national data standard, and work is now underway to develop the MaCCS data collection tool.

1 Introduction and background

Before the 1940s, maternity care (antenatal care and birth) for Australian women was typically provided in the home by the family doctor and a midwife. Gradually, this shifted towards hospital-based obstetric specialist care within a 'medicalised' framework, assisted by 'obstetric-nurses'. This meant that there was now little choice for women about who would provide their care and where. However, growing criticism of the negative impact this was having on women's experience of pregnancy and birth—together with a demand for more socially-oriented models (such as those provided by midwives)—saw an increase in the late 1970s and 1980s in the maternity care options available. More recently, there has been a gradual return to more midwifery-led antenatal care and births outside the hospital setting. Rather than one standard 'package' of obstetrician+midwife+hospital, some maternity services began to offer maternity care in different 'models'.

The term 'model of care' is often used in the health-care system, particularly in relation to maternity care; however, it is difficult to define. A model of care has both tangible components (such as roles, structure, methods, location) and those that are less so (such as philosophy, culture, values). A model of care can be thought of as a 'recipe' for how care is provided; it describes the systematic and standardised way that health care (in this case, maternity care) is provided, including who the health-care professionals are, their roles, where care is provided and the care 'pathway' that the health-care consumer will follow. The benefit of describing health-care delivery in terms of models is that it ensures that all staff working together in a particular area or unit work in a similar way, within a similar framework and guided by a common set of goals (Davidson et al. 2006). Further, by defining a model in a systematic way, care can be evaluated on a common basis. Through randomised controlled trials and systematic reviews, an increasing evidence base is being developed on the different outcomes for women and babies under different models of maternity care.

Despite Australia's having one of the lowest maternal and perinatal mortality rates in the world (WHO 2011), the Australian Government recognised that it was not meeting all the needs of Australian women (Department of Health and Ageing 2009). The release, in 2008, of a discussion paper, *Improving maternity services in Australia: a discussion paper from the Australian Government* (Department of Health and Ageing 2008), began the consultation process that became the Maternity Services Review. The report of this review found that, while there were a variety of models of care available in Australia, the dominant models involved medical care in either a private or public hospital setting, and that consumers were not satisfied with the lack of access to other models of care (Department of Health and Ageing 2009).

The National Maternity Services Plan (the Plan) took into consideration the recommendations of the Maternity Services Review as well as other reviews and initiatives and provides a strategic framework for guiding the development of policy and program development for Australian maternity services (AHMC 2011). Many actions in the Plan aim to increase the availability and access to a range of models of care and provide evidence-based information to both consumers and health services to enable informed decision making (AHMC 2011). Monitoring the effectiveness of these actions relies on collecting and reporting standardised and consistent information on maternal and perinatal mortality and morbidity as well as on data relating to models of care. Specifically, Action 4.2.4 in the Plan provides for the development of 'consistent descriptors and definitions for the range of models of maternity care available' (AHMC 2011:53).

Standardising a nomenclature and definitions for maternity models of care would allow data to be collected nationally to facilitate meaningful analysis and comparisons of maternal and perinatal outcomes in differing models of care; it would also help in evaluating the success of the Plan, including the ability to report on *Indicator 20 – Models of Care*, one of the National Core Maternity Indicators endorsed by the Australian Health Ministers' Advisory Council (AIHW 2014a). The lack of a consistent and agreed method for defining and categorising models of care restricts the ability to accurately compare, or evaluate, different models of care outside of a research design. This has made it exceedingly difficult for women and their families to make informed decisions about accessing different models of care based purely on what they are named locally.

Stage 1 of the National Maternity Data Development Project (NMDDP) included a sub-project to develop a suitable nomenclature for models of maternity care in Australia. A literature review was conducted and extensive consultation undertaken (under the guidance of the Nomenclature for Models of Care Working Party). Following this, a proposal was put forward to implement a classification system (rather than just a naming system) called the Maternity Care Classification System (MaCCS) as a means to classify, record and report on data about models of care in Australia (AIHW 2014a, 2014b, 2014c).

The MaCCS would allow hospitals to classify their models of care on an annual basis (or when introducing a new model) based on their individual characteristics and assign each model to a Major Model Category (MMC) and a model ID code. The MMCs are a set of agreed names and descriptions for broad categories of models of care and would provide a name or label to be assigned to each model; the model ID can be recorded in various health and maternity information systems, including the Perinatal Data Collection. By assigning an MMC to each model, it will be possible to report on the range of models of care available to women in each jurisdiction using common terminology (such as Team midwifery care, Private obstetrician (specialist) care, Shared care etc.). Through linkage with the Perinatal Data Collection, it will also allow for more in-depth analysis based on characteristics of models, such as the extent of continuity of carer, whether the model is targeted at a specific group of women (such as Aboriginal and Torres Strait Islander women) or whether care was offered in a certain location (such as at home, a birth centre or Aboriginal Community Controlled Health Organisation location).

The theoretical model for the MaCCS developed in Stage 1 has been progressed for formal data development in Stage 2, under the guidance of the MACCS Working Party (Table 1.1). This includes developing and piloting the Maternity Model of Care Data Set Specification (MoC DSS), identifying additional data elements to record the model of care in the National Perinatal Data Collection and documenting the specifications required for a future web-based electronic data collection tool.

This report provides information about the national pilot undertaken to evaluate the data standards for the new MoC DSS. This first chapter provides background information on the development of the MaCCS as part of Stage 1 and 2 of the NMDDP. Chapter 2 contains information on the data development process and the content of the MoC DSS, while Chapter 3 details the methodology for how the national pilot was conducted. Chapter 4 presents detailed results of the analysis of the pilot, including information on the number of different models classified, feedback on individual data elements and any errors or inconsistencies in responses that could be identified. A discussion of the findings of the pilot and the concluding recommendations are provided in Chapter 5, including the next steps for the MaCCS project. A set of appendixes provides additional information, including a list of

the hospitals that participated, a copy of the pilot survey and MoC DSS standards, a table of the recommendations to come out of the pilot and the tables used in analysing the pilot data.

Table 1.1: Maternity Care Classification System Working Party

Name[a]	Organisation/expertise
Ms Mary Beneforti	Australian Institute of Health and Welfare
Ms Jo Borrman	Expert—Health Information Management
A/Prof Georgina Chambers (Chair)	National Perinatal Epidemiology and Statistics Unit
Ms Natasha Donnolley (Secretariat)	National Perinatal Epidemiology and Statistics Unit
Ms Joanne Ellerington	NPDDC and Qld representative
Mr Mark Gill	Vic representative
Prof Caroline Homer	Expert—midwifery
Ms Maureen Hutchinson	WA representative
Prof Sue Kruske	Expert—rural and remote maternity care
Ms Penny Maher	ACT representative
Mr Peter Mansfield	Tasmania representative
Ms Gail Mondy	MSIJC representative
A/Prof Michael Nicholl	Expert—obstetrics and NSW representative
Ms Maggi Richardson	NT representative
Dr Wendy Scheil	SA representative

(a)   Former members and proxy members include Professor Elizabeth Sullivan (Chair), Ms Kate Gibson (NPDDC representative), Ms Marie Hughes (NT representative), Ms Jan White (Proxy for MSIJC), Ms Helen Perkins (Proxy for ACT).

2 Maternity Model of Care Data Set Specification

To ensure that data collected through the MaCCS are comparable and consistent across all users and jurisdictions, the data elements must be developed in a standardised methodical way using established data development practices. The use of national data standards developed using the AIHW's Metadata Online Registry (METeOR) enables nationally comparable and consistent data to be produced. A national data standard specifies the agreed name, definition, response values and other metadata (data about data) as well as guidelines for their collection. When collected and reported according to the national data standard, data can be consistently compared across different jurisdictions, settings and sectors.

The process of developing national health data standards involves:

- drafting the item according to agreed definitions and collection methods in the standard formats specified in METeOR
- obtaining approval of the draft item by relevant stakeholders
- securing review, revision and sign-off by the AIHW Metadata and Classifications Unit (MCU)
- submitting the item to the National Health Information Standards and Statistics Committee (NHISSC)
- if approved, submitting the item (done by the NHISSC) to the National Health Information Performance and Principal Committee (NHIPPC) for endorsement.

Once endorsed, the item can be registered. It then becomes a national standard contained in the National Health Data Dictionary.

National data standards for the data elements in the MaCCS identified in Stage 1 of the NMDDP have been drafted in METeOR. The ability for all jurisdictions to implement the MaCCS at the same time in the future is uncertain (and unlikely). In the absence of a national agreement to collect these data (such as with the Perinatal Data Collection) and to reduce any possible future implementation delay, the data elements were drafted as a Data Set Specification (DSS) rather than as a National Minimum Data Set. The process of data development for items being added to a DSS or National Minimum Data Set is the same.

Although the data standards used the definitions and data values endorsed by stakeholders consulted during Stage 1 of the project, the complete data standards required further validation via a national pilot to ensure that they were comprehensive and exhaustive (in particular, the Guide for Use information and permissible values). The data elements contained in the draft MoC DSS that were evaluated in the national pilot are listed by their short name in Table 2.1, with the full set of data standards provided at Appendix B.

Once any recommended changes are made to the data standards in the MoC DSS (following the pilot), the AIHW MCU will undertake another technical review. Once all data standards are approved by the MCU, they will be submitted to the MaCCS Working Party and NMDDP Advisory Group for endorsement and then submitted to the NHISSC. As noted above, if approved, they will then be submitted to the NHIPPC for endorsement and inclusion in the National Health Data Dictionary.

Table 2.1: MoC DSS data elements by short name for the national Pilot Program

Data element short name	Definition
Establishment identifier *(not used in the pilot)*	The identifier for the establishment in which episode or event occurred. Each separately administered health-care establishment to have a unique identifier at the national level.
Target group indicator	An indicator of whether a particular maternity model of care is predominantly targeted at a specific section of women who share a common characteristic or set of characteristics, as represented by a code.
Maternity target group	The characteristics of women or their pregnancy that define a target group for a specific maternity model of care, as represented by a code.
Profession of designated maternity carer	The profession of the maternity health-care provider who is acting as the designated maternity carer in a model of care, as represented by a code.
Midwifery caseload indicator	An indicator of whether a model of maternity care is a midwifery caseload model of care, as represented by a code.
Midwifery caseload size	The total number of women (caseload) cared for per year by each full-time equivalent primary midwife working in a midwifery caseload model of maternity care, as represented by a number.
Extent of continuity of carer	The extent to which continuity of carer is provided across the continuum of maternity care within a model of maternity care, as represented by a code.
Planned collaborative maternity carer	The profession of other recognised and named collaborative maternity care professionals in a maternity model of care, as represented by a code.
Planned transfer for intrapartum care and birth indicator	An indicator of whether a maternity model of care requires that all women be transferred to another location prior to labour for intrapartum care and birth, as represented by a code.
Expected setting for an antenatal care visit	The expected setting for an antenatal care visit that is offered within a model of maternity care, as represented by a code.
Expected setting of birth	The expected setting for a birth offered by a model of maternity care, as represented by a code.
Expected setting of postnatal care	The expected setting for postnatal care that is offered within a model of maternity care, as represented by a code.
Individual or group care	A descriptor of whether the model of maternity care offers antenatal and/or postnatal care in individual or group sessions, as represented by a code.
Planned scheduled medical visits	The total number of planned visits with a medical practitioner scheduled for all women in a model of maternity care, as represented by a number.
Additional remote or rural services offered indicator	An indicator of whether or not additional remote or rural services are offered in a maternity model of care, as represented by a code.
Type of additional antenatal/postnatal remote or rural service	The type of additional rural and remote antenatal/postnatal service provided in a maternity model of care, represented by a code.
Expected time of model completion after birth event	The length of time after a birth event that a model of maternity care is expected to cease, as represented by a code.
Major Model Category	The overarching major category or group that a maternity model of care can be described by, based on its characteristics, as represented by a code.
Maternity model of care identifier *(not used in the pilot)*	A sequence of characters which uniquely identifies a maternity model of care, as represented by a number.

3 Methodology

The MaCCS is a novel concept in maternity care, not only in Australia but also anywhere in the world (AIHW 2014c). As such, no classification system or tool exists against which to compare the data standards. During Stage 1 of the project, the data elements underwent content validation as part of their initial development. However, the fully developed data standards contain more information than a definition and set of values; hence, it was decided to pilot the new DSS via a SurveyMonkey® questionnaire to a range of hospitals in each jurisdiction.

The aims of the MoC DSS pilot were:

- to ensure that the value domains were correct and exhaustive
- to test the Guide for Use for each data element and confirm that there were sufficient instructions for users
- to test that the values for the MMC were correct and exhaustive and that all models could be assigned to a single MMC.

The pilot was not designed to test the complete MaCCS as a classification system or to test a survey tool but to test the technical aspects of the data elements (the data standards) developed in METeOR.

During the consultations with stakeholders in each jurisdiction between September and November 2013, stakeholders nominated a list of potential pilot sites from a range of maternity services. This ensured a representative mix of birthing sites of differing size, geographical location, casemix and models of care. Jurisdictional representatives were contacted again in June 2014 to confirm the list of sites to be invited to participate in the pilot, with some changes being identified at this time. These sites were contacted either directly by the National Perinatal Epidemiology and Statistics Unit (NPESU) Project Officer or via the jurisdictional Health Department representative and invited to participate in the MoC DSS Pilot Program. A total of 49 sites across Australia were invited to participate, with only 3 sites declining. A list of these sites is provided in Table 3.1.

The MoC DSS Pilot Program was conducted during the period 27 June to 15 September 2014. Participating hospitals were contacted by email with the pilot instructions and link to the survey in SurveyMonkey® (see Appendix B). Each jurisdiction was allocated a 1-week timeslot to undertake the pilot in the nominated maternity services, which allowed the Project Officer at the NPESU to support and assist participants if required. A print copy of the electronic survey is provided at Appendix B. Participants were asked to complete their surveys during their allocated 1-week timeslot.

Participants were asked to complete a new survey for each of the models of maternity care offered to pregnant women at their maternity service. Pilot participants were regularly followed up by email and telephone when surveys were not completed within 2 weeks or if only 1 survey was completed for a site. Participants who submitted incomplete surveys (often because they left the survey open too long and it 'timed out') were contacted and asked to repeat it. Not all participants managed to complete a separate survey for all the models of care offered by their service, and caution should be taken when reviewing the results for the number of models of care offered at each site (at Appendix A). Some participants were telephoned to clarify their responses to assist in analysing and interpreting the pilot results presented in Chapter 4.

The completed survey data were exported from SurveyMonkey® to Microsoft Excel and IBM SPSS Statistics 22 for analysis. A comprehensive analysis of the results is presented in Chapter 4.

Table 3.1: Participating MoC DSS Pilot Program sites by jurisdiction

NSW	Victoria
Dubbo Hospital	Ballarat Health Services
Forbes Hospital[a]	Bendigo Health Care Group
Gosford Hospital	Casey Hospital[b]
John Hunter Hospital	Maryborough District Health Service
Lithgow Hospital	Monash Medical Centre—Clayton[b]
Manning Hospital	Northeast Health Wangaratta
Moree District Hospital	Royal Women's Hospital
Parkes Hospital[a]	South West Healthcare Warrnambool
Royal Hospital for Women	Sunshine Hospital
Sutherland Hospital	West Gippsland Healthcare Group (Warragul)
Queensland	**Western Australia**
Cairns Hospital	Armadale Hospital
Emerald Hospital	Broome Hospital
Logan Hospital	Bunbury Hospital
Mount Isa Base Hospital	Community Midwife Program
Nambour General Hospital	King Edward Memorial Hospital
Redland Hospital	Joondalup Health Campus
Royal Brisbane and Women's Hospital	
Warwick Hospital	
South Australia	**Tasmania**
Crystal Brook Hospital	Launceston General Hospital
Flinders Medical Centre	North West Private Hospital
Gawler Health Service	Royal Hobart Hospital
Port Augusta Hospital	
Port Pirie Hospital	
Australian Capital Territory	**Northern Territory**
Calvary Hospital	Alice Springs Hospital
Centenary Hospital for Women and Children	Katherine Hospital
	Royal Darwin Hospital

(a) The respondent for Forbes Hospital also completed surveys for Parkes Hospital (which had not been invited to participate) which is closely aligned, resulting in 10 sites in New South Wales. One (1) of the original invited hospitals declined to participate.

(b) The surveys for Casey Hospital and Monash Medical Centre—Clayton were combined by the respondent into 1 maternity service for Monash Health as the models of care are for teams at all three Monash Health sites.

4 Results

A total of 47 maternity services completed 217 surveys classifying models of maternity care using the MoC DSS. The number of sites in each jurisdiction varied from 2 in the Australian Capital Territory to 10 in New South Wales and Victoria. Tables 4.1 and 4.2 provide details on the number of models in each jurisdiction and to which MMC they were classified. As Figure 4.1 shows, the MMC of 'Public hospital maternity care' described more than 25% of models in the pilot program. The true figure is almost certainly higher due to some models being incorrectly classified as 'Public hospital high risk maternity care'. Only 30% of participating sites reported having a model for 'Private obstetrician (specialist) care', which may also have been under-reported as only 6 hospitals across 3 jurisdictions classified this type of model. One of the newer models of care available to women at a public hospital is 'Private midwifery care'; although previously available in many hospitals before the withdrawal of insurance cover in 2002, this model has only lately returned in a small number of hospitals as an option under recent national reforms. Only 3 models were classified to this MMC and 1 of these was in error.

Table 4.1: Pilot details by state or territory

State or territory	Number of sites invited	Number of sites accepted	Total number of models classified
New South Wales	10	10[a]	53
Victoria	11	10	35[b]
Queensland	9	8	45
Western Australia	6	6	18
South Australia	5	5	17
Tasmania	3	3	21
Australian Capital Territory	2	2	9
Northern Territory	3	3	19
Total	**49**	**47**	**217**

(a) Although 10 sites were invited, 1 site declined; however, one respondent also completed surveys for a second non-invited site which was also included in the analysis, resulting in 10 sites participating in New South Wales.

(b) A further 4 surveys were received after data analysis started and were not included.

Tasmania had the largest average number of models of care per maternity service at 7, and Western Australia the smallest, at 3. The number of models of care per site varied from 1 to 13 (details at Appendix A). The percentage of the total models of care in each MMC varied between jurisdictions (see Figure 4.2). 'Public hospital maternity care' had the largest percentage of models in all jurisdictions except Western Australia, where there was a larger percentage of models categorised as 'Shared care' (although some of these were misclassified). Predictably, there were a higher proportion of models in the Northern Territory categorised as 'Remote area maternity care' than in other jurisdictions, although it was surprising that there were no models in this MMC in Western Australia. This variation (in all MMCs) can be explained in part by the misclassification of some models but also by the small number of pilot sites in each jurisdiction (as a proportion of the total in each state/territory) and variations in service delivery between jurisdictions. As the pilot was limited to a small number of sites in each jurisdiction, it is not appropriate to make inter-

jurisdictional comparisons of all models of care. Table 4.2 provides comparisons for Major Model Categories.
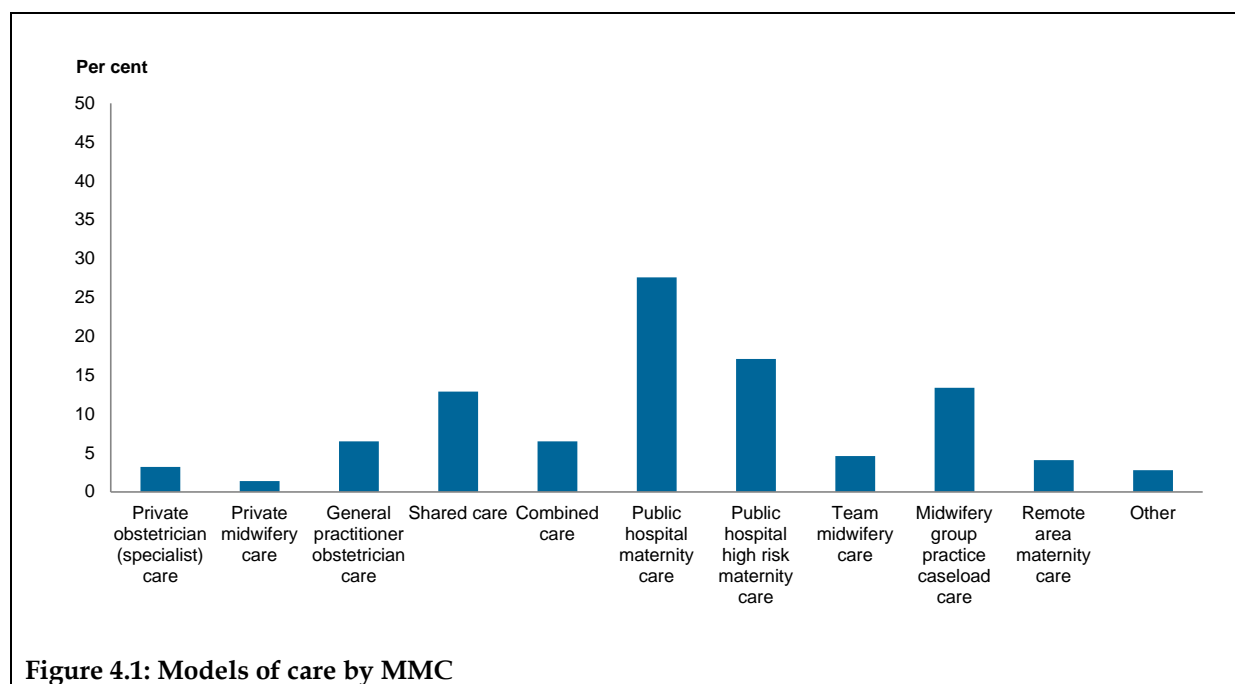
Figure 4.1: Models of care by MMC

Table 4.2: Models of care classified by MMC, states and territories

MMC	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Total
					Number				
Private obstetrician (specialist) care	2	3	2	0	0	0	0	0	**7**
Private midwifery care	0	1	1	1	0	0	0	0	**3**
General practitioner obstetrician care	5	4	2	1	1	0	0	1	**14**
Shared care	7	5	4	6	1	4	1	0	**28**
Combined care	4	1	4	1	1	0	0	3	**14**
Public hospital maternity care	14	8	11	4	7	6	3	7	**60**
Public hospital high risk maternity care	12	6	7	1	3	5	2	1	**37**
Team midwifery care	1	3	2	1	1	1	1	0	**10**
Midwifery group practice caseload care	7	4	5	2	3	2	2	4	**29**
Remote area maternity care	0	0	5	0	0	1	0	3	**9**
Other	1	0	2	1	0	2	0	0	**6**
Total	**53**	**35**	**45**	**18**	**17**	**21**	**9**	**19**	**217**
					Per cent[a]				
Private obstetrician (specialist) care	3.8	8.6	4.4	0.0	0.0	0.0	0.0	0.0	**3.2**
Private midwifery care	0.0	2.9	2.2	5.6	0.0	0.0	0.0	0.0	**1.4**
General practitioner obstetrician care	9.4	11.4	4.4	5.6	5.9	0.0	0.0	5.3	**6.5**
Shared care	13.2	14.3	8.9	33.3	5.9	19.0	11.1	0.0	**12.9**
Combined care	7.5	2.9	8.9	5.6	5.9	0.0	0.0	15.8	**6.5**

(continued)

Table 4.2 (continued): Models of care classified by MMC, states and territories

MMC	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Total
					Per cent[a]				
Public hospital maternity care	26.4	22.9	24.4	22.2	41.2	28.6	33.3	36.8	**27.6**
Public hospital high risk maternity care	22.6	17.1	15.6	5.6	17.6	23.8	22.2	5.3	**17.1**
Team midwifery care	1.9	8.6	4.4	5.6	5.9	4.8	11.1	0.0	**4.6**
Midwifery group practice caseload care	13.2	11.4	11.1	11.1	17.6	9.5	22.2	21.1	**13.4**
Remote area maternity care	0.0	0.0	11.1	0.0	0.0	4.8	0.0	15.8	**4.1**
Other	1.9	0.0	4.4	5.6	0.0	9.5	0.0	0.0	**2.8**
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

(a) Percentages may not add to 100% due to rounding.

The analysis of the MoC DSS pilot surveys focused on a number of different areas:

1. errors made by participants in recording the values for each data element (including not following conditional obligations or other instructions contained in the data standards, or having inconsistent values between different data elements)

2. data elements and standards that need amending, deleting or replacing

3. functionality required in a future web-based electronic data collection tool

4. focuses for education and training as part of the MaCCS implementation.

Overall, there were some useful suggestions for additional instructions or comments from users on how the data standards could be improved and for additional values. It was clear, however, from the number and type of errors that not all participants read or understood the data standards or instructions well and answered each of the questions based on the data element name or definition only. Detailed results for each data element, including errors, feedback, 'other' values and recommendations, are provided in Section 4.1. Not all feedback and suggestions were relevant and not all have been included in the results.

4.1 Results by data element

It is recommended that the results be read in conjunction with the pilot DSS questions at Appendix B to provide a context for each of the following sections.

4.1.1 Target group indicator and Maternity target group

This section relates to the following two data elements. More detail can be found at Appendix B.

Target group indicator

Is the model of care predominantly targeted at a specific section of women who share a common characteristic or set of characteristics?

Maternity target group

(Only applicable if you answered 'Yes' to Q1. If you answered 'No' to the *Target group indicator* in the previous question, please select 99 for this question.)

The specific group of women that a model of maternity care is designed for.

Errors

There were two main areas of error with these 2 related data elements: selecting a value for the *Target group indicator* and then contradictory values for the *Maternity target group*, or selecting inappropriate or unnecessary target groups.

An example of the first type of error is participants selecting 'No' for the indicator and then selecting multiple target groups (which contravenes the conditional statement in the Guide for Use), or the opposite—selecting 'Yes' for the indicator and then 'CODE 99 No target groups'. Some participants selected 'No' for the indicator for models that were clearly targeted at a particular group, such as women with diabetes (based on their narrative description of the model). In total, 8 surveys selected 'Yes' to *Target group indicator* and then 'CODE 99 No target group' for *Maternity target group*. More than twice as many selected 'No' to *Target group indicator* and then selected values for *Maternity target group* (18 surveys in total).

An example of the second type of error is participants selecting 'Yes' for the indicator in a complex/high-risk or obstetric-led model but selecting almost all of the target group values rather than just selecting 'CODE 5 Complex or high risk pregnancy'. In some cases, participants selected 'Yes' for an all-risk model that does not target any particular group of women and then selected all of the target groups. This type of error occurred in responses from 6 of the 8 jurisdictions.

Discussion

As this pilot was conducted using SurveyMonkey® and was not designed to evaluate the data collection method (or tool), functionality related to conditional data elements could not be employed. As such, it was not possible to prevent participants from selecting values for *Maternity target group* if they had selected 'No' to the indicator item. The data standards clearly specify that the data element *Maternity target group* is conditional on a 'Yes' response to *Target group indicator*. If a purpose-built data collection tool is built for the MaCCS, this type of functionality using decision-rules would be included which would prevent errors relating to conditional data elements. Conversely, the software will need to ensure that if

there is a 'Yes' response to the indicator item that at least one value is selected for *Maternity target group*.

Feedback on *Target group indicator* was received from 16 surveys and 10 provided feedback on *Maternity target group*. There were 27 responses suggesting an 'Other' value for *Maternity target group*.

Several respondents raised the issue that, rather than targeting specific groups, their model excluded certain groups. During the data development process of the data elements in the MaCCS, there had been a data element for *Exclusion criteria*; this was changed to the current *Target group indicator* after advice from the AIHW MCU and discussion with the MaCCS Working Party. In most cases, the women being excluded from a model of care are those deemed to be high risk. To address this feedback, it is suggested that an additional value be added to the value set for *Maternity target group*—that is, 'All excluding high-risk pregnancy'.

Some of the feedback reported difficulty in completing the target group items as women outside of the target group may also be cared for in the model. The Guide for Use already addresses this issue and acknowledges that models targeted at a particular group may not necessarily do so to the exclusion of all others. This is different from the issue of combining multiple models into one classification as one participant did for their 'Tertiary care and specialty clinics'. Rather than splitting these into different models for each of the different groups and care pathways, the respondent combined them into one model. The respondent therefore had difficulty in assigning a target group and thus selected nearly all of them (and had difficulty in answering other items) due to the variability of the 'model' (which was actually multiple models of care).

After reviewing the suggestions for 'Other' values for *Maternity target group*, several suggestions should be added to the value set. As already mentioned, an additional value for 'All excluding high-risk pregnancy' would be beneficial and would incorporate the concept of 'Category B' women referred to by some respondents (this refers to the Australian College of Midwives Guidelines for Consultation and Referral). Several respondents suggested 'Geographical area' as a value in addition to 'Remote women'. The addition of both these values could be confusing as they may not be seen to be mutually exclusive. It is therefore suggested that an additional value of 'Maternal remote area of residence' be added to the value set and an instruction in the Guide for Use that target groups based purely on geographical location (such as postcode range) that are not classed as 'Maternal remote area of residence' be considered as 'CODE 88 Other maternity target groups'.

There were repeated suggestions to add 'other endocrine conditions' or 'thyroid conditions' to the list; these were generally associated with models of care for women with diabetes. It is suggested that the current value 'CODE 10 Maternal diabetes' be amended to 'CODE 10 Maternal diabetes and other endocrine disorders'. Additional instructions should also be added to the Guide for Use for CODE 10 to include thyroid conditions in this value set.

The remaining suggestions for 'Other' values were not considered to be used often enough to justify additional values and they could be covered under existing values.

Recommendations

1. Functionality included in a future web-based data collection tool that includes decision-rules that would prevent errors relating to conditional data elements.

2. An additional value added to the value set for *Maternity target group*; that is, 'All excluding high-risk pregnancy'.

3. An additional value added to the value set for *Maternity target group* for 'Maternal remote area of residence'.

4. Additional information in the Guide for Use for *Maternity target group* that target groups based purely on geographical location (such as postcode range) that are not classed as 'Maternal remote area of residence' be coded as 'CODE 88 Other maternity target groups'.

5. Existing CODE 10 in the value set for *Maternity target group* be updated to 'CODE 10 Maternal diabetes and other endocrine disorders'. Additional instructions should also be added to the Guide for Use for CODE 10 to include thyroid conditions.

4.1.2 Profession of designated maternity carer

This section relates to the following data element. More detail can be found at Appendix B.

Designated maternity carer

What is the profession of the maternity health-care provider who is acting as the designated maternity carer in this model of care?

Errors

The main area of error in the data element *Profession of designated maternity carer* related to 'Shared care' models and those that selected a value for 'Multidisciplinary team'. Based on the name and narrative description provided by respondents, it was possible to identify models that were considered to be shared care between a general practitioner (GP) or GP obstetrician and hospital staff. The Guide for Use for 'CODE 12 Shared care' (as provided in the survey documentation in Appendix B) provides the following instruction:

> Use this code when the model of care is a formal shared care arrangement with no single designated carer. This could be between different combinations of maternity care professionals such as GP and midwife, GP and hospital RMO [resident medical officer], GP and obstetrician, Midwife and Aboriginal health practitioner etc.

Of the 28 models of care classified to the MMC of 'Shared care', 16 (57%) did not select CODE 12 as the designated carer. Instead, a variety of other values were selected. Similarly, 9 models of care that were not classified to the MMC 'Shared care' had selected 'CODE 12 Shared care' as the designated carer (another 2 models classified as 'Remote area maternity care' also selected CODE 12, but this may be allowable). In some of those cases, the narrative description clearly identified a designated carer such as a midwife working in public practice; however, because they considered the care was in collaboration with an obstetrician or other professional type, they had selected 'CODE 12 Shared care'. One specific example of this was a midwifery group caseload practice model where the designated maternity carer should have been 'CODE 4 Midwife—Public'. Two other midwifery caseload models also selected either 'CODE 12 Shared care' or 'CODE 13 Multidisciplinary team'.

There was also some confusion about the use of the value 'CODE 13 Multidisciplinary team'. This value was originally added to the value set following consultations in Victoria where maternity policy is encouraging multidisciplinary team-based care rather than models led by one profession. Maternity care in many Victorian hospitals is provided in the form of team-based care pathways ('green pathway' for women with minimal risk factors, 'red pathway' for women whose pregnancies are of higher risk and require specialist care). Using

the narrative description provided for each model of care by participants, it was apparent that some participants selected CODE 13 when there was an obvious single designated maternity carer who could collaborate or consult with other disciplines as required. This is not the same as a multidisciplinary team where no single carer or profession leads the care for all the women in the model. For example, one model in South Australia that selected 'CODE 13 Multidisciplinary team' for *Profession of designated maternity carer* was described as:

> Traditional antenatal clinic with consultant led care with a team of Obstetricians and registrars and residents (RMOs) managing the antenatal care for women in an all risk model.

The appropriate value for this model should have been 'CODE 1 Specialist obstetrician—public'.

Similarly, 1 model from the Australian Capital Territory that used CODE 13 was described as:

> Women attend a midwife led antenatal clinic for antenatal care. Women birth in delivery suite and then transfer to the postnatal ward prior to discharge to Midcall program for postnatal care at home.

In this case, the appropriate value for *Profession of designated maternity carer* would have been 'CODE 4 Midwife—public'.

Other individual errors of allocating the correct profession occurred in a number of models, including the use of CODE 5 instead of CODE 6 for a private midwifery model, and CODE 1 instead of CODE 4 for an outpatient clinic for women 'who choose not to see an obstetrician or GP regarding their impending birth'. Two models had 'Other' with 1 listing 'neonatologist, radiologist, social worker, childbirth educators' and another 'Care may be either #2, #3, #6, #7, #9'. This last example was a combined care model where women could receive their antenatal care from a private provider in the community and then birth in the public hospital. Some of these errors and the comments in the feedback highlight the lack of understanding some participants had of the definition for *Profession of designated maternity carer* and indicate that they may not have read through the data standards thoroughly before completing the survey.

Discussion

As noted above, the Guide for Use information for the data element *Profession of designated maternity carer* explicitly states the circumstances in which the value 'CODE 12 Shared care' should be used.

Further DSS-specific instructions are provided that if CODE 12 is used, the professions of the shared care providers should be recorded in the data element *Profession of collaborative maternity carer*. (This will be addressed further in the section related to this data element.) Most of the errors relating to this data element indicate that some participants did not read the data standards for the data element before responding, or did not fully understand them. It also highlights a lack of understanding of what is meant by 'designated' carer, despite the data standards providing the following glossary definition:

> The health care professional who coordinates the care for a woman during the antenatal, intrapartum or postnatal stages of maternity care, based on the woman's identified needs and individual circumstances.

This may be a midwife, obstetrician, general practitioner or other maternity health professional.

Synonymous names for this data element are also provided as these may be better known to some participants: 'Lead maternity carer', 'Primary maternity carer', 'Maternity care co-ordinator'.

Feedback on *Profession of designated maternity carer* was received from 19 surveys with 2 suggestions in the 'Other' category.

There were no suggestions to improve the instructions for this data element to address the errors in allocating CODE 12 or CODE 13. However, any future web-based data collection tool should have an alert mechanism if a model is assigned to the MMC of 'Shared care' but the *Profession of designated maternity carer* has not been coded as CODE 12—with the coding of the professions involved in the shared care arrangement identified in *Profession of collaborative maternity carer*. Users should be prevented from saving the classification for the model if this inconsistency is present.

Although there is a DSS-specific instruction for CODE 12 to code the professions providing the shared care in the data element *Profession of collaborative maternity carer*, no such instruction currently applies to 'CODE 13 Multidisciplinary team'. For consistency, this instruction should be added to the DSS to capture the different professions involved in the multidisciplinary team.

Other decision-rules that should be built into the software include identifying code values that are inconsistent with the MMC (see Appendix D, Table D1 for relevant data). For example, under the definition of 'Combined care', the antenatal care provider is a private service provider in the community and would be the professional identified as the 'lead carer'. As such, the use of CODE 1, CODE 4, CODE 12 and CODE 13 for *Profession of designated maternity carer* would not be correct.

Using the MMC as a guide for the appropriate value for *Profession of designated maternity carer*, and after reviewing the narrative descriptions of the models classified, 36 of 217 models (17%) had an incorrect value for this data element.

A total of 19 responses were received for feedback on completing this data element (not all were relevant to the question). Many of the comments related to the difficulty in identifying a single lead carer when this may change over the course of the pregnancy, depending on the woman's needs. The MaCCS has been designed to capture the intention of a model of care for the majority of women who receive care in it, not to capture the individual journeys for each woman. As such, there will be some variability in what women receive in relation to what the model intended. Respondents completing the MaCCS should be reminded of this when classifying models of care so that they consider who the designated carer *usually* is in the model of care for most women.

Other comments show that some participants were not aware that there was another data element that captured other carers involved in the model and they added this information in their feedback. For example:

> May include other specialist e.g. Endocrinologist and may include contact with a midwife as well and Diabetic Educator etc.

Some respondents appeared to be uncomfortable with assigning the *Profession of designated maternity carer* to 'CODE 4 Midwife—public' for public hospital maternity care models involving 'traditional' midwife antenatal clinics even though the care was provided by

midwives. Instead, 'CODE 1 Specialist obstetrician—public' was used to indicate that there was a doctor overseeing and supervising all care even if they were not actually providing that care. One respondent explained this, with the following comment:

> Once again, although the midwife provides all care, there is an 'overseeing' obstetrician for all women, who will check the patient notes to ensure that they are indeed low risk/normal (coding) before care continues. They will also see women should complications become known during the term of the pregnancy.

To address these concerns, additional information could be added to the Guide for Use explaining that the designated maternity carer may not be the most senior clinician involved in the care, with an example.

There were no relevant suggestions for 'Other' values to be added to the value set for this data element.

Recommendations

1. The future web-based data-collection tool to have an alert mechanism if a model is assigned to the MMC of 'Shared care' but the *Profession of designated maternity carer* has not been coded as CODE 12—with the coding of the professions involved in the shared care arrangement identified in *Profession of collaborative maternity carer*. Users should be prevented from saving the classification for the model if this inconsistency is present.

2. The addition of a DSS-specific instruction for 'CODE 13 Multidisciplinary team' when used as a value for *Profession of designated maternity carer* to code the professions providing the care in the data element *Profession of collaborative maternity carer*.

3. Decision-rules built into future software that identify and flag value codes for *Profession of designated maternity carer* that are inconsistent with the MMC selected.

4. Additional information added to the Guide for Use for *Profession of designated maternity carer* explaining that the designated maternity carer may not be the most senior clinician involved in the care, with an example to illustrate.

4.1.3 Midwifery caseload indicator and Midwifery caseload size

This section relates to the following data elements. More detail can be found at Appendix B.

Midwifery caseload
Whether a model of maternity care is midwifery caseload

Midwifery caseload size
(Only applicable if the answer to Q7 was 'Yes'. If this is not a midwifery caseload model, enter 0.)

The total number of women (caseload) cared for per year by each full-time equivalent primary midwife working in a midwifery caseload model of maternity care. If the model does not have a caseload, enter 0.

Errors

There were relatively few errors for these 2 related midwifery caseload data elements, with the majority related to participants entering a value for *Midwifery caseload size* when they had selected 'No' to the indicator item (7 models). Four of these models were considered to be 'Team midwifery' (although 1 had the MMC of 'Other', 1 was a group care model, 1 was a

remote care model that restricted the number of women whom the remote area midwife looked after and 1 was an outpatient medical-led clinic). As the data element *Midwifery caseload size* is conditional on a 'Yes' response to *Midwifery caseload indicator*, this type of error can be prevented using decision-rules in a future data collection software tool.

Of 40 models that selected 'Yes' to *Midwifery caseload indicator*, only 2 did not involve midwifery caseload at all. These were medical-led antenatal clinics that sometimes cared for women who were also part of a midwifery caseload group practice and required collaborative care with an obstetrician. A further 5 had correctly selected 'Yes' for the indicator item but selected an incorrect MMC, and 2 models that had a caseload did not offer intrapartum care. Technically, to be considered as a midwifery caseload model of care, the midwives should be the primary midwife for antenatal, intrapartum and postnatal care. Both of these last 2 models were for Aboriginal and Torres Strait Islander women, and the midwives act as a primary carer for a set number of women (caseload) for antenatal and postnatal care only. Advice will be sought from the MaCCS Working Party as to whether this still constitutes midwifery caseload (although neither of the models would be classified to the MMC of 'Midwifery group practice caseload care').

Not all models of care that correctly selected 'Yes' to *Midwifery caseload indicator* were of the MMC 'Midwifery group practice caseload care', nor do they have to be. Two models were correctly classified as 'Private midwifery care', 1 as 'Combined care' and 1 as 'Public hospital high risk maternity care'. For this reason, it is not possible to automatically assign the MMC of 'Midwifery group practice caseload care' to all models that select 'Yes' for *Midwifery caseload indicator* when developing decision-rules for the data collection software tool.

A third private midwifery care model had incorrectly coded 'No' for the indicator item as the respondent could not say how the midwife structured her business or how many women she cared for as primary midwife. For scenarios such as this, it may be necessary to add a value for 'unknown' in the data standards for *Midwifery caseload size*. Advice will be sought from the AIHW MCU on this.

Discussion

As with the previous conditional data item, the Guide for Use for *Midwifery caseload size* has explicit DSS-specific instructions that reporting this data element is conditional on a 'Yes' response to *Midwifery caseload indicator*. Adhering to this instruction will eliminate most of the errors that occurred for these data elements and the applicable rules can be built into an electronic purpose-built data collection tool in the future. It may not be possible to eliminate all errors for these data elements; however, some of the models that had incorrectly selected 'Yes' to the indicator item had a value other than 'CODE 4 Midwife—public', 'CODE 5 Midwife—private' or 'CODE 6 Midwife—privately practising' for the *Profession of designated maternity carer*. Consideration of both the designated carer and the MMC can help to identify errors in *Midwifery caseload indicator*. These validation rules can be built into the data collection tool to prevent recording a 'Yes' for *Midwifery caseload indicator* if the designated maternity carer and/or the MMC are not valid codes for a midwifery caseload model of care. In the case of contradictory values, the software can alert the user to review and change the value of either the *Profession of designated maternity carer*, *Midwifery caseload indicator* or *Major Model Category*. This would also identify errors where a value of 'No' was selected for *Midwifery caseload indicator* and the MMC was 'Private midwifery care' or 'Midwifery group practice caseload care'.

Validation of a value for *Midwifery caseload size* would also be of benefit. Values over 60 are unlikely for a midwifery caseload model, so adding an alert in the data collection software could raise a query for any response over 60 or a value of 0 when the indicator item is 'Yes'.

Feedback on *Midwifery caseload indicator* was received from 11 surveys with another 11 responses for *Midwifery caseload size*. There was no option of an 'Other' value for this data element.

Some of the feedback responses indicated a lack of understanding of what caseload is, despite the information provided in the data standards. As well, there were several antenatal 'clinic' models where women in a midwifery caseload model also attended. These women would be classified under their caseload Midwifery Group Practice (MGP) model, not the clinic, so including caseload characteristics in the responses for the clinic models is not appropriate.

There is a 'grey area' in defining whether a model includes midwifery caseload when the model does not include intrapartum care. In all other respects, these models (many of which are for vulnerable groups such as Indigenous women) have midwives who are on an annualised salary, are the primary midwife for a set number of women, and provide care in locations and at times that are flexible for the women. The only area that differs is that the midwives are not on call and do not attend the birth. Following advice from experts on the MaCCS Working Party, it was determined that continuity of carer for the whole duration of ante-, intra- and postpartum care is required for a model to code 'Yes' to *Midwifery caseload indicator* and it is suggested that this validation could be built into the data collection software. As well, it is necessary to add a DSS-specific instruction to *Midwifery caseload indicator* that a 'Yes' value requires that the value for *Extent of continuity of carer* must be 'CODE 5 Whole duration of maternity period—antenatal, intrapartum and postpartum'. Of the 40 models that responded 'Yes' to *Midwifery caseload indicator*, 5 (13%) did not have 'CODE 5 Whole duration of maternity period—antenatal, intrapartum and postpartum' for *Extent of continuity of carer,* including 1 that selected 'CODE 6 No continuity of carer'.

Recommendations

1. The use of decision-rules in a future data collection software tool to prevent a value for the conditional data element *Midwifery caseload size* when a 'No' response is coded for *Midwifery caseload indicator*.

2. A DSS-specific instruction added to *Midwifery caseload indicator* that a 'Yes' value for this data element must also require the value for *Extent of continuity of carer* to be 'CODE 5 Whole duration of maternity period—antenatal, intrapartum and postpartum'.

3. The use of validation rules built into a future data collection tool that all models that select 'Yes' to *Midwifery caseload indicator* must have continuity of carer for the entire maternity period.

4. The use of validation rules built into a future data collection tool to prevent recording a 'Yes' for *Midwifery caseload indicator* if the designated maternity carer and/or the MMC are not valid codes for a midwifery caseload model of care. In the case of contradictory values, the software can alert the user to review and change the value of either the *Profession of designated maternity carer*, *Midwifery caseload indicator* or *Major Model Category*.

5. The addition of a validation rule into the future data collection software to query any value for *Midwifery caseload size* over 60, or a value of 0 when the indicator item is 'Yes'.

4.1.4 Extent of continuity of carer

This section relates to the following data element. More detail can be found at Appendix B.

Extent of continuity of carer

The extent to which continuity of carer is provided across the continuum of maternity care within a model of maternity care.

Errors

There were considerable errors in completing this data element, which were anticipated during development of the MaCCS and the DSS. The concept of continuity of *carer* was frequently confused with continuity of *care* by participants. Almost one-quarter of models classified in the pilot were identified to have a likely error in the coding of *Extent of continuity of carer*. In 1 jurisdiction alone, there were 19 models of care that coded this data element to a level of continuity that was highly unlikely, based on the narrative description for the *Profession of designated maternity carer* and the *Major Model Category*. In many cases, these models were either a multidisciplinary team or team midwifery model of care that may have provided 'continuity of care' but this is not the same as continuity of *carer* as per the DSS glossary definition:

> Continuity of carer means care provided, or lead, over the full length of the episode of care by the same named carer. Relational continuity is provided by the same named caregiver being involved throughout the period of care even when other caregivers are required. Other caregivers may be involved in the provision of care, either as a backup to the named carer or to collaborate in the provision of care, however the named carer remains to coordinate and provide ongoing care throughout.

When the *Profession of designated maternity carer* has been coded as 'CODE 13 Multidisciplinary team', there cannot be any continuity of carer based on the definition. Of the 27 models with 'CODE 13 Multidisciplinary team' as the designated carer type, 14 had coded some level of continuity of carer. After reviewing responses, 12 were believed to have an incorrect response for *Extent of continuity of carer* (44%).

When the *Profession of designated maternity carer* has been coded to 'CODE 12 Shared care', it is possible for the *Extent of continuity of carer* to be coded to 'CODE 1 Antenatal period only', 'CODE 2 Antenatal and intrapartum periods', 'CODE 3 Antenatal and postpartum periods' and 'CODE 5 Whole duration of maternity period—antenatal, intrapartum and postpartum'; however, it is unlikely—based on the definition of 'Shared care'—for there to be no continuity of carer. Of the 24 models that had 'CODE 12 Shared care' for *Profession of designated maternity carer*, 3 had selected 'CODE 6 No continuity of carer' (1 of these had the incorrect designated carer type) but the majority had selected 'CODE 1 Antenatal period only' (38%) or 'CODE 5 Whole duration of maternity period—antenatal, intrapartum and postpartum' (29%).

There were many models of care described as 'antenatal clinics' with midwives, obstetricians, RMOs and 'junior doctors' that claimed to have continuity of carer during various stages of maternity care, in particular in the antenatal period. One example is a model as described below:

This clinic is for women with gestational diabetes (mainly) and care is provided by the hospital team caregivers including O+Gs RMOs, midwives, diabetes educator, dietician, health worker in conjunction with clinicians from outer area.

The respondent selected 'CODE 1 Antenatal period only' for a model that did not have a designated carer for the antenatal period.

Another multidisciplinary team model that selected 'CODE 5 Whole duration of maternity period—antenatal, intrapartum and postpartum' is described as follows:

Each Team has a medical and midwifery co-lead, leading consultant and training obstetricians and registered and student midwives. The Team provides antenatal (pregnancy), intrapartum and postnatal care collaboratively with a primary aim of increased continuity of care. To provide this, both midwives and medical staff rotate their activities through the week (e.g. one day in clinic, one day on birth suite, one day postnatal etc.). Each site also has a 'core' Birth Suite workforce (core non-rotating midwives and on-call medical team) but the majority of women will be cared for in labour by a midwife from their own team. All domiciliary postnatal care is provided by a separate team of domiciliary midwives. Each Team has a weekly Team meeting where individual women and their care are discussed and to train and support junior staff.

A number of 'Team midwifery' models also selected a high level of continuity of carer despite women's seeing up to 10 different 'team' midwives during their maternity care. One example of a model that had selected 'CODE 5 Whole duration of maternity period—antenatal, intrapartum and postpartum' is described as follows:

Team midwifery provide antenatal, intrapartum and some postnatal care to low risk women. The aim is for all women to meet all the midwives on the Team during their pregnancy. There are 10 Midwives in the Team. All care is provided in the hospital.

From these descriptions, it is apparent that many of these models provide continuity of care by a team of maternity care providers within a common location and philosophy of care; however, they are not providing continuity of *carer* from a named carer as per the definition in the data standards.

Discussion

It was clear from the substantial number of errors with this data element that, despite the Guide for Use instructions for each value code, participants were still confusing continuity of *carer* with continuity of *care*. This is perhaps understandable given that the proposed classification of models of care involves some new concepts and terminology with which not all clinicians may be familiar. An introductory statement at the beginning of the Guide for Use on the difference between continuity of care and continuity of carer may reduce the error rate; however, it will still depend on participants properly reading the Guide for Use. As with previous data elements, the programing of decision-rules in the future data collection software tool may reduce the error rate. So, too, would a pop-up alert when users selected any codes other than 'CODE 6 No continuity of carer' to remind them that the definition relates to having a single named carer for the majority of the care period and not a small team. Any classification that had 'CODE 13 Multidisciplinary team' for *Profession of designated maternity carer* or had an MMC of 'Team midwifery' should automatically raise an error alert for any value for this data element other than 'CODE 6 No continuity of carer'.

Any future implementation of the MaCCS (with or without the data collection tool) will require a considerable investment in education and training for users. A focus of this training should be on understanding the definition of data elements such as *Extent of continuity of carer* where either there is a clear lack of understanding or confusion with a similar concept (in this case continuity of *care*). Including pop-up alerts in the software can reinforce concepts such as continuity of carer by reminding users of the correct definition and suggesting when a value may not be consistent with other data element responses already selected.

Throughout the development and consultation periods of both Stage 1 and Stage 2, continuity of carer was identified as a critical part of defining a model of care and, more importantly, the influence it can have on outcomes for women and babies. Benefits include greater satisfaction for women and clinicians, improved outcomes for women and babies, and reduced costs for hospital services. This data element is too important to remove due to poor data quality in the pilot. Every effort needs to be made to ensure that end users understand the difference between 'carer' and 'care' to improve the quality of the data collected.

Feedback on *Extent of continuity of carer* was received from 22 surveys. There was no option of 'Other' value for this data element.

Some feedback for *Extent of continuity of carer* raised the issue of whether the designated carer must be present for all or just some of the care in a certain period without it negating continuity of carer. This is particularly pertinent to 'Private obstetrician specialist care' where an obstetrician would be the designated carer for the antenatal period—but not present for the entire intrapartum period (although considered to be supervising the care); he or she would not provide all inpatient postnatal care but would conduct visits and oversee the postnatal care and conduct the 6-week check. Several respondents queried whether this was still 'CODE 5 Whole duration of maternity period—antenatal, intrapartum and postpartum'. A similar situation applies for a 'Midwifery group practice caseload' model that provides antenatal care and intrapartum care by a single designated midwife, with immediate inpatient postnatal care provided by hospital core midwives; after discharge, the postnatal care is picked up again by the named carer who provided the antenatal and intrapartum care. Does this still constitute 'CODE 5 Whole duration of maternity period—antenatal, intrapartum and postpartum'? Reviewing the definitions provided in the data standards and following advice from the MaCCS Working Party, it was determined that both of these scenarios still constituted continuity of carer, particularly from the perspective of the women in those models.

Some models of 'Shared care' were also inconsistently coded as lacking continuity of carer, with some respondents not taking into account that—outside of visits women made to the hospital (maybe only 1–3 antenatal visits)—they had continuity of carer with their GP/GP obstetrician or privately practising midwife. At a minimum, these models should have continuity of carer in the antenatal period, and validation rules built into future data collection software should prevent users from recording anything less.

It was clear from some of the narrative descriptions of models of care at some smaller rural/regional hospitals that continuity of carer was possible in outpatient clinic models due to having only a small number of midwives and obstetricians. In these models, continuity of carer was not provided necessarily in the design of the model but due to staffing circumstances. When there are only 2 midwives and 1 GP obstetrician available, continuity of carer can happen by default for most women seen in the model. This highlights the point that just because a model of care is not in an MMC that is typically considered to provide

continuity of carer throughout the maternity period (such as MGP models), this does not preclude it from happening.

The converse of that scenario is revealed by the fact that 1 model classified itself as a 'Midwifery group practice caseload model' but did not provide any continuity of carer. In this model, the midwives work in groups of 3 and rotate a particular role in blocks of 4 days (24 hours)—with 1 midwife on call for births, 1 on days off and 1 on antenatal and postnatal. They are all employed on an annualised salary, do not work shifts and self-manage their workload (according to the definition) but they do not work as primary and back-up pairs. Because of this, women may see any 1 of the 3 midwives for their visits, birth and postnatal care and the caseload is technically shared by all 3 midwives. Despite the fairly close adherence to the definition of 'caseload' and despite its name and the employment arrangements of the midwives, this model should potentially be classified as 'Team midwifery' because a defining characteristic of midwifery caseload care is the provision of continuity of carer.

The structure of the MaCCS presumes that all maternity models provide care throughout the whole antenatal, intrapartum and postnatal period for most women. However, some of the responses to this and other data elements revealed that some models of care may start only from approximately 36 weeks gestation or may stop when labour starts. For 1 'Midwifery group practice caseload model', care started for remote women who came to town at approximately 36 weeks gestation for 'sit down'. Care was then provided by a designated midwife for the remainder of the antenatal period, intrapartum care and postnatal care until the woman went back to her remote community where further postnatal care was provided by the remote area midwife/nurse. In classifying this model, none of the options would tell the full story. If the majority of the antenatal period is considered, these women may not have any continuity of carer up until 36 weeks (meaning 'CODE 6 No continuity of carer' would be correct); however, from when they enter the MGP model at 36 weeks until about 4–5 days after birth, they have full continuity of carer (meaning 'CODE 5 Whole duration of maternity period' would be correct). But if CODE 5 were used, the fragmented care the women had received up until 36 weeks would be ignored and it would appear as though they had continuity of carer through the whole antenatal period. If CODE 6 were used, the continuity of carer that they receive from 36 weeks (which often involves daily visits when the women come for 'sit-down') would not be acknowledged. Technically, these women are not changing models of care as most of them receive their earlier antenatal care in their remote communities (which is coded into the values for *Expected setting for an antenatal care visit*), but then all change to the MGP when they are sent to town for the end of the pregnancy and birth. This is a single model of 'Remote area maternity care'. Until there is a real-time electronic pregnancy record that can capture movements between models of care when they happen (so that this type of model could be split), it is likely and also appropriate that the characteristics of the MGP model will be recorded in the classification, including 'CODE 5 Whole duration of maternity period', as, from the midwives' perspective, that is what they are providing. During early development of the MaCCS, some consideration was given to including a data element defining when care in a model began; however, the expert consensus was there would be too much variation between individual women in a model of care that would reduce the quality of the data and therefore make the data element of little value.

This predicament is similarly experienced for some of the high-risk models of care where many women do not enter the model until late in pregnancy when complications arise. From that point, they may receive one-on-one care from a designated carer. Some respondents

were unsure of how to code these models as the wording of many of the data elements, including *Extent of continuity of carer*, is based on the premise that the model is available for the entire antenatal to postnatal period. As familiarity with the MaCCS develops and users understand that the classification is about the intent of the model for the majority of women in it rather than trying to accommodate every variation for every woman, these issues should abate.

Recommendations

1. Addition of an introductory statement at the beginning of the Guide for Use for *Extent of continuity of carer* describing the difference between continuity of *care* and *carer*.

2. The use of decision-rules in a future data collection software tool to prevent the use of the value 'CODE 5 Whole duration of maternity period' for *Extent of continuity of carer* for models of care that have *Profession of designated maternity carer* coded as 'CODE 13 Multidisciplinary team'.

3. The use of decision-rules in a future data collection software tool to prevent the use of the value 'CODE 6 No continuity of carer' for models that are 'Shared care'.

4. The use of decision-rules in a future data collection software tool to prevent the use of any value other than 'CODE 6 No continuity of carer' for models that are 'Team midwifery'.

5. The use of pop-up alerts in a future data collection tool when users select any codes other than 'CODE 6 No continuity of carer' to remind them that the definition relates to having a single named carer for the majority of the care period and not a small team.

6. A focus of user training during the MaCCS implementation should be on understanding the definition of data elements such as *Extent of continuity of carer* where there is either a clear lack of understanding or confusion with a similar concept (in this case continuity of *care*).

7. Addition of a DSS-specific instruction that if the value for the *Major Model Category* is 'CODE 1 Private obstetrician (specialist) care', 'CODE 2 Private midwifery care' or 'CODE 9 Midwifery group practice caseload care', the value for *Extent of continuity of carer* must be recorded as 'CODE 5 Whole duration of maternity period—antenatal, intrapartum and postpartum'.

4.1.5 Planned collaborative maternity carer

This section relates to the following data element. More detail can be found at Appendix B.

Planned collaborative maternity carer

The profession of other recognised and named collaborative maternity care professionals in a maternity model of care.

Errors

The most substantial error in completing this data element was that participants did not follow the DSS-specific instruction not to repeat the *Profession of designated maternity carer*:

> Do not code the profession of the designated maternity carer as this is identified in a different related data element.

In total, 71 models repeated the same profession of the designated carer for *Planned collaborative maternity carer* (33%). As well, there is a DSS-specific instruction that if the *Profession of designated maternity carer* was 'CODE 12 Shared care', the profession of the carers should be coded in *Planned collaborative maternity carer*. Of the 19 models that had correctly coded 'CODE 12 Shared care' for *Profession of designated maternity carer*, 9 (47%) did not correctly code the collaborative carers (an additional 5 models had CODE 12 but this was an incorrect value for the designated carer).

The other area that contributed to errors was that some participants did not follow the definition of a 'planned role' in the model and coded a large number of planned collaborative carers who would have been involved in the model only on an ad hoc basis for women who needed it. For example, a model that was not for a particular target group was described as follows:

> Pregnancy care is shared between an affiliated GP and midwives from the clinic. You will generally see the same midwife when you attend the clinic. If the need arises you will be referred to the Doctor's clinic.

For this model, the respondent had selected many professions such as 'CODE 8 Maternal–fetal medicine subspecialist', 'CODE 14 Perinatal mental health worker', 'CODE 15 Other allied health practitioner', 'CODE 16 Medical specialist other than obstetric' as well as 'CODE 1 Specialist obstetrician—public' and 'CODE 7 General practitioner' and failed to code the midwives in the model. It is highly unlikely from the narrative description of the model that these are all professions 'that have a planned role within a model of care for all women in the model' as per the data standards.

Many public hospital maternity models that were described as a type of 'clinic' model led by obstetricians did not select 'CODE 4 Midwife—public' for *Planned collaborative maternity carer*. Similarly, some models of care that did not have a medical professional coded as the *Profession of designated maternity carer* or *Planned collaborative maternity carer* still coded a value for *Planned scheduled medical visits* (at least 16 models). If medical visits are planned within a model, it is expected that there is a medical professional (either obstetrician or GP) who has a planned role in the model.

Discussion

Many of the errors for this data element can be avoided by having decision-rules built into future data collection software that enforce the DSS-specific instructions; that is, preventing the recording of the same value entered for *Profession of designated maternity carer*, and reminding respondents to enter the professions involved if 'CODE 12 Shared care' was the value of *Profession of designated maternity carer*. The data standard does not currently require this instruction when 'CODE 13 Multidisciplinary team' is used and it would be beneficial and consistent if this were added.

The definition in the data element for *Planned collaborative maternity carer* does not sufficiently explain that the carer must have a formal role built into the model rather than seeing women referred to them on an 'as needed basis'. This information is contained further into the data standards in a DSS-specific instruction. This was a requirement of the AIHW MCU so that the data element could be used by others who may not require this restriction. To ensure that respondents follow the more prescriptive instruction required for the MaCCS, the future data collection tool should highlight this information. If more than 2 professions are selected, a pop-up alert could reinforce the message further and ask the user whether all these carer types had a defined and formal role in the model for most women.

Some respondents may not have coded particular professions as collaborative carers if they determined that it was not a single named person who was providing the care, rather any number of people of that professional type. For example, the respondents who did not code midwives as collaborative carers in public hospital models that had one of the medical practitioner codes or 'CODE 12 Shared care' for *Profession of designated maternity carer* may have left this code off thinking that any number of hospital midwives could be involved in the care. It would be expected that 'CODE 4 Midwife—public' should be coded for virtually all models of care that take place in a public hospital (if they are not already coded as the designated carer). This is because midwives have a formal role in care provision in the intrapartum and postnatal periods (if not also the antenatal), even if it is not a single named carer. The same cannot be said of any other of the values for this data element. The use of a validation rule in the future data collection software to flag an alert when 'CODE 4 Midwife—public' is not used could increase the quality of the data entered. Similarly, if a model of care has a number entered for *Planned scheduled medical visits* but no medical professional code in either of the carer data elements, an alert should be raised to correct this before the record can be saved.

Feedback on *Planned collaborative maternity carer* was received from 12 surveys, with 17 suggestions in the 'Other' category.

Some feedback for this data element indicated confusion over whether or not to include 'CODE 1 Specialist obstetrician—public' if the obstetrician did not necessarily see the women but had an established role in case review or in supporting a midwifery-led model. This would be considered as meeting the definition of the data element as the obstetrician has 'a planned role within a model of care for all women in the model' even though he or she may not necessarily be providing physical clinical care. If, however, a midwifery-led model of care did *not* have a formal relationship with an obstetrician to provide collaborative case reviews (consulting with a medical practitioner only when needed who then did not have any further role in the model), this would not meet the definition. An additional statement could be added to the DSS-specific instructions that the role may not necessarily include clinical care directly with the women in the model but there is an established formal relationship between the designated carer and the collaborative carer type, with a formal role for the collaborative carer.

The Guide for Use for both *Planned collaborative maternity carer* and *Profession of designated maternity carer* has explanatory information for a number of the different codes but not all. Feedback from 1 respondent requested guidance on the difference between 'CODE 9 Aboriginal maternal infant care practitioner' and 'CODE 10 Aboriginal health practitioner'. This additional information, including other terms by which they are known, will be added to the Guide for Use for this value set.

Although there were 17 suggestions for 'Other' values, most could be fitted into existing values. For example, dietician, physiotherapist, social worker and diabetic educator could all be put under 'CODE 15 Other allied health practitioner'. There was 1 suggestion provided by multiple respondents: 'Public hospital medical officers'. This does not currently fit under 'CODE 1 Specialist obstetrician—public' or, really, under 'CODE 16 Medical specialist other than obstetric'. Many of the narrative descriptions also referred to care being provided by 'junior doctors' and 'RMOs'. Following advice from the MaCCS Working Party, it is recommended to add a value for 'Public hospital medical officers'.

Recommendations

1. The use of decision-rules in a future data collection software tool to enforce the DSS-specific instruction to prevent recording the same value in *Planned collaborative maternity carer* that was entered for *Profession of designated maternity carer*.

2. The use of decision-rules in a future data collection software tool to prompt respondents that if 'CODE 12 Shared care' was the value of *Profession of designated maternity carer*, they must enter the professions providing that shared care in *Planned collaborative maternity carer*.

3. Adding an additional instruction into the Guide for Use for *Planned collaborative maternity carer* for 'CODE 13 Multidisciplinary team' to be consistent with the instruction for CODE 12.

4. Highlighting the DSS-specific information regarding the 'planned' nature of the carer in the model (rather than on an 'as needed' basis) in the data element in the future data collection tool; if more than 2 professions are selected, a pop-up alert should reinforce the message further and ask the user whether all of these carer types had a defined and formal role in the model for most women.

5. The use of a validation rule in the future data collection software to flag an alert when 'CODE 4 Midwife—public' is not selected for *Planned collaborative maternity carer* (when it is also not the designated carer) in any public hospital model of care.

6. The use of a validation rule in the future data collection software that if a model of care has a positive value recorded for *Planned medical visits indicator* but no medical professional code in either of the carer data elements, the record cannot be saved until a code is entered.

7. Adding an additional statement to the DSS-specific instructions that the role of the *Planned collaborative maternity carer* may not necessarily include clinical care directly with the women in the model but there must be an established formal relationship between the designated carer and the collaborative carer type, with a formal role for the collaborative carer.

8. Adding explanatory information to the Guide for Use for the values of 'CODE 9 Aboriginal maternal infant care practitioner' and 'CODE 10 Aboriginal health practitioner' to assist in differentiating them.

9. Adding a value for 'Public hospital medical officer' for *Planned collaborative maternity carer*.

4.1.6 Planned transfer for intrapartum care and birth indicator

This section relates to the following data element. More detail can be found at Appendix B.

Planned transfer for intrapartum care and birth indicator

Do all women in this model of care need to be transferred to another location prior to labour for intrapartum care and birth?

Errors

Interpreting this data element was problematic for some participants, with some substantial data quality issues. It was not expected that many models of care would code 'Yes' to *Planned transfer for intrapartum care and birth indicator*. This was because it was predominantly designed for remote models of care, where women have to leave their remote communities late in pregnancy to stay in a larger town or city for intrapartum care, often waiting there for

a number of weeks before labour. However, some participants interpreted the data element to mean that if antenatal care was provided in the community outside of the hospital (such as at an outreach clinic, clinician's private rooms, community health centre et cetera)—even if in the same suburb or surrounding areas—this meant all women had a planned transfer for birth.

Of the 25 models that had coded 'Yes' for this data element, 13–16 of them are likely to have done so in error (52–64%). Four (4) of these models selected full continuity of designated carer (not likely if women are moving areas for intrapartum care), 4 were classified as 'GP obstetrician care' and 3 were 'Public hospital high risk care'. Using the narrative descriptions, the MMC and the extent of continuity of designated carer, these errors could be identified.

Discussion

Feedback on *Planned transfer for intrapartum care and birth indicator* was received from 11 surveys and there was no 'Other' category for this data element.

The use of the word 'transfer' confused some respondents. The definition in the data standards does not make it clear that this refers to women moving to another town to await labour and birth:

> An indicator of whether a maternity model of care requires that all women be transferred to another location prior to labour for intrapartum care and birth, as represented by a code.

Based on the definition alone, this could apply to any model of care where the antenatal care was not provided at the hospital where the woman would give birth, such as when antenatal visits occur in a private provider's rooms, a community-based clinic or even at home.

During the consultation and development stage of the MaCCS, the intention was to have a data element that would assist in identifying remote models of care where a woman had to travel a considerable distance to birth and would potentially be separated from her family and community. Several different data items were attempted, with none being ideal. The final outcome is the data element presented here. Given the extreme error rate and the feedback on this data element (indicating it is not well understood), it will be necessary either to completely reword it or to remove it altogether. Some respondents also expressed difficulty in answering this data element correctly if the model cared for both women from the local area and women brought for 'sit down' from remote communities.

Advice was sought from the MaCCS Working Party about whether to retain an item for reporting models of care that required women to leave their local communities for birth. The Working Party endorsed the replacement data item described below.

Box 4.1: Replacement data item for *Planned transfer for intrapartum care and birth indicator*

Routine relocation for intrapartum care and birth indicator

An indicator of whether a maternity model of care requires women to be routinely relocated from their community to another location prior to labour for intrapartum care and birth, as represented by a code.

(continued)

Box 4.1 *(continued)*: Replacement data item for *Planned transfer for intrapartum care and birth indicator*

Permissible values:

CODE 1   Yes

CODE 2   No

Guide for use:

CODE 1 Yes

This code is to be used if the intention of the model of care is that all women cared for in the model require routine relocation from their communities to another location prior to labour for intrapartum care and birth. While some women may give birth prior to relocation (unplanned), this is not the intention of the model. Do not use this code if the model of care only requires transfer of some women with increased risk factors to attend a hospital of higher role delineation (for example, from a Level 4 facility to a Level 6 facility due to complications of pregnancy).

For example, CODE 1 for any model of care where women who reside in a rural or remote community where there is no accessible appropriate birth facility are routinely relocated to a larger town or city some weeks prior to the birth.

CODE 2 No

This code is to be used for all other models of care where the intention of the model is that women can remain in their general area for birth and the model does not require women to leave their communities prior to the onset of labour for intrapartum care and birth.

This change may reduce the number of errors when respondents apply this data element to shared care/combined care models or those providing community-based antenatal care visits.

Recommendation

Replace the existing data element *Planned transfer for intrapartum care and birth indicator* with:

> *Routine relocation for intrapartum care and birth indicator*
>
> An indicator of whether a maternity model of care requires women to be routinely relocated from their community to another location prior to labour for intrapartum care and birth, as represented by a code.
>
> Permissible values:
>
> CODE 1 Yes; CODE 2 No

4.1.7 Expected setting for an antenatal care visit

This section relates to the following data element. More detail can be found at Appendix B.

Expected setting for an antenatal care visit

The expected setting for an antenatal care visit that is offered within this model of maternity care.

Errors

There were relatively few errors with this data element, with the main issue being with 'Shared care' models not having a hospital location selected in addition to 'CODE 3 Clinicians' private rooms'. Some respondents did not read the definition for 'CODE 3 Clinicians' private rooms', which includes GP surgeries; instead, they selected 'Other' and then specified GP rooms.

In 1 model, the narrative description stated that 2 antenatal care visits occurred in the home, but this location was not selected for the data element and, in 1 combined care model, 'CODE 6 Home' was selected even though the narrative description indicated that all antenatal visits were at the hospital.

During development of the data standards, it was suggested that some locations from the value set for this data element (also used in the other data elements for setting of care) be excluded. This included 'CODE 8 Birth centre—in hospital', 'CODE 9 Hospital—excluding birth centre' and 'CODE 10 Hotel or hostel', as these were unlikely to be used for antenatal visits. In particular, it was thought that 'CODE 1 Hospital clinic onsite' would be used for all hospital-based antenatal visits. The pilot data included 12 models that provided antenatal care visits at 'Hospital—excluding birth centre'; 5 of these did not also select one of the hospital clinic values. It is not possible to tell from the data whether this was in error or whether the care is provided in the labour/delivery ward as opposed to a 'clinic' setting. Five models provided antenatal care visits in a 'Hotel or hostel' and 12 indicated antenatal visits occurred in a 'Birth centre—in hospital'.

Discussion

The use of decision-rules in any future web-based data collection tool—so as to ensure that models of care assigned to either the MMC 'Shared care' or having a designated maternity carer as 'CODE 12 Shared care' have selected one of the hospital settings (CODES 1, 2, 7, 8 or 9) in addition to 'CODE 3 Clinicians' private rooms'—will reduce many of the errors in this data element. As well, it may be beneficial to add a query alert when 'CODE 9 Hospital—excluding birth centre' is used to check whether the user is referring to a clinic.

Feedback on *Expected setting for an antenatal care visit* was received from 11 surveys, with 11 suggestions in the 'Other' category.

The same value set is used in the data elements for setting of antenatal care, birth and postnatal care and has a Guide for Use only for 2 values (CODE 3 and CODE 9). Some feedback indicated confusion about the definition for 'CODE 2 Hospital clinic—outreach', 'CODE 4 Community facility' and 'CODE 5 Aboriginal Community Controlled Health Organisation' facility. To assist users of the MaCCS, it may help to provide further information in the Guide for Use on differentiating these values.

Other feedback provided for this data element points to users' forgetting that the MaCCS is not about capturing data at the individual level but about the *intention* of the model of care for the majority of women for which it is designed. This data element is about the 'expected' setting in the model. While it is acknowledged that some models of care will accommodate providing care to women wherever they need it (including in local parks), this is not the 'expected' setting for most visits. Similarly, some women in a model of care may require antenatal admission or may deviate from the usual pathway intended by the model, but this is not necessary to capture through the MaCCS. The feedback from 1 respondent in relation to women in private midwifery care (Eligible Private Practice Midwives) who may come in

for some hospital visits or be admitted is an example of this. If women in that model do not usually receive antenatal care at a hospital, it is not necessary to select one of those values for this data element. However, if a 'Shared care' model includes 2 hospital visits, this should be included.

Several respondents suggested adding another value for this value set to cover women in detention (including in prison, detention centres or secure mental health facilities). Expert advice was sought from the MaCCS Working Party, which did not support adding an additional value at this time.

The last relevant comment related to the difficulty in answering this data element (and others) for a model of care for postnatal care only. There are similar comments on other data elements but for models that provide antenatal care only. These models of care that do not cover all stages of pregnancy and birth were not considered when the MaCCS was developed. Expert advice was sought from the MaCCS Working Party as to whether an additional data element needed to be created to capture whether the model of care covers all antenatal, intrapartum and postnatal care; the members did not believe it was necessary. This issue is further discussed later for the data element *Expected time of model completion after birth event*.

Recommendations

1. Decision-rules to ensure that models of care assigned to either the MMC 'Shared care' or having a designated maternity carer of 'CODE 12 Shared care' have selected 1 of the hospital settings (CODES 1, 2, 7, 8 or 9) as well as 'CODE 3 Clinicians' private rooms'.

2. The use of a validation alert when 'CODE 9 Hospital—excluding birth centre' is used without CODE 1 or CODE 2 to check whether the user is referring to a hospital 'clinic'.

3. Additional Guide for Use information included for the code set to provide definitions for 'CODE 2 Hospital clinic—outreach', 'CODE 4 Community facility' and 'CODE 5 Aboriginal Community Controlled Health Organisation facility'.

4.1.8 Expected setting of birth

This section relates to the following data element. More detail can be found at Appendix B.

Expected setting of birth
The expected setting for a birth offered by this model of maternity care.

Errors

There were very few errors detected for this data element using the narrative description of the model and/or the MMC assigned. Although 12 models offered birth at 'CODE 6 Home', 4 did not select any additional locations, such as 'CODE 9 Hospital—excluding birth centre', despite mention of the option to birth at hospital in the narrative description. While models of care aimed at a 'planned homebirth' intend for all women to birth at home, a large proportion of women may need to transfer to hospital for birth (this may be an intrapartum transfer or a known, planned antenatal decision to birth in hospital). As well, many models of care that include birthing at home also provide women with the option of birthing in either a birth centre or a hospital setting.

The other errors detected relate to respondents not correctly interpreting the definition for 'CODE 8 Birth centre—in hospital' and 'CODE 9 Hospital—excluding birth centre'. Three

models were identified that had selected 'Other' and then described a birth suite or labour ward (CODE 9 should have been used) and 2 models selected 'CODE 8 Birth centre'—in hospital for hospitals that do not have a birth centre. One 'high-risk clinic' model had multiple values for *Expected setting of birth*, including 'CODE 5 Aboriginal Community Controlled Health Organisation facility' and 'CODE 6 Home', even though the narrative description stated that birth occurred in the hospital birth suite. These locations may have been selected because the narrative description also mentioned that women from other models of care may attend the clinic as well (for additional care for conditions such as gestational diabetes); those models may include homebirth. It is unlikely, however, that women 'crossing over' into the high-risk model would then be able to birth in either of these external low-risk settings.

Discussion

With so few errors for this data element, little can be suggested to improve the data standard for *Expected setting of birth*. Examining the models of care that offered 'CODE 6 Home' as an *Expected setting for birth*, it would be beneficial to add a decision-rule to future software to confirm whether there are additional settings for birth if CODE 6 is the only one selected.

Feedback on *Expected setting of birth* was received from 4 surveys, with 4 suggestions in the 'Other' category.

None of the suggested feedback or 'other' values can be incorporated as they reflect more the respondents' lack of reading the data standards than inadequate information or instructions.

As for the previous data element for the setting of antenatal care, some discussion with the MaCCS Working Party will be required on whether there needs to be a mechanism for identifying models of care that do not cover the maternity continuum. If so, data elements such as *Expected setting of birth* may require a 'Not applicable' value.

Recommendation

The use of a validation alert when 'CODE 6 Home' is used without CODE 7, 8 or 9 to confirm whether women also have another option for birth setting.

4.1.9 Expected setting of postnatal care

This section relates to the following data element. More detail can be found at Appendix B.

Expected setting of postnatal care
The expected setting for postnatal care that is offered within this model of maternity care.

Errors

Some respondents seem to have been confused about what constitutes 'postnatal care', which resulted in a number of errors. These errors were predominantly confined to four areas: (i) 'CODE 6 Home' not selected when the narrative description indicated women could receive home visits after hospital discharge, (ii) selecting 'CODE 3 Clinicians' private rooms' or 'CODE 1 Hospital clinic—onsite' due to having a 6-week check-up, (iii) not including 'CODE 9 Hospital—excluding birth centre' for models offering hospital birth, and (iv) using 'Other' to describe a postnatal ward.

Some respondents were unsure of whether to include 'domiciliary midwifery' or 'early discharge' home visiting programs as part of the model of care, so did not include 'CODE 6

Home' as a value for *Expected setting of postnatal care*, even if the option was included in the narrative description. At least 11 models of care were described as having some sort of home visiting program available to women but did not select this option as a value.

During development of the data standards, it was not expected that postnatal care would be provided in a hospital 'clinic' setting as this was more likely to be a 6-week check-up than the ongoing daily postnatal care intended in the data element. The lack of a specific definition of 'postnatal care' may have confused some respondents. A total of 49 models indicated that postnatal care was provided in an onsite or outreach hospital clinic (CODE 1 and/or CODE 2) and/or clinicians' private rooms (CODE 3). These were generally 'outpatient clinic' models or private/GP models and this setting would represent the setting for the postnatal check-up at 6 weeks postnatal rather than the setting for immediate postnatal care.

Due to the lack of a clear definition for 'postnatal care', other respondents did not include the hospital setting as a value, assuming that the question was referring to the location of postnatal care after leaving the hospital. Almost one-quarter of models completed in the pilot did not select an inpatient setting for postnatal care (CODES 7, 8 or 9) even though these were locations for birth.

When examining both *Expected setting of postnatal care* and *Expected time of model completion after birth event*, further errors were identified by looking at models that were reported to end at discharge. Of the 26 models that reported to be completed as 'CODE 1 At the end of the birth event', half selected an external location for *Expected setting of postnatal care*; 9 models had postnatal care at home, 3 in a hospital clinic and 1 in clinicians' rooms.

Discussion

The aim of this data element was to capture the scope of settings where women receive their postnatal care within a model but, in particular, to identify whether a model of care provided postnatal visits in the home.

Feedback on *Expected setting of postnatal care* was received from 20 surveys, with 12 suggestions in the 'Other' category. The feedback illustrated that there is some confusion about when postnatal care starts and ends, about whether to include separate home visiting programs and 6-week visits and about the fact that the setting for postnatal care is expected to include at least the same setting as that for birth. Given this, it may be more beneficial to remove this data element altogether and replace it with another that will capture whether the model provides access to a postnatal home-visiting program (either as a part of the model or as an option to access a 'domiciliary midwifery program' or 'early discharge program'). The definition will need to include not only visits in the 'home' but also any residential facility so as to include women from remote areas who may be staying in a hotel or hostel during the postnatal period. While some models may offer postnatal 'clinics', capturing all of the settings for postnatal care may not be as useful as identifying which models provide postnatal visits at home. The MaCCS Working Party provided expert advice, with an agreement to replace this data element.

Recommendation

Remove the data element *Expected setting of postnatal care* and replace with the following new data element.

> **Box 4.2: Recommended replacement data item for *Expected setting of postnatal care***
>
> *Postnatal visits in a residential setting indicator*
>
> An indicator of whether a model of maternity care provides postnatal visits in a residential setting, as represented by a code.
>
> Permissible values:
>
> CODE 1   Yes
>
> CODE 2   No
>
> Guide for use:
>
> CODE 1 Yes
>
> This code is to be used if a model of maternity care provides women with access to postnatal visits by a maternity care health professional in a residential setting such as the woman's own home, a hotel or hostel. These visits may be provided by the designated maternity carer who has provided care throughout the antenatal and/or intrapartum
>
> period or the visits may be provided as part of a 'domiciliary' or 'early discharge' midwifery home visiting program.
>
> CODE 2 No
>
> This code is to be used if a model of maternity care does not provide women with postnatal care in a residential setting and postnatal visits are only provided in a hospital, clinicians' private rooms or a community/health-care facility following discharge from the birth setting.

4.1.10 Individual or group care

This section relates to the following data element. More detail can be found at Appendix B.

Individual or group care
Whether this model of maternity care offers antenatal and/or postnatal care in individual or group sessions.

Errors

Based on a review of the narrative descriptions of the different models as well as the MMC and carer types, it is believed there is a high level of error in reporting this data element. Of the 51 models that reported either 'CODE 2 Group sessions' or 'CODE 3 Combination of individual and group sessions', only 5 are believed to meet the correct definition. Respondents were reporting 'CODE 3 Combination of individual and group sessions' when antenatal education sessions were provided at the hospital to groups of women (and their partners) or if there were specific group education classes for pregnancy-related conditions such as gestational diabetes.

Discussion

Feedback on *Individual or group care* was received from 9 surveys and there was no 'Other' category for this data element.

The Guide for Use for this data element states:

> Group sessions must include both education and clinical care in a group setting and does not refer to 'parenting classes' or 'antenatal education classes' only.

However, many respondents reported group sessions based solely on the provision of antenatal education classes. Although the data quality for reporting it was low, this data element is too important in the DSS to consider removing it. The provision of maternity care in a group model (such as through the *Centering Pregnancy®* model) is not yet widespread in Australia; however, there is increasing evidence that it can improve outcomes for women and babies, particularly when targeted at vulnerable groups of women (Ickovics et al. 2003; Palmer et al. 2010; Zielinski et al. 2014).

To address the high error rate, additional explanatory information could be added to the future data collection software tool on the required content of group sessions. As well, an alert could be added to confirm the selection of 'CODE 2 Group sessions' or 'CODE 3 Combination of individual and group sessions' and to remind the respondent that this is not for 'parenting classes' or separate education sessions.

Recommendation

The use of a validation alert when 'CODE 2 Group sessions' or 'CODE 3 Combination of individual and group sessions' is selected to confirm whether the group sessions are more than 'parenting classes' or separate education classes and to remind respondents that they should be group clinical visits that incorporate both physical examinations as well as group-driven discussion/education.

4.1.11 Planned scheduled medical visits

This section relates to the following data element. More detail can be found at Appendix B.

Planned scheduled medical visits
The total number of planned visits with a medical practitioner scheduled for all women in this model of maternity care.

Errors

Although the definition for this data element specified 'planned visits with a medical practitioner', some respondents appeared to report the total number of antenatal visits with any maternity carer (doctor or midwife). For example, some models with the designated maternity carer as midwife (including *MGP caseload* models) reported as many as 10 visits for this data element. Eleven models of care reported between 1 and 10 planned scheduled medical visits without having a medical professional as either the designated maternity carer or a collaborative carer, despite the data standard's including a conditional obligation that this was required. If a model of care is designed to have planned medical visits for all women (as opposed to referring women to a doctor only as needed), at least one of the data elements identifying the profession of the maternity carers must be a medical professional.

The other error occurred in relation to some GP 'Shared care' models that had reported zero (0) planned scheduled medical visits, although described a schedule of visits with the GP and at the hospital.

Discussion

Feedback on *Planned scheduled medical visits* was received from 47 surveys and there was no 'Other' category for this data element.

This substantial feedback on the difficulty in completing this data element was due to the variability in the number of visits women receive by a medical professional. Respondents

were also unclear whether the number they reported was just for medical visits or for all antenatal visits, including those with midwives. The data quality for this data element is likely to be very low given this confusion and the variability within a model. As such, it is recommended to change this to an indicator item rather than reporting a number.

If respondents report that there are planned scheduled medical visits, any future data collection tool should validate that one of the maternity care providers (either the designated carer or a collaborative carer) is a medical professional. It is important that respondents understand that this data element (even if changed to an indicator item) is recording planned visits with a doctor as opposed to visits only when certain women require them. Identifying whether a model of care includes a minimum number of medical appointments for all women could be an important differentiating characteristic when evaluating outcomes between different models of care and it is suggested that a data element reporting this characteristic is still included in the DSS.

Recommendations

1. Change the data element *Planned scheduled medical visits* to an indicator item to report whether there are a minimum number of planned scheduled medical visits for all women in a model of care. The new data element suggested is described below:

Box 4.3: Recommended replacement data item for *Planned scheduled medical visits*

Planned medical visit indicator

An indicator of whether there are a minimum number of planned visits with a medical practitioner scheduled for all women in a model of maternity care, as represented by a code.

Permissible values:

CODE 1   Yes

CODE 2   No

Guide for use:

Some models of care include a minimum number of scheduled or planned visits to a medical practitioner for all women. These are planned as part of the model of care and not visits to a doctor as required for some women. Although the number of visits for individual women may vary depending on need, some models will have a minimum number of visits for all women (even 1 visit).

CODE 1 Yes

This code is used if a model of maternity care includes a schedule of planned visits to a medical practitioner. The number of visits to a medical practitioner may vary, depending on the woman's individual needs; however, there is a minimum schedule of planned visits for all women intended within the model of care. These must be planned as part of the model of care and not referrals to a doctor as required for some women.

CODE 2 No

This code is used if a model of maternity care does not include a minimum number of planned visits to a medical practitioner. Women may still be referred to a doctor if needed but there is no minimum schedule of visits to a medical practitioner for all women included in the model of care.

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2. The use of decision-rules in a future data collection software tool to confirm whether the data elements *Profession of designated maternity carer* or *Planned collaborative maternity carer* have a value for a medical practitioner when *Planned medical visit indicator* is recorded as 'CODE 1 Yes'.

4.1.12 Additional remote or rural services offered indicator and Type of additional antenatal/postnatal remote or rural service

This section relates to the following data elements. More detail can be found at Appendix B.

Additional remote or rural services offered indicator
Are additional remote or rural services offered in this maternity model of care?

Type of additional antenatal/postnatal remote or rural service
The type of additional rural and remote antenatal/postnatal service provided in this maternity model of care

Errors

There were relatively few errors with this data element, with only 30 models indicating they provided additional remote or rural services. Although most of these models were in regional/remote areas and serviced remote communities, some were less so and may have incorrectly reported this data element. For example, 1 model reported a 'Home midwifery service' as an additional remote or rural service and several recorded their 'GP Shared care' model as being 'Community-based remote area clinicians'.

Although the data element *Type of additional antenatal/postnatal remote or rural service* is conditional on the *Additional remote or rural services offered indicator* being recorded as 'CODE 1 Yes', some respondents did not follow the instruction. One respondent recorded 'Yes' to the indicator but 'CODE 99 None' to *Type of additional antenatal/postnatal remote or rural service* while 3 models recorded 'CODE 2 No' to the indicator item and then selected some additional remote or rural services.

One model of care described 'virtual consultations at remote health centres' but did not record telehealth as an additional service.

Discussion

Although these data elements are relevant only to a small subset of models of maternity care, they are important data to capture to report on the availability of services specific to remote models of care. The use of decision-rules in a future data collection tool to enforce the conditional obligation of the 2 related data elements will reduce the errors considerably.

Feedback on *Additional remote or rural services offered indicator* and *Type of additional antenatal/postnatal remote or rural service* was received from 8 surveys, with 3 suggestions in the 'Other' category.

None of the suggestions for 'Other' values are recommended to add to the value set as they are not seen as additional services specific to remote or rural areas.

Recommendation

Functionality built into a future web-based data collection tool that includes decision-rules that would prevent errors relating to these conditional data elements.

4.1.13 Expected time of model completion after birth event

This section relates to the following data element. More detail can be found at Appendix B.

Expected time of model completion after birth event
The length of time after a birth event that this model of maternity care is expected to cease.

Errors

Respondents had difficulty completing this data element and many did not follow the Guide for Use in defining what the birth event was. The data standard specifies that:

> This data element is the equivalent to discharge from a model of care (not necessarily discharge from hospital).

> What is considered the end of a birth event will vary with the maternity model of care. For the purpose of this data element, if a model of care involves an inpatient stay a birth event is considered to end at discharge from hospital. If a model of care does not involve an inpatient stay then the end of a birth event is considered to be the time of birth.

Some models clearly stated in their narrative description that care ended at discharge from hospital but then reported a value other than 'CODE 1 At the end of the birth event', with many reporting 'CODE 2 1–3 days after the birth event'. There were also 13 models of care that reported *Expected time of model completion after birth event* as 'CODE 1 At the end of the birth event' but also reported the *Expected setting of postnatal care* to be a value other than the birth setting (home, clinicians' private rooms, hospital clinic). Of the 18 models that reported providing postnatal care for more than 6 weeks, 8 did not provide postnatal care at home, indicating that these models are almost certainly referring to the 6-week check as postnatal care.

As mentioned in the section for *Expected setting of postnatal care*, the lack of a definition for postnatal care resulted in some respondents including just the hospital period, others including domiciliary midwifery support programs and some including 6-week checks in their time period. Some models of care involving a GP or GP obstetrician as the designated maternity carer reported postnatal care continuing for more than 42 days as they continue to provide care to the woman and her family in their community (not what is meant by postnatal care). Almost one-quarter of public hospital maternity care models reported providing postnatal care for more than 1 week after the end of the birth event, with 5 models providing care for more than 4 weeks. Some of these models are likely to have defined postnatal care as being the 6-week check rather than ongoing regular visits during the 42-day period.

Discussion

A formal definition of what constitutes postnatal care is required to address many of the issues identified with this data element in the national pilot. The current definition for *Expected time of model completion after birth event* states:

> The length of time after a birth event that a model of maternity care is expected to cease, as represented by a code.

The difficulty for respondents is in deciding whether the postnatal care women receive after discharge is part of the model itself or is provided through a different program. Many models provide postnatal care only up until hospital discharge but women can then receive

home visits through a 'Midwifery Support Program' or a postnatal domiciliary care program, which though technically not a part of the model from which the woman has been receiving her care is open to all women at the hospital. Similarly, although not providing continuous postnatal care for the whole 6 weeks, many models of care include a single 6-week check-up after hospital discharge. Hence, technically, the model does not cease until 42 days after the birth event. Both these scenarios make it difficult to answer this data element and thus reduce the data quality due to inconsistent interpretation of the definition. It would be misleading to have the same answer for a model of care that provided regular home visits for 6 weeks by the same known carer and for a model that provided only a single 6-week check-up at the hospital outpatient clinic; however, under the current definition, this is possible and it is not what was intended by the data element.

Feedback on *Expected time of model completion after birth event* was received from 39 surveys and there was no 'Other' category for this data element.

The feedback also highlights the issue of some models of care providing care only for the antenatal period, with care in the model ending when labour starts. This is particularly relevant to some of the public hospital 'clinic' models and models targeted at specific groups of women such as Aboriginal and Torres Strait Islander women, where the model provides antenatal care only. In these models, intrapartum and postnatal care are provided through 'core' hospital midwives and either end at discharge or the postnatal care continues with home visits from the generic or 'mainstream' home visiting program. For these models of care, it is not possible to select an appropriate response to this data element.

Considering the issues identified with the related data element *Expected setting of postnatal care* and the suggestion to change this to *Postnatal visits in residential setting indicator*, the errors for *Expected time of model completion after birth event* may be reduced by changing it to *Expected length of time for postnatal visits in residential setting*. This would be conditional on a 'CODE 1 Yes' response to the new data element *Postnatal visits in residential setting indicator.* This would identify how long women received postnatal care at home and would allow models of care that offered ongoing postnatal visits for a specific time period to be differentiated from those offering a single check-up at the end of that same time period. The main purpose of the original data element was to identify for how long women were receiving planned continuous postnatal care and was intending to exclude one-off follow-up visits. Changing the data element reporting the setting for postnatal care to an indicator of home visits only may align better with the intent. With the changes to these 2 data elements, it would not matter whether the postnatal home visits were provided by the same model or through a 'mainstream' home visiting program (thereby removing that source of error). Further, if the visits are provided by the same designated carer as the earlier pregnancy care, this will still be captured through the existing data element *Extent of continuity of carer.*

The amended data element would also address the errors and feedback regarding differing lengths of stay for some women in a model. This is despite the specification in the Guide for Use that the time period starts from hospital discharge if there is an inpatient stay, as the time period starts from when the women are home, regardless of the length (or absence) of an inpatient stay. The confusion over the definition of a birth event would also be removed.

To ensure that the conditional obligation of the 2 replacement data elements is followed, the future data collection software tool should include decision-rules to require a value for *Expected length of time for postnatal visits in residential setting* when a positive response is recorded for *Postnatal visits in residential setting indicator* and to prevent a value being recorded if the answer is 'CODE 2 No'.

If the 2 related data elements are changed according to the above recommendations, the MaCCS would no longer capture all the different settings where postnatal care was provided or for how long women received care in a model. While these are valuable data, they are of less value than knowing whether and for how long women receive postnatal care at home (or other residential setting). As the pilot has demonstrated, there are important issues with the data quality of the draft data elements.

Recommendations

1. Remove the data element *Expected time of model completion after birth event* and replace with the following new data element:

Box 4.4: Recommended replacement data item for *Expected time of model completion after birth event*

Expected length of time for postnatal visits in a residential setting

The expected length of time a model of maternity care provides access to postnatal visits in a residential setting, as represented by a code.

Permissible values:

CODE 1   1–3 days

CODE 2   4–7 days

CODE 3   8–14 days

CODE 4   15–28 days

CODE 5   29–42 days

CODE 6   More than 42 days

Guide for use:

Code the appropriate value that represents the length of time that a model of care provides the majority of women with access to postnatal visits by a maternity care health professional in a residential setting, such as the woman's own home, a hotel or hostel. These visits may be provided by the designated maternity carer who has provided care throughout the antenatal and/or intrapartum period or the visits may be provided as part of a 'domiciliary' or 'early discharge' midwifery home visiting program that is separate to the model of care the woman had been in up until she gave birth.

Conditional obligation:

Reporting of this data element is conditional upon a 'Yes' response to the data element *Maternity model of care – postnatal visits in a residential setting indicator, Yes/No Code N*.

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2. The use of decision-rules in a future data collection tool to require a value for *Expected length of time for postnatal visits in a residential setting* when a positive response is recorded for *Postnatal visits in a residential setting indicator* and to prevent a value being recorded if the answer is 'CODE 2 No'.

4.1.14 Major Model Category

This section relates to the following data element. More detail can be found at Appendix B.

Major Model Category
Every model of care can be categorised into 1 of 10 Major Model Categories, based on their characteristics. Please review each of the MMC descriptions and indicate when asked to which category this model belongs.

Errors

Analysing the narrative descriptions, combined with the key defining data elements of *Profession of designated maternity carer*, *Midwifery caseload indicator*, *Extent of continuity of carer* and *Planned collaborative maternity carer*, enabled the accuracy of the MMC assignment for each model of care to be evaluated. Approximately 80% of the surveys were allocated the correct MMC (172/217), 16% were incorrect and the remainder were uncertain.

The accuracy of the MMC assignment varied between categories. 'Midwifery group practice caseload care' had the highest accuracy, with 97% of models correctly assigned. 'Other' was the least accurate, with all models being able to be assigned to an existing MMC. Figure 4.2 graphically represents the accuracy of each of the MMC assignments.

Figure 4.2: Accuracy of the MMC assignment
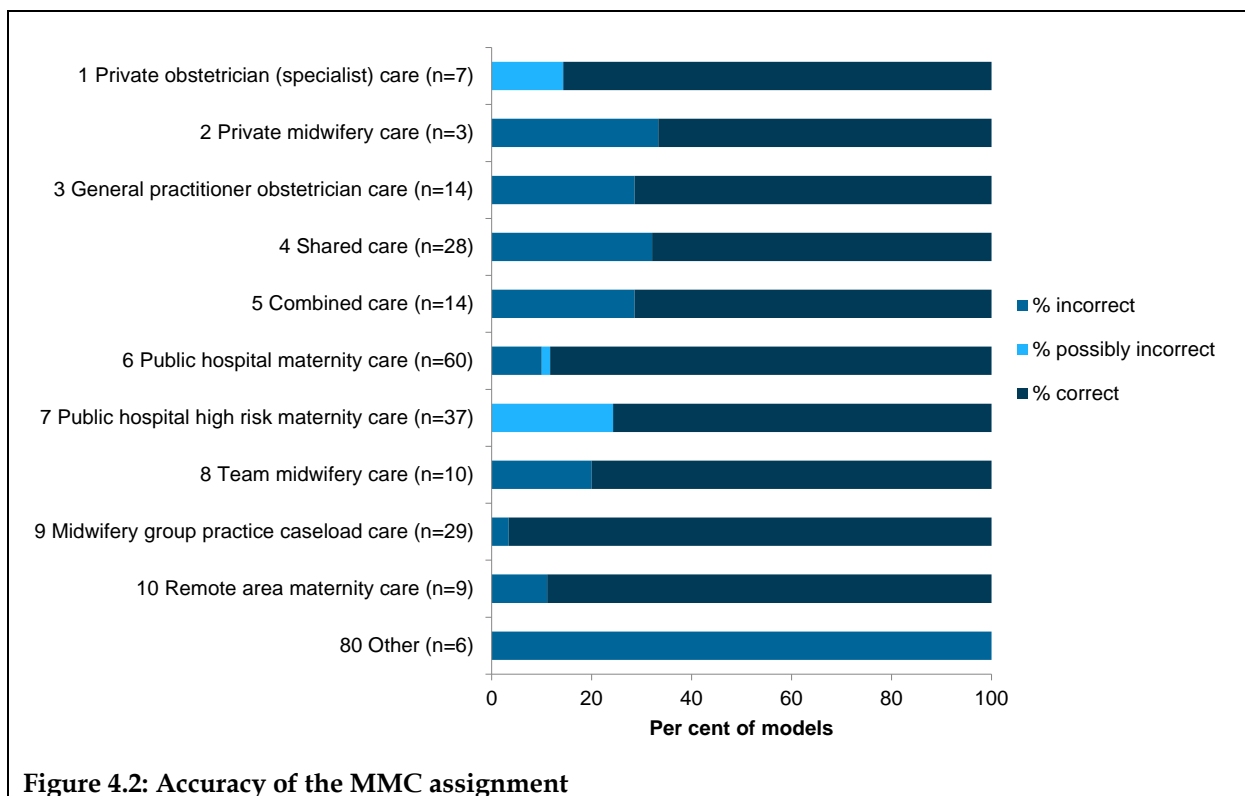
Many of the models of care assigned to the MMC 'Public hospital high risk maternity care' were specific-condition 'clinics', such as for women with diabetes and other endocrine disorders, bariatric models, women with breech presentation or 'next birth after caesarean section' clinics. The Guide for Use states that these types of models should be categorised as 'Public hospital maternity care'; however, given the number of respondents who considered these to be 'Public hospital high risk maternity care', the MaCCS Working Party will need to advise whether the Guide for Use should be changed. When looking at the maternity carers

involved in the models classified as 'high-risk maternity care', only 6 of the 37 models reported planned involvement of a 'Maternal–fetal medicine subspecialist', with none being the designated maternity carer. While conditions such as diabetes and obesity or having a breech presentation or next birth after caesarean require obstetric input or management and increase a woman's pregnancy risk, they are not generally considered as high-risk models.

The other MMCs that had more than a 25% error rate were, predictably, 'GP obstetrician care', 'Shared care' and 'Combined care'. Some respondents interpreted 'Shared care' or 'Combined care' more literally as being models that had care shared or combined between different professions within a hospital, such as midwives and doctors or a multidisciplinary team, rather than the formal definitions provided in the data standards. For example, 1 model classified as 'Shared care' was described as:

> [Model name] is midwifery-led model of care for normal risk women in [city]. Women receive their antenatal at the women's health clinic, and their intrapartum and post-partum care in the hospital and by midwives working in this team. If they are discharged early, they are referred to our extended midwifery service who visit them in their homes. Midwives can access obstetric medical staff, endocrinologist and other midwives if required.

This model should have been classified as 'Team midwifery care'.

Another model classified as 'Combined care' was described as:

> The Tuesday high risk clinic [is for women] who have any medical issues [and the] care givers are consultant obstetricians, midwives and physicians.

This model would have been more accurately classified as 'Public hospital high risk maternity care'.

The 4 models incorrectly classified as 'GP obstetrician care' should have been classified as 'Shared care' as there is an agreement between the GP and the hospital, with women attending a schedule of visits at the hospital and with midwives and/or doctors and hospital staff providing intrapartum and postnatal care. One (1) of these models with the *Profession of designated maternity carer* recorded as 'CODE 12 Shared care' was described as:

> Women who are suitable to be cared for by their GP and been seen by the obstetric team in the Antenatal clinic at their first visit, 28 and 36 week visit and at term.

Only 3 models of care were classified as 'Private midwifery care'; however, 1 of these was likely to be a coding error by the respondent as all responses to the data elements described the model as 'Private obstetrician (specialist) care'.

Two of the 10 models classified as 'Team midwifery care' should have been 'Midwifery group practice caseload care' as the care met all the criteria for a caseload model. However, the 1 model incorrectly assigned to 'Midwifery group practice caseload care' was better described as 'Team midwifery care'. This was because the team of 3 midwives, although employed on an annualised salary, shared a caseload of women between them, with each working a 4-day roster, either providing intrapartum care (including 24-hour on call for the 4 days), antenatal and postnatal visits, or being off duty for the 4 days. In this model, women are not allocated a 'primary' midwife and will see any and all of the 3 midwives. This reduces the extent of continuity of carer normally provided in a caseload model of care.

One in 10 of the models classified as 'Public hospital maternity care' would have been more accurately described by another MMC. Two of the models were 'Team midwifery care', 2

were 'Midwifery group practice caseload care', 1 was clearly described as a 'Shared care' model with a GP. The last incorrect classification was applied where the respondent had grouped multiple models offered at the hospital into one survey response, including an antenatal clinic that cared for local women, women from remote communities and women cared for in a 'Midwifery group practice caseload model'.

Discussion

For some MMCs, there are simple validation rules that can be used to prevent the assignment of an incorrect MMC. For example, some MMCs require a particular value for the data element *Profession of designated maternity carer*, such as 'CODE 4 Midwife—public' for 'Team midwifery care' and 'Midwifery group practice caseload care'. Other data elements that can be used to validate the MMC assignment include *Extent of continuity of carer*, *Midwifery caseload indicator* and *Planned collaborative maternity carer*. Some errors identified in assigning the MMC may be reduced by using decision-rules in a future web-based data collection tool to restrict the MMC value set from which a user can pick, based on values reported in other data elements. However, many of the errors could not be identified without a review of the narrative description provided in the survey.

Broader definitional issues need to be addressed to improve the accuracy of assigning the MMC 'Public hospital high risk maternity care'. Some respondents classified models of care to this MMC if the model was for women at an increased risk that required obstetric care, such as models for women with diabetes or obesity or women requesting a vaginal breech delivery or management of the next birth after caesarean section. The Guide for Use for *Major Model Category* currently advises that these models should be classified as 'Public hospital maternity care'. Given the number of errors of this kind, the MaCCS Working Party was consulted for advice on whether to change the Guide for Use for 'Public hospital high risk maternity care'. Members agreed to recommend additional instructions that this MMC is for models of care provided by multidisciplinary specialists for complex maternal, medical and fetal conditions and limited obstetric conditions. It is not to be used for specialised obstetric-led clinics such as those specifically for women with diabetes or with obstetric risk factors such as a high Body Mass Index.

To address errors in assigning the closely related MMCs of 'GP obstetrician care', 'Shared care' and 'Combined care', a number of validation decision-rules could be incorporated into the future data collection tool. This would include a validation of the values for *Profession of designated maternity carer* and *Planned collaborative maternity carer* as well. Pop-up alerts could also be used when any of these MMCs are assigned to confirm the definitional characteristics before recording the value (for example, asking the respondent to confirm that a 'Shared care' model involved an established shared care agreement between the community-based maternity carer and the hospital, including an agreed schedule of visits; otherwise, to consider the MMC 'Combined care'.

Feedback on *Major Model Category* was received from 6 surveys, with 6 suggestions in the 'Other' category.

One of the feedback comments identified an issue with some models that provide care for women from remote areas:

> It was difficult to decide on the group because many women are seen by midwives in a remote Aboriginal community, but not all women. As stated, many women will choose to see a doctor for the entirety of the pregnancy, but there is no private practitioner in [town] willing to see women for the duration of the pregnancy and all

women are referred to the hospital if they live within driving distance for their antenatal care (unless part of midwifery group practice).

Some of these are hospital-based models of care that provide care not only for local women but also for remote women when they come to town for some antenatal visits and intrapartum care. This makes it difficult for respondents to classify the models, as the one clinic provides care to two distinct groups of women. To address this confusion, an additional guide specifically for remote models, should be developed to assist maternity services to classify these models. Respondents need to think of a model of care as a care pathway, rather than focusing on a physical location such as a clinic. A single clinic or maternity care professional or team could be providing care to women in a number of different models. Using the model of care referred to in the feedback comment above as an example, this should be split into 2 different models of care. One should be a 'Public hospital maternity care' model that provides care to local women as described in the narrative description provided:

> On Tuesdays, Thursdays and Fridays, both registrars and Consultants run antenatal clinics for women on the Maternity Unit. Birthing is either by a doctor or midwife in the hospital and postnatal care is provided by midwives on the Maternity ward in the hospital.

The responses for this model of care should be about the local women who attend the clinic and the care pathway they follow. A second model of care should then be classified for women from remote communities, even if they sometimes attend the same hospital clinic for some of their visits. Most of the antenatal care for this latter group of women would be provided in their remote community by remote-area midwives (as per the feedback comment: 'many women are seen by midwives in a remote Aboriginal community') and the responses for this model of care should be based on the usual care 'pathway' that these women from remote areas follow. In that case, there would be additional settings for antenatal care visits as well as some additional remote/rural services and, possibly, a different value for the extent of continuity of carer compared with that for women who only attend the hospital clinic. It is important that respondents completing the MaCCS see the model of care as being more than just the physical 'antenatal clinic' and who goes there; rather, from the perspective of the care pathway that different groups of women with common characteristics will follow. This will be an important part of the education and training package that will need to be developed to implement the MaCCS after NMDDP Stage 2.

Once the models allocated to 'Other' are removed from the analysis and the accidental allocation of 1 model of care to 'Private midwifery' rather than 'Private obstetrician' is taken into account, the overall accuracy of the MMC allocation was 82–85%, depending on whether those models for which the MMC *may* be inaccurate (rather than are definitely inaccurate) are included.

Recommendations

1. The use of decision-rules in a future data collection tool to validate the MMC assignment using the data elements *Profession of designated maternity carer*, *Extent of continuity of carer*, *Midwifery caseload indicator* and *Planned collaborative maternity carer* and to restrict the available values for the MMC data element.

2. Editing the Guide for Use for 'Public hospital high risk maternity care' and 'Public hospital maternity care' to define against which MMC to classify models of care for women at an increased risk that require obstetric care, such as models for women with diabetes or obesity or women requesting a vaginal breech delivery or management of the next birth after caesarean section.

3. Using pop-up alerts in the future data collection tool when the MMCs for 'GP obstetrician care', 'Shared care' or 'Combined care' are recorded to confirm the definitional characteristics before recording the value.

4. Developing an additional guide for users specifically for remote models as part of the future MaCCS implementation to assist maternity services to classify these models.

5   Conclusion

The MoC DSS national pilot identified some of the difficulties respondents face when classifying models of care, even when detailed definitions and instructions are available. The consultations undertaken in Stage 1 of the NMDDP highlighted the variations in terminology used in different jurisdictions as well as differences in interpreting terms and concepts used in maternity settings.

Maternity managers and staff are busy with competing priorities, and during the pilot may not have had the time to fully read and understand the data standards for each of the data elements—or, perhaps, they assumed they understood the questions in the DSS without checking the definitions. In addition, some instructions may not have been sufficiently clear and concise to assist staff to answer the questionnaire in the most efficient manner. In some cases, errors were due to a lack of understanding of a concept (such as continuity of carer). This will need to be addressed through education during implementation.

An important outcome of the pilot has been the confirmation of the 10 MMCs, which were found to be complete and acceptable to respondents, with no additional categories suggested through the pilot. However, since the Australian Government introduced a number of reforms to expand access to midwifery-led continuity of carer models (by introducing Medicare eligibility for privately practising midwives among others), a number of partnerships have been formed between private midwives and private obstetricians. This collaborative practice model does not currently fit into either of the 2 private MMCs and will require an additional category. The MaCCS Working Party agreed to adding a new MMC for this model type: 'Private obstetrician and privately practising midwife joint care', and the new value will be added into the data standards.

The pilot has demonstrated the importance of developing an electronic data collection tool to assist respondents to correctly report the values for the MoC DSS data elements. It has also assisted in identifying decision-rules and validation checks that would be required as part of the functionality of such a tool. The pilot has shown that data standards alone are insufficient to ensure high-quality data collection, particularly when novel concepts are being introduced.

Many errors were due to respondents either not following instructions or selecting values that contradicted values in other data elements or what was stated in their narrative description. The respondents' comments and suggestions were useful in identifying issues that had not previously arisen and to understand why respondents had answered questions in particular ways. It has become apparent that it is important to provide as much assistance as possible to these busy clinicians to minimise respondent burden while ensuring the greatest accuracy possible.

Although very little feedback was received about how the Guide for Use for data elements could be improved, an analysis of the errors made by participants identified areas where instructions have been lacking or where they require further elaboration. Reassuringly, there were few relevant suggestions for additional values to be added for data elements, suggesting that the existing value sets are comprehensive.

The high response rate to the pilot invitation (46 out of 49 sites), as well as the number of surveys completed, indicates a high level of goodwill and a willingness by hospitals and maternity services to use a system like the MaCCS. This reflects an understanding of the

complexity and the importance of national comparability for models of care. Some early uncertainty in Victoria about the suitability of the MaCCS for the Victorian maternity services environment was resolved through a number of changes to data elements in the MoC DSS. The pilot has shown that the DSS can now adequately capture information about the care pathways used in Victorian maternity services, and hence is applicable to all jurisdictions.

The main outcome of the pilot is a number of recommendations in four main areas (detailed in Section 4.1 and summarised at Appendix C):

1. removing or replacing some data elements
2. making changes to the data standards, including some additional Guide for Use instructions, and making changes to value sets and some additional conditional obligations
3. identifying decision-rules and validation functionality for the web-based data collection tool that needs to be developed after Stage 2
4. identifying priorities to be considered in developing the education and training package for implementation.

In summary:

- four data elements are recommended to be replaced (1 of which may be deleted altogether) to address important data quality issues with respondents not understanding the intent of the data elements
- seven data elements need modification of the data standards, including 4 additional values
- at least 24 decision-rules/validation checks were identified to incorporate in the specifications for the electronic data collection tool
- education needs to be focused on identifying what qualifies as a 'model of care' to incorporate concepts of care pathways that may cross over physical locations and professions that are a part of other models; additional information needs to be provided to assist with classifying remote models of care; and complex concepts, such as 'continuity of carer', need to be highlighted in the training and education materials.

Appendix A: Pilot hospital details

Table A1: Births per annum in each pilot site

Pilot site	Births per annum	Pilot site	Births per annum
New South Wales[a]		***Queensland (cont.)***[b]	
Dubbo Hospital	1207	Royal Brisbane and Women's Hospital	3784
Forbes Hospital	n.a.	Warwick Hospital	215
Gosford Hospital	2496	***Western Australia***[c]	
John Hunter Hospital	3720	Armadale Hospital	2001
Lithgow Hospital	220	Broome Hospital	536
Manning Hospital	720	Bunbury Hospital	1366
Moree District Hospital	223	Community Midwifery Program	n.a.
Parkes Hospital	n.a.	King Edward Memorial Hospital	5690
Royal Hospital for Women	3978	Joondalup Health Campus	2595
Sutherland Hospital	1262	***South Australia***[d]	
Victoria		Crystal Brook Hospital	51
Ballarat Health Services	n.a.	Flinders Medical Centre	3014
Bendigo Health Care Group	n.a.	Gawler Health Service	491
Maryborough District Health Service	n.a.	Port Augusta Hospital	293
Monash Health (Clayton and Casey)	n.a.	Port Pirie Hospital	164
Northeast Health Wangaratta	n.a.	***Tasmania***[e]	
Royal Women's Hospital	n.a.	Launceston General Hospital	1493
South West Healthcare Warrnambool	n.a.	North West Private Hospital	≈800
Sunshine Hospital	n.a.	Royal Hobart Hospital	1916
West Gippsland Healthcare Group Warragul	n.a.	***Australian Capital Territory***[f]	
Queensland[b]		Calvary Hospital	1303
Cairns Hospital	2496	Centenary Hospital for Women and Children	2625
Emerald Hospital	323	***Northern Territory***[g]	
Logan Hospital	3516	Alice Springs Hospital	824
Mount Isa Base Hospital	555	Katherine Hospital	300
Nambour General Hospital	2314	Royal Darwin Hospital	1789
Redland Hospital	2228		

n.a. Data not available

≈ approximately

(a)   *NSW Mothers and Babies 2010.*
(b)   *Perinatal Statistics Queensland 2012.*
(c)   *Western Australia's Mothers and Babies, 2011.*
(d)   *Pregnancy and Outcome in South Australia 2011.*
(e)   Tasmania's *Council of Obstetric & Paediatric Mortality & Morbidity Annual Report 2012.*
(f)   *A review of service delivery and clinical outcomes at public maternity units in the Australian Capital Territory 2010.*
(g)   *Northern Territory Mothers and Babies 2011.*

Appendix B: Pilot documentation

Survey instructions emailed to pilot participants

Thank you for agreeing to participate in the national Pilot Program for the new Maternity Model of Care Data Set Specification (MoC DSS). As you would be aware from previous correspondence, the MoC DSS is an integral component of the proposed Maternity Care Classification System or MaCCS. When implemented, the MaCCS will enable us for the first time to classify models of maternity care based on the characteristics of the women cared for in the model, the carers working in the model and aspects of the care provided. It is hoped that the MaCCS will enable reporting on the range of models of care available to women around the country using common terminology provided by the Major Model Categories (MMCs) and also enable more in-depth analysis of maternity care based on the characteristics of models captured through the MoC DSS.

The Pilot Survey is accessed via the link below. You will be asked to answer a series of questions about each model of maternity care offered to birthing women at your service using the data elements in the proposed MoC DSS as well as comment on the data elements themselves. **Please repeat the survey for every model of care offered at your maternity service**, including models of care that may provide antenatal care remotely to your service but women receive their intrapartum and/or postnatal care with you (for example remote area models of care where women receive their care in their community but come to your maternity service to birth, or if you are the receiving birthing hospital for a lower level hospital that provides antenatal and postnatal care only).

When identifying what models of care are available at your service it may be difficult to identify exactly what makes one model or care pathway different to another, especially those models provided through outpatient clinics. Try to think about the different groups of women you care for and whether they follow a distinct care pathway (for example, women with gestational diabetes attending the antenatal clinics on a certain day) and whether care is available in different locations for different groups of women (e.g. low risk women accessing the birth centre for intrapartum care vs other women birthing in delivery suite). You may think that you only offer a couple of different models of care until you start to tease out these sorts of factors and realise that you actually have 3 or 4 different antenatal clinic pathways or different teams for different groups of women. Don't forget to classify any shared care models you might have or if women birth at your service who receive their care from a private midwife. Another model you might not think of is Combined Care, where women receive their antenatal care from their GP or GP Obstetrician privately (not as part of a shared care agreement) and then attend your maternity service for birth care (this often happens in rural areas where there is no publicly funded antenatal care).

Attached is a summary of the data standards for the MoC DSS. This contains a description of each of the data elements that form the questions in the survey, including their definitions and the full Guide for Use instructions. It may assist you to read through this before completing the survey or refer to it as you answer each of the questions when you classify your models of care. If you have difficulty with the value lists or with the Guide for Use instructions for any of the data elements, please indicate this in the survey when asked.

We would like to hear about any way you think that this DSS can be improved, including additional values for data elements or more explicit instructions in the Guide for Use.

Please remember that you cannot save a survey partway through and go back to it later to complete it, however after you have completed the survey for a single model of care you may return at any time to commence the next classification. After you have completed classifying a model of care the survey will recommence at the start for you to repeat the process for another model of care. **Please make sure you classify ALL the maternity models of care offered by your service**. The Pilot Survey will be conducted between **Monday [Xth Month] and Friday [Xth Month]**, if you need more time to complete your surveys please let me know.

If you have any questions about the Pilot or need assistance in classifying any of your models of care, please do not hesitate to contact me either by email or by telephone on XXX. I am available throughout the week to assist you with completing the Pilot. Thank you for taking the time to participate in this Pilot—with your help we can ensure that the MoC DSS and the MaCCS will be applicable to all models of care provided around the country.

> **The link to the Maternity Model of Care Data Set Specification Pilot Survey is:**
> **https://www.surveymonkey.com/s/MoC DSS_[state]**

Maternity Models of Care Data Set Specification Pilot Survey

Introduction

Thank you for agreeing to participate in this pilot program to assess the proposed Maternity Models of Care Data Set Specification.

A classification system for defining and naming models of maternity care in Australia has recently been developed by the AIHW National Perinatal Epidemiology and Statistics Unit as part of the National Maternity Data Development Project. The need for such a system was identified in the National Maternity Services Plan.

The proposed Maternity Care Classification System or MaCCS has already undergone an extensive consultation process involving stakeholders from all maternity care disciplines as well as health information managers, data custodians and consumer representatives. An integral component of the MaCCS is a Data Set Specification (DSS) containing 19 data elements that define different characteristics of models of maternity care. As part of the technical data development process, the DSS requires piloting to ensure it will meet its objectives.

You have been invited to participate in this project because you have in-depth knowledge of the different models of care offered in your maternity service.

This questionnaire asks a series of questions about each defined model of maternity care offered to women giving birth at your maternity service. The questions identify different characteristics of the model of care that will enable it to be classified to one of 10 common Major Model Categories (MMC). At the end of the questionnaire you will also be asked to select which MMC you believe defines the model. The questionnaire must be repeated for each model of maternity care you provide at your maternity service. The survey should take approximately 5–8 minutes to complete for each model of care described.

You have also been provided with a separate set of instructions that provide information about the technical aspects of each data element including a Guide for Use to assist you in answering each question.

If you have any questions about this Pilot, require assistance in answering the questions or have any other comments, please contact Natasha Donnolley at XXXX or call on XXXX.

Many thanks for your assistance with this project.

Ms Natasha Donnolley

National Perinatal Epidemiology and Statistics Unit

General Questions

1. What is your name and position at the maternity service?

2. Please enter your email address in case we need to contact you.

3. What is the name of your health service?

Model of care information

Please select one of the models of care available to birthing women at your maternity service and answer the questions on the following pages with this model in mind.

1. What is the name of the model of care?

2. Briefly describe the model of care known as [answer from Q1], including who provides the care, where care is provided and if there are any restrictions to who is included in this model of care.

Some examples:

The Lavender Group is a midwifery-led caseload model of care for low-risk women in the western suburbs. Women can receive their antenatal visits at home or at the Western Community clinic and birth is offered at home, at the Western hospital birth centre or in the delivery suite at the hospital. Women are offered early discharge within 6 hours of birth with antenatal visits provided at home by the midwife for up to 6 weeks.

Or

The Wednesday Outpatient Clinic is for women who have gestational diabetes and care is provided by a team of caregivers including midwives, RMOs, consultant obstetricians, a dietician and an endocrinologist. Women have their antenatal care at the outpatient clinic and birth in the delivery suite. Postnatal care in the model ends at discharge from hospital.

DSS Data elements

The following questions relate to the model of care known as [answer from Q1]. Please select the response which most accurately describes the characteristic as it relates to this model of care. If you select 'other' please provide further details to explain your answer.

To assist us in assessing the structure of the proposed data elements in the new Model of Care DSS please describe any difficulties you had in providing any of the responses, as well as suggestions for improving the instructions and Guide for use. You should have been provided with a separate document which contains further technical information for each data element to assist you in responding.

1. Target group indicator

Is the model of care predominantly targeted at a specific section of women who share a common characteristic or set of characteristics?

<u>Guide for use:</u>

Some models of care are designed for specific groups of women based on a set of agreed common criteria and may restrict access to women not meeting these criteria. These restrictions may be based on geographical area, risk factors, ethnic, cultural or social groups or medical or obstetric conditions.

In some cases, a model of care may not have any access restrictions but will still predominantly target a particular group of women. In both of these cases a value of 'Yes' should be used.

If a model of care is available to all women without any restrictions then a value of 'No' should be used.

☐ 1 - Yes

☐ 2 - No

2. If it was difficult to respond to this question or you wish to suggest improvements or instructions, please comment.

3. Maternity target group

(Only applicable if you answered 'Yes' to Q1. If you answered 'No' to the Target Group Indicator in the previous question then please select 99 for this question.)

The specific group of women that a model of maternity care is designed for.

Guide for Use:

Some models of care are targeted at specific groups of women with similar characteristics. These might be based on geographical area, risk status, obstetric or medical condition or social/cultural characteristic. Having a target group does not necessarily mean that the model of care is restricted to only those women (although the model is specifically targeted at them) and other women may also access the model of care. For example, a model of care that is targeted specifically for Aboriginal and Torres Strait Islander women may also provide care for non-Indigenous women living in the same remote area; however, they make up a small proportion of the women cared for in the model. Some models of care are targeted at more than one group of women. Multiple values for this data element may be selected to identify all the specific groups of women who are targeted in a particular model of care.

If there is no specific target group (that is, any women can be included in that model of care) then select 99.

Additional Guide for use instructions:

CODE 3 This code is to be used if a model of care is restricted to women with 'low-risk' or 'normal' pregnancies.

CODE 4 This code is to be used for breech clinics or models of care.

CODE 5 This code is to be used for high-risk clinics or maternal–fetal medicine clinics or models of care.

CODE 6 This code is to be used for twin/triplet clinics or models of care.

CODE 7 This code is to be used for 'vaginal birth after caesarean (VBAC)' or 'next birth after caesarean (NBAC)' clinics or models of care.

CODE 9 This code is to be used for bariatric clinics or models of care.

CODE 12 This code is to be used for models of care targeted specifically at young women.

CODE 80 This code is to be used for models of care targeted at specific cultural groups not specified by other codes, such as particular ethnic groups.

CODE 81 This code is to be used for models of care targeted at women from specific social groups not specified by other codes.

CODE 82 This code is to be used for models of care targeted at vulnerable women not specified by other codes, such as women affected by domestic violence, women in custody etc.

CODE 88 This code is used for models of care targeted at other specific groups of women not specified by other codes.

- ☐ 1 Aboriginal or Torres Strait Islander identification
- ☐ 2 Migrant or refugee
- ☐ 3 Low risk or normal pregnancy
- ☐ 4 Breech presentation of fetus
- ☐ 5 Complex or high risk pregnancy
- ☐ 6 Multi fetal pregnancy
- ☐ 7 Next birth after caesarean section
- ☐ 8 Planned homebirth
- ☐ 9 Maternal obesity or high body mass index (BMI)
- ☐ 88 Other (please specify)

- ☐ 10 Maternal diabetes
- ☐ 11 Maternal drug or alcohol use
- ☐ 12 Maternal age young
- ☐ 13 Maternal mental health condition
- ☐ 80 Other specific cultural groups not already specified
- ☐ 81 Other social groups not already specified
- ☐ 82 Other vulnerable groups not already specified
- ☐ 99 No target group

4. If it was difficult to respond to this question or you wish to suggest improvements or instructions, please comment.

5. Designated maternity carer

What is the profession of the maternity health-care provider who is acting as the designated maternity carer in this model of care?

This position may also be known as the maternity care coordinator, primary or lead carer or named carer within a model of care and is the profession of the maternity care provider who is responsible for coordinating the maternity care for a woman. In some cases this may not be an individual but may be a multidisciplinary team or a shared care arrangement.

Guide for Use:

CODE 1 Specialist obstetrician—public

This code also includes obstetric registrars.

CODE 4 Midwife-public

Use this code for midwives employed in the public health system.

CODE 5 Midwife-private

Use this code for midwives employed in the private health system but not working independently. This may be in a private hospital or in an obstetrician's private practice.

CODE 6 Midwife-privately practising

Use this code for independent privately practising midwives working in either a private or public health-care setting. This includes privately practising midwives with visiting rights to a public or private hospital to provide intrapartum care, privately practising midwives who provide privately funded homebirth services or private midwives providing antenatal and postnatal care independently.

CODE 12 Shared care

Use this code when the model of care is a formal shared care arrangement with no single designated carer. This could be between different combinations of maternity care professionals such as GP and midwife, GP and hospital RMO, GP and obstetrician, Midwife and Aboriginal health practitioner etc.

CODE 13 Multidisciplinary team

Use this code when the model of care has no individual lead carer and all care is provided by a team of clinicians that may include obstetricians and midwives.

☐ 1 Specialist obstetrician-public

☐ 2 Specialist obstetrician-private

☐ 3 General practitioner obstetrician

☐ 4 Midwife-public

☐ 5 Midwife-private

☐ 6 Midwife-privately practising

☐ 88 Other (please specify)

☐ 7 General practitioner

☐ 8 Maternal–fetal medicine subspecialist

☐ 9 Aboriginal maternal infant care practitioner

☐ 11 Nurse

☐ 12 Shared care

☐ 13 Multidisciplinary team

6. If it was difficult to respond to this question or you wish to suggest improvements or instructions, please comment.

7. Midwifery caseload

Whether a model of maternity care is midwifery caseload.

Glossary: A model of maternity care where women have a primary midwife assigned to them throughout pregnancy, labour and birth and the postnatal period. Each midwife has an agreed number (caseload) of women per year and acts as a second or back-up midwife for women who have another midwife as their primary carer. Caseload midwives usually work on a 24-hour on-call basis (this may be organised within a group) and may be employed on an annualised salary. This is also known as a midwifery continuity of carer model of care and may be a private or public arrangement. Midwifery caseload may be managed within a midwifery group practice model where a small number of midwives join together in a group with each midwife having their own caseload and providing back-up for the other midwives in the group practice. A key aspect of caseload midwifery practice that differentiates it from 'team midwifery' models is that women have a named midwife, caseload midwives have a self-managed workload that is outside of a traditional roster structure and provides a high level of continuity of a known carer across the continuum of maternity care. Note that this is different to team midwifery.

Guide for Use:

Code 1: 'Yes' is to be used only if the model of care is midwifery caseload. This involves a midwife having a set number of women per month or per annum (full-time equivalent) that they are the primary midwife for, providing and coordinating the majority of care throughout pregnancy, labour and after birth and acting as a back-up midwife for another primary midwife. The primary midwife is usually on-call for 24 hours per day for a set period and is often paid on an annualised salary and not on shifts. This is different to team midwifery.

Code 2: 'No' is to be used for all other models of care, including team midwifery. Although a team midwifery model may look after a set number of women per year, this number is shared among the team rather than having each midwife act as primary midwife for their own caseload of women.

☐ 1 - Yes

☐ 2 - No

8. If it was difficult to respond to this question or you wish to suggest improvements or instructions, please comment.

9. Midwifery caseload size

(Only applicable if the answer to Q7 was 'Yes'. If this is not a midwifery caseload model then enter 0.)

The total number of women (caseload) cared for per year by each full-time equivalent primary midwife working in a midwifery caseload model of maternity care. If the model does not have a caseload then enter 0.

Guide for Use:

This should be the total number of women per year that a midwife looks after in the role of primary midwife as a full-time equivalent midwife. If a model of care includes part-time midwives working as primary midwife then the caseload should be recalculated to reflect their caseload if they were working full-time. Do not count the number of women that the midwife is also caring for as a back-up midwife.

Total number: ☐

10. If it was difficult to respond to this question or you wish to suggest improvements or instructions, please comment.

11. Extent of continuity of carer

The extent to which continuity of carer is provided across the continuum of maternity care within a model of maternity care.

Glossary: Continuity of carer means care provided, or lead, over the full length of the episode of care by the same named carer. Relational continuity is provided by the same named caregiver being involved throughout the period of care even when other caregivers are required. Other caregivers may be involved in the provision of care, either as a backup to the named carer or to collaborate in the provision of care, however the named carer remains to coordinate and provide ongoing care throughout.

Guide for Use:

CODE 1 Antenatal period only

This code is to be used if the model of care provides continuity of carer throughout the antenatal period only. A single named designated carer provides the majority of care to each woman for the antenatal period only and not for intrapartum or postpartum care.

CODE 2 Antenatal and intrapartum periods

This code is to be used if the model of care provides continuity of carer throughout the antenatal and intrapartum periods only. A single named designated carer provides the majority of care to each woman for the antenatal period as well as intrapartum care but does not provide postpartum care.

CODE 3 Antenatal and postpartum periods

This code is to be used if the model of care provides continuity of carer throughout the antenatal and postpartum periods only. A single named designated carer provides the majority of care to each woman for the antenatal period and again in the postpartum period but not for intrapartum care. This may be the case for some remote or rural models of care where women are transferred to another hospital for birth but receive their antenatal and postnatal care in their local hospital or community.

CODE 4 Intrapartum and postpartum periods

This code is to be used if the model of care provides continuity of carer throughout the intrapartum and postpartum periods only. A single named designated carer provides the majority of care to each woman for the birth episode (intrapartum period) and postpartum period but does not provide care in the antenatal period.

CODE 5 Whole duration of maternity period—antenatal, intrapartum and postpartum

This code is to be used if the model of care provides continuity of carer throughout all stages of the pregnancy, labour and postnatal periods. A single named designated carer provides the majority of care to each woman for the antenatal, intrapartum and postpartum periods.

CODE 6 No continuity of carer

This code is to be used if the model of care does not provide any continuity of carer to women in the model. There is no named designated carer assigned to each woman and care is provided by any number of different care providers throughout the antenatal, intrapartum and postpartum periods. There may be a small team of maternity care professionals providing care to women within the same philosophical model (continuity of care). However, there is no primary or lead caregiver offering continuity of carer.

- ☐ 1 Antenatal period only
- ☐ 2 Antenatal and intrapartum periods
- ☐ 3 Antenatal and postpartum periods
- ☐ 4 Intrapartum and postpartum periods
- ☐ 5 Whole duration of maternity period —antenatal, intrapartum and postpartum
- ☐ 6 No continuity of carer

12. If it was difficult to respond to this question or you wish to suggest improvements or instructions, please comment.

13. Planned collaborative maternity carer

The profession of other recognised and named collaborative maternity care professionals in a maternity model of care.

Guide for Use:

This data element allows for multiple values. Please code all relevant collaborative carer/s involved in a model of care that provide collaborative care with the designated (lead) carer. Do not code the profession of the designated carer as this is identified in a different related data element. If the value of Q5 Designated maternity carer was CODE 12 Shared care then code the values for the different professions of carers who share the provision of care within the maternity model of care.

Only code the profession of carers that have a planned role within a model of care for all women in the model. Do not code health-care professionals that women may be referred to on an 'ad hoc' basis. Record 99 if there are no planned collaborative carers in a maternity model of care.

CODE 1 Specialist obstetrician—public

This code also includes obstetric registrars.

CODE 4 Midwife—public

Use this code for midwives employed in the public health system.

CODE 5 Midwife—private

Use this code for midwives employed in the private health system but not working independently. This may be in a private hospital or in an obstetrician's private practice.

CODE 6 Midwife—privately practising

Use this code for independent privately practising midwives working in either a private or public health-care setting. This includes privately practising midwives with visiting rights to a public or private hospital to provide intrapartum care, privately practising midwives who provide privately funded homebirth services or private midwives providing antenatal and postnatal care independently.

☐ 1 Specialist obstetrician—public

☐ 2 Specialist obstetrician—private

☐ 3 General practitioner obstetrician

☐ 4 Midwife—public

☐ 5 Midwife—private

☐ 6 Midwife—privately practising

☐ 7 General practitioner

☐ 8 Maternal–fetal medicine specialist

☐ 88 Other (please specify)

☐ 9 Aboriginal maternal infant care practitioner

☐ 10 Aboriginal health practitioner

☐ 11 Nurse

☐ 14 Perinatal mental health worker

☐ 15 Other allied health practitioner

☐ 16 Medical specialist other than obstetric

☐ 99 No planned collaborative carer

14. If it was difficult to respond to this question or you wish to suggest improvements or instructions, please comment.

15. Planned transfer for intrapartum care and birth indicator

Do all women in this model of care need to be transferred to another location prior to labour for intrapartum care and birth?

Guide for Use:

This data element refers to planned transfer for all women prior to labour and not just for women who require a higher-level of care for birth or in an emergency.

CODE 1 Yes

This code is to be used only if it is intended within the model of maternity care to transfer all women to a different location for intrapartum care and birth. This is a planned transfer prior to labour.

CODE 2 No

This code is to be used for all other models of care where women can receive intrapartum care at the same facility or in the same area as their antenatal and postnatal care. Some women may need to be transferred for intrapartum care elsewhere due to the presence of risk factors or in an emergency.

☐ 1 - Yes

☐ 2 - No

16. If it was difficult to respond to this question or you wish to suggest improvements or instructions, please comment.

17. Expected setting for an antenatal care visit

The expected setting for an antenatal care visit that is offered within this model of maternity care.

Guide for Use:

Some models of care offer multiple options for where antenatal care is provided and all applicable codes should be used.

CODE 3 Clinicians' private rooms

This code also includes Medicare Local facilities and GP surgeries.

CODE 9 Hospital—excluding birth centre

This code is used for areas used for birthing in a hospital other than a birth centre (if one is present). These may be known by a variety of names such as a birth suite, delivery suite, labour ward, labour and delivery etc.

☐ 1 Hospital clinic—onsite	☐ 6 Home
☐ 2 Hospital clinic—outreach	☐ 7 Birth centre—stand alone
☐ 3 Clinicians' private rooms	☐ 8 Birth centre—in hospital
☐ 4 Community facility	☐ 9 Hospital—excluding birth centre
☐ 5 Aboriginal Community Controlled Health	☐ 10 Hotel or hostel

Organisation facility

☐ 88 Other (please specify)

18. If it was difficult to respond to this question or you wish to suggest improvements or instructions, please comment.

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19. Expected setting for birth

The expected setting for a birth offered by this model of maternity care.

<u>Guide for use:</u>

Some models of care offer multiple options for where birth care is provided and all applicable codes should be used.

CODE 9 Hospital—excluding birth centre

This code is used for areas used for birthing in a hospital other than a birth centre (if one is present). These may be known by a variety of names such as a birth suite, delivery suite, labour ward, labour and delivery etc.

☐ 5 Aboriginal Community Controlled Health Organisation facility

☐ 6 Home

☐ 7 Birth centre—stand alone

☐ 8 Birth centre—in hospital

☐ 9 Hospital—excluding birth centre

☐ 88 Other (please specify)

20. If it was difficult to respond to this question or you wish to suggest improvements or instructions, please comment.

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21. Expected setting of postnatal care

The expected setting for postnatal care that is offered within this model of maternity care

<u>Guide for Use:</u>

Some models of care offer multiple options for where postnatal care is provided and all applicable codes should be used.

CODE 3 Clinicians' private rooms

This code also includes Medicare Local facilities and GP surgeries.

CODE 9 Hospital—excluding birth centre

This code is used for areas used for birthing in a hospital other than a birth centre (if one is present). These may be known by a variety of names such as a birth suite, delivery suite, labour ward, labour and delivery etc.

☐ 1 Hospital clinic—onsite

☐ 2 Hospital clinic—outreach

☐ 3 Clinicians' private rooms

☐ 4 Community facility

☐ 5 Aboriginal Community Controlled Health Organisation facility

☐ 88 Other (please specify)

☐ 6 Home

☐ 7 Birth centre—stand alone

☐ 8 Birth centre—in hospital

☐ 9 Hospital—excluding birth centre

☐ 10 Hotel or hostel

22. If it was difficult to respond to this question or you wish to suggest improvements or instructions, please comment.

23. Individual or group care

Whether this model of maternity care offers antenatal and/or postnatal care in individual or group sessions.

Guide for Use:

Some models of care offer antenatal and/or postnatal care in group sessions, such as the Centering Pregnancy® model. Group sessions must include both education and clinical care in a group setting and does not refer to 'parenting classes' or 'antenatal education classes' only. Group sessions are sessions that consist of two or more women.

CODE 3 Combination of individual and group sessions

Use this code when a model of care offers a combination of individual sessions and group sessions.

☐ 1 Individual sessions

☐ 2 Group sessions

☐ 3 Combination of individual and group sessions

24. If it was difficult to respond to this question or you wish to suggest improvements or instructions, please comment.

25. Planned scheduled medical visits

The total number of planned visits with a medical practitioner scheduled for all women in this model of maternity care.

Guide for Use:

Some models of care include a schedule of planned visits to a medical practitioner. Record the total number of visits to a doctor that are scheduled into the care plan in this model of care. Not all women

will necessarily receive this number of visits but it is the number intended within the model of care for most women. These must be planned as part of the model of care and not visits to a doctor as required for some women. Record 0 if women in a model of maternity care only see a doctor if needed on a case-by-case basis.

Within a maternity model of care a 'medical practitioner' refers to either an obstetrician or a GP. This includes obstetric registrars and GP obstetricians.

Reporting of this data element is conditional upon the reported value of either Q5 Designated maternity carer, or Q13 Collaborative maternity carer being one of the following:

Code 1 Specialist obstetrician—public

Code 2 Specialist obstetrician—private

Code 3 General practitioner obstetrician

Code 7 General practitioner

Code 8 Maternal–fetal medicine subspecialist

Total number of planned scheduled medical visits per woman:

26. If it was difficult to respond to this question or you wish to suggest improvements or instructions, please comment.

27. Additional remote or rural services offered indicator

Are additional remote or rural services offered in this maternity model of care?

Guide for Use:

These additional antenatal/postnatal services are particularly for women in remote or rural areas who reside at a significant distance from a maternity service.

□ 1 - Yes

□ 2 - No

28. If it was difficult to respond to this question or you wish to suggest improvements or instructions, please comment.

29. Type of additional antenatal/postnatal remote or rural service

The type of additional rural and remote antenatal/postnatal service provided in this maternity model of care.

Guide for Use:

Reporting of this data element is conditional upon the reported value of Q27 Additional remote or rural services offered indicator being Code 1 Yes. If the answer was 'No' then record CODE 99 Not applicable for this data element.

This data element allows for multiple values to be recorded. Please record all additional services provided for remote or rural women in a model of maternity care. These additional services are provided for women who reside at a significant distance from a maternity service.

CODE 1 Fly-in-fly-out clinicians

This may include Medical Specialist Outreach Assistance Program (MSOAP) services or any maternity care clinician (midwife or doctor) who travels to a remote community from a metropolitan centre specifically to provide antenatal/postnatal care.

CODE 2 Telehealth

This code is for any model of care that includes visits with a clinician via telehealth technology.

CODE 3 Community-based remote-area clinicians

This code is for models of care where remote-area nurses, midwives and or doctors provide care to women in their local community.

☐ 1 Fly-in-fly-out clinicians   ☐ 3 Community-based remote-area clinicians

☐ 2 Telehealth   ☐ 99 None—not applicable

☐ 88 Other (please specify)

30. If it was difficult to respond to this question or you wish to suggest improvements or instructions, please comment.

31. Expected time of model completion after birth event

The length of time after a birth event that this model of maternity care is expected to cease.

Guide for Use:

The length of time that planned postnatal care is included within a model of care varies from model to model. In some cases, care ends at discharge from hospital or the birth location, whereas in other models planned postnatal care may continue for 6 weeks. This data element is the equivalent to discharge from a model of care (not necessarily discharge from hospital).

What is considered the end of a birth event will vary with the maternity model of care. For the purpose of this data element, if a model of care involves an inpatient stay a birth event is considered to end at discharge from hospital. If a model of care does not involve an inpatient stay then the end of a birth event is considered to be the time of birth.

Code 1 At the end of birth event.
Record Code 1 if planned postnatal care ends either at discharge from hospital (if there is an inpatient stay) or ends immediately after birth if there is no inpatient stay.

☐ 1 At the end of the birth event   ☐ 5 15–28 days after the birth event

☐ 2 1–3 days after the birth event   ☐ 6 29–42 days after the birth event

☐ 3 4–7 days after the birth event   ☐ 7 More than 42 days after the birth event

☐ 4 8–14 days after the birth event

32. If it was difficult to respond to this question or you wish to suggest improvements or instructions, please comment.

Major Model Categories

This last section asks you to select the Major Model Category (MMC) that you believe this model belongs to. Please read the description of each of the categories before selecting the appropriate category for the model. If you believe that this model does not belong in one of the existing categories, please select 'Other' and provide details.

Every model of care can be categorised into one of ten Major Model Categories based on their characteristics. Please review each of the MMC descriptions on the next two pages and indicate when asked which category this model belongs to.

1. Private Obstetrician (specialist care):

Antenatal care provided by a private specialist obstetrician. Intrapartum care is provided in either a private or public hospital by the private specialist obstetrician and hospital midwives in collaboration. Postnatal care is usually provided in the hospital by the private specialist obstetrician and hospital midwives and may continue in the home, hotel or hostel.

2. Private midwifery care:

Antenatal, intrapartum and postnatal care is provided by a private midwife or group of midwives in collaboration with doctors in the event of identified risk factors. Antenatal, intrapartum and postnatal care could be provided in a range of locations including the home.

3. General Practitioner Obstetrician Care:

Antenatal care provided by a GP obstetrician. Intrapartum care is provided in either a private or public hospital by the GP obstetrician and hospital midwives in collaboration. Postnatal care is usually provided in the hospital by the GP obstetrician and hospital midwives and may continue in the home or community.

4. Shared care:

Antenatal care is provided by community maternity service provider/s (doctor and/or midwife) in collaboration with hospital medical and/or midwifery staff under an established agreement and can occur both in the community and in hospital outpatient clinics. The care provided by the community care provider may be in collaboration with other community-based health professionals such as Aboriginal Health Workers/Practitioners. Intrapartum and early postnatal care usually takes place in the hospital by hospital midwives and doctors often in conjunction with the community doctor or midwife (particularly in rural settings).

5. Combined care:

Antenatal care provided by a private maternity service provider (doctor and/or midwife) in the community. Intrapartum and early postnatal care provided in the public hospital by hospital midwives and doctors. Postnatal care may continue in the home or community by hospital midwives.

6. Public hospital maternity care:

Antenatal care is provided in hospital outpatient clinics (either onsite or outreach) by midwives and/or doctors. Care could also be provided by a multidisciplinary team. Intrapartum and postnatal care is provided in the hospital by midwives and doctors in collaboration. Postnatal care may continue in the home or community by hospital midwives.

7. Public hospital high risk care:

Antenatal care is provided to women with medical high risk/complex pregnancies by maternity care providers (specialist obstetricians and/or maternal–fetal medicine subspecialists in collaboration with midwives) with an interest in high risk maternity care in a public hospital. Intrapartum and postnatal care is provided by hospital doctors and midwives. Postnatal care may continue in the home or community by hospital midwives.

8. Team midwifery care:

Antenatal, intrapartum and postnatal care is provided by a small team of rostered midwives (no more than 8) in collaboration with doctors in the event of identified risk factors. Intrapartum care is usually provided in a hospital or birth centre. Postnatal care may continue in the home or community by the team midwives.

9. Midwifery Group Practice caseload care:

Antenatal, intrapartum and postnatal care is provided within a publicly funded caseload model by a known primary midwife with secondary back-up midwife/midwives providing cover and assistance with collaboration with doctors in the event of identified risk factors. Antenatal care and postnatal care is usually provided in the hospital, community or home with intrapartum care in a hospital, birth centre or home.

10. Remote area maternity care:

Antenatal and postnatal care is provided in remote communities by a remote area midwife (or a remote area nurse) or group of midwives sometimes in collaboration with a remote area nurse and/or doctor. Antenatal care may also be provided via telehealth or fly-in-fly-out clinicians in an outreach setting. Intrapartum and early postnatal care is provided in a regional or metropolitan hospital (involving temporary relocation prior to labour) by hospital midwives and doctors.

1. Please select the Major Model Category that best fits this model of care being described.

Guide for Use:

Although there is much variation in models of maternity care, all models of care can be grouped into one of the broad Major Model Categories based on their characteristics, i.e. the characteristics of the women in the model, the carers working in the model and aspects of the care provided.

The Major Model Categories have broad descriptions that describe the intent of a model of care, recognising that not all women in a model of care will necessarily follow the same journey or receive the same care pathway as the model intends (or was designed for) for the majority of women.

CODE 2 Private midwifery care

This code should be recorded for all models of care where the designated maternity carer is a privately practicing midwife, even if the care is provided from a private midwifery caseload group practice. This code is not to be used if the model of care is Shared Care between a private midwife and a hospital as part of a formal arrangement.

CODE 4 Shared care

This code should only be used when there is an established shared care agreement between the community-based maternity carer (doctor or midwife) and the hospital. This would usually include an agreed schedule of antenatal care visits between the two providers.

CODE 5 Combined care

This code is to be used when antenatal care is provided by a private maternity carer in the community (doctor or midwife) and intrapartum care is provided separately by public hospital doctors and/or midwives without an established Shared Care agreement. There is no agreed schedule of visits between the two different providers and the community-based private maternity carer does not provide any care in the hospital.

CODE 6 Public hospital maternity care

This code can be used for models of care provided in public hospitals where antenatal care is usually provided in outpatient clinics by midwives or doctors (sometimes a multidisciplinary team) and may include specific purpose clinics such as diabetes clinics, next birth after caesarean (NBAC) clinics etc. This code should not be used for models of care for high risk pregnancies (Code 7) or models that are in the category of Team midwifery (Code 8) or Midwifery group practice caseload care(Code 9).

☐   1 Private obstetrician (specialist) care

☐   2 Private midwifery care

☐   3 General practitioner obstetrician care

☐   4 Shared care

☐   5 Combined care

☐   6 Public hospital maternity care

☐   7 Public hospital high risk maternity care

☐   8 Team midwifery care

☐   9 Midwifery group practice caseload care

☐   10 Remote area maternity care

☐   88 Other (please specify)

2. If it was difficult to respond to this question or you wish to suggest improvements or instructions, please comment.

Survey Complete

Thank you for completing this questionnaire classifying a model of maternity care at your maternity service. If you have other models of care could you please repeat the questionnaire to classify each of the other models.

If you require any assistance with this process, please contact Natasha Donnolley on XXXX.

With thanks

Ms Natasha Donnolley

National Perinatal Epidemiology and Statistics Unit

MoC DSS data standards from METeOR

Please note that an abridged copy of these data standards was provided to pilot participants. This is a copy of the data standards used in the national pilot and is not the final set of data standards that were subsequently submitted for addition to the National Health Data Dictionary.

Maternity model of care DSS 2015-

Exported from METeOR

List of metadata items

Maternity model of care DSS 2015

Establishment identifier (not required for this pilot)

Target group indicator

Maternity target group

Profession of designated maternity carer

Midwifery caseload indicator

Midwifery caseload size

Extent of continuity of carer

Planned collaborative maternity carer

Planned transfer for intrapartum care and birth indicator

Expected setting for an antenatal care visit

Expected setting of birth

Expected setting of postnatal care

Individual or group care

Planned scheduled medical visits

Additional remote or rural services offered indicator

Type of additional antenatal/postnatal remote or rural service

Expected time of model completion after birth event

Major Model Category

Maternity model of care identifier

Glossary items

Antenatal care visit

Collaborative maternity carer

Continuity of carer

Designated maternity carer

Midwifery caseload

Maternity model of care DSS 2015-

Scope: The Maternity model of care (MoC) data set specification (DSS) is not mandated for collection. This data set specification enables maternity care providers to classify models of care using the Maternity Care Classification System (MaCCS).

The scope of the data set is all models of maternity care available to pregnant and birthing women.

The MaCCS, utilising the DSS provides a standardised nomenclature and descriptive data for maternity models of care. National collation of these data enables meaningful analysis and comparisons of maternal and perinatal outcomes between differing models of care. The data elements in the DSS describe the different characteristics of models of maternity care based on three domains:

- the women a model is designed for;
- the carers working in the model; and
- aspects of how care is provided.

The development of the MaCCS and the MoC DSS was undertaken as part of the National Maternity Data Development Project under the guidance of an expert advisory group and included wide-reaching consultation with relevant stakeholder groups around the country.

Collection and usage attributes

Statistical unit: A single model of maternity care provided by a maternity service.

Guide for use: Maternity care providers will report these data once each year for each model of maternity care provided. Every model that provided pregnancy and/or intrapartum care for any of the women giving birth in the period must be included and be allocated a Major Model Category (MMC) and model code.

A single record in the DSS represents a single model of maternity care available to a pregnant woman.

Metadata items in this Data Set Specification

Seq No.	Metadata item	Obligation	Max. occurs
1	Establishment identifier	Mandatory	1
2	Target group indicator	Mandatory	1
3	Maternity target group	Conditional	10
4	Profession of designated maternity carer	Mandatory	1
5	Midwifery caseload indicator	Mandatory	1

6	Midwifery caseload size	Conditional	1
7	Extent of continuity of carer	Mandatory	1
8	Planned collaborative maternity carer	Optional	12
9	Planned transfer for intrapartum care and birth indicator	Mandatory	1
10	Expected setting for an antenatal care visit	Mandatory	7
11	Expected setting of birth	Mandatory	6
12	Expected setting of postnatal care	Mandatory	9
13	Individual or group care	Mandatory	1
14	Planned scheduled medical visits	Conditional	1
15	Additional remote or rural services offered indicator	Mandatory	1
16	Type of additional antenatal/postnatal remote or rural service	Conditional	8
17	Expected time of model completion after birth event	Mandatory	1
18	Major Model Category	Mandatory	1
19	Maternity model of care identifier	Mandatory	1

Establishment identifier (not required for this pilot)

Identifying and definitional attributes

Technical name: Establishment—organisation identifier (Australian), NNX[X]NNNNN

Definition: The identifier for the establishment in which episode or event occurred. Each separately administered health care establishment to have a unique identifier at the national level.

Representational attributes

Representation class: Identifier

Data type: String

Format: NNX[X]NNNNN

Maximum character length: 9

Maternity model of care DSS 2015-

DSS specific information: If the model of care being recorded is not based at a single establishment (eg individual hospital or birthing service) but is a model of care being provided throughout a state or territory and available across a range of maternity services, then code this data element with the state or territory identifier for the state that is recording the model of care. Use this identifier in all placeholders. The permissible values for the State/Territory Identifier are:

Value Meaning

1   New South Wales

2   Victoria

3   Queensland

4   South Australia

5   Western Australia

6   Tasmania

7   Northern Territory

8   Australian Capital Territory

9   Other territories (Cocos (Keeling) Islands, Christmas Island and Jervis Bay Territory)

Collection and usage attributes

Guide for use: Concatenation of:

Australian state/territory identifier (character position 1);

Sector (character position 2);

Region identifier (character positions 3-4); and

Organisation identifier (state/territory), (character positions 5-9).

Comments: Establishment identifier should be able to distinguish between all health care establishments nationally.

Target group indicator

Identifying and definitional attributes

Technical name: Maternity model of care—target group indicator, code N

Definition: An indicator of whether a particular maternity model of care is predominantly targeted at a specific section of women who share a common characteristic or set of characteristics, as represented by a code.

Representational attributes

Representation class: Code

Data type: Boolean

Format: N

Maximum character length: 1

Permissible values:

Value	Meaning
1	Yes
2	No

Collection and usage attributes

Guide for use: Some models of care are designed for specific groups of women based on a set of agreed common criteria and may restrict access to women not meeting this criteria. These restrictions may be based on geographical area, risk factors, ethnic, cultural or social groups or medical or obstetric conditions. In some cases, a model of care may not have any access restrictions but will still predominantly target a particular group of women. In both of these cases a value of "Yes" should be used.

If a model of care is available to all women without any restrictions then a value of "No" should be used.

Maternity target group

Identifying and definitional attributes

Technical name:

Maternity model of care—target group, code N[N]

Definition:

The characteristics of women or their pregnancy that define a target group for a specific maternity model of care, as represented by a code.

Representational attributes

Representation class:

Code

Data type:

Number

Format:

N[N]

Maximum character length:

2

Permissible values:

Value	Meaning
1	Aboriginal or Torres Strait Islander identification
2	Migrant or refugee
3	Low risk or normal pregnancy
4	Breech presentation of fetus
5	Complex or high risk pregnancy
6	Multi fetal pregnancy
7	Next birth after caesarean section
8	Planned homebirth
9	Maternal obesity or high body mass index (BMI)
10	Maternal diabetes
11	Maternal drug or alcohol use
12	Maternal age—young
13	Maternal mental health condition
80	Other specific cultural groups not already specified
81	Other social groups not already specified

| 82 | Other vulnerable groups not already specified |
| 88 | Other maternity target groups |

Collection and usage attributes

Guide for use: CODE 3   Low risk or normal pregnancy

This code is to be used if a model of care is restricted to women with "low-risk" or "normal" pregnancies.

CODE 4   Breech presentation of fetus

This code is to be used for breech clinics or models of care.

CODE 5   Complex or high risk pregnancy

This code is to be used for high-risk clinics or maternal-fetal medicine clinics or models of care.

CODE 6   Multi fetal pregnancy

This code is to be used for twin/triplet clinics or models of care.

CODE 7   Next birth after caesarean section

This code is to be used for "vaginal birth after caesarean (VBAC)" or "next birth after caesarean (NBAC)" clinics or models of care.

CODE 9   Maternal obesity or high body mass index (BMI)

This code is to be used for bariatric clinics or models of care.

CODE 12   Maternal age—young

This code is to be used for models of care targeted specifically at young women.

CODE 80   Other specific cultural groups not already specified

This code is to be used for models of care targeted at specific cultural groups not specified by other codes, such as particular ethnic groups.

CODE 81   Other social groups not already specified

This code is to be used for models of care targeted at women from specific social groups not specified by other codes.

CODE 82   Other vulnerable groups not already specified

This code is to be used for models of care targeted at vulnerable women not specified by other codes, such as women affected by domestic violence, women in custody etc.

CODE 88   Other maternity target groups

This code is used for models of care targeted at other specific groups of women not specified by other codes.

Maternity model of care DSS 2015-

Conditional obligation: Reporting of this data element is conditional upon a 'yes' response to the data element Maternity model of care—target group indicator, code N.

DSS specific information: Some models of care are targeted at more than one group of women. Multiple values for this data element may be selected to identify all the specific groups of women that are targeted in a particular model of care.

If there is no specific target group (that is, the model of care is available to all women) then a value for this data element is not to be reported as it is conditional on a "Yes" response to data element Maternity model of care—target group indicator, code N.

Collection and usage attributes

Guide for use: Some models of care are targeted at specific groups of women with similar characteristics. These might be based on geographical area, risk status, obstetric or medical condition or social/cultural characteristic. Having a target group does not necessarily mean that the model of care is restricted to only those women (although the model is specifically targeted at them) and other women may also access the model of care. For example, a model of care that is targeted specifically for Aboriginal and Torres Strait Islander women may also provide care for non-Indigenous women living in the same remote area, however they make up a small proportion of the women cared for in the model.

Profession of designated maternity carer

Identifying and definitional attributes

Technical name: Maternity model of care—profession of designated maternity carer, code N[N]

Synonymous names: Profession of lead maternity carer; Profession of maternity care co-ordinator; Profession of primary carer; Profession of named carer

Definition: The profession of the maternity health care provider who is acting as the **designated maternity carer** in a model of care, as represented by a code

Representational attributes

Representation class: Code

Data type: Number

Format: N[N]

Maximum character length: 2

Permissible values:

Value	Meaning
1	Specialist obstetrician—public
2	Specialist obstetrician—private
3	General practitioner obstetrician
4	Midwife—public
5	Midwife—private
6	Midwife—privately practising
7	General practitioner
8	Maternal—fetal medicine subspecialist
9	Aboriginal maternal infant care practitioner
10	Aboriginal health practitioner
11	Nurse
12	Shared care
13	Multidisciplinary team
14	Perinatal mental health worker

15	Other allied health practitioner
16	Medical specialist other than obstetric
88	Other

Collection and usage attributes

Guide for use: CODE 1   Specialist obstetrician—public

This code also includes obstetric registrars.

CODE 4   Midwife—public

Use this code for midwives employed in the public health system.

CODE 5   Midwife—private

Use this code for midwives employed in the private health system but not working independently. This may be in a private hospital or in an obstetrician's private practice.

CODE 6   Midwife—privately practising

Use this code for independent privately practising midwives working in either a private or public healthcare setting. This includes privately practising midwives with visiting rights to a public or private hospital to provide intrapartum care, privately practising midwives who provide privately funded homebirth services or private midwives providing antenatal and postnatal care independently.

CODE 12   Shared care

Use this code when the model of care is a formal shared care arrangement with no single designated carer. This could be between different combinations of maternity care professionals such as GP and midwife, GP and hospital RMO, GP and obstetrician, Midwife and Aboriginal health practitioner etc.

CODE 13   Multidisciplinary team

Use this code when the model of care has no individual lead carer and all care is provided by a team of clinicians that may include obstetricians and midwives.

Maternity model of care DSS 2015-

DSS specific information: If the value for this data element is "CODE 12 Shared Care" you must also record the values for the professions involved in the shared care in the data element Maternity model of care—profession of collaborative maternity carer, code N[N].

Collection and usage attributes

Guide for use: This position may also be known as the maternity care co-ordinator, primary or lead carer or named carer within a model

of care and is the profession of the maternity care provider who is responsible for co-ordinating the maternity care for a woman. In some cases this may not be an individual but may be a multi-disciplinary team or a shared care arrangement.

Restrictions on values:

The following codes are not permissible values for this data element:

CODE 9 Aboriginal health practitioner

CODE 14 Perinatal mental health worker

CODE 15 Other allied health practitioner

CODE 16 Medical specialist other than obstetric

Midwifery caseload indicator

Identifying and definitional attributes

Technical name: Maternity model of care—midwifery caseload indicator, yes/no code N

Synonymous names: Midwifery group practice; Midwifery continuity of carer

Definition: An indicator of whether a model of maternity care is a **midwifery caseload** model of care, as represented by a code.

Representational attributes

Representation class: Code

Data type: Boolean

Format: N

Maximum character length: 1

Permissible values:

Value	Meaning
1	Yes
2	No

Collection and usage attributes

Guide for use: Code 1: Yes is to be used only if the model of care is midwifery caseload. This involves a midwife having a set number of women per month or per annum (fulltime equivalent) that they are the primary midwife for, providing and coordinating the majority of care throughout pregnancy, labour and after birth and acting as a backup midwife for another primary midwife. The primary midwife is usually on-call for 24 hours per day for a set period and is often paid on an annualised salary and not on shifts. This is different to team midwifery.

Code 2: No is to be used for all other models of care, including team midwifery. Although a team midwifery model may look after a set number of women per year, this number is shared among the team rather than having each midwife act as primary midwife for their own caseload of women.

Midwifery caseload size

Identifying and definitional attributes

Technical name: Maternity model of care—midwifery caseload size, number N[NN]

Definition: The total number of women (caseload) cared for per year by each full-time equivalent primary midwife working in a **midwifery caseload** model of maternity care, as represented by a number.

Representational attributes

Representation class: Total

Data type: Number

Format: N[NN]

Maximum character length: 3

Maternity model of care DSS 2015-

Conditional obligation: Reporting of this data element is conditional upon a 'yes' response to the Maternity model of care—midwifery caseload indicator, yes/no code N data element.

Collection and usage attributes

Guide for use: This should be the total number of women per year that a midwife looks after in the role of primary midwife as a full-time equivalent midwife. If a model of care includes part-time midwives working as primary midwife then the caseload should be recalculated to reflect their caseload if they were working full-time. Do not count the number of women that the midwife is also caring for as a back-up midwife.

Extent of continuity of carer

Identifying and definitional attributes

Technical name: Maternity model of care—extent of continuity of carer, code N[N]

Definition: The extent to which **continuity of carer** is provided across the continuum of maternity care within a model of maternity care, as represented by a code.

Representational attributes

Representation class: Code

Data type: Number

Format: N[N]

Maximum character length: 2

Permissible values:

Value	Meaning
1	Antenatal period only
2	Antenatal and intrapartum periods
3	Antenatal and postpartum periods
4	Intrapartum and postpartum periods
5	Whole duration of maternity period—antenatal, intrapartum and postpartum
6	No continuity of carer

Collection and usage attributes

Guide for use: CODE 1   Antenatal period only

This code is to be used if the model of care provides continuity of carer throughout the antenatal period only.

A single named designated carer provides the majority of care to each woman for the antenatal period only and not for intrapartum or postpartum care.

CODE 2   Antenatal and intrapartum periods

This code is to be used if the model of care provides continuity of carer throughout the antenatal and intrapartum periods only.

A single named designated carer provides the majority of care to each woman for the antenatal period as well as intrapartum care but does not provide postpartum care.

CODE 3   Antenatal and postpartum periods

This code is to be used if the model of care provides continuity of carer throughout the antenatal and postpartum periods only.

A single named designated carer provides the majority of care to each woman for the antenatal period and again in the postpartum period but not for intrapartum care. This may be the case for some remote or rural models of care where women are transferred to another hospital for birth but receive their antenatal and postnatal care in their local hospital or community.

CODE 4   Intrapartum and postpartum periods

This code is to be used if the model of care provides continuity of carer throughout the intrapartum and postpartum periods only.

A single named designated carer provides the majority of care to each woman for the birth episode (intrapartum period) and postpartum period but does not provide care in the antenatal period.

CODE 5   Whole duration of maternity care—antenatal, intrapartum and postpartum

This code is to be used if the model of care provides continuity of carer throughout all stages of the pregnancy, labour and postnatal periods.

A single named designated carer provides the majority of care to each woman for the antenatal, intrapartum and postpartum periods.

CODE 6   No continuity of carer

This code is to be used if the model of care does not provide any continuity of carer to women in the model.

There is no named designated carer assigned to each woman and care is provided by any number of different care providers throughout the antenatal, intrapartum and postpartum periods. There may be a small team of maternity care professionals providing care to women within the same philosophical model (continuity of care). However, there is no primary or lead caregiver offering continuity of carer.

Planned collaborative maternity carer

Identifying and definitional attributes

Technical name: Maternity model of care—profession of collaborative maternity carer, code N[N]

Definition: The profession of other recognised and named **collaborative maternity care professionals** in a maternity model of care, as represented by a code.

Representational attributes

Representation class: Code

Data type: Number

Format: N[N]

Maximum character length: 2

Permissible values:

Value	Meaning
1	Specialist obstetrician—public
2	Specialist obstetrician—private
3	General practitioner obstetrician
4	Midwife—public
5	Midwife—private
6	Midwife—privately practising
7	General practitioner
8	Maternal—fetal medicine subspecialist
9	Aboriginal maternal infant care practitioner
10	Aboriginal health practitioner
11	Nurse
12	Shared care
13	Multidisciplinary team
14	Perinatal mental health worker
15	Other allied health practitioner
16	Medical specialist other than obstetric

88   Other

Collection and usage attributes

Guide for use: CODE 1   Specialist obstetrician—public

This code also includes obstetric registrars.

CODE 4   Midwife—public

Use this code for midwives employed in the public health system.

CODE 5   Midwife—private

Use this code for midwives employed in the private health system but not working independently. This may be in a private hospital or in an obstetrician's private practice.

CODE 6   Midwife—privately practising

Use this code for independent privately practising midwives working in either a private or public healthcare setting. This includes privately practising midwives with visiting rights to a public or private hospital to provide intrapartum care, privately practising midwives who provide privately funded homebirth services or private midwives providing antenatal and postnatal care independently.

CODE 12   Shared care

Use this code when the model of care is a formal shared care arrangement with no single designated carer. This could be between different combinations of maternity care professionals such as GP and midwife, GP and hospital RMO, GP and obstetrician, Midwife and Aboriginal health practitioner etc.

CODE 13   Multidisciplinary team

Use this code when the model of care has no individual lead carer and all care is provided by a team of clinicians that may include obstetricians and midwives.

Maternity model of care DSS 2015-

DSS specific information: This data element allows for multiple values. Please code all relevant collaborative carer/s involved in a model of care that provide collaborative care with the designated (lead) carer. Do not code the profession of the designated carer as this is identified in a different related data element.

Only code the profession of carers that have a planned role within a model of care for all women in the model. Do not code healthcare professionals that women may be referred to on an 'ad hoc' basis. Do not record a value if there are no planned collaborative carers in a maternity model of care.

If the value of the data element Maternity model of care—profession of designated maternity carer, code N[N] is 'CODE 12 Shared care' then code the values for the different professions of carers who share the provision of care within the maternity model of care.

The following values are excluded for use from this data element:

CODE 12 Shared care

CODE 13 Multidisciplinary team

Planned transfer for intrapartum care and birth indicator

Identifying and definitional attributes

Technical name: Maternity model of care—planned transfer for intrapartum care and birth indicator, yes/no code N

Synonymous names: Planned transfer for birth indicator

Definition: An indicator of whether a maternity model of care requires that all women be transferred to another location prior to labour for intrapartum care and birth, as represented by a code.

Representational attributes

Representation class: Code

Data type: Boolean

Format: N

Maximum character length: 1

Permissible values:

Value	Meaning
1	Yes
2	No

Collection and usage attributes

Guide for use: This data element refers to planned transfer for all women prior to labour and not just for women who require a higher-level of care for birth or in an emergency.

CODE 1   Yes

This code is to be used only if it is intended within the model of maternity care to transfer all women to a different location for intrapartum care and birth. This is a planned transfer prior to labour.

CODE 2   No

This code is to be used for all other models of care where women can receive intrapartum care at the same facility or in the same area as their antenatal and postnatal care. Some women may need to be transferred for intrapartum care elsewhere due to the presence of risk factors or in an emergency.

Expected setting for an antenatal care visit

Identifying and definitional attributes

Technical name: Maternity model of care—expected setting for an antenatal care visit, code N[N]

Definition: The expected setting for an **antenatal care visit** that is offered within a model of maternity care, as represented by a code.

Representational attributes

Representation class: Code

Data type: Number

Format: N[N]

Maximum character length: 2

Permissible values:

Value	Meaning
1	Hospital clinic—onsite
2	Hospital clinic—outreach
3	Clinicians' private rooms
4	Community facility
5	Aboriginal Community Controlled Health Organisation facility
6	Home
7	Birth centre—stand alone
8	Birth centre—in hospital
9	Hospital—excluding birth centre
10	Hotel or hostel
88	Other

Collection and usage attributes

Guide for use: CODE 3   Clinicians' private rooms

This code also includes Medicare Local facilities and GP surgeries.

CODE 9   Hospital—excluding birth centre

This code is used for areas used for birthing in a hospital other than a birth centre (if one is present). These may be known by a

variety of names such as a birth suite, delivery suite, labour ward, labour and delivery etc.

Note that some codes may not be applicable to all stages of maternity care. Check the Guide for use for individual data elements that use this value domain.

Maternity model of care DSS 2015-

DSS specific information: Some models of care offer multiple options for where antenatal care is provided and all applicable codes should be used.

Expected setting of birth

Identifying and definitional attributes

Technical name: Maternity model of care—expected setting of birth, code N[N]

Synonymous names: Planned place of birth

Definition: The expected setting for a birth offered by a model of maternity
                       care, as represented by a code.

Representational attributes

Representation class: Code

Data type: Number

Format: N[N]

Maximum character length: 2

Permissible values:

Value	Meaning
1	Hospital clinic—onsite
2	Hospital clinic—outreach
3	Clinicians' private rooms
4	Community facility
5	Aboriginal Community Controlled Health Organisation facility
6	Home
7	Birth centre—stand alone
8	Birth centre—in hospital
9	Hospital—excluding birth centre
10	Hotel or hostel
88	Other

Collection and usage attributes

Guide for use: CODE 3   Clinicians' private rooms

This code also includes Medicare Local facilities and GP
surgeries.

CODE 9   Hospital—excluding birth centre

This code is used for areas used for birthing in a hospital other than a birth centre (if one is present). These may be known by a variety of names such as a birth suite, delivery suite, labour ward, labour and delivery etc.

Note that some codes may not be applicable to all stages of maternity care. Check the Guide for use for individual data elements that use this value domain.

Maternity model of care DSS 2015-

DSS specific information: Some models of care offer multiple options for where birth care is provided and all applicable codes should be used.

The following codes from this value domain are excluded from this data element and must not be used:

CODE 1 Hospital clinic—onsite
CODE 2 Hospital clinic—outreach
CODE 3 Clinicians' private rooms
CODE 4 Community facility
CODE 10 Hotel or hostel

Expected setting of postnatal care

Identifying and definitional attributes

Technical name: Maternity model of care—expected setting of postnatal care, code N[N]

Synonymous names: Planned location of postnatal care; Location of postnatal visits; Location of postpartum care

Definition: The expected setting for postnatal care that is offered within a model of maternity care, as represented by a code.

Representational attributes

Representation class: Code

Data type: Number

Format: N[N]

Maximum character length: 2

Permissible values:

Value	Meaning
1	Hospital clinic—onsite
2	Hospital clinic—outreach
3	Clinicians' private rooms
4	Community facility
5	Aboriginal Community Controlled Health Organisation facility
6	Home
7	Birth centre—stand alone
8	Birth centre—in hospital
9	Hospital—excluding birth centre
10	Hotel or hostel
88	Other

Collection and usage attributes

Guide for use: CODE 3   Clinicians' private rooms

This code also includes Medicare Local facilities and GP surgeries.

CODE 9   Hospital—excluding birth centre

This code is used for areas used for birthing in a hospital other than a birth centre (if one is present). These may be known by a variety of names such as a birth suite, delivery suite, labour ward, labour and delivery etc.

Note that some codes may not be applicable to all stages of maternity care. Check the Guide for use for individual data elements that use this value domain.

Maternity model of care DSS 2015-

DSS specific information: Some models of care offer multiple options for where postnatal care is provided and all applicable codes should be used.

Individual or group care

Identifying and definitional attributes

Technical name: Maternity model of care—group session status, individual/group session descriptor code N

Definition: A descriptor of whether the model of maternity care offers antenatal and/or postnatal care in individual or group sessions, as represented by a code.

Representational attributes

Representation class: Code

Data type: Number

Format: N

Maximum character length: 1

Permissible values:

Value	Meaning
1	Individual sessions
2	Group sessions
3	Combination of individual and group sessions

Collection and usage attributes

Guide for use: Some models of care offer antenatal and/or postnatal care in group sessions, such as the *Centering Pregnancy*® model. Group sessions must include both education and clinical care in a group setting and does not refer to "parenting classes" or "antenatal education classes" only. Group sessions are sessions that consist of two or more women.

CODE 3   Combination of individual and group sessions

Use this code when a model of care offers a combination of individual sessions and group sessions.

Planned scheduled medical visits

Identifying and definitional attributes

Technical name: Maternity model of care—planned medical visit, total number N[N]

Definition: The total number of planned visits with a medical practitioner scheduled for all women in a model of maternity care, as represented by a number.

Representational attributes

Representation class: Total

Data type: Number

Format: N[N]

Maximum character length: 2

Maternity model of care DSS 2015-

Conditional obligation: Reporting of this data element is conditional upon the reported value of either Maternity model of care—profession of designated maternity carer, code N[N] or Maternity model of care—profession of collaborative maternity carer, code N[N] being one of the following:

Code 1 Specialist obstetrician—public

Code 2 Specialist obstetrician—private

Code 3 General practitioner obstetrician

Code 7 General practitioner

Code 8 Maternal—fetal medicine subspecialist

DSS specific information: Within a maternity model of care a 'medical practitioner' refers to either an obstetrician or a GP. This includes obstetric registrars and GP obstetricians.

Collection and usage attributes

Guide for use: Some models of care include a schedule of planned visits to a medical practitioner. Record the total number of visits to a doctor that are scheduled into the care plan in this model of care. Not all women will necessarily receive this number of visits but it is the number intended within the model of care for most women. These must be planned as part of the model of care and not visits to a doctor as required for some women.

Use Code 0 if women in a model of maternity care only see a doctor if needed on a case-by-case basis.

Additional remote or rural services offered indicator

Identifying and definitional attributes

Technical name: Maternity model of care—additional remote or rural services offered indicator, yes/no code N

Definition: An indicator of whether or not additional remote or rural services are offered in a maternity model of care, as represented by a code.

Representational attributes

Representation class: Code

Data type: Boolean

Format: N

Maximum character length: 1

Permissible values:

Value	Meaning
1	Yes
2	No

Collection and usage attributes

Guide for use: These additional antenatal/postnatal services are particularly for women in remote or rural areas who reside at a significant distance from a maternity service.

Type of additional antenatal/postnatal remote or rural service

Identifying and definitional attributes

Technical name: Maternity model of care—type of additional remote or rural service, antenatal/postnatal service code N[N]

Definition: The type of additional rural and remote antenatal/postnatal service provided in a maternity model of care, represented by a code.

Representational attributes

Representation class: Code

Data type: Number

Format: N[N]

Maximum character length: 2

Permissible values:

Value	Meaning
1	Fly-in-fly-out clinicians
2	Telehealth
3	Community-based remote-area clinicians
88	Other

Maternity model of care DSS 2015-

Conditional obligation: Reporting of this data element is conditional upon the reported value of Maternity model of care—additional remote or rural services offered indicator, yes/no code N being Code 1 Yes.

DSS specific information: This data element allows for multiple values to be recorded. Please record all additional services provided for remote or rural women in a model of maternity care.

Collection and usage attributes

Guide for use: Report a permissible value indicating an additional service that is included specifically for remote or rural women in a model of maternity care. These additional services are provided for women who reside at a significant distance from a maternity service.

CODE 1   Fly-in-fly-out clinicians

This may include Medical Specialist Outreach Assistance Program (MSOAP) services or any maternity care clinician (midwife or doctor) who travels to a remote community from a metropolitan centre specifically to provide antenatal/postnatal care.

CODE 2   Telehealth

This code is for any model of care that includes visits with a clinician via telehealth technology.

CODE 3   Community-based remote-area clinicians

This code is for models of care where remote-area nurses, midwives and or doctors provide care to women in their local community.

Expected time of model completion after birth event

Identifying and definitional attributes

Technical name: Maternity model of care—expected time of completion, length of time after birth event code N[N]

Synonymous names: Model discharge

Definition: The length of time after a birth event that a model of maternity care is expected to cease, as represented by a code.

Representational attributes

Representation class: Code

Data type: Number

Format: N[N]

Maximum character length: 2

Permissible values:

Value	Meaning
1	At the end of the birth event
2	1-3 days after the birth event
3	4-7 days after the birth event
4	8-14 days after the birth event
5	15-28 days after the birth event
6	29-42 days after the birth event
7	More than 42 days after the birth event

Collection and usage attributes

Guide for use: The length of time that planned postnatal care is included within a model of care varies from model to model. In some cases, care ends at discharge from hospital or the birth location, whereas in other models planned postnatal care may continue for 6 weeks. This data element is the equivalent to discharge from a model of care (not necessarily discharge from hospital).

What is considered the end of a birth event will vary with the maternity model of care. For the purpose of this data element, if a model of care involves an inpatient stay a birth event is considered to end at discharge from hospital. If a model of care does not involve an inpatient stay then the end of a birth event is

considered to be the time of birth.

Code 1 At the end of birth event.

Record Code 1 if planned postnatal care ends either at discharge from hospital (if there is an inpatient stay) or ends immediately after birth if there is no inpatient stay.

Major Model Category

Identifying and definitional attributes

Technical name: Maternity model of care—model of care category, Major Model Category code N[N]

Synonymous names: MMC code

Definition: The overarching major category or group that a maternity model of care can be described by based on its characteristics, as represented by a code.

Representational attributes

Representation class: Code

Data type: Number

Format: N[N]

Maximum character length: 2

Permissible values:

Value	Meaning
1	Private obstetrician (specialist) care
2	Private midwifery care
3	General Practitioner obstetrician care
4	Shared care
5	Combined care
6	Public hospital maternity care
7	Public hospital high risk maternity care
8	Team midwifery care
9	Midwifery group practice caseload care
10	Remote area maternity care
80	No formal care
88	Other

Collection and usage attributes

Guide for use: Every model of maternity care can be allocated to one of ten broad Major Model Categories (MMC). While there will be variation between models of care in the same MMC these broad

descriptors provide a common understanding and terminology about different categories of maternity models of care.

CODE 1   Private obstetrician (specialist) care

Antenatal care provided by a private specialist obstetrician. Intrapartum care is provided in either a private or public hospital by the private specialist obstetrician and hospital midwives in collaboration. Postnatal care is usually provided in the hospital by the private specialist obstetrician and hospital midwives and may continue in the home, hotel or hostel.

CODE 2   Private midwifery care

Antenatal, intrapartum and postnatal care is provided by a private midwife or group of midwives in collaboration with doctors in the event of identified risk factors. Antenatal, intrapartum and postnatal care could be provided in a range of locations including the home.

CODE 3   General Practitioner obstetrician care

Antenatal care provided by a GP obstetrician. Intrapartum care is provided in either a private or public hospital by the GP obstetrician and hospital midwives in collaboration. Postnatal care is usually provided in the hospital by the GP obstetrician and hospital midwives and may continue in the home or community.

CODE 4   Shared care

Antenatal care is provided by a community maternity service provider (doctor and/or midwife) in collaboration with hospital medical and/or midwifery staff under an established agreement, and can occur both in the community and in hospital outpatient clinics. Intrapartum and early postnatal care usually takes place in the hospital by hospital midwives and doctors, often in conjunction with the community doctor or midwife (particularly in rural settings).

CODE 5   Combined care

Antenatal care provided by a private maternity service provider (doctor and/or midwife) in the community. Intrapartum and early postnatal care provided in the public hospital by hospital midwives and doctors. Postnatal care may continue in the home or community by hospital midwives.

CODE 6   Public hospital maternity care

Antenatal care is provided in hospital outpatient clinics (either onsite or outreach) by midwives and/or doctors. Care could also be provided by a multidisciplinary team. Intrapartum and postnatal care is provided in the hospital by midwives and doctors in collaboration. Postnatal care may continue in the home or community by hospital midwives.

CODE 7   Public hospital high risk maternity care

Antenatal care is provided to women with medical high risk/complex pregnancies by maternity care providers (specialist obstetricians and/or maternal-fetal medicine subspecialists in collaboration with midwives) with an interest in high risk maternity care in a public hospital. Intrapartum and postnatal care is provided by hospital doctors and midwives. Postnatal care may continue in the home or community by hospital midwives.

CODE 8   Team midwifery care

Antenatal, intrapartum and postnatal care is provided by a small team of rostered midwives (no more than eight) in collaboration with doctors in the event of identified risk factors. Intrapartum care is usually provided in a hospital or birth centre. Postnatal care may continue in the home or community by the team midwives.

CODE 9   Midwifery Group Practice caseload care

Antenatal, intrapartum and postnatal care is provided within a publicly-funded caseload model by a known primary midwife with secondary backup midwife/midwives providing cover and assistance with collaboration with doctors in the event of identified risk factors. Antenatal care and postnatal care is usually provided in the hospital, community or home with intrapartum care in a hospital, birth centre or home.

CODE 10   Remote area maternity care

Antenatal and postnatal care is provided in remote communities by a remote area midwife (or a remote area nurse) or group of midwives sometimes in collaboration with a remote area nurse and/or doctor. Antenatal care may also be provided via telehealth or fly-in-fly-out clinicians in an outreach setting. Intrapartum and early postnatal care is provided in a regional or metropolitan hospital (involving temporary relocation prior to labour) by hospital midwives and doctors.

Collection and usage attributes

Guide for use: Although there is much variation in models of maternity care, all models of care can be grouped into one of the broad 'Major Model Categories' based on their characteristics, i.e. the characteristics of the women in the model, the carers working in the model and aspects of the care provided.

The Major Model Categories have broad descriptions that describe the *intent* of a model of care, recognising that not all women in a model of care will necessarily follow the same journey or receive the same care pathway as the model intends (or was designed for) for the majority of women.

CODE 2 Private midwifery care

This code should be recorded for all models of care where the designated maternity carer is a privately practising midwife, even if the care is provided from a private midwifery caseload group practice. This code is not to be used if the model of care is "Shared Care" between a private midwife and a hospital as part of a formal arrangement.

CODE 4 Shared care

This code should only be used when there is an established shared care agreement between the community-based maternity carer (doctor or midwife) and the hospital. This would usually include an agreed schedule of antenatal care visits between the two providers.

CODE 5 Combined care

This code is to be used when antenatal care is provided by a private maternity carer in the community (doctor or midwife) and intrapartum care is provided separately by public hospital doctors and/or midwives without an established "Shared Care" agreement. There is no agreed schedule of visits between the two different providers and the community-based private maternity carer does not provide any care in the hospital.

CODE 6 Public hospital maternity care

This code can be used for models of care provided in public hospitals where antenatal care is usually provided in outpatient clinics by midwives or doctors (sometimes a multidisciplinary team) and may include specific purpose clinics such as diabetes clinics, next birth after caesarean (NBAC) clinics etc. This code should not be used for models of care for high risk pregnancies (Code 7) or models that are in the category of "Team midwifery" (Code 8) or "Midwifery group practice caseload care" (Code 9).

Maternity model of care identifier

Identifying and definitional attributes

Technical name: Maternity model of care—identifier, N(6)

Definition: A sequence of characters which uniquely identifies a maternity model of care, as represented by a number

Representational attributes

Representation class: Identifier

Data type: Number

Format: N(6)

Maximum character length: 6

Collection and usage attributes

Guide for use: The first character position should be the Australian state/territory identifier for the origin of the model of care.

     The remaining characters should be a unique number combination within each state or territory.

Glossary items

Antenatal care visit

Identifying and definitional attributes

Metadata item type: Glossary Item

Definition: An intentional encounter between a pregnant woman and a healthcare professional to assess and improve maternal and fetal well-being throughout pregnancy and prior to labour.

In the majority of cases the primary health care professional administering antenatal care will be a midwife or a doctor but may include other registered healthcare professionals such as a nurse or Aboriginal Maternal Infant Care Practitioner.

An antenatal care visit may occur in the following clinical settings:

antenatal outpatients clinic
specialist outpatient clinic
general practitioner surgery
obstetrician private room
community health centre
rural and remote health clinic
independent midwife practice setting including home of pregnant female

Collaborative maternity carer

Identifying and definitional attributes

Metadata item type: Glossary Item

Definition: The health care professional who collaborates with the **designated maternity carer** to provide care for women during the antenatal, intrapartum or postnatal stages of maternity care, based on the women's identified needs and individual circumstances.

Continuity of carer

Identifying and definitional attributes

Metadata item type: Glossary Item

Synonymous names: Continuity of lead carer; Continuity of primary carer

Definition: Continuity of carer means care provided, or lead, over the full length of the episode of care by the same named carer. Relational continuity is provided by the same named caregiver

being involved throughout the period of care even when other caregivers are required. Other caregivers may be involved in the provision of care, either as a backup to the named carer or to collaborate in the provision of care, however the named carer remains to coordinate and provide ongoing care throughout.

Designated maternity carer

Identifying and definitional attributes

Metadata item type: Glossary Item

Synonymous names: Lead maternity carer; Primary maternity carer; Maternity care co-ordinator

Definition: The health care professional who coordinates the care for a woman during the antenatal, intrapartum or postnatal stages of maternity care, based on the woman's identified needs and individual circumstances.

        This may be a midwife, obstetrician, general practitioner or other maternity health professional.

Midwifery caseload

Identifying and definitional attributes

Metadata item type: Glossary Item

Synonymous names: Midwifery group practice; Midwifery continuity of carer

Definition: A model of maternity care where women have a primary midwife assigned to them throughout pregnancy, labour and birth and the postnatal period. Each midwife has an agreed number (caseload) of women per year and acts as a second or "back-up" midwife for women who have another midwife as their primary carer. Caseload midwives usually work on a 24-hour on-call basis (this may be organised within a group) and may be employed on an annualised salary. This is also known as a midwifery continuity of carer model of care and may be a private or public arrangement. Midwifery caseload may be managed within a midwifery group practice model where a small number of midwives join together in a group with each midwife having their own caseload and providing backup for the other midwives in the group practice. A key aspect of caseload midwifery practice that differentiates it from 'team midwifery' models is that women have a named midwife, caseload midwives have a self-managed workload that is outside of a traditional roster structure and provides a high level of continuity of a known carer across the continuum of maternity care. Note that this is different to team midwifery.

Appendix C: Summary of recommendations

Table C1: Data elements to be replaced

Planned transfer for intrapartum care and birth indicator

Replace this data element with:

'Routine relocation for intrapartum care and birth indicator'.

An indicator of whether a maternity model of care requires women to be routinely relocated from their community to another location prior to labour for intrapartum care and birth, as represented by a code.

Permissible values:

CODE 1   Yes

CODE 2   No

Guide for use:

CODE 1 Yes

This code is to be used if the intention of the model of care is that all women cared for in the model require routine relocation from their communities to another location prior to labour for intrapartum care and birth. While some women may give birth prior to relocation (unplanned), this is not the intention of the model. Do not use this code if the model of care only requires transfer of some women with increased risk factors to attend a hospital of higher role delineation (for example from a Level 4 facility to a Level 6 facility due to complications of pregnancy).

For example, CODE 1 for any model of care where women who reside in a rural or remote community where there is no accessible appropriate birth facility are routinely relocated to a larger town or city some weeks prior to the birth.

CODE 2 No

This code is to be used for all other models of care where the intention of the model is that women can remain in their general area for birth and the model does not require women to leave their communities prior to the onset of labour for intrapartum care and birth.

Expected setting of postnatal care

Remove the data element 'Expected setting of postnatal care' and replace with the following new data element:

'Postnatal visits in a residential setting indicator'.

An indicator of whether a model of maternity care provides postnatal visits in a residential setting, as represented by a code.

Permissible values:

CODE 1   Yes

CODE 2   No

Guide for use:

CODE 1 Yes

This code is to be used if a model of maternity care provides women with access to postnatal visits by a maternity care health professional in a residential setting, such as the woman's own home, a hotel or hostel. These visits may be provided by the designated maternity carer who has provided care throughout the antenatal and/or intrapartum period or the visits may be provided as part of a 'domiciliary' or 'early discharge' midwifery home visiting program.

CODE 2 No

This code is to be used if a model of maternity care does not provide women with postnatal care in a residential setting and postnatal visits are provided only in a hospital, clinicians' private rooms or a community/health-care facility following discharge from the birth setting.

(continued)

Table C1 (continued): Data elements to be replaced

Planned scheduled medical visits

Change the data element 'Planned scheduled medical visits' to an indicator item to report whether there are a minimum number of planned scheduled medical visits for all women in a model of care. The new data element suggested is:

'Planned medical visit indicator'.

An indicator of whether there are a minimum number of planned visits with a medical practitioner scheduled for all women in a model of maternity care, as represented by a code.

Permissible values:

CODE 1   Yes

CODE 2   No

Guide for use:

Some models of care include a minimum number of scheduled or planned visits to a medical practitioner for all women. These are planned as part of the model of care and not visits to a doctor as required for some women. Although the number of visits for individual women may vary depending on need, some models will have a minimum number of visits for all women (even 1 visit).

CODE 1 Yes

This code is used if a model of maternity care includes a schedule of planned visits to a medical practitioner. The number of visits with a medical practitioner may vary depending on the woman's individual needs; however, there is a minimum schedule of planned visits for all women intended within the model of care. These must be planned as part of the model of care and not referrals to a doctor as required for some women.

CODE 2 No

This code is used if a model of maternity care does not include a minimum number of planned visits to a medical practitioner. Women may still be referred to a doctor if needed but there is no minimum schedule of visits to a medical practitioner for all women included in the model of care.

Expected time of model completion after birth event

Remove the data element 'Expected time of model completion after birth event' and replace with the following new data element:

'Expected length of time for postnatal visits in a residential setting'.

The expected length of time a model of maternity care provides access to postnatal visits in a residential setting, as represented by a code.

Permissible values:

CODE 1   1–3 days

CODE 2   4–7 days

CODE 3   8–14 days

CODE 4   15–28 days

CODE 5   29–42 days

CODE 6   More than 42 days

Guide for use:

Code the appropriate value that represents the length of time that a model of care provides the majority of women with access to postnatal visits by a maternity care health professional in a residential setting such as the woman's own home, a hotel or hostel. These visits may be provided by the designated maternity carer who has provided care throughout the antenatal and/or intrapartum period or the visits may be provided as part of a 'domiciliary' or 'early discharge' midwifery home visiting program that is separate to the model of care the woman had been in up until she gave birth.

Conditional obligation:

Reporting of this data element is conditional upon a 'Yes' response to the data element Maternity model of care—postnatal visits in a residential setting indicator, Yes/No code N.

Table C2: Data standards changed in METeOR

Maternity target group

An additional value added to the value set for 'Maternity target group'; that is, All excluding high-risk pregnancy.

An additional value added to the value set for 'Maternity target group' for Maternal remote area of residence.

Additional information in the Guide for Use for 'Maternity target group' that target groups based purely on geographical location (such as postcode range) that are not classed as Maternal remote area of residence be coded as CODE 88 Other maternity target groups.

Update the existing CODE 10 in the value set for 'Maternity target group' to CODE 10 Maternal diabetes and other endocrine disorders. Additional instructions should also be added to the Guide for Use for CODE 10 to include thyroid conditions.

Profession of designated maternity carer

The addition of a DSS-specific instruction for CODE 13 Multidisciplinary team when used as a value for 'Profession of designated maternity carer' to code the professions providing the care in the data element 'Profession of collaborative maternity carer'.

Additional information added to the Guide for Use for 'Profession of designated maternity carer' explaining that the designated maternity carer may not be the most senior clinician involved in the care, with an example to illustrate.

Midwifery caseload indicator and Midwifery caseload size

A DSS-specific instruction added to 'Midwifery caseload indicator' that a 'Yes' value for this data element must also require the value for 'Extent of continuity of carer' to be CODE 5 Whole duration of maternity period—antenatal, intrapartum and postpartum.

Extent of continuity of carer

Addition of an introductory statement at the beginning of the Guide for Use for 'Extent of continuity of carer' describing the difference between continuity of *care* and *carer*.

Addition of a DSS-specific instruction that if the value for the MMC is CODE 1 Private obstetrician (specialist) care, CODE 2 Private midwifery care or CODE 9 Midwifery group practice caseload care, the value for Extent of continuity of carer must be recorded as CODE 5 Whole duration of maternity period—antenatal, intrapartum and postpartum.

Planned collaborative maternity carer

Add an additional instruction to the Guide for Use for 'Planned collaborative maternity carer' for CODE 13 Multidisciplinary team to be consistent with the instruction for CODE 12.

Add an additional statement to the DSS-specific instructions that the role of the 'Planned collaborative maternity carer' may not necessarily include clinical care directly with the women in the model but there must be an established formal relationship between the designated carer and the collaborative carer type with a formal role for the collaborative carer.

Add explanatory information to the Guide for Use for the values of CODE 9 Aboriginal maternal infant care practitioner and CODE 10 Aboriginal health practitioner to assist in differentiating them.

Add a value for Public hospital medical officer for 'Planned collaborative maternity carer'.

Expected setting for an antenatal care visit

Additional Guide for Use information added to the value set *Setting of maternity care code N[N]* to provide definitions for CODE 2 Hospital clinic—outreach, CODE 4 Community facility and CODE 5 Aboriginal Community Controlled Health Organisation facility.

Major Model Category

Edit the Guide for Use for *Public hospital high risk maternity care* and *Public hospital maternity care* to define against which MMC to classify models of care for women at an 'increased risk' that require obstetric care, such as models for women with diabetes or obesity or women requesting a vaginal breech delivery or management of the next birth after caesarean section.

Add an additional value for a new MMC for *Private obstetrician and privately practising midwife joint care*.

Table C3: Data collection software functionality

Target group

Functionality included in a future web-based data collection tool that includes decision-rules that would prevent errors relating to conditional data elements.

Profession of designated maternity carer

The future web-based data-collection tool to have an alert mechanism if a model is assigned to the MMC of *Shared care* but the 'Profession of designated maternity carer' has not been coded as CODE 12 with the coding of the professions involved in the shared care arrangement identified in 'Profession of collaborative maternity carer'. Users should be prevented from saving the classification for the model if this inconsistency is present.

Decision-rules built into future software that identify and flag value codes for 'Profession of designated maternity carer' that are inconsistent with the MMC selected.

Midwifery caseload indicator and Midwifery caseload size

The use of decision-rules in a future data collection software tool to prevent a value for the conditional data element 'Midwifery caseload size' when a 'No' response is coded for 'Midwifery caseload indicator'.

The use of validation rules built into a future data collection tool that all models that select 'Yes' to 'Midwifery caseload indicator' must have continuity of carer for the entire maternity period.

The use of validation rules built into a future data collection tool to prevent recording a 'Yes' for 'Midwifery caseload indicator' if the designated maternity carer and/or the MMC are not valid codes for a midwifery caseload model of care. In the case of contradictory values, the software can alert the user to review and change the value of either the 'Profession of designated maternity carer', 'Midwifery caseload indicator' or 'Major Model Category'.

The addition of a validation rule to the future data collection software to raise a query for any value for 'Midwifery caseload size' over 60 or a value of 0 when the indicator item is 'Yes'.

Extent of continuity of carer

The use of decision-rules in a future data collection software tool to prevent the use of the value CODE 5 Whole duration of maternity period for 'Extent of continuity of carer' for models of care that have 'Profession of designated maternity carer' coded as CODE 13 Multidisciplinary team.

The use of decision-rules in a future data collection software tool to prevent the use of the value CODE 6 No continuity of carer for models that are *Shared care*.

The use of decision-rules in a future data collection software tool to prevent the use of any value other than CODE 6 No continuity of carer for models that are *Team midwifery*.

The use of pop-up alerts in a future data collection tool when users select any of the codes other than CODE 6 No continuity of carer to remind them that the definition relates to having a single named carer for the majority of the care period and not a small team.

Planned collaborative maternity carer

The use of decision-rules in a future data collection software tool to enforce the DSS-specific instruction to prevent recording the same value in 'Planned collaborative maternity carer' that was entered for 'Profession of designated maternity carer'.

The use of decision-rules in a future data collection software tool to prompt respondents that if CODE 12 Shared care was the value of 'Profession of designated maternity carer', they must enter the professions providing that shared care in 'Planned collaborative maternity carer'.

The DSS-specific information regarding the 'planned' nature of the carer in the model rather than on an 'as-needed basis' should be highlighted in the data element in the future data collection tool. If more than 2 professions are selected, a pop-up alert should reinforce the message further and ask the user whether all of these carer types had a defined and formal role in the model for most women.

The use of a validation rule in the future data collection software that if a model of care has a positive value recorded for 'Planned medical visits indicator' but no medical professional code in either of the carer data elements, the record cannot be saved until a code is entered.

The use of a validation rule in the future data collection software to flag an alert when CODE 4 Midwife—public is not selected for 'Planned collaborative maternity carer' (when it is also not the designated carer) in any public hospital model of care.

(continued)

Table C3 (continued): Data collection software functionality

Expected setting for an antenatal care visit

Decision-rules to ensure that models of care assigned to either the MMC *Shared care* or that have a designated maternity carer as CODE 12 Shared care have selected one of the hospital settings (Codes 1, 2, 7, 8 or 9) in addition to CODE 3 Clinicians' private rooms.

The use of a validation alert when CODE 9 Hospital—excluding birth centre is used without Code 1 or 2 to check whether the user is referring to a hospital 'clinic'.

Expected setting of birth

The use of a validation alert when CODE 6 Home is used without Code 7, 8 or 9 to confirm whether women also have another option for birth setting.

Individual or group care

The use of a validation alert when CODE 2 Group sessions or CODE 3 Combination of individual and group sessions is selected to confirm whether the group sessions are more than 'parenting classes' or separate education classes— that they are group clinical visits that incorporate both physical examinations as well as group-driven discussion/education.

Planned scheduled medical visits

The use of decision-rules in a future data collection software tool to confirm whether the data elements 'Profession of designated maternity carer' or 'Planned collaborative maternity carer' have a value for a medical practitioner when 'Planned medical visits indicator' is recorded as CODE 1 Yes.

Additional remote or rural services offered indicator and Type of additional antenatal/postnatal remote or rural service

Functionality built into a future web-based data collection tool that includes decision-rules that would prevent errors relating to these conditional data elements.

Expected time of model completion after birth event

Based on new data element to replace 'Expected time of model' completion: the use of decision-rules in a future data collection tool to require a value for 'Expected length of time for postnatal visits in a residential setting' when a positive response is recorded for 'Postnatal visits in a residential setting indicator' and to prevent a value being recorded if the answer is CODE 2 No.

Major Model Category

The use of decision-rules in a future data collection tool to validate the MMC assignment using the data elements 'Profession of designated maternity carer', 'Extent of continuity of carer', 'Midwifery caseload indicator' and 'Planned collaborative maternity carer' and to restrict the available values for the MMC data element.

Using 'pop-up' alerts in the future data collection tool when the MMC for *GP obstetrician care*, *Shared care* or *Combined care* are recorded to confirm the definitional characteristics before recording the value.

Table C4: Education and training issues

Issues identified

Development of an additional guide for users specifically for remote models as part of the future MaCCS implementation to assist maternity services in classifying these models.

A focus of user training during the MaCCS implementation should be on understanding the definition of data elements such as 'Extent of continuity of carer' where there is a clear lack of understanding or confusion with a similar concept (in this case continuity of care).

Appendix D: Tables used in analysis

Table D1: Count of models for each Profession of designated maternity carer by MMC

MMC	Specialist obstet.—public	Specialist obstet.—private	GP obstet.	Midwife—public	Midwife—private	Midwife—privately practising	General pract.	Maternal—fetal medicine subspec.	Aboriginal maternal infant care practitioner	Nurse	Shared care	Multidisc. team	Other
Private obstetrician (specialist) care	0	7	0	0	0	0	0	0	0	0	0	0	0
Private midwifery care	0	1	0	0	2	0	0	0	0	0	0	0	0
General practitioner obstetrician care	0	0	10	1	0	0	2	0	0	0	1	0	0
Shared care	2	0	2	5	0	0	6	0	0	0	12	1	0
Combined care	1	1	0	2	1	1	1	0	1	0	3	2	1
Public hospital maternity care	11	0	0	35	0	0	0	0	0	0	2	12	0
Public hospital high risk maternity care	25	0	0	3	0	0	0	0	0	0	1	8	0
Team midwifery care	0	0	0	9	0	0	0	0	0	0	1	0	0
Midwifery group practice caseload care	0	0	0	26	0	0	0	0	0	0	2	1	0
Remote area maternity care	0	0	0	4	0	0	0	0	0	0	2	2	1
Other	0	0	0	4	0	0	1	0	0	0	0	1	0

Note: Highlighted cells indicate an error where the incorrect profession has been assigned as the designated carer based on the MMCs and the data standards.

Table D2: Count of models per Maternity target group by Target group indicator

Maternity target group	Target group indicator	
	Yes	**No**
Aboriginal or Torres Strait Islander identification	28	2
Migrant or refugee	9	2
Low-risk or normal pregnancy	73	6
Breech presentation of fetus	12	3
Complex or high-risk pregnancy	31	5
Multi-fetal pregnancy	21	3
Next birth after caesarean section	19	3
Planned homebirth	4	0
Maternal obesity or high body mass index	22	4
Maternal diabetes	25	5
Maternal drug or alcohol use	19	5
Maternal age—young	18	4
Maternal mental health condition	17	4
Other specific cultural groups not already specified	6	1
Other social groups not already specified	9	1
Other vulnerable groups not already specified	14	1
Other (please specify)	25	2
No target group	8	45

Note: Highlighted cells indicate an error where Target group indicator was 'No' but Maternity target groups were coded.

Table D3: Midwifery caseload indicator—'Yes' by Extent of continuity of designated carer

Extent of continuity of designated carer	Number of models
Antenatal period only	1
Antenatal and intrapartum periods	1
Antenatal and postpartum periods	2
Whole duration of maternity period—antenatal, intrapartum and postpartum	35
No continuity of carer	1
Total	**40**

Table D4: Midwifery caseload indicator—'Yes' by MMC

MMC	Number of models
Private midwifery care	2
Combined care	1
Public hospital maternity care	4
Public hospital high risk maternity care	2
Team midwifery care	2
Midwifery group practice caseload care	29
Total	**40**

Table D5: Midwifery caseload indicator—'No' but caseload size >0 by MMC

MMC	Number of models
Remote area maternity care	1
Public hospital maternity care	2
Team midwifery care	3
Other (please specify)	1
Total	**7**

Table D6: Midwifery caseload indicator—'Yes' by Designated carer and MMC

Designated carer and MMC	Number of models
Specialist obstetrician—public	*1*
Public hospital high risk maternity care	1
Shared care	*3*
Public hospital maternity care	1
Midwifery group practice caseload care	2
Multidisciplinary team	*1*
Midwifery group practice caseload care	1
Midwife—public	*32*
Public hospital maternity care	3
Public hospital high risk maternity care	1
Team midwifery care	2
Midwifery group practice caseload care	26
Midwife—private	*3*
Private midwifery care	2
Combined care	1
Total	**40**

Table D7: Individual or group sessions by MMC

| MMC | Individual or group care | | | |
	Individual sessions	Group sessions	Combination of individual and group sessions	Total
Private obstetrician (specialist) care	7	0	0	7
Private midwifery care	3	0	0	3
General practitioner obstetrician care	12	0	2	14
Shared care	24	1	3	28
Combined care	11	1	2	14
Public hospital maternity care	43	9	8	60
Public hospital high risk maternity care	28	0	9	37
Team midwifery care	8	1	1	10
Midwifery group practice caseload care	20	1	8	29
Remote area maternity care	7	1	1	9
Other (please specify)	3	3	0	6
Total	**166**	**17**	**34**	**217**

Table D8: Expected setting of postnatal care by setting for birth

Setting for birth	Postnatal care setting											
	Hospital clinic—onsite	Hospital clinic—outreach	Clinicians' private rooms	Community facility	ACCHO facility	Home	Birth centre—stand alone	Birth centre—in hospital	Hospital excluding birth centre	Hotel or hostel	Other	Total
ACCHO facility	1	0	1	1	1	1	0	0	1	1	0	1
Home	2	0	1	2	1	12	0	1	6	1	0	12
Birth centre—stand alone	0	0	0	0	0	2	1	0	1	0	0	2
Birth centre—in hospital	1	2	0	6	5	21	0	10	12	4	2	25
Hospital—excluding birth centre	28	6	20	13	14	106	0	8	154	14	11	200
Other (please specify)	0	0	0	1	1	2	0	1	2	0	1	4
Total	**30**	**6**	**20**	**14**	**14**	**119**	**1**	**11**	**155**	**14**	**12**	**217**

Table D9: MMC by Extent of continuity of carer

MMC	Antenatal period only		Antenatal and intrapartum periods		Antenatal and postpartum periods		Intrapartum and postpartum periods		Whole duration of maternity period		No continuity of carer	
						Extent of continuity of carer							
Private obstetrician (specialist) care	1	(14.3%)	2	(28.6%)	0	(0.0%)	0	(0.0%)	4	(57.1%)	0	(0.0%
Private midwifery care	0	(0.0%)	0	(0.0%)	0	(0.0%)	0	(0.0%)	3	(100.0%)	0	(0.0%)
General practitioner obstetrician care	3	(21.4%)	0	(0.0%)	0	(0.0%)	1	(7.1%)	10	(71.4%)	0	(0.0%)
Shared care	12	(42.9%)	1	(3.6%)	6	(21.4%)	0	(0.0%)	6	(21.4%)	3	(10.7%)
Combined care	4	(28.6%)	0	(0.0%)	8	(57.1%)	0	(0.0%)	1	(7.1%)	1	(7.1%)
Public hospital maternity care	21	(35.0%)	3	(5.0%)	4	(6.7%)	0	(0.0%)	8	(13.3%)	24	(40.0%)
Public hospital high risk maternity care	5	(13.5%)	6	(16.2%)	2	(5.4%)	1	(2.7%)	7	(18.9%)	16	(43.2%)
Team midwifery care	0	(0.0%)	2	(20.0%)	0	(0.0%)	0	(0.0%)	7	(70.0%)	1	(10.0%)
Midwifery group practice caseload care	1	(3.4%)	1	(3.4%)	0	(0.0%)	0	(0.0%)	26	(89.7%)	1	(3.4%)
Remote area maternity care	0	(0.0%)	0	(0.0%)	5	(55.6%)	0	(0.0%)	1	(11.1%)	3	(33.3%)
Other	2	(33.3%)	0	(0.0%)	0	(0.0%)	0	(0.0%)	1	(16.7%)	3	(50.0%)
Total	**49**	**(22.6%)**	**15**	**(6.9%)**	**25**	**(11.5%)**	**2**	**(0.9%)**	**74**	**(34.1%)**	**52**	**(24.0%)**

Note: Highlighted cells indicate a likely error where 'Extent of continuity of carer' selected is unlikely for the MMC.

Table D10: Profession of designated maternity carer by Extent of continuity of carer

Profession of designated maternity carer	Extent of continuity of carer					
	Antenatal period only	Antenatal and intrapartum periods	Antenatal and postpartum periods	Intrapartum and postpartum periods	Whole duration of maternity period	No continuity of carer
Specialist obstetrician—public	4	6	2	1	8	18
Specialist obstetrician—private	2	2	0	0	5	0
General practitioner obstetrician	1	0	0	1	10	0
Midwife—public	25	5	7	0	34	18
Midwife—private	0	0	1	0	2	0
Midwife—privately practising	0	0	1	0	0	0
General practitioner	5	0	3	0	2	0
Aboriginal maternal infant care practitioner	0	0	0	0	1	0
Shared care	9	0	5	0	7	3
Multidisciplinary team	3	2	5	0	4	13
Other	0	0	1	0	1	0
Total	**49**	**15**	**25**	**2**	**74**	**52**

Note: Highlighted cells indicate a likely error where 'Extent of continuity of carer' selected is unlikely for the 'Profession of designated maternity carer'.

Table D11: Profession of designated maternity carer by Profession of collaborative carer

Designated carer	Collaborative carer															
	Spec. obst.—public	Spec. obst.—private	GP obst.	Midwife public	Midwife—priv.	Midwife—priv. pract.	GP	MFM sub-spec.	Ab. mat. infant care pract.	Ab. health pract.	Nurse	Perinat. mental health worker	Other allied health pract.	Med. spec. other than obst.	No planned collab. mat. carers	Other
Specialist obstetrician—public	23	0	1	27	1	0	6	4	4	1	2	5	10	11	2	3
Specialist obstetrician—private	2	3	0	5	2	0	0	1	0	0	0	1	1	2	0	0
General practitioner obstetrician	1	0	4	7	1	0	1	0	0	0	0	0	0	0	2	0
Midwife—public	63	0	5	36	0	0	14	10	6	10	4	10	14	13	8	7
Midwife—private	2	0	0	2	1	0	0	0	0	0	0	0	0	0	0	0
Midwife—privately practising	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
General practitioner	4	0	2	7	0	0	3	0	0	0	0	0	0	0	1	0
Maternal—fetal medicine subspecialist	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Aboriginal maternal infant care practitioner	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0
Nurse	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Shared care	11	2	7	16	1	0	8	2	1	5	3	4	4	3	1	3
Multidisciplinary team	17	0	3	19	0	1	5	5	2	2	2	4	8	9	3	3
Other	1	1	1	1	0	1	1	1	1	0	0	0	0	1	0	1

Note: Highlighted cells indicate an error where 'Profession of designated maternity carer' was repeated for 'Profession of planned collaborative carer' or no collaborative carers were selected when they were required.

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Related publications

AIHW (Australian Institute of Health and Welfare) 2014a. Foundations for enhanced maternity data collection and reporting in Australia: National Maternity Data Development Project—Stage 1. Cat. no. PER 60. Canberra: AIHW.

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The Maternity Care Classification System, or MaCCS, was developed as part of the National Maternity Data Development Project to provide a comprehensive classification system for maternity models of care operating in Australia. This report describes a pilot test that was conducted as part of the data development work on an important element of the MaCCS: the Maternity Model of Care Data Set Specification. Included in the report is a background description of the work, methodology, logistics and the results of the pilot.