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Evaluation of the Operational Maternity Service Model of Care for Castlemaine Health

Evaluation report, September 2022

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Project scope and key deliverables

This project focusses on the revised maternity model of care introduced at Castlemaine Health in 2021. As per the Research Services Agreement between La Trobe University and Castlemaine Health, the project scope and key deliverables are:

"*To undertake a comprehensive evaluation covering the first 12 months of operation of the new model. A range of stakeholders will provide a wide variety of perspectives on the new model of care, which will assist with informing the development of recommendations for future maternity care provision at the service, and elsewhere.*

All key clinical outcomes for the 12 months will be tabulated and reported. Given the low numbers of births at the service, these outcomes will not be statistically analysed as the small numbers would make this meaningless. However, a description of all sentinel events, serious adverse events, and transfers out of the service will be included, and all cases will be reviewed to ensure that agreed policies and procedures were followed. Some of this quantitative data collection is already planned, and described in the Collaborative Operational Model of Care document, but this will be a more comprehensive formal independent review. The aim is to not only evaluate the Castlemaine model, but to provide a blueprint for any facility across the state of Victoria hoping to recommence birthing at their service.

Specifically, this evaluation will include:

1. *An exploration of key external and internal stakeholder views, including relevant clinical and non-clinical staff views at Castlemaine Health and Bendigo Health on the current model, including midwifery, medical (GPs, GPOs and obstetric staff), nursing, Board of Management, executive, and quality and safety staff, with emphasis on the governance structure of the current model, barriers and gaps, and a description of the concepts that make the current service robust and sustainable over time;*
2. *An exploration of consumer satisfaction with the current model; and*
3. *A review of clinical outcomes for all women, and an audit of all sentinel events, serious adverse events, and perinatal transfers out of the service for the duration of the evaluation.*

The evaluation will also include recommendations for the ongoing sustainability of birthing services at Castlemaine Health, and provide a framework document for services across the state wishing to recommence birthing at their service to ensure compliance with agreed policies."

Abbreviations

ANMF	Australian Nursing and Midwifery Federation
BOS	Birthing Outcomes System
CTG	Cardiotocography
CPAP	Continuous positive airway pressure
DASS-21	Depression, Anxiety and Stress Scale
DoH	Victorian Department of Health
DRG	Diagnosis-Related Group
EFT	Equivalent full-time
EPDS	Edinburgh Postnatal Depression Scale
GPO	General Practitioner Obstetrician
IOL	Induction of labour
IPPR	Intermittent positive pressure respiration
MCATS	Management Consultants and Technology Services
MGP	Midwifery Group Practice
PND	Postnatal depression
PPH	Postpartum haemorrhage
REDCap	Research Electronic Data Capture
RM	Registered Midwife
RN	Registered Nurse
SCV	Safer Care Victoria
SBACH	Support Birthing at Castlemaine Health
SROM	Spontaneous rupture of membranes
TENS	Transcutaneous Electrical Nerve Stimulation

Executive summary

BACKGROUND

In May 2020, the Castlemaine Health Board endorsed a decision to suspend maternity service provision, and commissioned an external review. In March 2021, Castlemaine Health recommenced taking bookings for birth, with a revised maternity model of care available to women and their families. This collaborative midwifery-led model of care provides women with one of three maternity care pathways depending on their needs and obstetric risk profile. It is supported by the Loddon-Mallee tertiary maternity service, Bendigo Health, with clear referral pathways when required. The primary model that underpins this is the Midwifery Group Practice (MGP) model, which consists of four midwives, each employed at 0.7 equivalent full-time (EFT), with a caseload of 45 women per EFT, and one MGP coordinator employed at 0.4 EFT (who is also employed as the maternity educator at 0.2 EFT). Midwives are supported by several General Practitioner Obstetricians (GPOs) who are associated with Castlemaine Health.

This evaluation reviews the first 12 months of operation of the revised maternity model of care. Key stakeholder and consumer views and experiences were explored, clinical outcome data were collected, and an audit of transfers was undertaken. Barriers and enablers to program sustainability were also explored, and recommendations to ensure long-term viability of the model are provided.

METHODS

This evaluation comprised three separate components, with the findings of each then combined into the summary and recommendations. The first component explored the views and experiences of relevant key stakeholders with regards to the implementation and sustainability of the revised model. Key stakeholders, including clinical, managerial and executive staff at Castlemaine Health and Bendigo Health, representatives from Safer Care Victoria (SCV) and the Australian Nursing and Midwifery Federation (ANMF), and members of advisory and community groups, were invited to take part in an interview. In addition, midwifery staff at Castlemaine Health were invited to complete a survey. The second component explored the views and experiences of maternity consumers who booked to receive pregnancy care at Castlemaine Health, and birthed within the first year of operation of the revised model. These women were invited to complete a survey and to take part in an in-depth interview. The final component of the evaluation was an audit of birth outcomes of all women booked for maternity care at Castlemaine Health (who subsequently birthed) during the evaluation time period.

The overarching aim of this evaluation was to provide the views and experiences of relevant stakeholders, including women who had received this revised model of care (and their clinical outcomes); to identify barriers and enablers to care provision; and to inform the development of recommendations on how to sustain the model.

RESULTS

Component 1: Exploring the views of key stakeholders

Interviews were completed with 29 key stakeholders. A diverse range of views and experiences were shared regarding the implementation, operation, impact and sustainability of the model. The amount of work to develop and implement the revised model was acknowledged, as were the difficulties faced during the transition period by those in roles directly impacted by the change. At the time of the evaluation, the revised model was reported to be well supported and working appropriately, facilitated by a strong partnership with Bendigo Health. There were, however, some issues raised about the sustainability of the model. These are outlined further below in the section on *Barriers to sustainability* – but in brief, there were concerns about **staffing**, including the workload of the MGP midwives, as well as recruiting and retaining medical and core (acute ward) midwifery staff; and concerns about the **costs** of the service (including the funding model).

The survey of midwifery staff was completed by 12 (of 24) midwives. There were mixed views on the support provided to these staff during the transition to this model of care, but respondents generally considered the revised model to be safe for women and their infants, that the transfer criteria and guidelines are clear, and that the interdisciplinary communication among clinicians working within the model was good.

Component 2: Exploring the views of maternity consumers

Forty-four (of 66; 67%) maternity consumers completed a survey regarding their maternity experiences at Castlemaine Health, and five of these women also took part in an interview. Survey and interview data demonstrated that women who birthed at Castlemaine Health as part of the revised model of maternity care were highly satisfied with the care they received. Their ratings of care were higher than those reported in studies of other models of maternity care across Victoria. Participants felt they were treated with kindness and respect, they felt empowered, and had a sense of agency throughout their pregnancies and post-birth. The women reported low levels of anxiety during labour and birth, and felt they coped physically and emotionally better than they had expected. They felt well supported by midwives and highly valued the continuity of care that they received throughout their experience. Women who were transferred to, and birthed at, Bendigo Health felt safe, and were also generally satisfied with their care.

Component 3: Audit of clinical outcomes

At the time of data collection, of those women who had given birth, just over 50% who had booked into the model birthed at Castlemaine Health. All women who birthed within the model had a liveborn baby, with no sentinel or near-miss events occurring at the service. All transfers that were audited occurred according to hospital guidelines.

We did, however, identify issues with the generation of reports of clinical outcome data, as well as a systems issue with tracking the outcomes of women transferred to Bendigo Health (due to the lack of maternity data sharing between Castlemaine Health and Bendigo Health), and have made recommendations regarding these issues.

BARRIERS TO SUSTAINABILITY

Two areas were evident that may impact model sustainability and need addressing: staffing, and the cost/funding of the model.

Staffing. In the first 12 months of operation, the maternity model of care evolved further, primarily to manage the decreasing availability of core midwifery staff to be the second midwife at each birth. The reality of the *current* model is that two MGP midwives are needed at most births – to ensure there is a primary and second midwife present. This differs from the model that was conceptualised, where a core midwife would be the second midwife at births, and has resulted in an increased workload for the four MGP midwives. For the model to be sustainable in the long-term, and to prevent potential burnout among the MGP midwives, we recommended increasing the overall MGP EFT (e.g., via employing another MGP midwife, or facilitating core midwives to step into an MGP role/provide leave relief etc.), and/or decreasing the current caseload held by each MGP EFT, and/or exploring another solution for back-up to be provided by other core hospital staff on-shift when women come to birth. Increasing the EFT of the MGP coordinator role commensurate with workload is also recommended.

Cost/funding considerations. Another barrier to model sustainability stems from how the collaborative arrangement between Bendigo Health and Castlemaine Health is funded. One concern is due to the broader maternity service funding model in Victoria. Regardless of how much care is provided by Castlemaine Health, when women birth at Bendigo Health (which around half the women booked to the model did), Bendigo Health receives the Diagnosis-Related Group (DRG) funding related to that birth, when in reality much of the intrapartum and postpartum care may be provided by Castlemaine Health. Further, if an MGP midwife has capacity to provide intrapartum care for her allocated woman at Bendigo Health and does so, this equates to a further cost to Castlemaine Health.

Additionally, the requirement for all MGP midwives to do an above ratio shift at Bendigo Health each fortnight is also funded by Castlemaine Health. While this might be needed when a midwife begins working in the model, the ongoing requirement is considered both a time and cost burden, and may need revisiting to better reflect the orientation and supervision needs of each MGP midwife. In addition, all GPOs are required to undertake a shift per month at Bendigo Health, also funded by Castlemaine Health. The above ratio shifts rostered at Bendigo Health are an important component of the model, however, consideration of how these are funded is critical to the sustainability of the model.

A number of stakeholders suggested expanding the range of services offered by Castlemaine Heath to offset some of the cost and staffing issues, for example offering elective caesarean sections on site.

As discussed above, consideration should be given to addressing the two issues raised in order to increase model sustainability, and where such collaborative models of maternity care exist across the state, we recommend a re-evaluation of funding allocation more consistent with actual service provision.

CONCLUSION AND RECOMMENDATIONS

This evaluation has shown the revised model of maternity care at Castlemaine Health to be valued by women, and by staff working in the model. It is supported by a strong partnership with Bendigo Health, and we recommend that the model continues. Every woman who booked to receive maternity care at the service during the evaluation period was assessed appropriately throughout pregnancy and intrapartum, with a multi-disciplinary case review conducted after every birth at the service. All transfers, when required, occurred appropriately.

Due to several factors, including core midwife staff shortages and limited exposure to births among this cohort, MGP midwives are currently the primary and second midwife at most births. This increased workload is a risk to the ongoing sustainability of the model, and needs further consideration for future workforce planning. In addition, the lack of maternity data sharing between Castlemaine Health and Bendigo Health increases the risk of information being lost or inaccurately reported, and could lead to clinical risks and/or inadequate clinical governance. The current funding model is also an important issue requiring further consideration to enhance sustainability for this model and for future models like this across Victoria.

To ensure the sustainability of the model, we make the following recommendations:

1. Given the challenges with coverage and back-up for the MGP midwives, we recommend that Castlemaine Health consider reducing the caseload of each MGP midwife, and/or increasing the overall EFT of the model (i.e., employing more MGP midwives). This would provide adequate coverage for unexpected leave requirements, increased bookings, and the need for MGP midwives to be the primary and second midwife at most births. Other strategies to ensure coverage and back-up need to be considered, and should be in consultation/ discussion with core midwives and the maternity management team. Going forward, we also recommend that Castlemaine Health routinely collects information about how often MGP midwives attend Bendigo Health with women for planned inductions, and how often (or for how long) midwives attend with women who are transferred intrapartum, to assist with planning EFT requirements in the future.

2. We recommend that further consideration be given to the standing of the position of the MGP coordinator commensurate with the role, responsibilities and expectations of this position.

3. Due to the current funding model allocation for maternity services, no DRG funding is received by Castlemaine Health when women transfer to Bendigo Health prior to or during labour (around 50% of women in the evaluation period). Further, if an MGP midwife has capacity to provide intrapartum care for her allocated woman at Bendigo Health (and does so), this equates to a further cost to the service. We recommend a re-evaluation of funding allocation consistent with actual service provision.

4. Consideration is given to providing greater flexibility around the number of shifts required for Castlemaine Health MGP midwives at Bendigo Health. Although these shifts are needed to develop and maintain skills, as well as relationships with staff at Bendigo Health, for some

midwives there could be a reduction to one shift per month or two weeks per year, with the option for an MGP midwife to travel to Bendigo Health with her allocated woman during an intrapartum transfer or induction of labour. However, other midwives such as new recruits unfamiliar with Bendigo Health may require a higher number of shifts.

5. As is the case with most MGP models of care, there is a complex relationship between core midwifery staff and MGP midwives. However, given the potential valuable contribution of the dual registered midwifery workforce, we recommend that Castlemaine Health explores ways to support this workforce. This could be through incentives and/or ongoing education allowing them to maintain their skills and competencies if they wish to do so. We also believe that some aspects of the working relationships between core and MGP midwives may require further development, and consideration could be given to regular scheduled meetings between the two groups. However, understanding what exact support would help requires further investigation.
6. Castlemaine Health consider the possibility of implementing a graduate midwifery program to ‘grow their own’ midwifery workforce, facilitating the development of a professional identity among graduates, with appropriate support, mentoring and supervision. We recommend that consideration be given to a combined graduate midwifery program between Castlemaine Health and Bendigo Health.
7. The multi-disciplinary clinical case review following every birth is continued, to ensure all clinical outcomes are transparent, and identify any processes or guidelines that might need revising.
8. Given the importance of continuing education provision to maternity staff, we recommend that the 0.2 EFT maternity educator position continues, to facilitate ongoing education provision to midwives, GPOs and acute ward staff.
9. MGP midwives continue to receive allocated time for administrative tasks e.g., Birthing Outcome System (BOS) shadow bookings and iPM (Patient Administration System software) appointments.

Further recommendations for ongoing sustainability include approaches to increase bookings, and attract and retain midwifery and medical staff, such as:

10. Consideration be given to a more collaborative approach to maternity care between Bendigo Health and Castlemaine Health for low-risk women living in the vicinity of Castlemaine e.g., the potential for women who request MGP-led care at Bendigo Health through their MGP program but who live close to Castlemaine to proactively be offered care through Castlemaine Health instead. If the Bendigo Health MGP program is over-subscribed, eligible women could also be offered MGP-led care at Castlemaine Health.
11. Consideration be given to expanding the range of services offered by Castlemaine Health to potentially offset staffing and cost issues, including the provision of elective caesarean section births at the service. This would expand the range of practices that core midwives

have access to, and may attract medical staff to the service, including GP anaesthetists. Gynaecological service provision could also be considered, with the 'sharing' of obstetric staff between Bendigo Health and Castlemaine Health used to facilitate these options.

Recommendations for data sharing and reporting

Approximately half of the women who booked to receive maternity care at Castlemaine Health were transferred to Bendigo Health before birth. Because there are separate birth outcome databases (BOS platforms) at both services, the requirements to document women who transfer to Bendigo Health across these two BOS systems can result in information being lost or inaccurately reported. Further, birthing outcome data for all women who book to receive care at Castlemaine Health should be available to the service to track outcomes among this cohort, irrespective of transfer.

12. For services such as Castlemaine Health and Bendigo Health, where there is a clearly defined service level agreement in place, we recommend the capacity for data sharing to avoid duplication of resourcing and ensure that delivery of clinical care is clearly documented and able to be reviewed in a timely manner.
13. Length of hospital stay could only be reported for 15 out of 39 women who birthed at Castlemaine Health. We recommend that time of hospital discharge (maternal and infant) be recorded in the BOS database, allowing the service to report the mean length of hospital stay for mothers and their infants.

Recommendations for other services

For similar services considering a revision of how they provide maternity care, we recommend that:

14. The Castlemaine Health Maternity Services Collaborative Operation Model of Maternity Care document, along with our recommendations for other services (i.e., recommendations 14 – 18 inclusive), be made available as a framework document for services planning to reinstate birthing, or revise their maternity care provision.
15. Given the benefit of external oversight, that other maternity services interested in a major revision of their model of maternity care engage the assistance of external consultants (such as maternity model of care experts and regional midwife consultants) to develop or reinstate alternative models of care.
16. Appropriate support is provided to all affected staff before and during the transition to new models of care. Adequate and appropriate engagement with all maternity care clinicians affected by transitions to new models of care is necessary to ensure the ongoing sustainability of maternity service provision at these services across the state.
17. The views of maternity consumers be an important component in shaping maternity models of care, and for maternity planning more broadly. Further, we recommend that advisory groups such as a Maternity Consumer Committee and First Nations Advisory Group be part of any redevelopment of maternity care provision in services across the state.
18. Continued monitoring of the workload of clinicians and coordinators in newly established maternity models of care be undertaken, with adjustments made commensurate on bookings and/or changes to the model. We also recommend regular assessments of staff wellbeing.

Background

MATERNITY SERVICE PROVISION IN VICTORIA

Almost 78,000 women gave birth in Victoria in 2019 [1]. Like the broader Australian context, the majority of births occur in public hospitals, and approximately 70% of births occur in metropolitan Melbourne. Of the public hospital births that occur in regional and rural areas, around 70% occur in either large regional centres or in sub-regional health services, with the remainder in local rural health services.

The Capability Frameworks for Victorian Maternity and Newborn Services [2] outline the role of each public maternity and newborn service in metropolitan, regional and rural Victoria. These frameworks define the care provided by maternity services into six levels, describing the services required at each level of care, and the relationships between maternity and newborn services at the statewide level (see Appendix 1 for the current statewide maternity and newborn capability levels). Level 1, 2 and 3 maternity service providers are defined as primary maternity care providers, and have the capacity to provide local care for women experiencing low risk pregnancies and their newborns. Level 4 facilities are able to provide care for both women and babies considered as ‘low risk’, as well as to care for some women who have some (defined or medium) additional risk, for example women with hypertensive disorders of pregnancy. Level 2, 3 and 4 maternity service providers are located mainly in regional and rural Victoria [3].

Level 5 and 6 maternity services provide care for women and babies who live locally and also provide care as needed to women from their local region or other locations in the state who are considered at moderate or high risk of complications [4]. Level 5 services provide labour and birth facilities for moderate-risk pregnancies from 31 weeks gestation. Level 6 services provide maternity care for women from across the state who are experiencing high-risk pregnancies and births, as well as providing care to women of any risk level living in the catchment area of their service. Level 6 services are equipped with Neonatal Intensive Care Units, so care for the most premature and sickest newborns in the state.

CASTLEMAINE HEALTH

Castlemaine Health is a rural health service provider located in the Goldfields region of central Victoria, approximately 40 kilometres from the regional centre of Bendigo. The service provides a comprehensive range of hospital and healthcare services including medical, surgical, rehabilitation, aged care, allied health, outreach services, and maternity services [5].

Castlemaine Health is designated as a level 2 maternity service provider, with the capacity to manage low risk pregnancies, as well as managing labour, birth and postnatal care for women at 37 weeks gestation or more. Maternity service provision at Castlemaine Health had previously been led by a General Practitioner Obstetrician (GPO) model, which provided continuity for women and their families, but also meant midwives did not work to their full scope of practice.

In May 2020, the Castlemaine Health Board of Directors, in discussions with the Director of Medical Services, Safer Care Victoria (SCV) and the Victorian Department of Health (DoH), endorsed a decision to suspend maternity services provision at Castlemaine Health.

The Board commissioned an independent review of the maternity service to examine the procedures, policies, clinical practice protocols and clinical governance systems that determine the capacity, capability and safety of a maternity service. The reviewers appointed were Dr Rupert Sherwood FRANZCOG FRCOG (Hons) and Ms Lisa Smith RN BSc Mid (Hons), who undertook a five-week process of reviewing documentation, and conducting extensive interviews with Castlemaine Health board members, executive staff, clinical staff, GPOs, Bendigo Health representatives and maternity consumers. The reviewers sought additional information from Bendigo Health, from regional and clinical committees working in maternity care and from community support groups.

In late June 2020, the Board accepted and endorsed the final Maternity Service Review report and its recommendations, which included the development of a new model of maternity care and strengthening the clinical governance processes. The report identified recommendations to improve seven key areas including:

- Partnerships and communication
- Support maternity staff through education and skills maintenance
- Models of care, scope of practice and workforce
- Clinical governance – leadership, quality and safety and risk management
- Data management – monitoring performance and outcomes
- Clinical practice – competence and performance (medical and midwifery)
- Partnering with the community

Recommendations relating to the re-opening of the service have been implemented, and the service recommenced the provision of pregnancy care in March 2021 and birthing in May 2021, with the first birth occurring in early June 2021. Actions responding to recommendations related to sustaining and growing the service continue to be progressed, and will be further informed by the findings from this evaluation report.

The revised model of maternity care now implemented at the service provides collaborative maternity care to women and their families, while working within a recognised governance framework of safety and quality [6]. It is underpinned by continuity of midwifery care, where midwives work in collaboration with GPOs to provide maternity care to women. The model includes a clearly defined relationship with the nearest regional level 5 maternity service, Bendigo Health, supported by clear communication and referral pathways in alignment with the Capability Framework for Victorian Maternity and Newborn Services [4].

The revised model provides women with one of three care pathways depending on their needs, their preferences and their obstetric risk profile. These are Midwifery Group Practice (MGP), Collaborative Shared Care, and Complex Maternity Care (each described below). Women who are assessed as being at low obstetric risk can choose to have all their care with Castlemaine Health; either within the MGP-led care, or the Collaborative Shared Care model.

Midwifery Group Practice

Midwifery Group Practice, also known as caseload midwifery care, is associated with improved clinical and psychosocial outcomes [7, 8], better childbirth experiences [9], greater satisfaction with care provision [10], and increased breastfeeding initiation [8]. Associated reductions in caesarean section births, epidural analgesia, special care admissions and other outcomes translate to cost savings compared to other models of care [11]. Women choosing the MGP-led care pathway receive care from a designated midwife during pregnancy, birth, and early postpartum period. This midwife (or one of the other MGP midwives) is on-call for the woman's labour and birth, providing women with continuity of midwife care for their maternity journey. This model is staffed by four MGP midwives, each currently working at 0.7 equivalent full-time (EFT) a total of 2.8 EFT, as well as an MGP co-ordinator, working at 0.4 EFT [12].

Collaborative Shared Care

In the Collaborative Shared Care option, care provision during pregnancy is provided by the woman's MGP midwife, with the addition of a selected number of visits with their GPO. However, the MGP midwife is the woman's primary contact throughout pregnancy, labour, birth and postpartum.

The MGP and Collaborative Shared Care models were developed with the support of the regional level 5 tertiary service, Bendigo Health. If any woman in either of these two models develops additional obstetric risks during pregnancy or intrapartum, she may be transferred to Bendigo Health in alignment with the Maternity Capability Frameworks for some or all of the remainder of her maternity care [4].

Complex Maternity Care

Given Castlemaine Health is a level 2 maternity service, pregnant women who are not suitable for maternity care provision at the service due to a higher obstetric risk profile are cared for at Bendigo Health (or another higher level service). However, these women may be suitable for transfer back to Castlemaine Health for postpartum care if they want this option.

PURPOSE OF THIS EVALUATION

Castlemaine Health recommenced taking bookings for maternity care as a level 2 maternity service provider from March 2021, with the revised model of maternity care available to women and their families. The purpose of this evaluation was to undertake a review of the revised maternity model of care at Castlemaine Health, covering the first 12 months of operation.

Across the state of Victoria, several smaller maternity services have closed or are closing their birthing services (plus or minus their pregnancy and postnatal care services). Therefore, in addition to evaluating the maternity model of care at Castlemaine Health, which includes identifying barriers and enablers to service provision, and making recommendations, we also aimed to ensure these outcomes could be used to inform any future redevelopment of other services across rural and regional Victoria.

Methods

AIMS

The aim of this evaluation was to undertake a comprehensive review of the Castlemaine Health maternity care model, encompassing the first 12 months of operation. Maternity consumers, clinicians and other relevant key stakeholders were invited to provide their views and experiences of the revised model, and clinical outcome data for all births during the evaluation period were collected.

STUDY DESIGN

We used multiple methods to undertake the evaluation. Data were collected via survey and interview, as well as from the electronic medical record. There were three components to the evaluation, described in more detail below. Component 1 explored the views of stakeholders at Castlemaine Health and other relevant key organisations; component 2 explored the experiences of maternity consumers who booked to receive maternity care at Castlemaine Health during its first year of operation; and component 3 was an audit of birth outcomes for all women who birthed in the model in the first 12 months of operation. Figure 1 shows the evaluation framework indicating the essential elements of each component.

EVALUATION PARTICIPANTS

Key stakeholders

Stakeholders employed at Castlemaine Health, Bendigo Health and other relevant organisations who may have been involved in setting up or working in the current maternity care model were invited to participate in this evaluation, with the aim of understanding their perceptions and experiences of the model at Castlemaine Health (and from the perspective of Bendigo Health where relevant). Clinical, managerial, and executive staff at these organisations participated in semi-structured interviews, and midwifery staff (including dual registered core midwifery staff working on the acute ward) were also invited to complete an anonymous online survey to explore their views of the model.

Maternity consumers

Maternity consumers who were booked to receive pregnancy care at Castlemaine Health, and who birthed between 1 May 2021 – 26 May 2022 (irrespective of birthing location) were invited to complete an anonymous online survey to explore their views and experiences. The women were also offered the opportunity to participate in a semi-structured interview to further explore their experiences of the model.

DATA COLLECTION

Data were collected between November 2021 and August 2022.

Component 1: Exploring the views of key stakeholders

Key stakeholder interviews

A list of 'key stakeholders' was compiled from early discussions with staff at Castlemaine Health. Key stakeholders were relevant employees of Castlemaine Health (e.g., midwifery staff ad GPOs), or other organisations who were involved in the development or implementation of the model, including Safer Care Victoria (SCV), the Australian Nursing and Midwifery Federation (ANMF), and Bendigo Health. Members of the Castlemaine Health Maternity Service Governance Group, the Maternity Services Operational Model of Care Working Group, the Maternity Services Consumer Committee, the First Nations Maternity Advisory Group, and representatives from the Support Birthing at Castlemaine Health (SBACH) Facebook page were also invited to take part in an interview. Stakeholders were approached via email by a member of the research team, with a description of the evaluation and what participation entailed, and invited to take part in a semi-structured interview. Interviews were conducted between November 2021 and June 2022.

Interview questions centred around the establishment and introduction of the revised model of maternity care, operational aspects of the model, resourcing, benefits, concerns and sustainability. Two members of the research team conducted the key stakeholder interviews. Interviews were completed via telephone or video-call, and were audio-recorded with consent, to allow for subsequent transcription. Transcripts were sent back to each key stakeholder to allow for checking and verification prior to analysis.

Online survey – midwifery staff

In February 2022, all midwifery staff from Castlemaine Health (including MGP and core midwifery staff who also worked on the acute ward) were invited to participate in an anonymous online survey. Although GPOs play a critical role in the success of the revised model, given the number of GPOs providing care to women as part of the model, they were invited to take part in key stakeholder interviews to explore their views on the model rather than complete this online survey.

The survey was built on the REDCap (Research Electronic Data Capture) platform, a secure web-based application for building and managing online surveys and databases [13, 14]. An invitation to complete the survey was emailed to the midwives by the MGP coordinator at the service, which contained a link to a Participant Information and Consent Form and to the online survey.

The survey was designed by the research team based on previous Victorian studies investigating midwives' views of maternity care models, and modified for use in this evaluation [15-17]. It was piloted with a number of research colleagues first, then by several midwives (not employed at Castlemaine Health or Bendigo Health) to check content, language, flow, appropriateness of response options and the length of the survey. This led to further refinements with changes discussed and agreed by the research team.

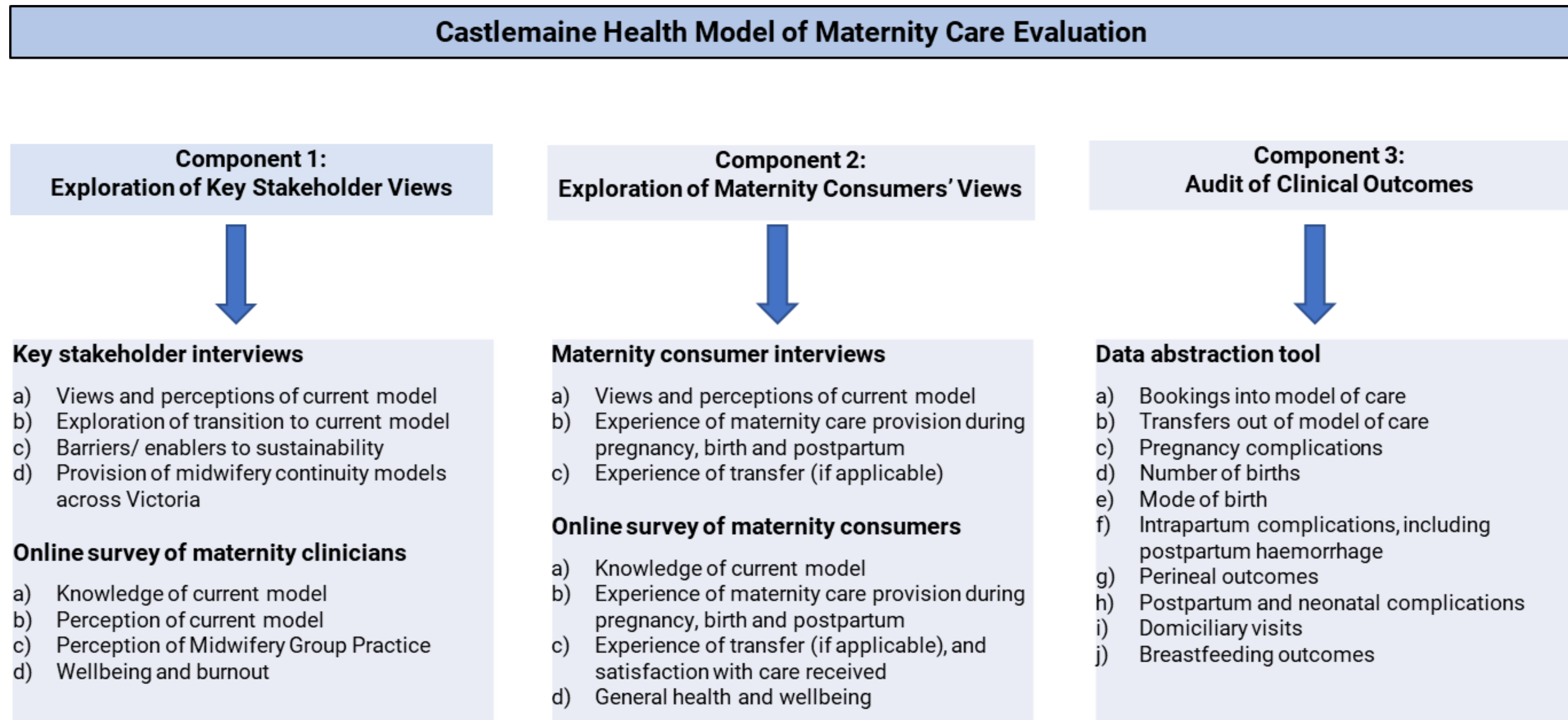


Figure 1: Evaluation framework

The survey included mainly fixed choice response options which covered general questions about the model of maternity care at Castlemaine Health; criteria and guidelines of the model; operational aspects of the model; and views on Midwifery Group Practice as a model of maternity care. Burnout, defined as an occupational phenomenon with the potential to affect a person's physical and mental health, job satisfaction and quality of work [17], was explored using the Copenhagen Burnout Inventory [18]; the Midwifery Process Questionnaire scale was used to ascertain midwives' views of their professional role [19]; and the Depression, Anxiety and Stress Scale (DASS-21) measured the negative emotional states of depression, anxiety and stress [20]. Demographic questions were also included. A small number of open-ended questions provided participants with the opportunity to comment further if they wished.

A final question in the survey asked if respondents would be willing to participate in an interview to further explore their experiences of the model. If they indicated they were willing, they were contacted by a member of the research team to organise a suitable time.

Component 2: Exploring the views of maternity consumers

Online survey

All women who booked to receive maternity care at Castlemaine Health from the time the service re-opened and who had birthed by 26 May 2022 were invited to complete an anonymous online survey, using the REDCap platform. This included women who birthed at Castlemaine Health, as well as women who booked into the model but were transferred to an alternative model of care and birthed elsewhere. One woman who birthed in June 2022 also received a survey inadvertently (which we included given she had taken the time to respond). The invitation to participate was sent on behalf of the research team by the MGP coordinator at Castlemaine Health. Most women received an email or text invitation no earlier than 12 weeks after their birth, with a link to the Participant Information and Consent Form and survey.

The survey explored women's views and experiences of the model. It was based on previous surveys used in Victorian studies [10, 21], and modified for this program evaluation. It included general questions about choosing the current model, and questions on women's experience of care during pregnancy, birth, and after the birth; their experience of being transferred (if applicable); contact with the hospital following the birth; infant feeding; experiences of participating in the current model; and some demographic questions. The Edinburgh Postnatal Depression Scale (EPDS) was included to provide an indication of potential postnatal depressive symptoms. The EPDS is a 10-item self-report instrument (4-point ratings; range 0-30), with higher scores indicating greater symptoms of depression [22]. Most survey questions were comprised of fixed choice response options, however, a number of open-ended questions provided participants with the opportunity to comment further if they wished.

The survey was piloted with colleagues, then with women similar to those who would be eligible to participate, to check content, language, flow, appropriateness of response options and the survey length. This was followed by further minor refining of the survey, with changes discussed and agreed by the research team.

A final question asked the responder if they would be willing to participate in an interview to further explore their experiences of the model. If they indicated they were willing, they were contacted by a member of the research team to organise a suitable interview time.

Maternity consumer interviews

The semi-structured in-depth interviews further explored women's experiences of maternity care during pregnancy, intrapartum, and postpartum. If women had been transferred they were also asked about their experience of the process. One member of the research team conducted all interviews, and this was done with the aid of an interview guide. The interviews were completed via video-call or telephone, and were audio recorded with consent, to allow for subsequent transcription. Transcripts were sent back to the women to allow for checking and verification prior to analysis.

Component 3: Audit of clinical outcomes

An audit of the medical records of all women who birthed as part of the maternity model of care from the start of the model until 7 June 2022 was undertaken, including those of women who were transferred out of the model at any stage. Appendix 2 lists all outcome variables requested by the research team.

Data were abstracted from the electronic Birthing Outcome System (BOS) database at Castlemaine Health. Assistance from the Health Information Manager and MGP coordinator at Castlemaine Health, and the BOS database provider, Management Consultants and Technology Services (MCATS) was required to obtain these deidentified data. For women who were transferred to Bendigo Health, BOS birth outcome data was requested, but was unable to be provided. We therefore instead requested that we be provided with deidentified hospital discharge summaries for each woman, so that we could extract the available data ourselves.

DATA ANALYSIS

Quantitative data analysis

Clinical outcome data for women who birthed at Castlemaine Health were provided on an Excel spreadsheet [23], and transferred to Stata 17 [24] for analysis. Data from the discharge summaries from Bendigo Health were entered into Excel manually, then transferred to Stata. Midwife and maternity consumer survey data were entered directly into REDCap by respondents, then transferred to Stata 17 for analysis. Data cleaning included checks for missing data, and range and logic checks. Any discrepancies in the data were checked, and the outcome then agreed by two members of the research team.

Descriptive statistics are provided in this report. Given the relatively small number of women who enrolled in the model, and small number midwives working in maternity service provision at Castlemaine Health, no statistical comparisons were undertaken. Simple descriptive analyses include percentages, frequencies and means (with standard deviation)/medians (with range).

The EPDS is composed of 10 items specially designed to screen postpartum women for depressive symptomatology [22]. Each item of the EPDS is scored on a four-point Likert-type scale (from 0 to 3),

with the total scale score ranging from 0–30 points. Scores above 12 for this instrument are suggestive of likely clinical depression [22].

Qualitative data analysis

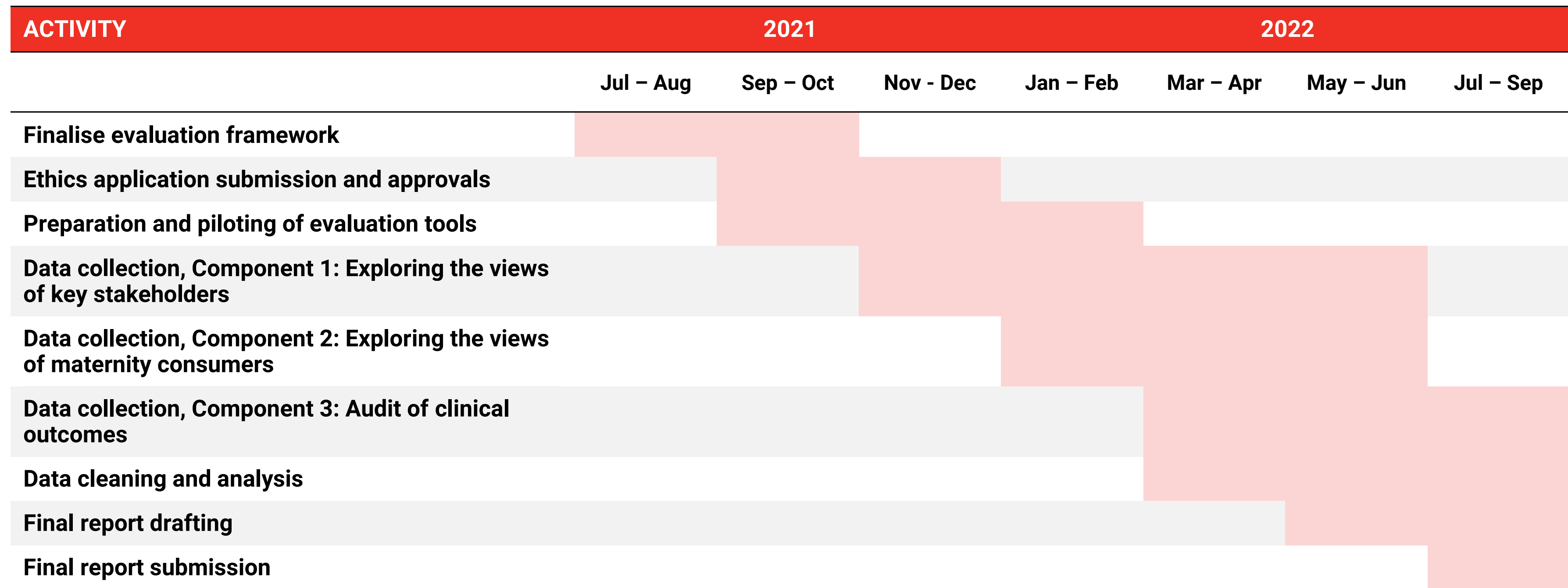
Qualitative data – including interview transcripts and open-ended survey responses – were analysed independently by two members of the research team, and discussed with other research team members to clarify and reach agreement on interpretations. An inductive thematic analysis method was followed [25]. Transcripts were read several times and data grouped into analytical descriptive categories using basic thematic analysis [26], first generating codes, which were collapsed into meaningful categories, which in turn were further collapsed to obtain broad themes to describe the data. Potentially identifying information about individuals was removed, and each participant identified only by a number within the report. Where direct quotes are used in this report, the de-identified number assigned to each participant has been used as an identifier. To protect anonymity, the position of stakeholders within the health service or other relevant organisations has been omitted from this report (so respondents are identified only as key stakeholders or consumers).

EVALUATION TIMELINE

A timeline covering the period of the evaluation is presented in Figure 2. Ethical approval for the evaluation was obtained in November 2021, following which our evaluation measures were piloted and refined. Data collection occurred between November 2021 and August 2022, with data cleaning and analysis conducted from April 2022.

ETHICAL CONSIDERATIONS

Approval for the study was granted by the La Trobe University Human Research Ethics Committee (project number HEC21332), which was deemed appropriate and sufficient by the CEO at Castlemaine Health. All participants who took part in this evaluation were provided with a participant information form via the REDCap platform, and gave informed consent prior to completing an online survey or interview.



ACTIVITY	2021				2022		
	Jul – Aug	Sep – Oct	Nov - Dec	Jan – Feb	Mar – Apr	May – Jun	Jul – Sep
Finalise evaluation framework							
Ethics application submission and approvals							
Preparation and piloting of evaluation tools							
Data collection, Component 1: Exploring the views of key stakeholders							
Data collection, Component 2: Exploring the views of maternity consumers							
Data collection, Component 3: Audit of clinical outcomes							
Data cleaning and analysis							
Final report drafting							
Final report submission							

Figure 2. Timeline for the Castlemaine Health maternity model of care evaluation

Results

COMPONENT 1: EXPLORING THE VIEWS OF KEY STAKEHOLDERS

Key stakeholder interviews

Key stakeholders were invited to participate in interviews for this evaluation with the aim of understanding their perceptions and experiences of the implementation, operation, impact and sustainability of the revised model of care. Stakeholders included Castlemaine Health midwives involved in the provision of the model of maternity care, those employed in dual midwifery and nursing positions, after-hours managers, GPOs, and management and executive staff. Medical, midwifery and management staff at Bendigo Health, representatives from Safer Care Victoria (SCV) and the Australian Nursing and Midwifery Federation (ANMF), members of community groups and First Nations representatives from Castlemaine Health were also invited to take part in an interview as key informants. Stakeholders were invited directly by a member of the research team, or indicated their willingness to take part in an interview on the survey distributed to Castlemaine Health midwifery and after-hours staff. Where any other relevant key stakeholders became apparent during the key stakeholder interviews, they were contacted and invited to participate in an interview.

In total, 34 key informants were provided with the opportunity to take part in an interview as part of this evaluation. Five people did not respond to the invitation to participate or indicated their unwillingness to take part in an interview (and consequently were not interviewed). Therefore, 29 stakeholders participated in key stakeholder interviews with members of the research team between November 2021 and June 2022. The interviews were general discussions that lasted between 15 minutes and just over one hour (mean 37 minutes).

The interview findings have been separated into five sections based around the key questions asked in the interviews. These included service suspension; model development and implementation; how the model is working; sustainability of the model; and potential role of midwifery-led models in reinstating birthing at other regional and rural services in Victoria. Within each section, key themes identified from the interviews are presented and quotes are used to help illustrate these themes. To maintain anonymity of interviewees, no names or specific roles are included.

Service suspension

Interviewees were asked about their experiences surrounding the suspension of the maternity service at Castlemaine Health in 2020. Many interviewees described the suspension of the service as a difficult experience. The process was described as sudden, and staff impacted by the suspension felt blindsided and inadequately supported during this time:

> *… the hospital just threw us a bomb on a Friday afternoon, saying, no birthing this weekend, and we'll talk on Monday. And that came completely out of nowhere, from our perspective.* (1013)

> *And the way they did that was awful in that they just left it to us to tell the women that [the service had closed]. There were about nine women due to birth in the next week or two.* (1008)

This has resulted in some persisting feelings of resentment between themselves and the service for some individuals:

> *I'm a little bit burnt by the shutting down of the service. It was a traumatic event.* (1017)

Interviewees acknowledged that the previous GPO-led model was atypical and had impacted on the midwives' being able to maintain their clinical experience and competency because they had reduced exposure to providing care for women in labour. For these reasons, many recognised the need for change. However, a number of respondents did not see any need for change and did not support the proposed midwifery-led model.

There was also some suspicion regarding the actual agenda for the suspension, and anxiety for whether there would be the support to reinstate maternity services at Castlemaine Health.

> *I was concerned about [the] agenda … Was this small maternity service going to be supported by everyone? It was very clear from the community it was supported. It was supported by the people running the previous maternity service. But across the board, across the state, across the nation, in terms of small maternity services, we knew we needed a big support base, and I was worried that we were up against a machine. A general push towards centralising maternity service care. And I was anxious where our particular service stood. You know, the CEO was speaking all the right words, but were we going to be financially backed and protected through insurances to keep doing the work we do … was the actual agenda to shut us down and to centralise care?* (1017)

The community response following the service suspension, including the work of the group known as SBACH (Save Birthing at Castlemaine Health), was recognised as a major factor contributing to reinstating birthing at Castlemaine Health. Many interviewees felt it was important to listen and respond to the community's wishes to have local birthing services reinstated. As one interviewee explained, "*the Board really wanted to do this for their community*" (1031).

Model development and implementation

Interviewees were asked to describe their involvement in, and experiences of, the development and implementation of the revised model of care, including any challenges experienced.

The process of developing and setting up the revised model was described as "*a very intensive process*" (1027) involving a significant amount of time and work. Interviewees highlighted the importance of external, independent positions to develop the revised model, which was noted as beneficial in helping to depersonalise the process. The skills and expertise of those involved was seen to facilitate the process of developing the revised model, particularly considering that the senior management team at the service may not have had midwifery discipline knowledge:

> *Having the right people around the table at this group was invaluable as the executive team at Castlemaine Health are not midwives and the model being put forward was a very new*

> *concept and something that needed to be 'sold' to the hospital, as they had no experience in this way of working. Having midwives who were respected and able to provide the knowledge and business case around how the model would work was important. We had a project lead who had experience with caseload and is a passionate and forward-thinking midwife, we had a representative from the [Australian Nursing and Midwifery Federation] and our [Loddon Mallee] Regional Midwife, all with MGP experience. Without this group of people, and the backing of Safer Care Victoria, I am not sure if we would be where we are today.* (1010)

The Loddon Mallee Regional Midwife role was acknowledged by another interviewee as contributing positively to this process:

> *I think the Loddon Mallee region had a benefit in that role [Loddon Mallee Regional Midwife], and I think that's something that probably should be put forward as something important in the regions, to consider. Especially when we're looking at implementing these models elsewhere. That role is a great resource.* (1027)

An important part of the model development and implementation was for Castlemaine Health to develop clarity around what level of maternity service they would provide to their community. As one interviewee explained, "*Castlemaine had to know what it wanted to be*" (1025). This process of Castlemaine Health developing this new identity was acknowledged as challenging but significant, and was facilitated by those involved being invested in the common goal:

> *I think it's been a very big journey through that, and now we're very much at a point where we can openly acknowledge that this was a difficult journey from a personal point of view for the people involved. But at the centre of everything was that we all wanted it to work, which I think was the key. We all actually have the same goal.* (1025)

Those who faced significant changes to their roles found this time particularly difficult. Some questioned the need for change, and/or that new roles were required within the revised model. This was described by some as an emotional process and may have contributed to ongoing feelings of discontent, exclusion and resistance for some:

> *…there is still some grief about letting go of what was a very beautiful and precious service.* (1030)

> *I think … there are still some midwives that are really feeling very unloved…* (1004)

There was particular concern for the feelings of staff whose roles were significantly affected by the changes, how the transition could have been better managed, and the recognition that it needed to be an inclusive process:

> *Letting them know that they were absolutely considered a significant part of the team. What their role would be in the model. Because I think it becomes too quickly a time where all you talk about is the midwives in the model. Whereas, the midwives out of the model and the nursing staff out of the model are just as much a part of the maternity service team. I think the language that we use, we need to be really mindful when we're developing these models of*

> *care, that it doesn't come as an exclusive process. That it's inclusive. I think that's a major learning.* (1027)

During the development of the model, a number of working groups were established, including a Clinical Practice Working Group, an Operational Model of Care Working Group, and a Maternity Service Governance Group. A medical lead was appointed to represent the GPOs and a midwifery lead appointed to represent all the midwives. The leads were the conduit between their professional group the working groups. There were different experiences of how consulted staff felt during the process, and while some felt involved in the consultation, others felt unheard and unsupported.

Most staff, however, were supportive of the introduction of the revised model. This support was noted as critical to the successful reopening of maternity services in the community.

> *Even though they [the GPOs] would not be the primary caregiver anymore, they were committed to see the service open again. They really wanted the women in the community to have the option to birth closer to home.* (1001)

Two advisory groups were also created – the Castlemaine Health Maternity Services Consumer Committee and a First Nations Advisory Group. Both groups were seen as valuable in informing the development of the revised model. Although community members felt they had a voice and ample opportunity to engage through the Consumer Committee, there were also reports that the Committee lacked clarity in their role and was underutilised.

How the model is working

Interviewees were invited to share their thoughts and experiences of working in the revised model.

The majority of interviewees were overwhelmingly positive about the model, describing it as *"fantastic"*, *"brilliant"* and *"working really well"*:

> *I think it's amazing. I am so proud that they are back on their feet and they have this amazing, the team itself, those people. And they work really well together so they have an amazing working environment. They are very supportive of each other. They know their scope, there's a respect. Yes, I'm in awe. It's one of the best working groups probably around.* (1019)

Although one interviewee felt that some women in Castlemaine were not choosing the model and raised concerns for the birthing outcomes for those going through the model, these views were not shared by the vast majority of participants. Most felt positive regarding the engagement of the community with the model, the satisfaction of consumers and birth outcomes:

> *It's really beautiful to see, and to see such lovely outcomes, and women really happy with their birth experiences. I think the take-away message is staff and clientele satisfaction is so high.* (1010)

The MGP midwives were described as providing a high level of care to women and the team was described as working well.

> *They want the best for their women. They're willing to listen. There's a lot of collaboration going on. They're great.* (1025)

> *And I think we all work very well together, very well supported. I don't think we could really have a better team, to be honest. It's actually working so lovely. It's such a joy to work with each of them, which is really lovely, and we learn so much off one another.* (1018)

The revised model led to a significant change in the way that midwives, nurses and medical staff worked. Clinicians working within the model were reported to have a good working relationship with each other. In particular, the relationship between MGP midwives and GPOs was described as open, collaborative, respectful and supportive. For core midwifery and nursing staff some aspects of the role and the working relationships required further development.

The model was described as facilitating ongoing staff learning for all clinical groups:

> *… there's been educative support, … [the] PROMPT [program] and education opportunities and that sort of stuff, is fantastic.* (1001)

In particular, the newly introduced case reviews were highly valued and described as contributing to staff learning in a collaborative way:

> *Yes, everyone would like to continue reviewing all the cases as it's great to celebrate what went well and not just focus on where we need to continue to grow. And it always helps, as a group, to talk through cases and learnings. And we'll actually probably find that more beneficial than our local M&M [Maternal and Perinatal Mortality and Morbidity Committee meeting] because we can get down and spend time in more of the nitty-gritty details of each case. And I think now that staff have got used to it, and now aware that it's not a criticism of anyone's care, but a learning opportunity.* (1010)

Although the regularity of the case reviews was time consuming for the staff involved, this process of collaborative discussions and reviews was seen as contributing to the provision of high quality and woman-centred care:

> *And the amount of transparency in the care is phenomenal. Talk about really individualised multidisciplinary discussions. It's probably overkill, but I think it's just been so great for everybody's learning … and for the women actually having three different perspectives looking at their care … and supportive discussion around respecting individual choices.* (1012)

Sustainability of the model

Interviewees were asked about the sustainability of the new maternity model of care, including what they felt would contribute to its sustainability, as well as any potential threats. The themes that emerged from the interviews included the importance of support; recruiting and retaining staff; EFT, workload and coordination within the MGP group; the partnership between Castlemaine Health and Bendigo Health; attention to costs and bookings; and the range of services offered by Castlemaine Health.

Support

Support from hospital management and from the Department of Health (DoH) was recognised as critical for sustainability. The majority of interviewees considered that hospital management and the DoH had been very supportive of the revised model to date, however some were wary that the model would be vulnerable if that level of support changed:

> *I think that as long as the hospital continues to value the service and what it offers and are supportive of it, because I think financially it will always be tricky, especially for a smaller service with a smaller budget. So, I think as long as you've got the CEO and the executives that are willing to say yes, this is worth it, and this is what our community wants, it will be sustainable. But if that management changes over, and you suddenly don't have that support, I think that's when the sustainability [will be threatened, if] they don't see the value in it.* (1010)

The support from Bendigo Health was also acknowledged, which was viewed as critical to sustainability. Some interviewees noted that in order for Bendigo Health (and other level 5 and regional services) to support Castlemaine Health (and/or other rural services), those level 5 services themselves needed to continue to receive sufficient support and resources.

The model was reported to be providing an excellent level of support for the MGP midwives and contributing to job satisfaction within the team. However, there were criticisms of elements of management support relating to the transition to the revised model (such as inadequate support for some staff during the transition) and in other cases relating to operational issues (e.g., payment and leave arrangements) that preceded the introduction of the revised model.

Recruiting and retaining staff

Many interviewees acknowledged that recruiting and retaining clinical staff was critical for sustainability. There were no concerns expressed about recruiting MGP midwives into the model. A midwifery-led model of care was seen as attractive to midwives and therefore contributing to sustainability from a workforce perspective. The location of Castlemaine Health within the state and its proximity to Bendigo was noted as an additional strength in relation to recruiting midwives:

> *I think that Castlemaine is going to be in a fortunate situation because of the relative closeness to Bendigo. There's a large community in Bendigo. There are lots of midwives around that would be prepared to travel that way because it's not that far, as opposed to if I think about services farther north, they're absolutely struggling with workforce.* (1016)

It was acknowledged, however, that MGP midwives not living close to the service would have extra travel time to reach the hospital, and that this may be an issue in some instances, e.g., when a woman required care urgently.

There were concerns about recruiting and retaining GPOs into the service however, and this was acknowledged as a significant threat to sustainability. GPOs were described as "*a dying breed*" and there were concerns that changes in the service provided at Castlemaine Health may deter GPOs from working in the service. As one interviewee said, *"I know there are a couple [of GPOs] that won't*

come and work here because we can't do [caesarean sections]" (1002). Another interviewee explained:

> *"I think that, if you look at GPOs in training, they all train in big hospitals with emergency caesar[ean] facilities locally, and it takes a pretty unique kind of GPO to want to work in a hospital that doesn't have theatre ... GPOs are a dying breed in general, and those who are being trained will probably get a more satisfying career somewhere like Echuca, which has 300 or 400 births a year instead of 50 or 60, [or] Maryborough, which is vulnerable in its own way, but has emergency caesar[ean] options there."* (1013)

Despite this, some felt that working in a service with a midwifery-led model of care would be attractive to GPOs:

> *… the new generation of GPOs would prefer a midwifery-led model, where actually they've got great relationships with midwives, they know they won't call them if they don't need them, the midwives know their women really well. So, it's possible that it creates a more sustainable model for GPOs as well, but we don't know that yet.* (1006)

The availability and/or willingness of dual-registered midwives and nurses (RM/RNs) to work in the model was also described as an issue, and was noted by many as a threat to sustainability. The model was designed to include core midwives who also worked on the acute ward, and who were not in the MGP model, to act as the second midwife during birth. However, concerns were raised about the willingness of RM/RNs at Castlemaine Health to be involved in intrapartum care. This was partly due to some question as to whether they had retained sufficient skills for intrapartum care; some concerns about the limits to midwifery scope of practice in the role; and many who noted the challenges in managing a patient load on the acute ward when also then being called in to assist with a birth (although this arrangement was also in place for midwives working in the previous model of care at the service):

> *... it's tricky, because they also have a patient load, whatever's in the door at Castlemaine Health acute wards. So they've still got to go off and give meds, and all of that kind of stuff for their nursing patients.* (1002)

> *… but at the same time we've got chaos going on in the ward on the outside. And they're really feeling the drag to say, I can't leave these people who are in the acute ward and leave the urgent care, etc., to go to 'midwifery land'. And draw the line in the sand and just ditch you guys. So, there's been a real emotional relationship there.* (1003)

There was also concern that being limited to the role of second midwife for births would not be adequate for the RM/RNs to maintain their midwifery skills. One interviewee said, "*We want to keep our skills up, but [this model is] not keeping our mid[wifery] skills*" (1009). These concerns also extended to possible challenges with recruiting new staff.

Suggestions were made by interviewees to address the issue of the reduction in the number of core midwives available to act as the second midwife. One suggestion was to transition to an MGP-only model, where the model employs sufficient MGP midwives to provide all antenatal, intrapartum and

postpartum care and does not rely on core midwives to be the second midwife at births. To do this, careful consideration of the EFT required in such a model, as well as an economic evaluation, was recommended. A growth in bookings was also seen as important to facilitate this option. An alternative suggestion was for all midwives to rotate through the MGP model. However, it was felt that those midwives who wanted to work in the MGP model would not want to spend part of each year working on the acute (medical) ward. Another suggestion was that other non-midwifery staff (e.g., registered nurses) could be educated and a credentialing process be developed so that they could act as the second person at a birth should the need arise.

> *But I think if this was to be implemented in the future it should be looked at as self-sustainable within the MGP model with a reduced caseload to be able to cater to this.* (1010)

> *... it looks like there are midwives definitely out there that want to work in this model. And if the service can grow and they can employ more midwives to run the model, then possibly, at some point in time, you might not need ward midwives.* (1011)

A further suggestion regarding recruiting and retaining staff was through the employment of double degree (nursing and midwifery) graduates, who could rotate through the acute ward and the MGP program in their graduate midwifery program as well as potentially having a placement at Bendigo Health to gain experience in the larger service. There was also a suggestion/goal of offering placements for Registered Nurses to undertake their midwifery postgraduate course at Castlemaine.

MGP EFT, workload and coordination

A number of issues were raised by participants regarding the MGP EFT, workload and coordination. In relation to EFT, when the model commenced, each MGP midwife worked at 0.4 EFT. Due to the higher number of bookings than anticipated, this was quickly increased to 0.7 EFT. Some interviewees considered an EFT of 0.7 or 0.8 for the MGP midwives was a sustainable level to help the midwives maintain work-life balance and avoid burnout (although the literature suggests that burnout is lower among caseload and MGP midwives compared to those not working in this model [16]), and some reflected that too low an EFT may not suit all midwives from a financial perspective. Consideration of the number of days off-call per fortnight was also noted to be important for sustainability to ensure the MGP midwives have flexibility within the constraints of their expected availability, and it was noted that this can be negotiated among MGP groups at the local level to make it work best for them (i.e., how they arrange their on-call within the group).

Concerns were raised about the increasing workload of the MGP midwives over time. This stemmed from increasing bookings as well as a reduction in the number of core midwives being available to act at the second midwife at birth, meaning that an MGP midwife has needed to fill this role. COVID-related sick leave and other leave also impacted on this, resulting in the midwives having to take on additional clinical and on-call hours. It has also meant they have not always been able to complete their fortnightly shift at Bendigo Health.

Another aspect that was raised was that the MGP midwives' knowledge of how both the MGP and the shared care/GPO were structured was important to the success of the model, including an understanding of and adherence to protocols and the underlying governance structure:

> *We're blessed to have MGP [midwives] who are understanding of the model, and I think that's a pivotal component. If you've got an MGP who didn't understand how things worked and the importance of the consultation and the oversight that Bendigo provides, then the model may not work as well. But our MGP [midwives] … understand the model in depth and know that this is our way forward. And if they diverge from this or try and alter the direction, then our model will not succeed, and our model would fall over. Because it's really important that we follow the protocols that are in place.* (1003)

The MGP coordinator role was described as demanding. When the model commenced, the MGP coordinator role was a combined MGP management and clinical role. In October 2021 the coordinator role was assigned to a separate, non-clinical position. Having a separate coordinator role was noted as important as it enabled the coordinator to provide better support to the clinical midwives within the team. Combining the MGP coordinator role with the midwifery educator (as is currently the case with the person in the role) was also noted as beneficial. Although not discussed by participants, it is likely that the oversight the coordinator has, has better enabled them to target education to areas/clinical scenarios that are relevant.

The MGP coordinator was described as having a very positive impact on the functioning of the model:

> *… the appointment of the new coordinator is probably one of the best, most positive steps this organisation has done, and obviously, that started off with her already being involved through midwifery education, [and with a] strong connection to Bendigo Health. It was just an excellent appointment. Great leadership, natural leader, and good communicator. So I think that that's been really good.* (1012)

<u>Partnership between Castlemaine and Bendigo Health</u>

The partnership between Castlemaine and Bendigo Health was recognised as critical for sustainability. Many interviewees expressed that there was an excellent working relationship between the two services – one that has been enhanced because of the new partnership. It was described as respectful, collaborative and facilitated by good communication between staff and between the services.

> *I think the relationship we have with Bendigo is extraordinarily better than it ever has been ... I think that they're seeing us as capable and part of their team now.* (1013)

The new partnership was considered to have helped Bendigo Health become more aware of Castlemaine Health's capabilities, which in turn helped build respect and trust between the services.

The new agreement also facilitated transfers of care, when required. This was seen as partly due to the strengthening of individual relationships between staff at the two services, as well as Bendigo Health having a clearer understanding of Castlemaine Health's capabilities and processes that may have necessitated a transfer.

> *The other thing that it does, is it means that the senior people from maternity services in Bendigo understand our capabilities in depth, and know that what we're doing. And when we*

> *ask for a person to transfer, there's no' ifs or buts', they 'get it' and they do it and they receive the person in a much more fluid way.* (1003)

A number of interviewees suggested that this strengthening of the relationship between the two services may also be beneficial to Bendigo Health as their maternity service reaches capacity:

> *…as they continue to get busier and busier, to have us down the road for low-risk pregnancy will be an advantage in the future.* (1002)

<u>Regular shifts at Bendigo Health for Castlemaine Health MGP midwives and GPOs</u>

Interviewees felt that the regular shifts undertaken by the Castlemaine Health MGP midwives and Castlemaine GPOs at Bendigo Health has significantly contributed to building and sustaining the positive working relationship between the services. The arrangement was also seen as critical for sustainability in providing the opportunity for the Castlemaine Health staff to retain and/or build their clinical skills, although some felt this wasn't essential for those with a high level of experience.

The familiarity of the Bendigo Health hospital and its systems for the Castlemaine Health staff was also considered to have helped facilitate bookings, transfers, and beneficial in situations where a MGP midwife attended Bendigo Health with one of her birthing women.

There was concern, however, of the workload burden on the small MGP team to be able to sustain the required fortnightly shift at Bendigo Health.

> *I would [like the fortnightly shift to continue], but I also know how vulnerable [the Castlemaine Health MGP group is] … I'm just very much aware that it is a big burden for the small team.* (1019)

Interviewees noted that because the shift the Castlemaine Health MGP midwives did at Bendigo Health was above ratio, it had allowed flexibility for the midwives in case of unexpected shift changes or on-call requirements. However, this was also noted to be a cost burden on Castlemaine Health to support this shift. More recently, the MGP midwives have not been able to attend Bendigo Health for their shift as planned, due to challenges with on-call coverage at Castlemaine Health. This was recognised as an issue that needed resolving.

<u>Cost and bookings</u>

Many interviewees were concerned that the cost of the model may be a barrier to sustainability. Some suggested that the cost of the model should be properly evaluated. They commented that an economic evaluation must take into account the cost savings to the health system as a result of the improved health outcomes associated with midwifery-led models (as per the evidence [7]).

Mechanisms associated with funding the model were also raised, with the main concerns related to the collaborative arrangements with Bendigo Health and how this collaborative model is funded. One concern is due to the broader maternity service funding model in Victoria – regardless of how much care is provided by Castlemaine Health, when women birth at Bendigo Health (which around half the women booked to the model did), Bendigo Health receives the Diagnosis-Related Group

(DRG) funding related to that birth, when in reality much of the intrapartum and postpartum care may be provided by Castlemaine Health. Further, if an MGP midwife provides intrapartum care for her allocated woman at Bendigo Health, this is a further cost to Castlemaine Health.

The importance of maintaining and growing the number of bookings into the service was noted as being important for ensuring it is financially viable as well as contributing to its sustainability from a workforce perspective. Ideas from interviewees for helping grow bookings included: the potential for Bendigo Health to refer eligible women to Castlemaine Health; increasing community awareness and understanding of the model through education and advertising; increasing referrals from surrounding GPs through better awareness of the service; offering water births at Castlemaine Health; and exploring the possibility of a publicly funded homebirth service through Castlemaine Health.

Expanding Castlemaine Health's range of services

Many interviewees spoke of the possibility of Castlemaine Health expanding the range of services that are provided to increase sustainability of the service, with the main idea being to be able to undertake elective caesarean sections. This was seen as a way to expand the midwifery scope of practice and to also help recruit and retain MGP and core midwives, as well as GPOs:

> *And once we are fully capable and able to do c[aesarean] sections, we will have much greater potential of attracting other GPOBs to the service. I know there are a couple that won't come and work here because we can't do c[aesarean] section.* (1002)

To be able to offer emergency caesarean sections, however, while described as desirable, was considered more difficult due to the requirement to have anaesthetists on call 24/7.

Expanding gynaecological services was suggested to complement elective caesarean theatre lists, and as a way to further attract and sustain the medical workforce. Sharing medical staff with Bendigo Health was also suggested, and that Bendigo consultants may be able to schedule procedures at Castlemaine Health and/or be available for elective caesarean sections at Castlemaine Health. Interviewees considered that these suggestions would not only help attract and sustain the medical and midwifery workforce, but also broaden the range of care available to the local community, closer to home.

Potential role of midwifery-led models in reinstating birthing at other regional and rural services in Victoria

Interviewees were asked their opinion on the potential role that midwifery-led models, such as Castlemaine Health's revised model, have in reinstating birthing at other regional and rural services in Victoria. The overwhelming response was positive. Many were keen for Castlemaine Health to be the 'blueprint' for other regional and rural services looking to reinstate birthing. The amount of work that went into developing the Castlemaine Health model was acknowledged, and it was pointed out that there is "*no point reinventing the wheel when such a great amount of work went into that document*" (1027).

It was acknowledged, however, that the model would need to be adapted to suit the context. Castlemaine Health was noted as fortunate to be located so close to Bendigo Health in terms of clinical support and recruiting staff. However, despite this, it was seen as such a valuable service to provide to local communities, and many were hopeful that this would be the start of a move to reinstate birthing more broadly in regional and rural Victoria.

Online survey – maternity care staff

This section provides an overview of the responses from the survey of maternity care staff. In total, 24 clinical staff were invited to complete an anonymous survey in February 2022, including four MGP midwives, three after-hours managers, the Nurse Unit Manager, the MGP coordinator and core (acute ward) midwives. Twelve survey responses were received (a 50% response rate).

Demographic characteristics of survey respondents are listed in Table 1. All MGP midwives (n = 4) and eight core midwives completed the survey. Respondents were between 30 and 60 years of age; with 6 to 34 years of experience in midwifery; and 3 to 40 years of experience in nursing. All were employed on a part-time basis.

Organisational acknowledgement

Participants were asked whether they felt adequately acknowledged by Castlemaine Health. Five respondents stated that they did feel acknowledged, but the same number did not (n = 5), with two unsure (Table 2).

Workload increases following the introduction of the revised model of care were investigated. Most respondents either did not think their workload increased (n = 6), or had a neutral response (n = 5). One respondent thought that introduction of the model increased their workload.

Table 1. Demographic characteristics of maternity care staff

CHARACTERISTIC	n
Position within service (n = 12)	
MGP midwife (n = 4)	4
Core midwife (n = 15)	8
Manager/coordinator (n = 5)	0
Female (n = 12)	12
Age (years), median (range) (n = 9)	49 (30 – 60)
Australian born (n = 12)	11
Aboriginal and/or Torres Strait Islander (n = 12)	0
Years of experience in midwifery profession, median (range) (n = 12)	16.5 (6 – 34)
Years of experience in nursing profession, median (range) (n = 11)	18 (3 – 40)
Part-time employment status (n = 12)	12
Part-time hours per fortnight, median (range) (n = 11)	48 (20 – 64)

CHARACTERISTIC	n
General health rating (n = 12)	
Excellent	2
Very good	3
Good	4
Moderate	3
Bad	0
Disability, impairment, mental and/or physical health condition or learning difference/disability that impacts daily life (n = 12)	
Yes	0
No	10
Prefer not to answer	2

Given the low number of respondents, percentages are not shown

Table 2. Acknowledgement and support

CHARACTERISTIC	n
Feels adequately acknowledged by organisation (n = 12)	
Yes	5
No	5
Unsure	2
Needs more support to fulfill current role (n = 12)	
Yes	1
No	6
Unsure	5

Given the low number of respondents, percentages are not shown

Knowledge and perceptions of the model of maternity care

Core (acute ward) midwives were asked about their knowledge of the model of maternity care operating at the service. Two reported that their knowledge of the model was high; three that they had moderate knowledge, and three reported they had little knowledge of the model of maternity care.

Collectively, most respondents (n = 10) believed that the eligibility criteria for MGP and Collaborative Shared Care, and the guidelines for maternity care provision at the hospital, were clear (Figure 3). All MGP midwives (n = 4) ‘Agreed’ or ‘Strongly agreed’ with these statements.

Criteria and guidelines

Most survey respondents ‘Agreed’ that the *criteria* for antenatal transfer of women from Castlemaine Health to an alternative service were clear (i.e., criteria for when transfer out of the model should occur), and that the *guidelines* (which outline care and/or courses of action when transfer out of the model is necessary) were clear (Figure 3). Eleven respondents indicated that the *criteria* and *guidelines* for intrapartum transfer to another service were clear, while nine indicated that the *criteria* and *guidelines* for postpartum transfer to another service were clear. All MGP midwives considered to criteria and guidelines were clear, whereas one core midwife ‘Strongly disagreed’ that the criteria and guidelines were clear; and a further two were unsure whether the guidelines and criteria for postpartum transfer were well-defined (Figure 3).

Safety

The majority of respondents indicated that they believed the current maternity model of care at their hospital was safe: over 90% of respondents (n = 11) thought it was safe for women and babies, and the same number felt it was ‘safe’ for hospital staff (Figure 4). One core midwife ‘Strongly disagreed’ that the model was safe for women, their infants or the staff working in the model (Figure 4).

Support provided during transition to new maternity model of care

Internal support for the maternity model of care was investigated. Only three respondents agreed there was enough support offered to staff during the transition to the revised model, and two of these were MGP midwives (Table 3).

The majority of responding midwives thought that the model was well supported by hospital management and maternity clinicians, 5/12 respondents thought it was well supported by core midwives, and there was uncertainty as to whether the model was supported by the acute ward nursing staff (Table 3).

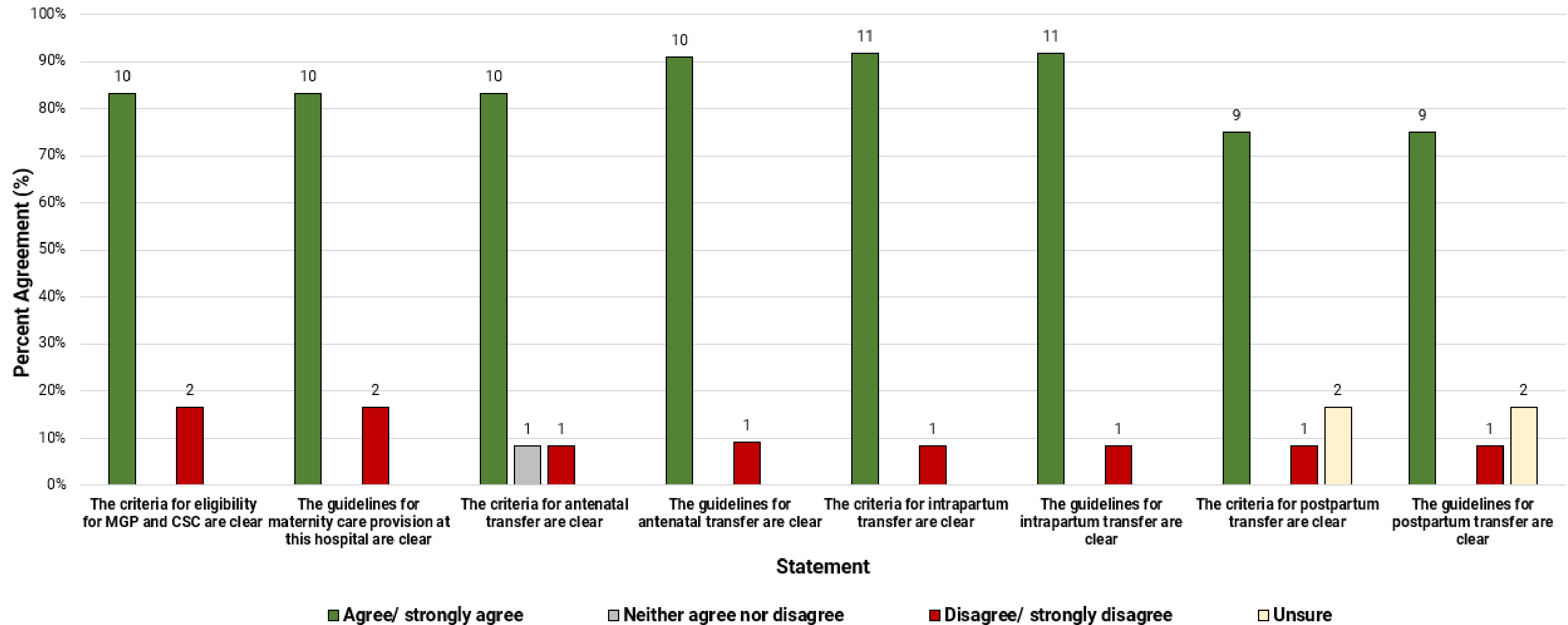


Figure 3. Knowledge of antenatal, intrapartum and postpartum transfer guidelines and criteria at Castlemaine Health

MGP: Midwifery Group Practice; CSC: Collaborative Shared Care

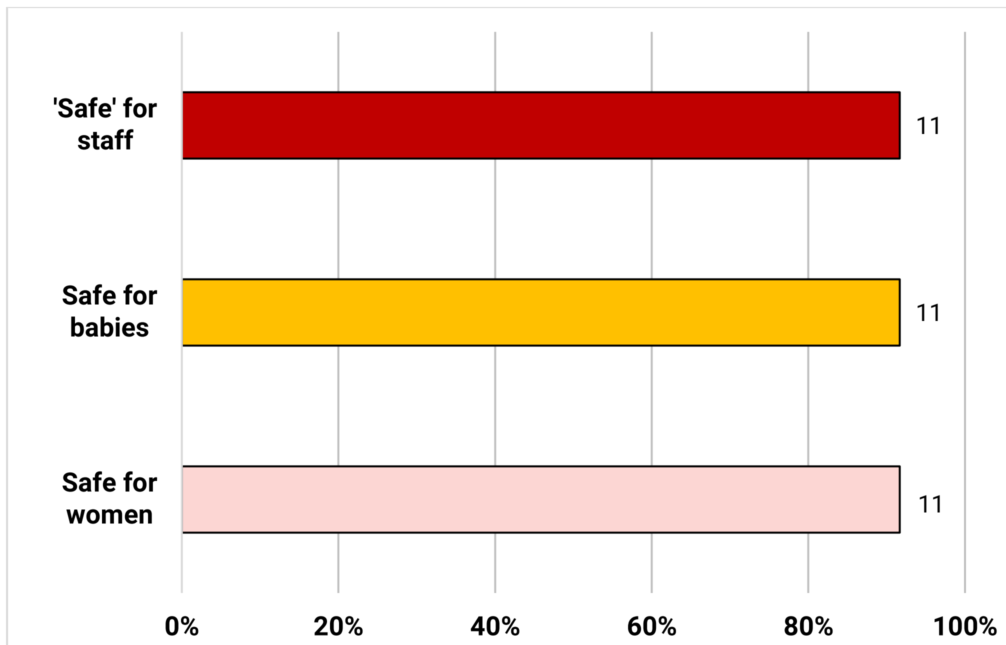


Figure 4. Respondents' views about safety of the maternity model of care

Table 3. Respondents' views about support for the maternity model of care

STATEMENT	Strongly disagree/ disagree (n)	Neither agree nor disagree (n)	Strongly agree/ agree (n)
There was adequate support provided to staff during the transition to the new model of maternity care (n = 12)	4	5	3
The model of maternity care operating at this hospital is supported by hospital management (n = 12)	0	0	12
The model of maternity care operating at this hospital is supported by medical staff (n = 12)	0	0	12
The model of maternity care operating at this hospital is supported by the core midwifery staff (n = 12)	4	3	5
The model of maternity care operating at this hospital is supported by the acute ward nursing staff (n = 12)	2	7	3

Given the low number of respondents, percentages are not shown

Engagement with women, their families and hospital services

Interdisciplinary communication among clinicians working within the model was explored. Most respondents 'Agreed' (n = 2) or 'Strongly agreed' (n = 6) that there was good communication between GPOs and MGP midwives involved in maternity care provision within the model and most also 'Agreed' (n = 2) or 'Strongly agreed' (n = 5) that there was good communication between Castlemaine Health and Bendigo Health (Table 4). No respondent disagreed with either statement, but there was some uncertainty; all MGP midwives 'Strongly agreed' with each statement.

Respondents were asked whether they had a clear understanding of their role within the model of care, and the role of medical staff working within the model. Most 'Agreed' (n = 6) or 'Strongly agreed' (n = 4) that they understood their role within the model (all MGP midwives 'Strongly agreed'). Most also 'Agreed' (n = 5) or 'Strongly agreed' (n = 3) that they understood the role of medical staff providing maternity care to women as part of the model (Table 4).

Staff views regarding community awareness of the model was also explored. While eight respondents agreed the MGP-led model of care was recognised within the community, only five considered the local community was aware of the Collaborative Shared Care model (Table 4).

Table 4. Engagement with women, their families and hospital services

STATEMENT	Strongly disagree/ disagree (n)	Neither agree nor disagree (n)	Strongly agree/ agree (n)
There is good communication between GP* obstetricians and Midwifery Group Practice midwives involved in maternity care provision at Castlemaine Health (n = 12)	0	4	8
There is good communication between Castlemaine Health and Bendigo Health regarding the Castlemaine Health maternity model of care program (n = 12)	0	5	7
I have a clear understanding of my role and responsibilities in caring for women in the program (n = 12)	2	0	10
I have a clear understanding of the roles and responsibilities of medical staff providing shared maternity care to women in the program (n = 12)	3	1	8
The local community is aware that the Midwifery Group Practice model exists (n = 12)	0	4	8
The local community is aware that the Collaborative Shared Care model exists (n = 11)	0	6	5

*GP obstetricians: General Practitioner Obstetricians; Given the low number of respondents, percentages are not shown

Working within the model

Midwives were asked their opinion the minimum years of midwifery experience MGP midwives should have before working in MGP care. Ten thought between 1 and 5 years was adequate (Appendix 3).

Six respondents considered MGP midwives should have extra skills before working in MGP care, for example amniotomy; the ability to insert an intravenous cannula; the ability to apply a fetal scalp electrode; balloon or prostaglandin insertion for induction of labour; prescribing medications; breech birth facilitation; newborn examination; ultrasonography for fetal positioning; fetal biometry and amniotic fluid index; and suturing skills. Appendix 3 lists the skills believed to be required by MGP midwives to work in MGP care.

Midwife wellbeing

Burnout is an occupational phenomenon associated with job dissatisfaction, increased sick leave and intention to leave a workplace [27]. It is characterised by emotional exhaustion and withdrawal from work [28]. Burnout among respondents was investigated using the Copenhagen Burnout Inventory [18], with none reporting high/severe burnout at the time of survey completion. However, core midwives reported more burnout compared to MGP midwives. The Midwifery Process Questionnaire [19] was used to assess midwives' attitudes towards their professional role, measured across four domains: professional satisfaction; professional support; professional development and client interaction. Midwifery Group Practice midwives rated more highly across all domains compared to core midwifery staff, indicative of a positive attitude towards their role. The Depression, Anxiety and Stress Scale (DASS-21) was included to measure levels of depression, anxiety and stress among survey respondents [20], with MGP midwives reporting less depression, anxiety and stress compared to core midwives. No survey respondent reported severe or extremely severe levels of depression, anxiety or stress.

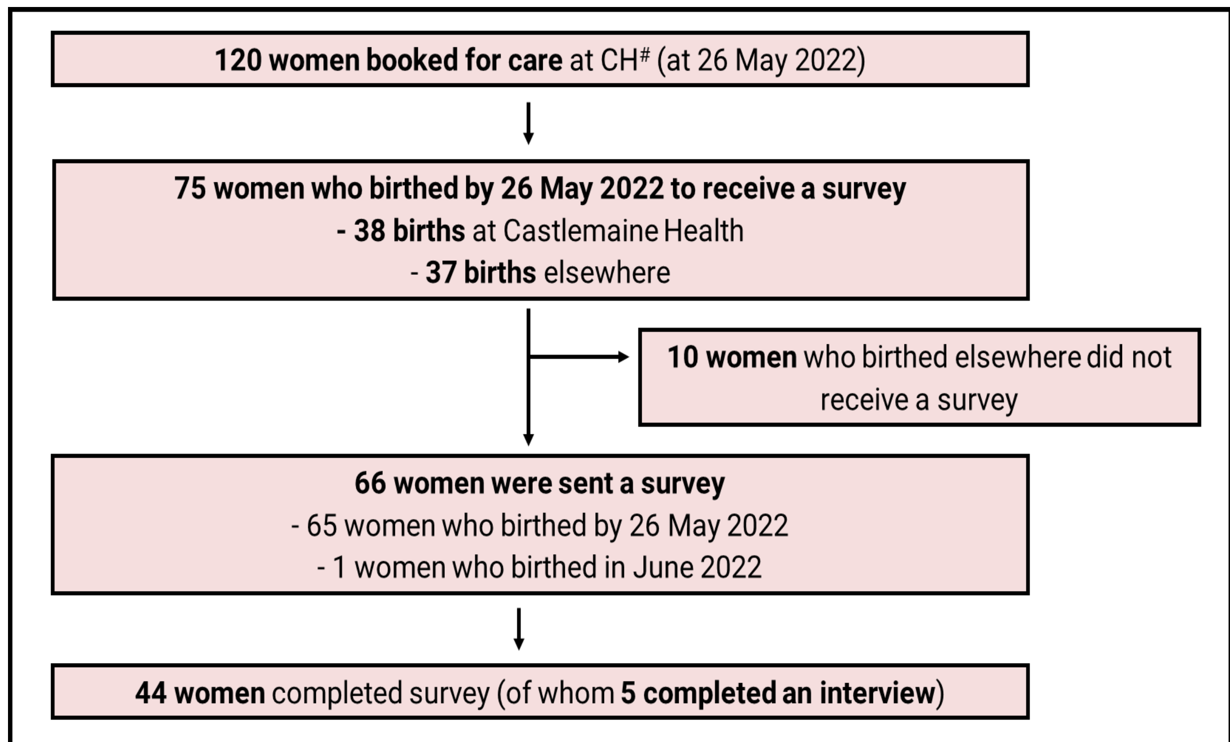
COMPONENT 2: EXPLORING THE VIEWS OF MATERNITY CONSUMERS

I feel deeply, deeply honoured to have had the experience I had. I would give so much for every woman to have the sort of care and experience I had. I am beyond grateful Castlemaine opened up again in time. (Survey respondent)

Online survey and interview

This section reports the survey and interview data from maternity consumers, beginning with Figure 5, which outlines the participation of the maternity consumers.

Of the 120 women booked for care at Castlemaine Health from its reopening until 26 May 2022, 75 women had either birthed at the service or were transferred antenatally or intrapartum, and subsequently birthed at another service (and 45 were still pregnant – Figure 5). These 75 women were eligible to receive a survey exploring their views of the maternity care they received, however only 65 were sent the survey invitation. This included all women who birthed at Castlemaine Health (38 women) and 27 women whose care was transferred to another service. It was later found that one women who birthed in June 2022 was also sent a survey, meaning 66 women in total were sent an invitation, and ten women who were transferred from Castlemaine Health antenatally were not sent a survey. Of the 66 women, 67% (44/66) responded to the survey. Five women agreed to also take part in an interview to further explore their experiences of care.



#CH: Castlemaine Health

Figure 5. Maternity consumer participation

Characteristics of respondents

Table 5 describes the characteristics of women who completed a survey: 50% were first time mothers (n = 22), the mean age was 35 years, and 87% had a degree or higher (n = 34). Most women rated their general health as ‘Very good’ or ‘Excellent’ (90%, n = 35).

Of the five women who agreed to take part in an interview, three had normal vaginal births and one had an instrumental birth at Castlemaine Health. One woman gave birth by emergency caesarean section at Bendigo Health after being transferred during labour. Two of the five women were multiparous – one woman had previously birthed at a large metropolitan birthing hospital, one at Castlemaine Health under the previous model, and the other multiparous woman had previously experienced a midwifery-led model of care at another rural service.

Pathways into the program

Maternity consumers were asked how and when they first heard about the model of maternity care at the hospital (Table 6). Most women indicated they first heard about the program before they became pregnant (64%, n = 27). Primarily, women reported that they heard about the model of care via their friends or their GP. Most indicated that they received enough information to assist them in deciding what model of maternity care to choose (91%, n = 40). The majority indicated that their preference at the time of their booking visit was MGP care (n = 28 women), and most women received this model (77%; n = 33). Of these 33 women, 23 women received only MGP care throughout their maternity experience.

Table 5. Demographic characteristics of all women booked and of survey respondents

CHARACTERISTIC	All women who booked to receive care$ (n = 120) n (%)	All women who were sent a survey (n = 66) n (%)
Primiparous (n = 115, 44)	54 (47)	22 (50)
Maternal age (years) at booking (n = 115); **at survey completion** (n = 31), **mean (SD#)**	33.3 (4)	35.0 (4)
Infant age (weeks) at survey completion, mean (SD#) (n = 44)	-- --	19.2 (12)
Partnered (n = 110, 39)	102 (93)	36 (92)
Completed high school (n = 38)	-- --	37 (97)
Further education (post-secondary school) (n = 39)		
Degree or higher	-- --	34 (87)
Diploma	-- --	4 (10)
Other	-- --	1 (3)
Government pension as main income source (n = 39)	-- --	2 (5)
Health Care Card holder	-- --	2 (5)
Aboriginal and/or Torres Strait Islander, mother (n = 119, 36)	2 (2)	0 (0)
Aboriginal and/or Torres Strait Islander, baby (n = 36)	-- --	1 (3)
Born in Australia (n = 117, 39)	108 (92)	37 (95)
First language English (n = 115, 39)	115 (100)	39 (100)
General health rating (n = 39)		
Excellent	-- --	13 (33)
Very good	-- --	22 (56)
Good	-- --	4 (10)
Fair	-- --	0 (0)
Poor	-- --	0 (0)

$All women who booked to receive maternity care at Castlemaine Health up to 26 May 2022; #SD: Standard deviation

Table 6. Pathways into program and pregnancy care

CHARACTERISTIC	n (%)
WHEN first heard about program (n = 42)	
Prior to becoming pregnant	27 (64)
Prior to booking at the hospital	15 (36)
HOW first heard about program* (n = 44)	
Friends/acquaintances	23 (52)
GP/family doctor	17 (39)
Internet/social media	14 (32)
Family member	8 (18)
Media	5 (11)
Through one of the MGP midwives	1 (2)
Other (e.g., through doula; through another care provider)	5 (11)
Received enough information (from either midwife or doctor) to help decide what model of maternity care to choose (n = 42)	
Yes	40 (95)
No	2 (5)
Model preference at booking (n = 37)	
Midwifery Group Practice	28 (76)
Collaborative shared care	8 (22)
Pregnancy care at Bendigo Health	1 (3)
Model of care received (n = 43)	
Midwifery Group Practice	33 (77)
Collaborative Shared Care	10 (23)
Midwifery Group Practice only received (n = 33)	23 (70)
Collaborative Shared Care only received (n = 9)	8 (89)

*Please note that women could provide more than one response option for this question

Experience of pregnancy care

Women were asked about their satisfaction with care during pregnancy via fixed-response and open-ended survey questions, as well as in the interview. Overall, women were highly satisfied with the care received in pregnancy.

In the survey, women were asked to rate their overall pregnancy care on a seven-point scale, where one was 'Very poor' and seven was 'Very good'. Most women rated their overall pregnancy care as 'Good' or 'Very good', and were happy with the physical and emotional care they received in pregnancy (Table 7).

The interview and open-ended survey responses to questions regarding care during pregnancy further demonstrated that women were overwhelmingly satisfied with their pregnancy care.

Many women commented on how much they valued the **relationship** they developed with their midwife through the continuity-of-care model. They described the midwives as outstanding, passionate and caring, and felt that they received **woman-centred care**, tailored to their individual needs and circumstances.

> *The birth of my first child was in a large city hospital where the care was very impersonal. At Castlemaine Health it was the opposite, I felt as though my midwife took the time to get to know me and my family, took the time to discuss any concerns and respected my decisions and preferences. (Survey respondent 17)*

> *As a single mother the primary care model made me feel much more supported in my pregnancy than I would have without it. It was why I first went to Castlemaine, and it is amazing. (Survey respondent 23)*

Women felt **respected**, **heard** and **involved in decision making** regarding their care. The time their caregivers gave to provide information and answer their questions contributed to this. This helped women feel **empowered** and **prepared** for labour and birth.

> *All of our sessions with the midwife were so informative with a real focus on making me feel informed, confident, well cared for and understood. I couldn't have imagined better care. (Survey respondent 40)*

> *Every staff member that I crossed paths with during my pregnancy was absolutely fantastic. My wishes were always respected, and they made me feel heard and supported. (Survey respondent 35)*

This also helped women feel **prepared** in case they needed to be transferred into the care of Bendigo Health, and gave them confidence about the relationship between the services should transfer be necessary.

> *So, it really helped me with working through what would happen if things went wrong as far as transferring up to Bendigo, which helped, because in the end this little guy had to be transferred with me later in the day. (Interviewee 2004)*

> *They were very up front about if something does happen, or we need to transfer you somewhere they're in constant contact with Bendigo Health and things like that. You weren't just going to be tossed out and wished luck. You actually were known somewhere else as well. (Interviewee 2005)*

Women noted how important the **continuity of care** was for them during their pregnancy, and the positive impact this had on their experience of labour and birth. It helped women feel '*calm and supported*' and that they could '*trust them [their caregivers] fully*'. Many also noted how important it was to meet all members of the MGP team in case their primary midwife was unable to attend their birth.

> *I appreciated being able to get to know her [primary midwife] and learn from her through my pregnancy. This meant I trusted her and the other midwives whom I had been given the chance to meet also. It turned out to extremely important for me personally because i was induced and that was not something I had hoped for. However, I trusted those who cared for me. (Survey respondent 9)*

> *… that was really good to be able to meet the midwives. I think if it had been a different midwife that was on when I was in labour, to be able to meet them in person and just get a gauge on them would've been really good. Because I found that I was just able to completely trust the people in the room when I was in labour because I sort of had met them before. (Interviewee 2004)*

Women valued the approach of care at Castlemaine Health that recognised the natural process of pregnancy and birth, and this helped women feel calm and empowered.

> *I loved that the midwives approached pregnancy as a healthy process that didn't need to be over medicalised or worried about. (Survey respondent 32)*

> *Having care where my trust in birth as a natural process was normalised and empowered was as it should be. (Survey respondent 34)*

One woman said she appreciated the late pregnancy appointment at Bendigo Health as it was an opportunity to "*see the hospital there just to know where to go*" (Interviewee 2002) in case of a transfer. However, another woman said she felt the appointment was "*a total waste of time*" (Interviewee 2004), and felt that her questions were not well answered by the clinician she met with, and that she did not receive woman-centred care.

Another woman highlighted that there may be communication issues between the two services after Bendigo Health was unable to access her previous appointment notes from Castlemaine Health.

Table 7. Women's experiences of care in pregnancy

STATEMENT	1 STRONGLY DISAGREE n (%)	2 n (%)	3 n (%)	4 n (%)	5 n (%)	6 n (%)	7 STRONGLY AGREE n (%)
At my check-ups I was always asked whether I had any questions (n = 43)							43 (100)
At my check-ups, the midwife/midwives always explained to me what was happening (n = 43)					1 (2)		42 (98)
At my check-ups, the doctors always explained to me what was happening* (n = 42)					1 (2)	1 (2)	40 (95)
I was always given an active say in decisions about my care in pregnancy (n = 43)						2 (5)	41 (95)
I always felt my worries, anxieties or concerns about the pregnancy and the baby were taken seriously by the midwife/midwives (n = 43)					1 (2)	3 (7)	39 (91)
I always felt my worries, anxieties or concerns about the pregnancy and the baby were taken seriously by the doctors* (n = 42)				1 (2)	1 (2)	1 (2)	39 (93)
The midwife/midwives provided reassurance when I needed it (n = 43)						1 (2)	42 (98)
The doctors provided reassurance when I needed it* (n = 40)			1 (3)			2 (5)	37 (93)
At my check-ups the midwife/midwives often seemed rushed (n = 43)	33 (77)	8 (19)					2 (5)
At my check-ups the doctors often seemed rushed* (n = 39)	29 (74)	6 (15)			2 (5)	2 (5)	

STATEMENT	1 STRONGLY DISAGREE n (%)	2 n (%)	3 n (%)	4 n (%)	5 n (%)	6 n (%)	7 STRONGLY AGREE n (%)
Care in pregnancy was provided in a competent way (n = 42)						2 (5)	40 (95)
I was happy with the physical care I received in pregnancy from the midwife/midwives (n = 43)						2 (5)	41 (95)
I was happy with the physical care I received in pregnancy from doctors* (n = 41)				1 (2)		4 (10)	36 (88)
I was happy with the emotional support I received in pregnancy from the midwife/midwives (n = 43)					1 (2)	3 (7)	39 (91)
I was happy with the emotional support I received in pregnancy from doctors* (n = 39)			1 (3)			3 (8)	35 (90)
I received adequate information during my pregnancy about labour and birth (n = 42)			1 (2)	1 (2)		3 (7)	37 (88)
Overall, how would you describe your care during pregnancy (1 = very poor; 7 = very good; n = 43)					1 (2)	4 (9)	38 (88)

*Please note some women indicated 'not applicable' to these items (where care not provided by doctor)

Transfers in pregnancy

Women were asked whether they received another model of maternity care in pregnancy (apart from the one assigned to them at their booking visit). This could include a transfer from Collaborative Shared Care to MGP care (or vice versa), or a transfer to Bendigo Health or elsewhere for the remainder of their maternity care. Eleven women (25%) indicated that they transferred during their pregnancy from the model of care they were assigned to at their booking visit (Table 8). Of these women, nine indicated that the transfer was for a medical reason (e.g., due to increasing medical risk in pregnancy). Most women 'Agreed' or 'Strongly agreed' that clinicians clearly explained why they were being transferred, that the change in plans occurred according to hospital guidelines, and that they were happy with the decision-making around their transfer in pregnancy. Two women indicated that they were not happy with the decision-making around their transfer to a higher level service, although their transfers were appropriate as per the Collaborative Operational Model of Care document [6].

Table 8. Transfer to another care pathway in pregnancy

CHARACTERISTIC	n (%)
Transferred to another model of care during pregnancy (n = 44)	11 (25)
Reason for transfer during pregnancy (n = 11)	
Medical reason	9 (82)
Personal reason	1 (9)
Unsure	1 (9)
Felt like they had a say in the decision to transfer to another model of care during pregnancy (n = 8)	
Yes, completely	4 (50)
Yes, to some extent	2 (25)
No	2 (25)
The midwife/doctor clearly explained why I was being transferred (n = 8)	
Disagree strongly	0 (0)
Disagree	0 (0)
Neither disagree nor agree	1 (13)
Agree	1 (13)
Strongly agree	6 (75)
Happy with the decision-making surrounding transfer to another model of care for pregnancy (n = 9)	
Disagree strongly	1 (11)
Disagree	1 (11)
Neither disagree nor agree	2 (22)
Agree	1 (11)
Strongly agree	4 (44)

CHARACTERISTIC	n (%)
The change in plans about receiving another model of care for pregnancy occurred according to the hospital's guidelines (n = 9)	
Disagree strongly	0 (0)
Disagree	0 (0)
Neither disagree nor agree	1 (11)
Agree	2 (22)
Strongly agree	6 (67)

Satisfaction with, and experience of labour and birth

Twenty-two women birthed at Castlemaine Health, 18 women birthed at Bendigo Health, and two women birthed before arrival at Castlemaine Health (Table 9). Most women had an unassisted vaginal birth (67%, n = 28). Eight women birthed by caesarean section at Bendigo Health.

Table 9. Characteristics of labour and birth

CHARACTERISTIC	n (%)
Hospital where labour commenced (n = 42)	
Castlemaine Hospital	29 (69)
Bendigo Hospital	9 (21)
Not applicable – labour care not provided at a hospital	3 (7)
Not applicable – no labour (elective caesarean)	1 (2)
Hospital where birth occurred (n = 42)	
Castlemaine Hospital	22 (52)
Bendigo Hospital	18 (43)
Baby not born at hospital	2 (5)
Birth type (n = 42)	
Unassisted (normal) vaginal birth	28 (67)
Forceps/vacuum birth	6 (14)
Caesarean birth	8 (19)
Transferred to another hospital during labour (n = 40)	8 (20)
Reason for transfer (n = 8)	
Complications with mother's health	0 (0)
Complications with infant's health	3 (38)
Unsure	0 (0)
Other reason	3 (38)

CHARACTERISTIC	n (%)
Overall care provision during intrapartum transfer (n = 6)	
Very good	6 (100)
Good	0 (0)
Average	0 (0)
Poor	0 (0)
Very poor	0 (0)

Figure 6 details women's satisfaction with care provision during labour and birth, shown by hospital of birth (i.e., Castlemaine Hospital or Bendigo Hospital). The majority of women were very satisfied with care provision during labour and birth: over 90% of the women who birthed at Castlemaine 'Strongly agreed' that care during labour and birth was provided in a safe way and competent way; and they were happy with the emotional support they received from the midwives (n = 21 women). Among those who birthed at Bendigo Health, over 70% of women 'Strongly agreed' that intrapartum care was provided in a safe (82%; n = 14) and competent way (76%; n = 13; Figure 6). At both services, most women described their intrapartum care provision as 'Very good'.

Women's experiences of labour and birth are shown in Figure 7. Of the women who birthed at Castlemaine Health, 17 stated that their overall birth experience was 'Very positive'. Of the women who birthed at Bendigo Health, six rated their experience was 'Very positive'. It must be noted that approximately 50% of survey respondents who birthed at Bendigo Health were transferred there intrapartum, which would likely affect their birth experience.

In the open-ended survey responses and the interviews, women shared their positive and negative experiences of care during labour and birth. Women who birthed at Castlemaine Health felt that they were treated with **kindness and respect** during their labour and birth. They felt their birthing wishes were acknowledged and effort was made to meet them. As a result, they felt **empowered** and had a **sense of agency** during their labour and birth.

> *All the midwives and doctors were so supportive and positive and made me feel completely free to be vocal and move how I needed to. At no point did I feel judged or rushed. (Survey respondent 32)*

> *Empowering experience because of my freedom to make decisions that were based on clear and unbiased information from midwives. (Survey respondent 41)*

> *Midwives clearly read our birth plan and adhered to it, openly communicated about it and allowed me to use the birthing space in the way that I needed to. (Survey respondent 34)*

Women valued the **support** they received by carers during labour and birth who they knew and trusted. This included their MGP midwife as well as the GPO (where needed).

> *It was a very positive birth experience. I remember just saying to them afterwards, like thanking the GP obstetrician and the midwife for the birth, really that it had gone the way I'd wanted and felt very positive and very held in that space rather than it being a very medical thing. (Interviewee 2004)*

> *The way my midwife was present and supportive but gave me and my husband space. The way I was allowed to have and lean on when needed a doula as well as my husband and midwife. The way my doctor was there when I needed her but not when I didn't. I felt safe and supported throughout. I felt listened to when I didn't want to try a position but encouraged and not overwhelmed when I hadn't thought of a position that was being suggested to me (which worked better). I felt all the team of my doctor and midwife and support team not only worked together beautifully and quietly behind the scenes. (Survey respondent 15)*

Two women discussed times during their labour when they did **not feel well supported** by the midwives involved in their care.

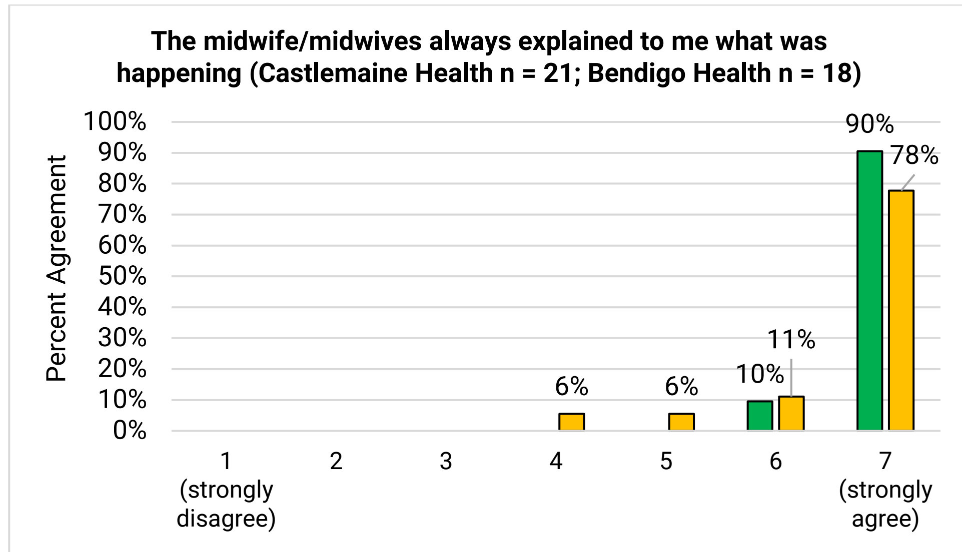
> *... the midwife that was already at the hospital wasn't part of the midwifery group practice and I just felt a bit left alone in the room until my actual midwife arrived. I think she was sort of just like, oh I'll leave you to it without really realising how far along I was. (Interviewee 2004)*

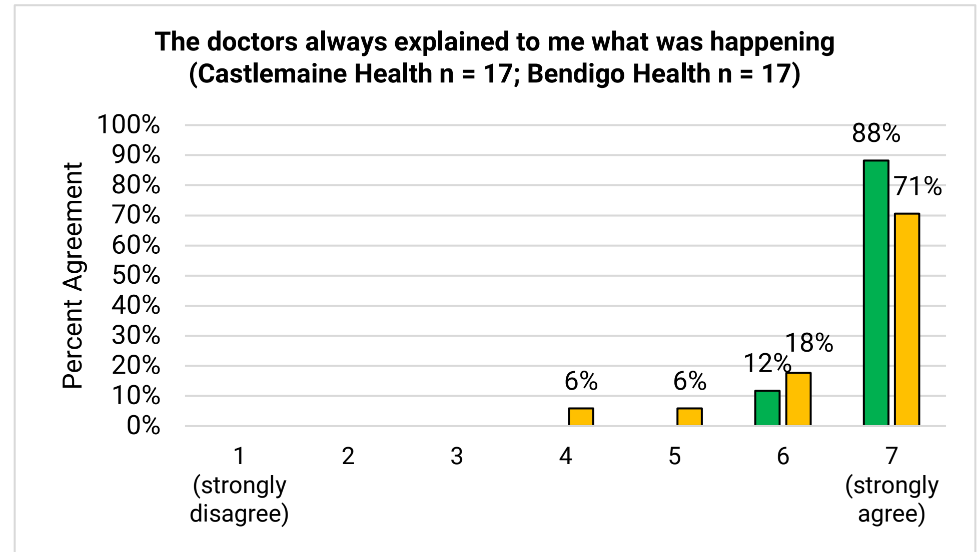
> *Right near the end they had to, obviously, call in an extra pair of hands, and that was just another staff midwife, somebody else from the floor that I didn't know. And that wasn't great either, because she came in and took over and did things which really were annoying. Just silly little things, but like she came in and turned the fan off, and I was about to have a baby, and I was like, don't turn that effing fan off. What the eff are you doing? Whereas all the other midwives that knew me knew that that was really important, and was going to keep me relaxed and able to do what I needed to do. And this random person came in. (Interviewee 2001)*

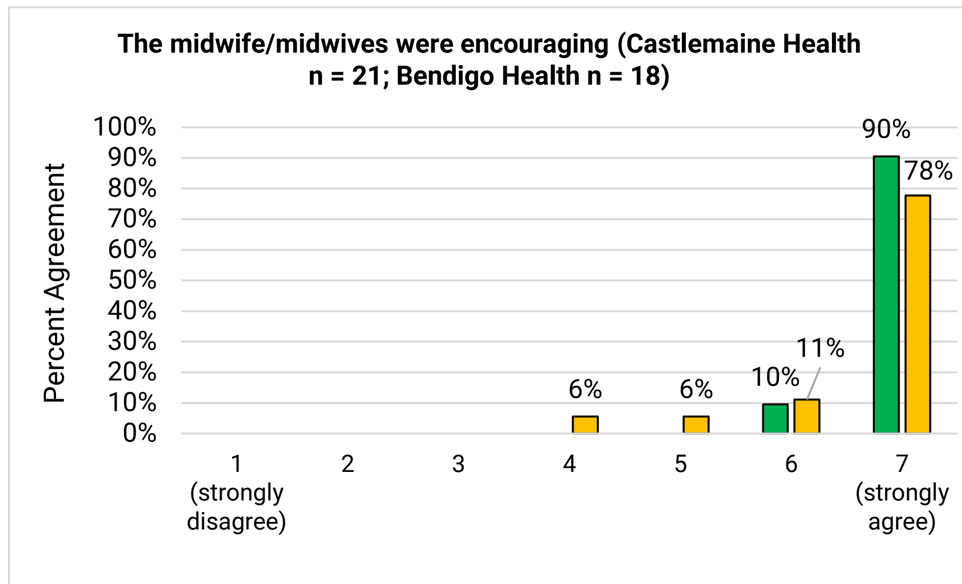
The **birthing space** at Castlemaine Health was described as comfortable, and women appreciated that it did not feel medicalised. This helped them stay focused during labour.

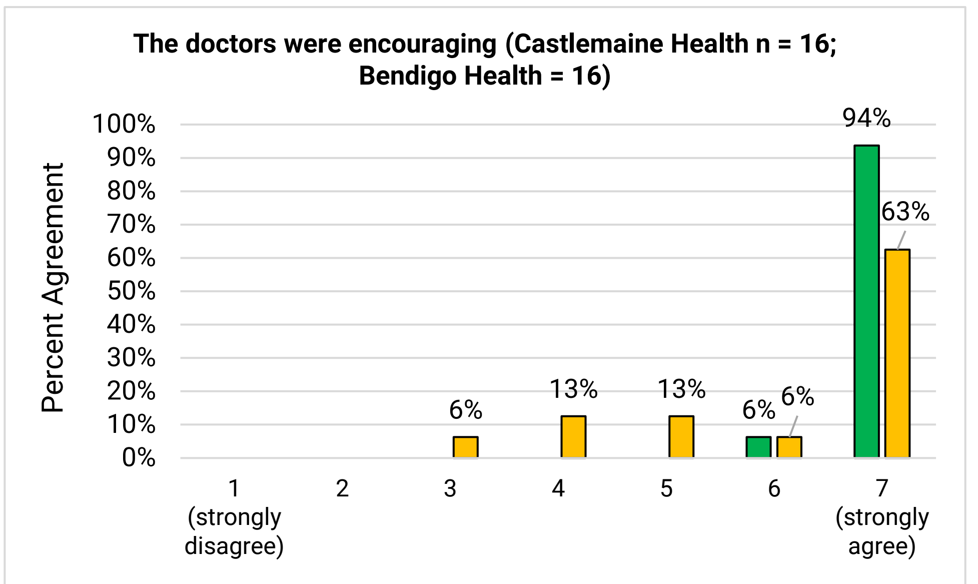
> *I really liked having the salt lamp there rather than… And being on a double bed as well was really nice. So, my husband could be on the bed next to me really closely and because it was a double bed, I was up and down, it didn't really feel as if it was like medical but made me stay in that headspace I'd been in at home … And then knowing who was in the room and they'd set it up before I even got in there with the salt lamp and stuff, so it was all nice and dark. And they'd offered aromatherapy type stuff, but I didn't want that. But knowing that was available was nice. (Interviewee 2004)*

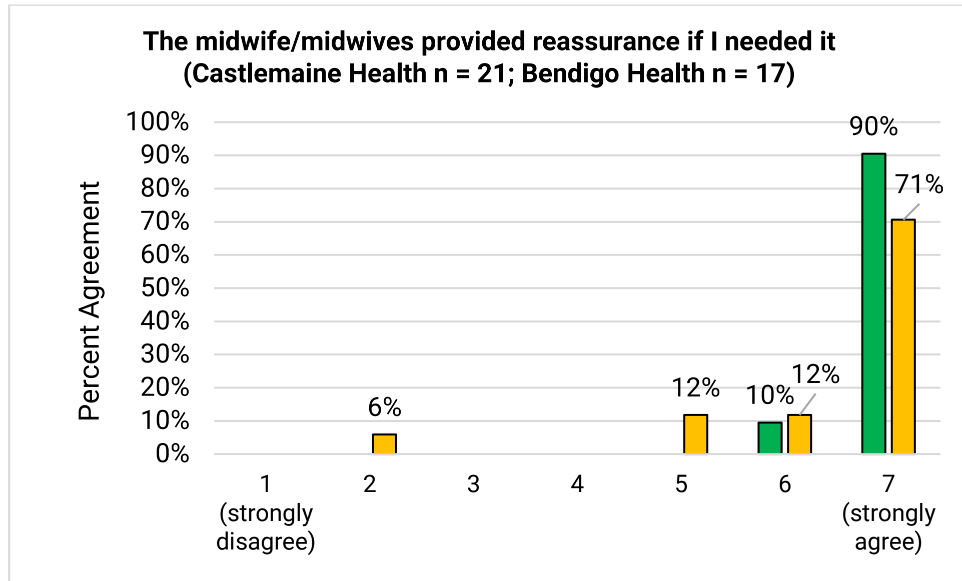
Only a few comments were made regarding aspects of intrapartum care at Castlemaine Health that women were dissatisfied with. One noted that she would have preferred to choose her midwife and obstetrician while another noted that she wished she had certainty about who would be present at the birth (in case her midwife was not available that day). Another woman noted that she did not feel she received as much one-on-one time with her midwife during labour as another woman who was labouring at the same time, and she also felt she could have been offered more pain relief options as she was "*only given gas and morphine just before being transferred*" (Survey respondent 5).

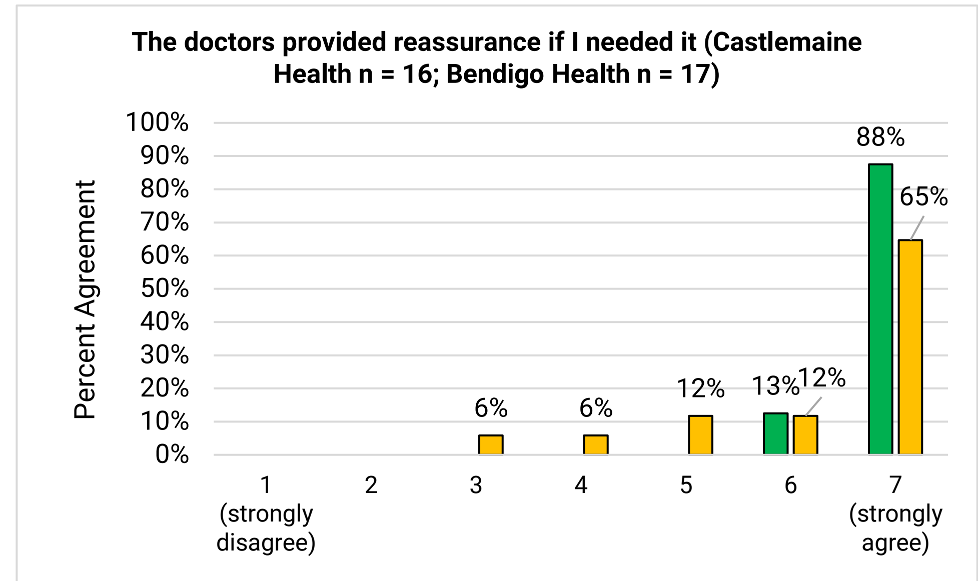

The midwife/midwives always explained to me what was happening (Castlemaine Health n = 21; Bendigo Health n = 18)
Percent Agreement
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
1 (strongly disagree)
2
3
4
5
6
7 (strongly agree)
6%
6%
10%
11%
90%
78%

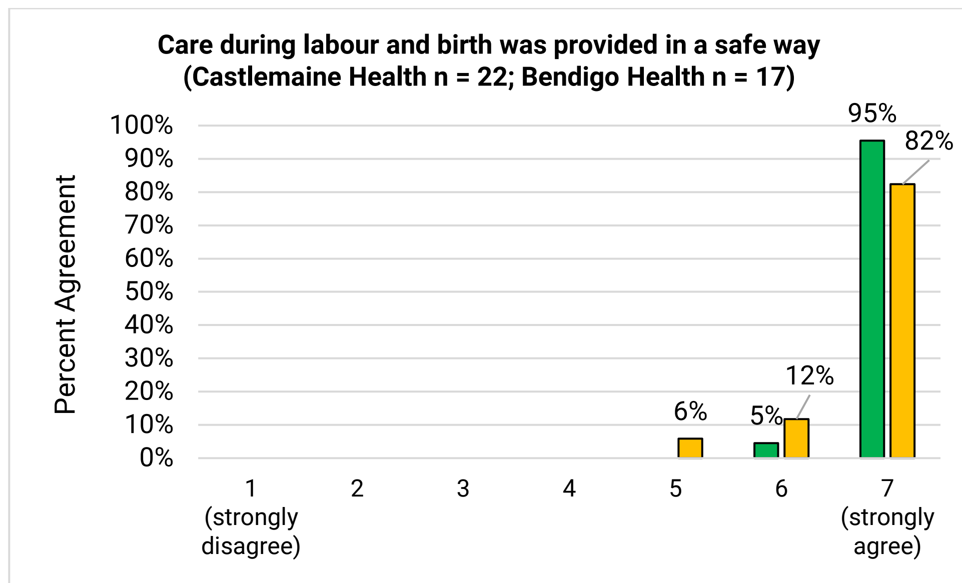

The doctors always explained to me what was happening (Castlemaine Health n = 17; Bendigo Health n = 17)
Percent Agreement
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
1 (strongly disagree)
2
3
4
5
6
7 (strongly agree)
6%
6%
12%
18%
88%
71%

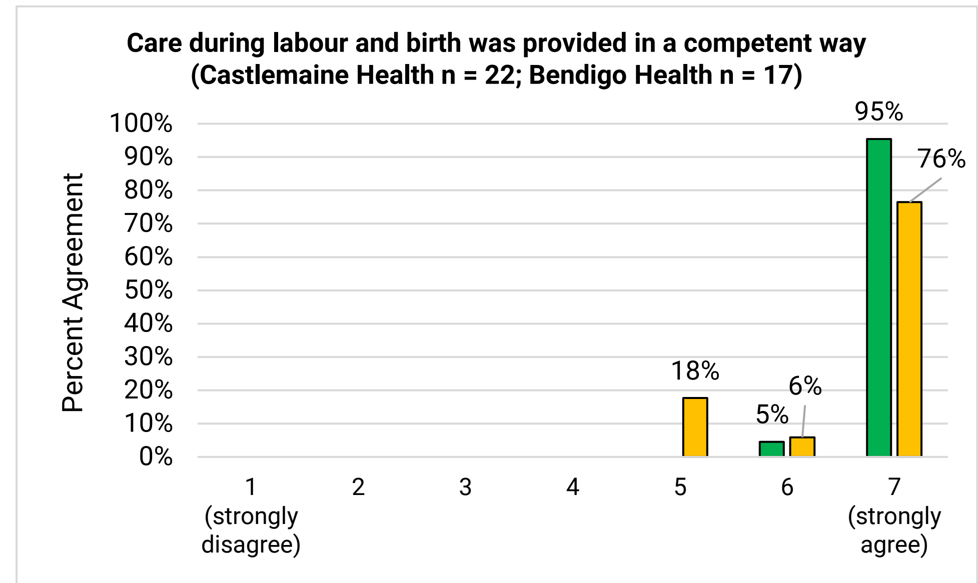

The midwife/midwives were encouraging (Castlemaine Health n = 21; Bendigo Health n = 18)
Percent Agreement
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
1 (strongly disagree)
2
3
4
5
6
7 (strongly agree)
6%
6%
10%
11%
90%
78%

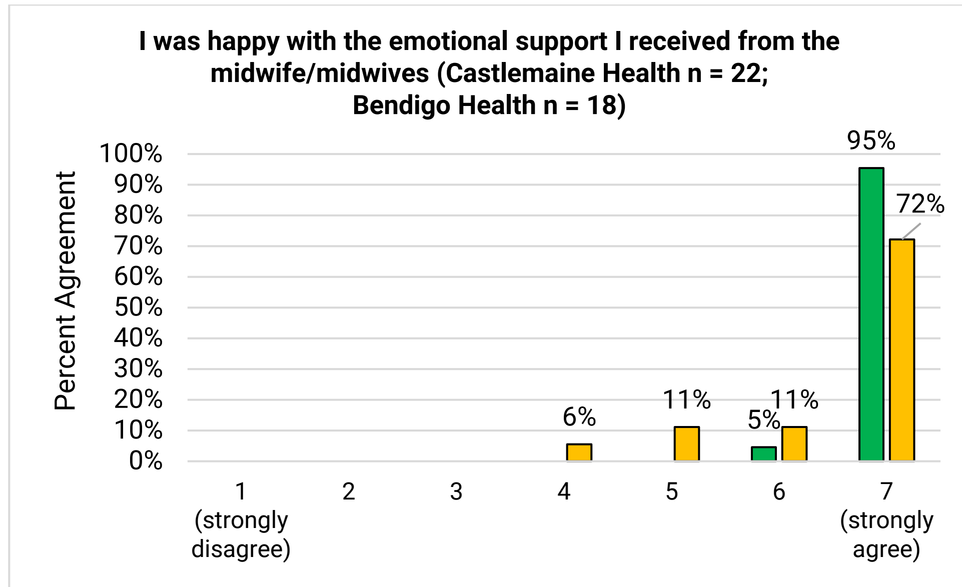

The doctors were encouraging (Castlemaine Health n = 16; Bendigo Health = 16)
Percent Agreement
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
1 (strongly disagree)
2
3
4
5
6
7 (strongly agree)
6%
13%
13%
6%
6%
94%
63%

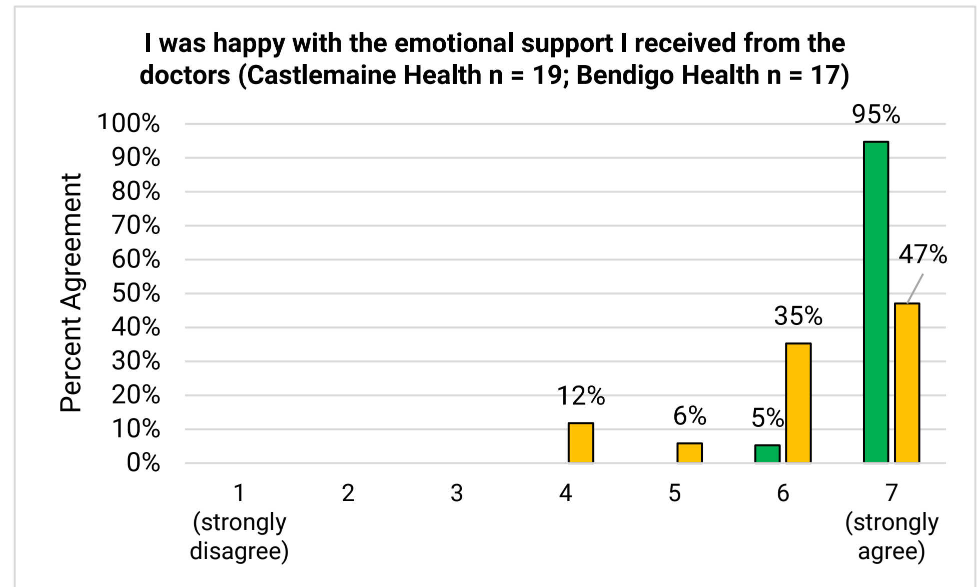

The midwife/midwives provided reassurance if I needed it (Castlemaine Health n = 21; Bendigo Health n = 17)
Percent Agreement
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
6%
12%
10%
12%
90%
71%
1 (strongly disagree)
2
3
4
5
6
7 (strongly agree)

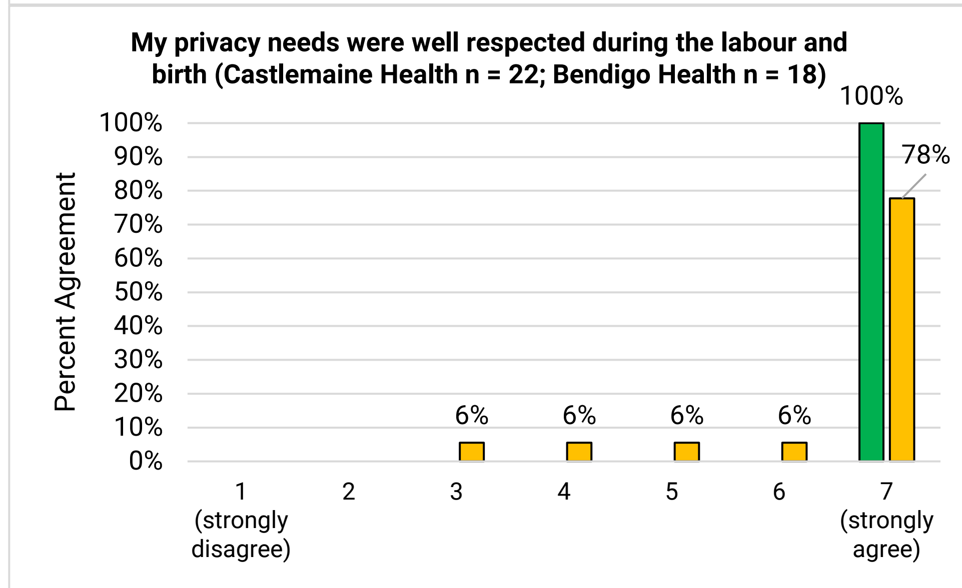

The doctors provided reassurance if I needed it (Castlemaine Health n = 16; Bendigo Health n = 17)
Percent Agreement
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
6%
6%
12%
13%
12%
88%
65%
1 (strongly disagree)
2
3
4
5
6
7 (strongly agree)

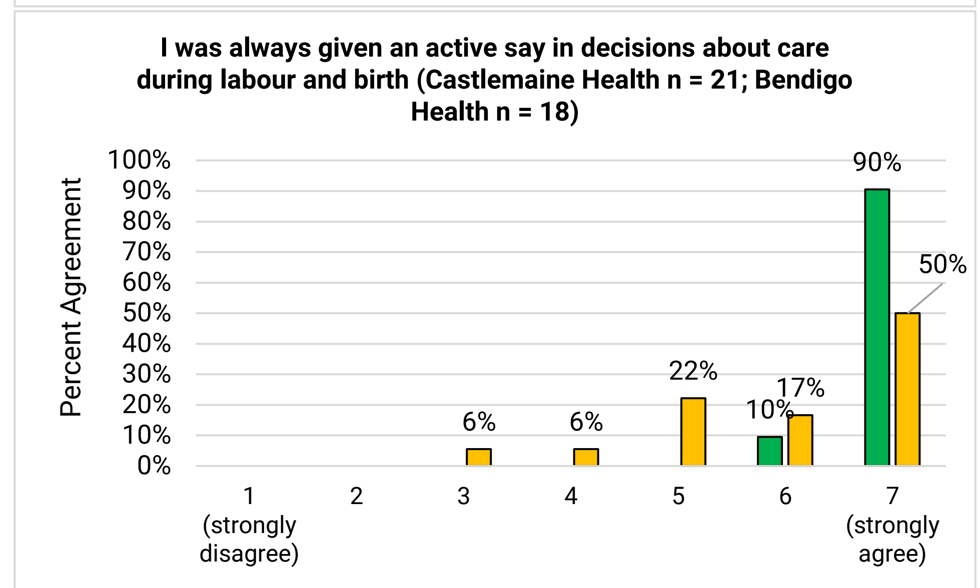

Care during labour and birth was provided in a safe way (Castlemaine Health n = 22; Bendigo Health n = 17)
Percent Agreement
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
6%
5%
12%
95%
82%
1 (strongly disagree)
2
3
4
5
6
7 (strongly agree)


Care during labour and birth was provided in a competent way (Castlemaine Health n = 22; Bendigo Health n = 17)
Percent Agreement
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
18%
5%
6%
95%
76%
1 (strongly disagree)
2
3
4
5
6
7 (strongly agree)


I was happy with the emotional support I received from the midwife/midwives (Castlemaine Health n = 22; Bendigo Health n = 18)
Percent Agreement
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
6%
11%
5%
11%
95%
72%
1 (strongly disagree)
2
3
4
5
6
7 (strongly agree)


I was happy with the emotional support I received from the doctors (Castlemaine Health n = 19; Bendigo Health n = 17)
Percent Agreement
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
12%
6%
5%
35%
95%
47%
1 (strongly disagree)
2
3
4
5
6
7 (strongly agree)


My privacy needs were well respected during the labour and birth (Castlemaine Health n = 22; Bendigo Health n = 18)
Percent Agreement
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
6%
6%
6%
6%
100%
78%
1 (strongly disagree)
2
3
4
5
6
7 (strongly agree)


I was always given an active say in decisions about care during labour and birth (Castlemaine Health n = 21; Bendigo Health n = 18)
Percent Agreement
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
6%
6%
22%
10%
17%
90%
50%
1 (strongly disagree)
2
3
4
5
6
7 (strongly agree)

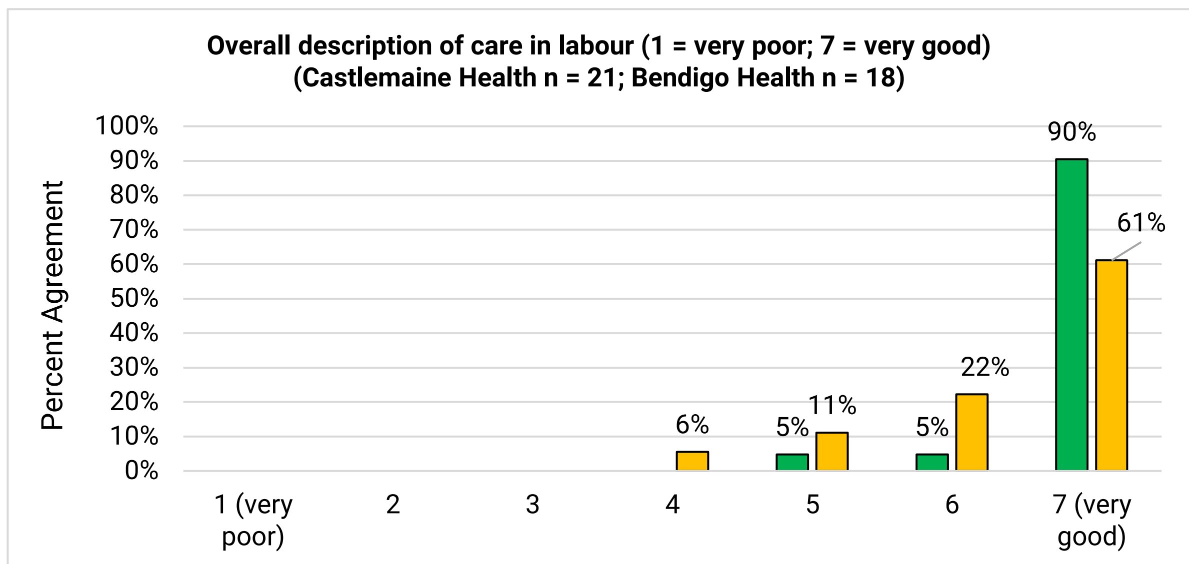
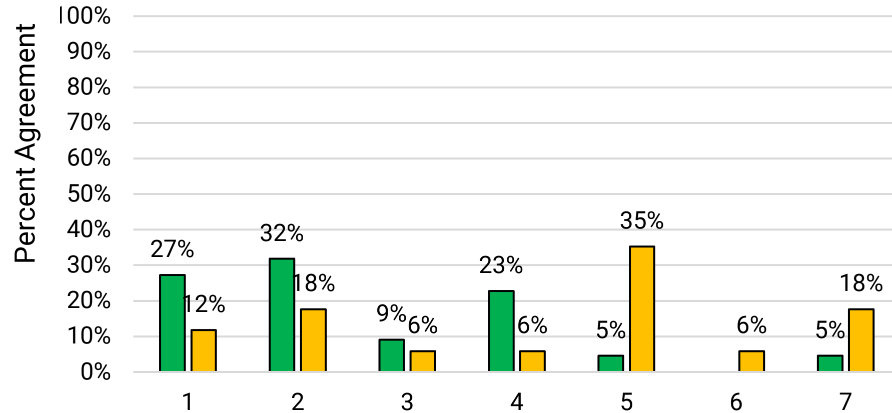
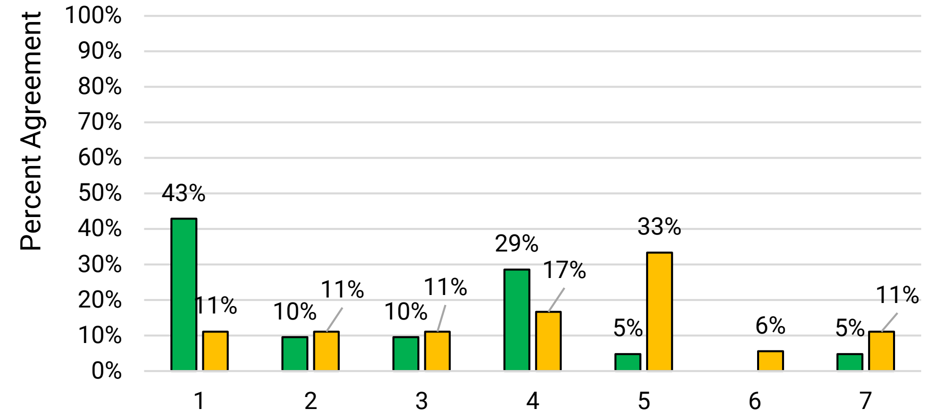
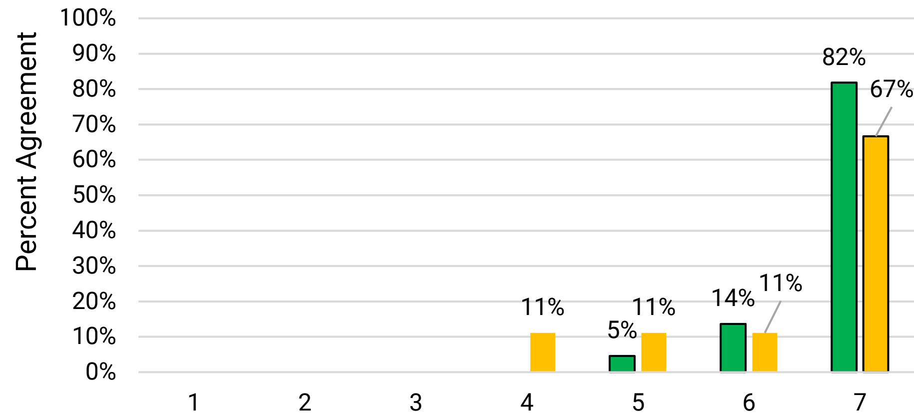


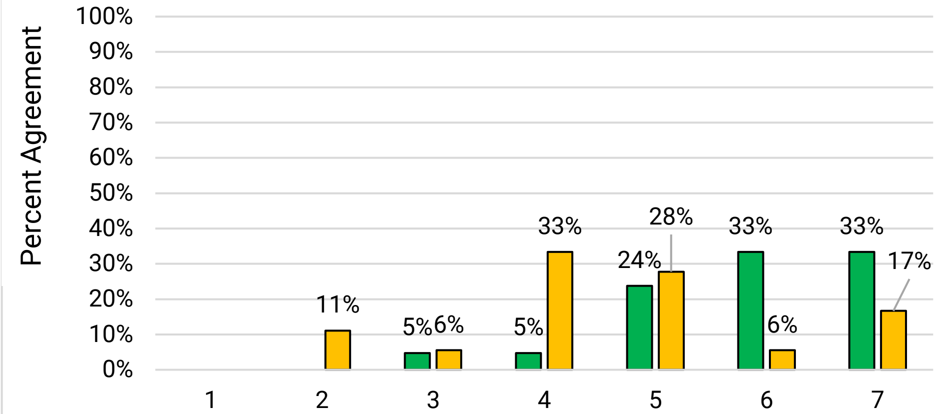
Figure legend:

Figure 6. Women's satisfaction with care provision during labour and birth at Castlemaine Health and Bendigo Health


During labour and/or birth, I was...(1 = not at all anxious; 7 = very anxious) (Castlemaine Health n = 22; Bendigo Health n = 17)
Percent Agreement
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
27%
12%
32%
18%
9%
6%
23%
6%
5%
35%
6%
5%
18%
1
2
3
4
5
6
7


My overall experience of pain was...(1 = very positive; 7 = very negative) (Castlemaine Health n = 21; Bendigo Health n = 19)
Percent Agreement
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
43%
11%
10%
11%
10%
11%
29%
17%
5%
33%
6%
5%
11%
1
2
3
4
5
6
7


During labour and/or birth, I felt free to express my feelings... (1 = not at all; 7 = felt completely free) (Castlemaine Health n = 22; Bendigo Health n = 18)
Percent Agreement
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
11%
5%
11%
14%
11%
82%
67%
1
2
3
4
5
6
7


During labour and/or birth, I felt I was (1 = completely out of control; 7 = in complete control) (Castlemaine Health n = 21; Bendigo Health n = 18)
Percent Agreement
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
11%
5%
6%
5%
33%
24%
28%
33%
6%
33%
17%
1
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3
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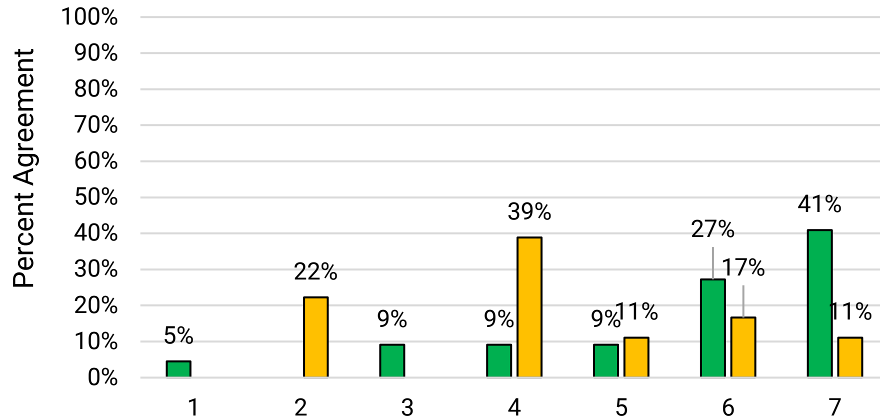
Physically, I coped... (1 = much worse than expected; 7 = much better than expected) (Castlemaine Health n = 22; Bendigo Health n = 18)
Percent Agreement
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
5%
22%
9%
9%
39%
9%
11%
27%
17%
41%
11%
1
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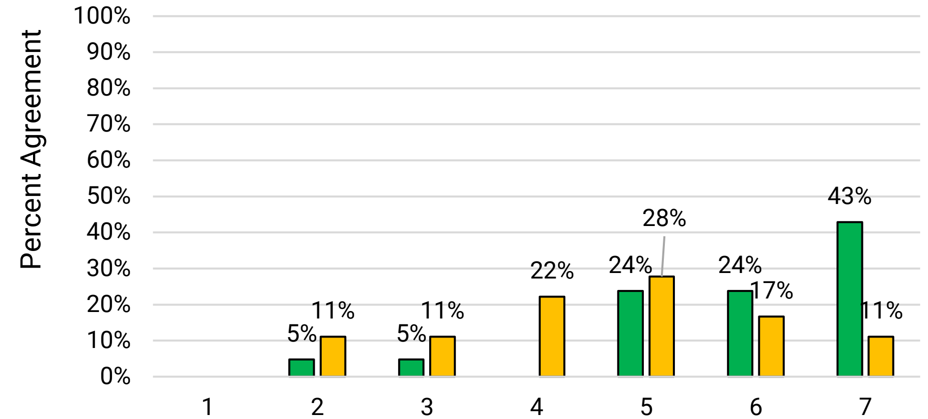
6
7


Emotionally, I coped... (1 = much worse than expected; 7 = much better than expected) (Castlemaine Health n = 21; Bendigo Health n = 18)
Percent Agreement
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
5%
11%
5%
11%
22%
24%
28%
24%
17%
43%
11%
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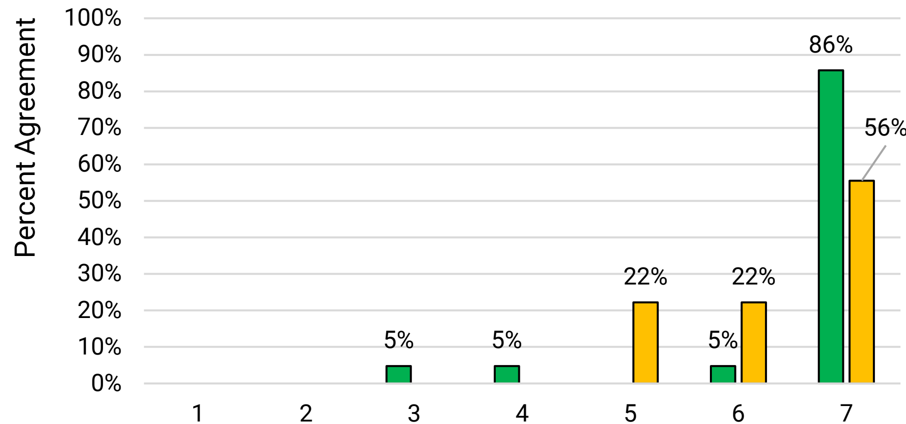
7


The midwife/midwives gave...(1 = no support at all; 7 = a lot of support) (Castlemaine Health n = 22; Bendigo Health n = 18)
Percent Agreement
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
5%
5%
22%
5%
22%
86%
56%
1
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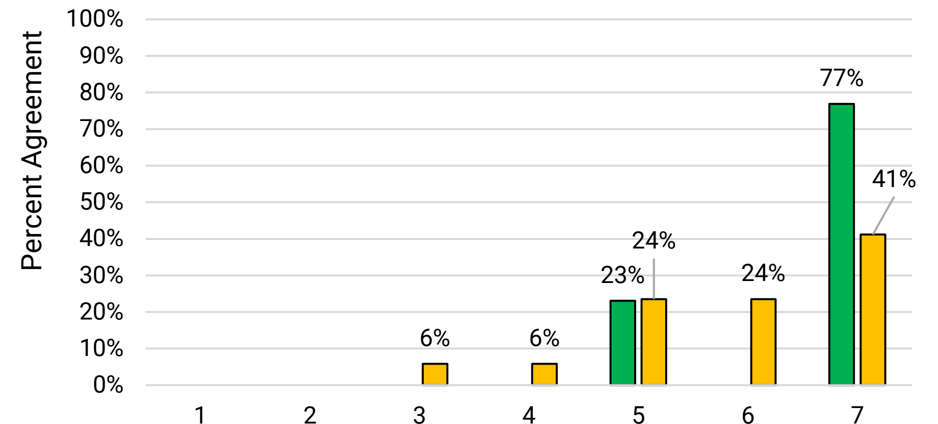
5
6
7


The doctors (if present) gave...(1 = no support at all; 7 = a lot of support) (Castlemaine Health n = 22; Bendigo Health n = 17)
Percent Agreement
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
6%
6%
23%
24%
24%
77%
41%
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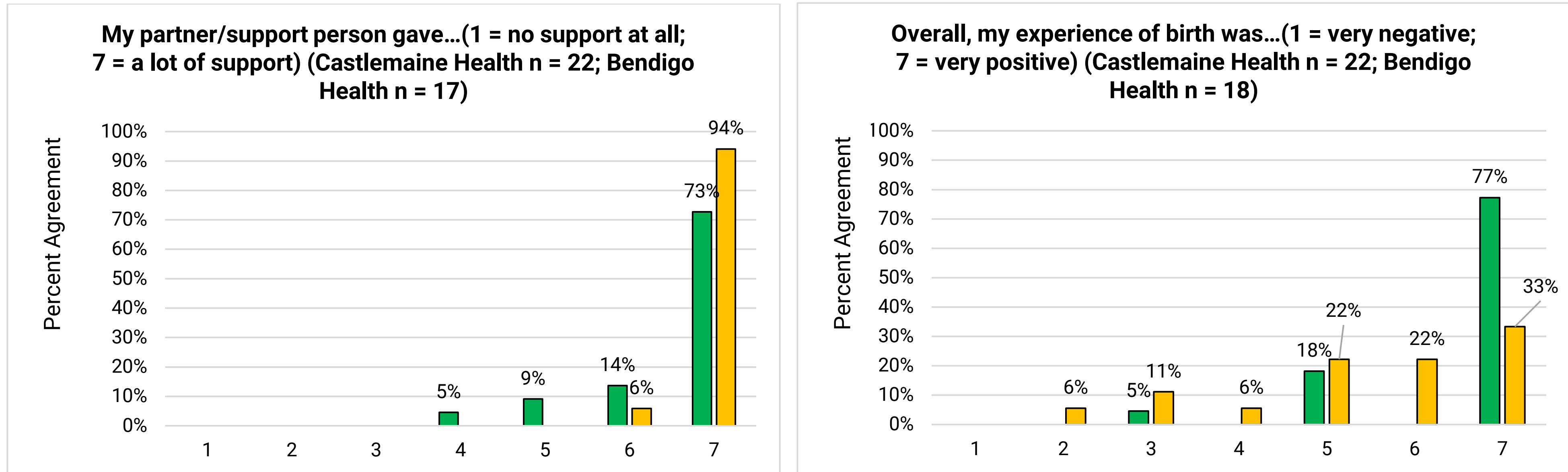


Figure legend:

Figure 7. Women's experiences of labour and/or birth at Castlemaine Health and Bendigo Health

Intrapartum transfer

Eight women (20% of respondents) indicated that they were transferred from Castlemaine Health to Bendigo Health during labour (Table 10), and all those who responded (n = 6) rated the care provision during the transfer as 'Very good'. Women who were transferred intrapartum were asked their views on the transfer process. All 'Strongly agreed' that clinicians clearly explained why the transfer was occurring (n = 6), and all 'Agreed' or 'Strongly agreed' that the intrapartum transfer happened according to hospital guidelines; that they felt they were safe, and their baby was safe, during the transfer process; and that there was good communication among clinicians during the transfer.

Table 10. Women's experiences of transfer during labour

STATEMENT	1 STRONGLY DISAGREE n	2 n	3 n	4 n	5 n	6 n	7 STRONGLY AGREE n
The midwife/doctor clearly explained why transfer was occurring (n = 6)							6
Happy with the decision-making surrounding transfer in labour (n = 6)					1	1	4
The intrapartum transfer happened according to the hospital's guidelines (n = 6)						1	5
Mother felt safe during intrapartum transfer (n = 6)						1	5
Mother felt baby was safe during intrapartum transfer (n = 6)						2	4
Good communication between midwife and other staff who cared for mother at the hospital (n = 6)						1	5

Based on the interviews and open-ended survey questions, women's responses were mixed regarding their experiences of being transferred to Bendigo Health during labour. Although women felt **well supported** by the staff at Bendigo Health, the **loss of continuity of care** with the woman's Castlemaine Health midwife was noted as a negative by some women.

Most women reported feeling **well informed** and **supported** during the transfer, and appreciated the "*quick transfer between hospitals during labour and quick decision making by staff for intervention*" (Survey respondent 19). However, one woman noted that *"once at Bendigo decisions were fast and I didn't feel as supported"* (Survey respondent 23).

A number of other women also described **negative care experiences** at Bendigo Health, including feeling their privacy was disregarded in the birthing space, inadequate communication from their care providers during labour and birth, and personal preferences relating to immunising their newborn being dismissed.

One woman expressed how grateful she was that her Castlemaine Health midwife was able to attend her caesarean section birth at Bendigo Health, however this may not have been consistent practice as expressed by another woman sharing her experience:

> *... the fact that midwives are not able to transfer with the women in their care to Bendigo is distressing. This added a significant amount of stress in the post due date timeframe. This part of the model needs to change. We were lucky that a Castlemaine obstetrician was rostered on the day I birthed and had a hugely positive impact on our birthing experience. The lead consultant obstetrician in Bendigo was insensitive and brought anxiety and fear to our birthing space. (Survey respondent 34)*

Experience of care in the early postnatal period

Most women (85%; n = 35) received postnatal care in the hospital where they birthed, and just under half (48%) of respondents stayed in hospital for less than 24 hours after the birth (Table 11). Seven women (17%) indicated that they were transferred to another hospital postpartum – either back to Castlemaine Health after birthing at Bendigo Health, or transferred to Bendigo Health during the postpartum period due to a complication. Of those who responded about this (n = 3), all rated their care provision during the transfer process as ‘Good’ or ‘Very good’.

Women were asked to rate their satisfaction with postnatal care (Figure 8), and their responses are shown based on the hospital where they spent their postnatal stay. In general, most were satisfied with the care they and their infants in hospital after the birth: 90% of women who received postnatal care at Castlemaine Health (n = 19) ‘Strongly agreed’ that their postnatal care provision was ‘Very good’; 40% of women who received postnatal care at Bendigo Health (n = 8) ‘Strongly agreed’ that their postnatal care provision was ‘Very good’; and approximately 50% of women who received postnatal care at Bendigo Health (n = 10) ‘Strongly agreed’ that postnatal care provision for their infant was ‘Very good’ (Figure 8). Most women agreed that the midwives at both services were sensitive and encouraging; that they were happy with the emotional care provided by the midwives; that care was provided in a competent way; and that they were always given an active say in care decisions about them and their infant (Figure 8).

Responses to open-ended survey and interview questions confirmed that women felt very well supported in the early postpartum period.

During the postpartum stay at Castlemaine Health, women described feeling **safe** and that "*it felt like home*" (Survey respondent 32). They appreciated the **care** they received from midwives and doctors, and that they were given **time to bond with their baby**.

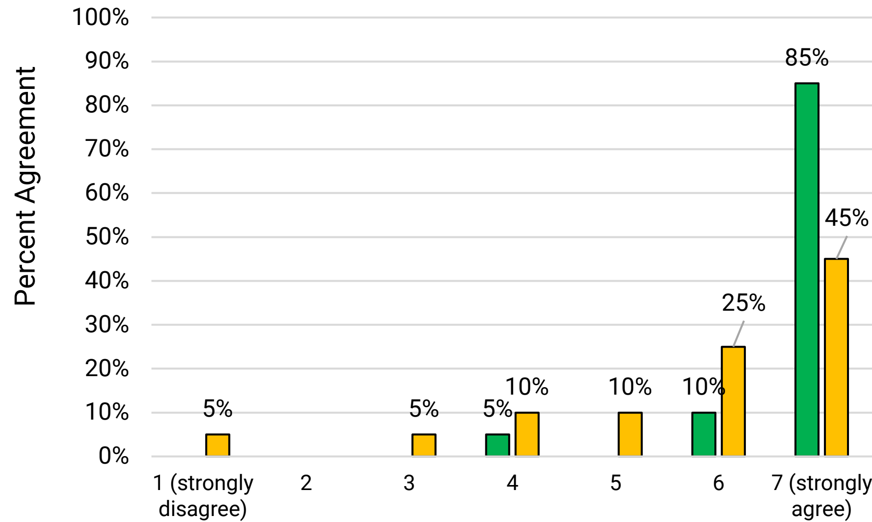
> *Not rushing or interfering the first day/night. Informing me I could say no to anything and advising on risks of refusing consent where appropriate. Particularly things like obs [observations] on the baby after birth. It gave me time to bond uninterrupted. (Survey respondent 2)*

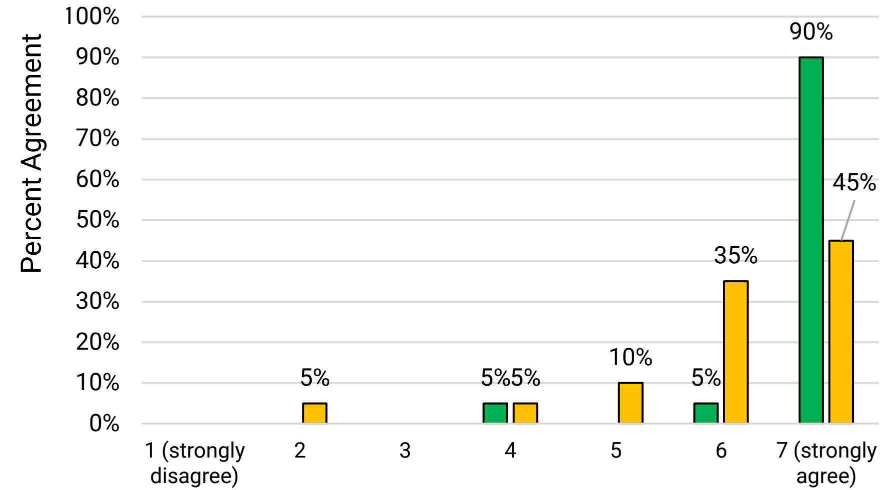
Three women did comment that they wished the postpartum hospital stay was longer than one night.

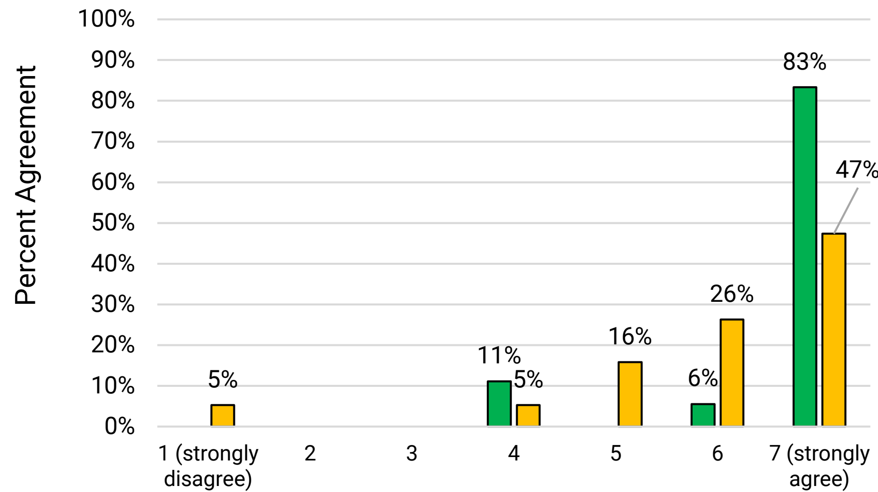
Table 11. Postnatal care and postpartum transfer

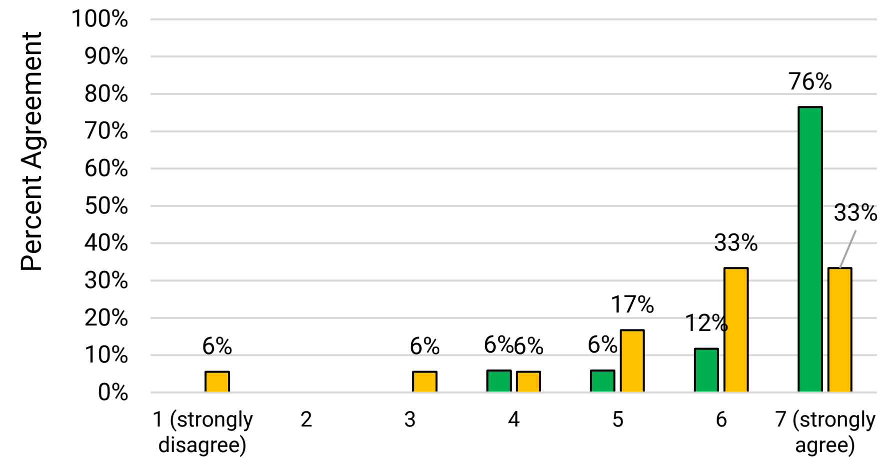
CHARACTERISTIC	n (%)
Received postnatal care in hospital where birthed (n = 41)	35 (85)
Length of hospital stay postpartum (n = 42)	
Less than 24 hours	20 (48)
24 – 48 hours	11 (26)
2 – 4 days	8 (19)
5 days or more	3 (7)
Transferred to another hospital postpartum (n = 42)	7 (17)
Hospital transferred to postpartum (n = 6)	
Castlemaine Hospital	2 (33)
Bendigo Hospital	4 (67)
Other	0 (0)
Reason for transfer (n = 6)	
Complications with mother's health	2 (33)
Complications with infant's health	1 (17)
Unsure	0 (0)
Other reason*	1 (17)
Overall care provision during postpartum transfer (n = 3)	
Very good	2 (67)
Good	1 (33)
Average	0 (0)
Poor	0 (0)
Very poor	0 (0)

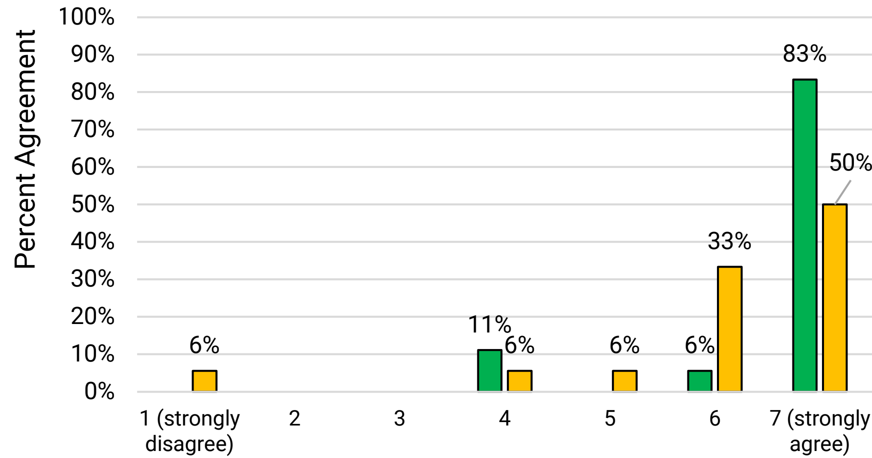
*Other reason: Birthed at Bendigo Health, and chose to spend postpartum hospital stay at Castlemaine Health


The midwife/midwives always explained to me what was happening (Castlemaine Health n = 20; Bendigo Health n = 20)
Percent Agreement
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
5%
5%
5%
10%
10%
10%
25%
85%
45%
1 (strongly disagree)
2
3
4
5
6
7 (strongly agree)

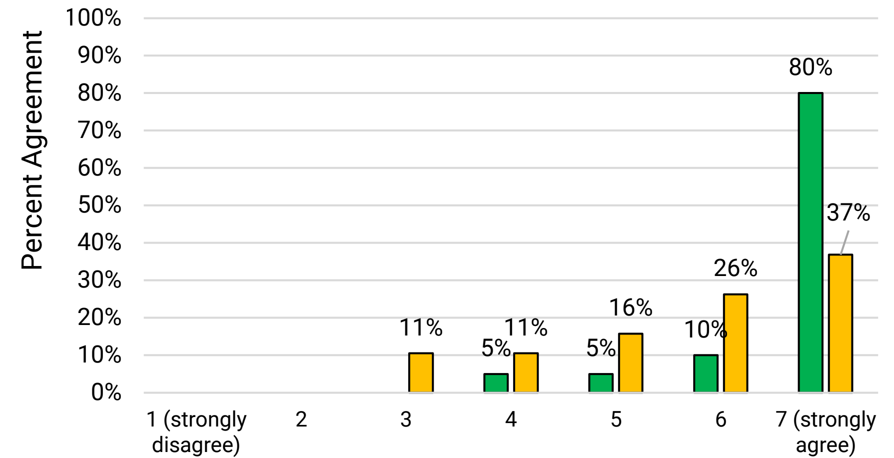

I was always given an active say in decisions about the care of my baby and myself (Castlemaine Health n = 20; Bendigo Health n = 20)
Percent Agreement
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
5%
5%5%
10%
5%
35%
90%
45%
1 (strongly disagree)
2
3
4
5
6
7 (strongly agree)


I was given the advice I needed about breastfeeding (Castlemaine Health n = 18; Bendigo Health n = 19)
Percent Agreement
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
5%
11%
5%
16%
6%
26%
83%
47%
1 (strongly disagree)
2
3
4
5
6
7 (strongly agree)

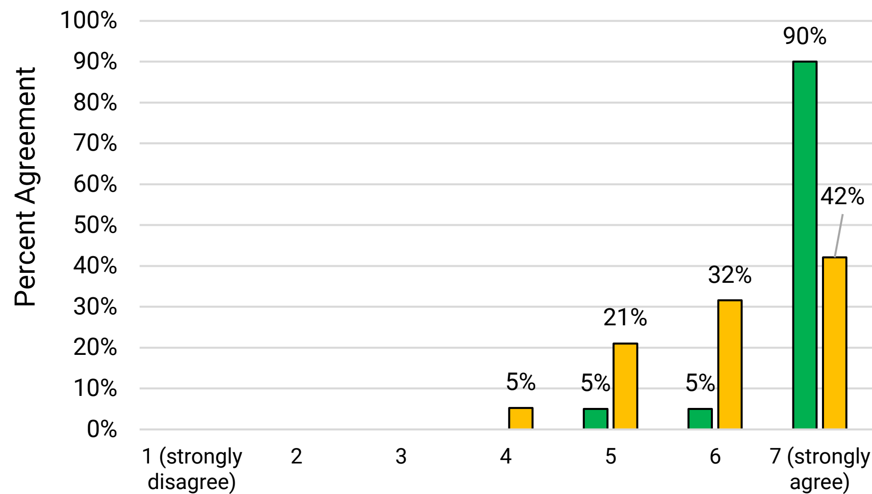

I was given the advice I needed about how to handle, settle or look after my baby (Castlemaine Health n = 17; Bendigo Health n = 18)
Percent Agreement
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
6%
6%
6%6%
6%
17%
12%
33%
76%
33%
1 (strongly disagree)
2
3
4
5
6
7 (strongly agree)



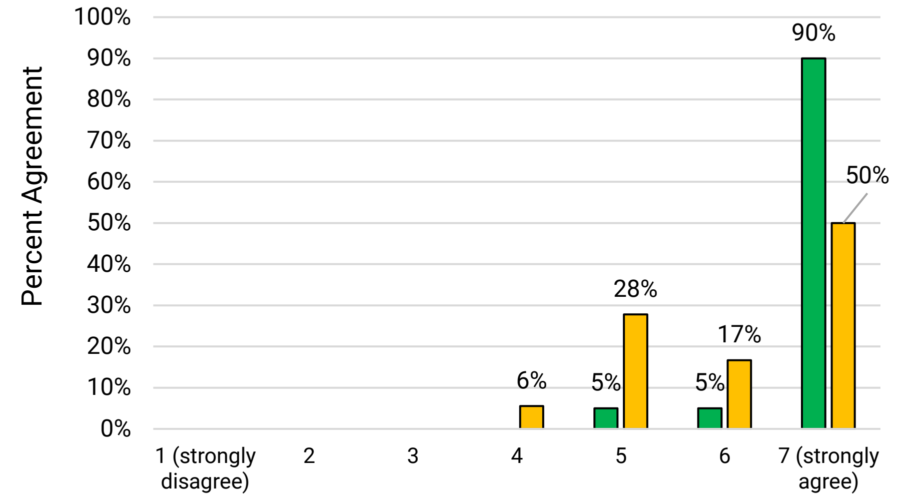
I was given the advice I needed about any problems with the baby's health and progress (Castlemaine Health n = 18; Bendigo Health n = 18)
Percent Agreement
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
6%
11%
6%
6%
6%
33%
83%
50%
1 (strongly disagree)
2
3
4
5
6
7 (strongly agree)



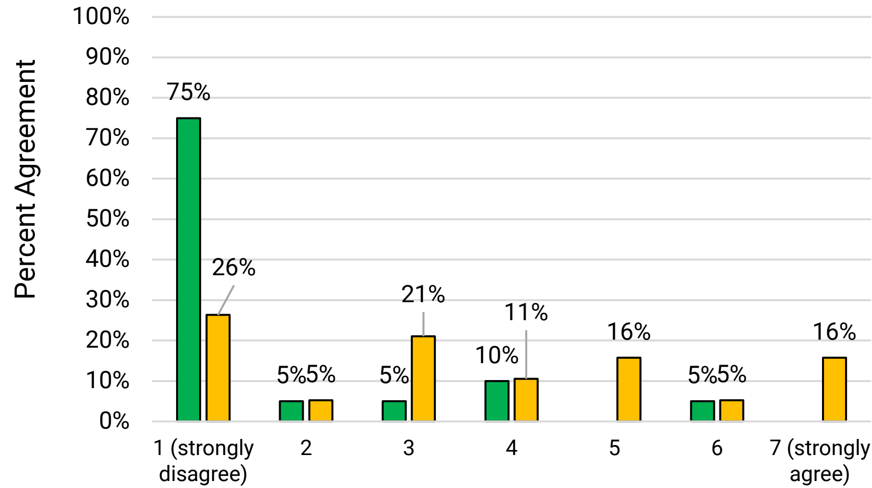
I was given the advice I needed about my own health and recovery after the birth (Castlemaine Health n = 20; Bendigo Health n = 19)
Percent Agreement
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
11%
5%
11%
5%
16%
10%
26%
80%
37%
1 (strongly disagree)
2
3
4
5
6
7 (strongly agree)

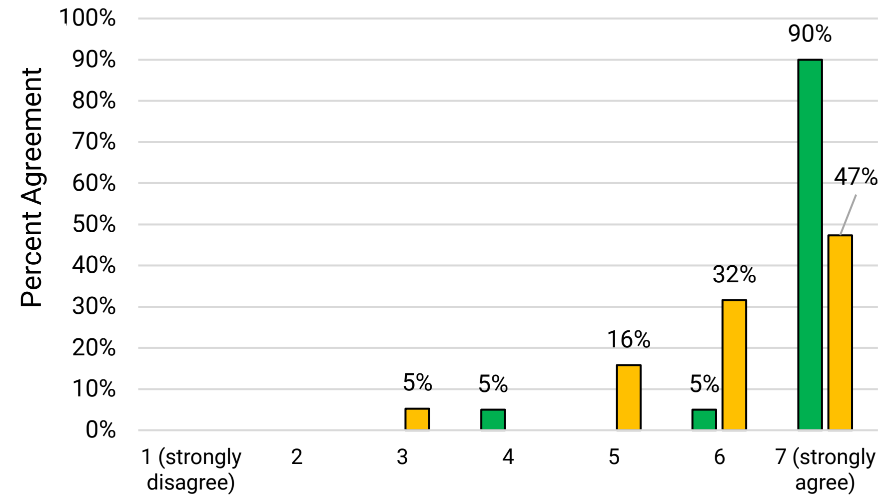


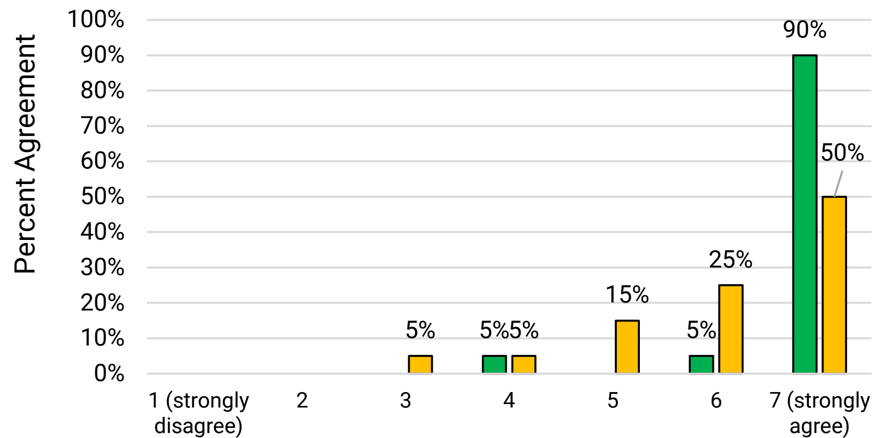
The midwives were sensitive (Castlemaine Health n = 20; Bendigo Health n = 19)
Percent Agreement
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
5%
5%
21%
5%
32%
90%
42%
1 (strongly disagree)
2
3
4
5
6
7 (strongly agree)



The midwives were encouraging (Castlemaine Health n = 20; Bendigo Health n = 18)
Percent Agreement
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
6%
5%
28%
5%
17%
90%
50%
1 (strongly disagree)
2
3
4
5
6
7 (strongly agree)


The midwives often seemed rushed (Castlemaine Health n = 20; Bendigo Health n = 19)
Percent Agreement
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
75%
26%
5%
5%
5%
21%
10%
11%
16%
5%
5%
16%
1 (strongly disagree)
2
3
4
5
6
7 (strongly agree)


I was happy with the emotional aspects of care by midwives (Castlemaine Health n = 20; Bendigo Health n = 19)
Percent Agreement
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
5%
5%
16%
5%
32%
90%
47%
1 (strongly disagree)
2
3
4
5
6
7 (strongly agree)


Care in hospital after the birth was provided in a competent way (Castlemaine Health n = 20; Bendigo Health n = 20)
Percent Agreement
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
5%
5%
5%
15%
5%
25%
90%
50%
1 (strongly disagree)
2
3
4
5
6
7 (strongly agree)

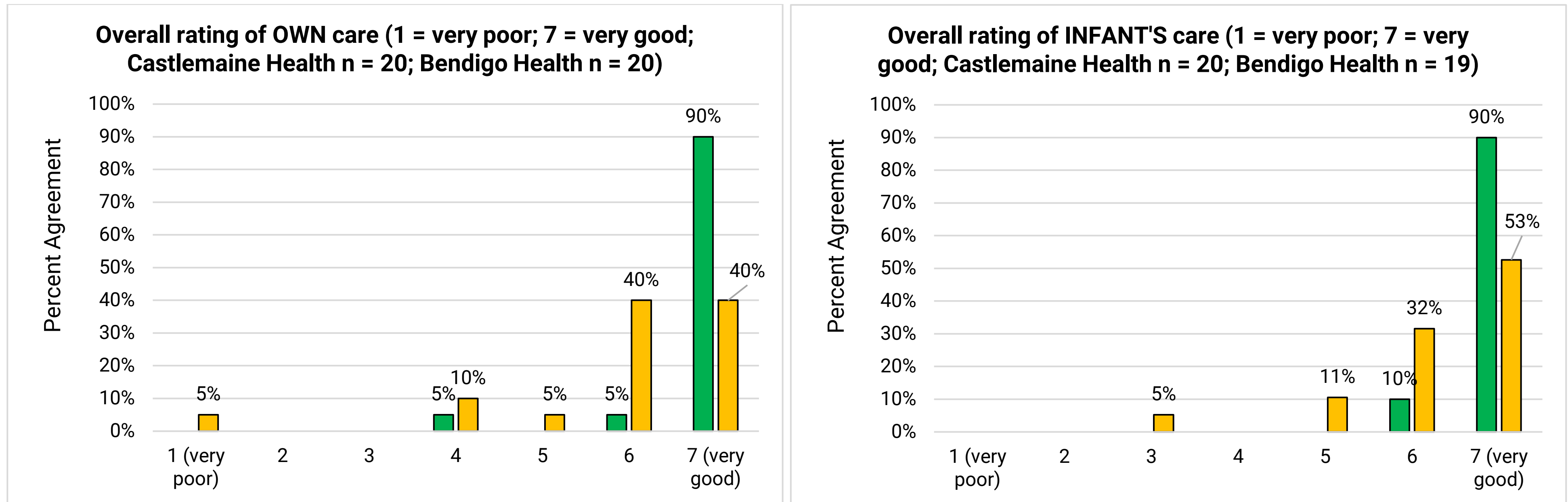


Figure legend:

Figure 8. Women's satisfaction with postnatal care provision at Castlemaine Health and Bendigo Health

Postpartum transfer

Women who were transferred postpartum were asked to rate their views on the transfer process on a scale of one to seven, where one was 'Strongly disagree and seven 'Strongly agree'. There were only three respondents for all statements, however, where applicable, women 'Strongly agreed' that the midwife/doctor clearly explained why they were being transferred, and that they were happy with the decision-making around the transfer process (n = 2 women). One woman 'Strongly disagreed' that she felt that her baby was safe during the transfer process. This respondent indicated that her baby was unable to travel with her to Bendigo Health by ambulance during the transfer process, and had to instead travel to Bendigo Health via car.

Care provision after hospital discharge

Women were also asked about their experiences of care after hospital discharge from Castlemaine Health or Bendigo Health (Table 12). Most women were discharged with their infant, and reported receiving home visits from a hospital (domiciliary) midwife (40/41 women). Thirty-eight women (95%) reported receiving home visits from a hospital midwife they had met before. The mean number of visits reported was three. Most women reported care provision for themselves and their infant post-hospital discharge as 'Very good' (Table 13).

Table 12. Care received after discharge

CHARACTERISTIC	n (%)
Mother and infant discharged together (n = 41)	40 (98)
Home visits with a hospital midwife (n = 41)	40 (98)
Number of home visits from a hospital midwife, mean (SD#) (n = 31)	3.1 (2)
Home visits with a known midwife (n = 40)	38 (95)
Number of home visits from a known midwife, mean (SD#) (n = 31)	2.9 (2)

#SD: Standard deviation

Table 13. Overall rating of care received at home from hospital midwife after birth

RATING OF CARE	1 VERY POOR n %	2 n %	3 n %	4 n %	5 n %	6 n %	7 VERY GOOD n %
Overall rating of OWN care received at home from hospital midwife after birth (n = 40)					1 (3)	7 (18)	32 (80)
Overall rating of BABY's care received at home from hospital midwife after birth (n = 40)					1 (3)	9 (23)	30 (75)

Open-ended survey and interview responses indicated that women really valued the **continuity of care** that they received postnatally from the same midwife who had looked after them through pregnancy and birth, and felt **emotionally supported** through this period.

> *The home visits after birth were great and it was very reassuring to have my midwife who I had gotten to know. Overall, I felt I needed a lot of emotional support, and that need was met constantly. (Survey respondent 9)*

> *… beautiful caring postpartum visits and phone calls to check in with myself and baby I feel extremely satisfied with my experience at Castlemaine Health. (Survey respondent 46)*

Women particularly valued the care that they received in the **privacy and comfort of their own home**, and **tailored to their own space and own needs**.

> *Just to be at home, that person coming to us and showing us how to do it in our own space. So, the bath was literally tailored to our sink area at home in the kitchen, and it was really, really awesome ... that was just a nice thing to be in my own comfortable space. (Interviewee 2003)*

Infant feeding outcomes

Table 14 reports women's breastfeeding intentions and infant feeding outcomes. Most women intended to breastfeed for more than six months (83%, n = 30). The majority of women (n = 40/41 women) commenced breastfeeding, with 39/40 women (98%) still breastfeeding at the time of survey completion (which was on average 19 weeks postpartum).

Table 14. Breastfeeding outcomes

CHARACTERISTIC	n (%)
Breastfeeding intention (n = 39)	
Less than 6 months	0 (0)
6 months or more	35 (90)
As long as able	1 (3)
Unsure	3 (7)
Breastfeeding commenced (n = 41)	40 (98)
Currently breastfeeding (n = 40)	39 (98)

Emotional wellbeing

An estimated 53,000 new mothers in Australia (1 in 6; 17%) are affected by postnatal depression each year [29, 30]. The Edinburgh Postnatal Depression Scale (EPDS) was included in the survey, providing an indication of potential postnatal depressive symptoms among respondents. Higher scores for this instrument indicate greater symptoms of depression, with scores above 12 suggestive of potential depression [22]. Among the cohort of survey respondents, the mean EPDS score was 4.3 (SD 4.0, range 0 – 15). Four women (10.3%) reported an EPDS score above 12. These four women reported their general health as 'Very good' (5-point Likert-type scale with response options ranging from 'Poor' to 'Excellent').

Overall impressions

Overall, 38 women (88%) rated their antenatal care provision at either Castlemaine Health or Bendigo Health as 'Very good' (not shown in the graph below because timing of antenatal transfer is unknown, and so data cannot be shown by hospital). Among those who received intrapartum and postnatal care at Castlemaine Health, satisfaction was also high – approximately 90% rated intrapartum and postnatal care provision as 'Very good' (Figure 9). Between 40% and 60% of the women who birthed at Bendigo rated care provision to them or their infant as 'Very good'. It is important to note that approximately 50% of the women who birthed at Bendigo Health were transferred there intrapartum, likely affecting experience of care provision.

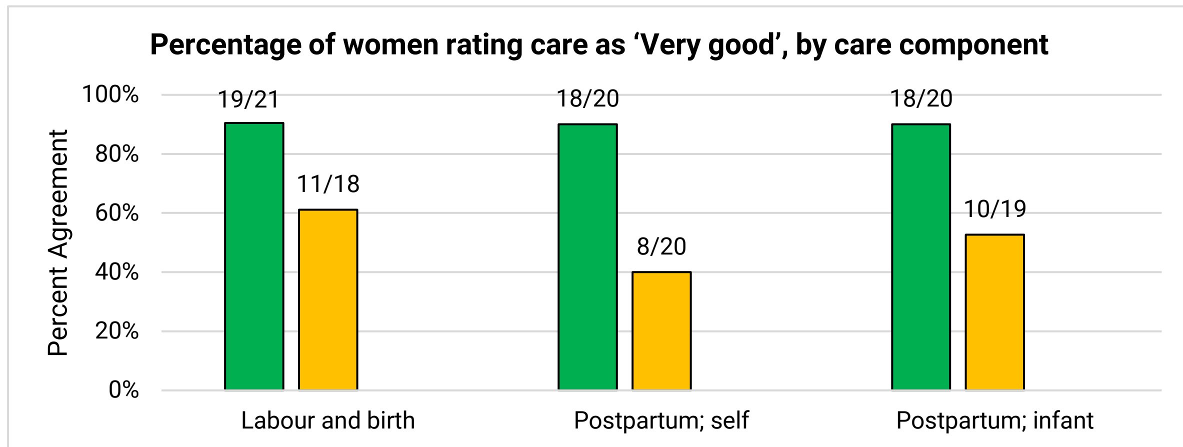


Figure legend:

Figure 9. Percentage of women rating care as 'Very good', by care component

Overall, women described the model of care as 'fantastic', 'amazing', and felt the whole experience exceeded expectations.

> *And I'm just a huge advocate for it because even though I didn't birth there in the end the whole experience exceeded all my expectations. And yes, it's a shame because I did have a C-section I won't be able to birth there next time, I do have to go through Bendigo. Which I'm actually really sad about because I would love to have the same midwife or one of the other girls because they're all just brilliant. (Interviewee 2002)*

COMPONENT 3: AUDIT OF CLINICAL OUTCOMES

Component 3 described the clinical outcomes of all women who had booked into the Castlemaine Health model of maternity care (MGP or Collaborative Shared Care) from the start of the model, and who had birthed by 7 June 2022. Data were collected for women who enrolled in the maternity model of care at Castlemaine Health at any point during their pregnancy, who either birthed at Castlemaine Health, or

- were transferred to Bendigo hospital or other higher level service **antenatally**;
- were transferred to Bendigo hospital or other higher level service **in labour**;
- were transferred to Bendigo hospital or other higher level service **postnatally**; and
- all women who were transferred from Bendigo Health or other higher level service back to Castlemaine Health at any point for maternity care provision.

Appendix 2 lists clinical outcome variables requested by the research team.
Note: It is important that no causal associations are drawn from the data presented – this type of comparison would require a different research design and much larger numbers of women in both groups. Rather, the outcome data are presented using descriptive statistics.

Demographic characteristics

Table 15 shows the demographic characteristics of women who booked to receive maternity care at Castlemaine Health, and the characteristics of women who birthed at the service. In total, 124 women had booked to receive maternity care at Castlemaine Health at the time of data collection (7 June 2022), of whom 39 women birthed at Castlemaine Health, two women birthed before arriving at Castlemaine Health, and 38 women had been transferred to another service either by choice or due to a medical reason in pregnancy or intrapartum. There were 45 women yet to birth.

The mean age of women who *booked* to receive maternity care at Castlemaine Health was 33 years (SD 4 years, range 25 – 42 years) and the mean age of those who *birthed* at the service was 34 years (SD 3.7 years, range 28 – 41 years). The majority of women were partnered, Australian born, and were not of Aboriginal and/or Torres Strait Islander origin (Table 15).

Approximately 45% of the women who *booked* to receive maternity care at the service at the time of data collection were first time mothers (n = 54), while 24% of women who had *birthed* at the service at the time of data collection were primiparous (n = 10). Almost 68% of women transferred to a higher level of care were primiparous (n = 23).

Most women were allocated to MGP-led care at their booking visit (n = 110; 94%). Among women who booked to receive maternity care at Castlemaine Health, the most frequently listed medical condition reported at the booking visit was anxiety disorder (10%; n = 12 women).

Table 15. Characteristics of women who booked to receive maternity care, and who birthed, at Castlemaine Health

CHARACTERISTIC	Women who booked to receive maternity care at Castlemaine Health (n = 124) n (%)	Women who birthed at Castlemaine Health^ (n = 41) n (%)
Age at booking (years), mean (SD#) (n = 118, 41)	33.3 (4.0)	34.1 (3.7)
Partnered (n = 113, 39)	105 (92.9)	37 (94.9)
Australian born (n = 120, 41)	110 (91.7)	37 (90.2)
Aboriginal and/or Torres Strait Islander, mother (n = 122, 41)	2 (1.6)	0 (0)
Aboriginal and/or Torres Strait Islander, infant (where mother was non-Indigenous) (n = 41)	-- --	1 (2.4)
Smoking status at booking (n = 122, 41)		
Non-smoker	115 (94.3)	40 (97.6)
Previous history of smoking	1 (0.8)	1 (2.4)
Ceased in pregnancy	2 (1.6)	0 (0)
Current smoker	4 (3.3)	0 (0)
Alcohol consumption at booking (n = 115, 40)		
No alcohol consumption in pregnancy	113 (98.3)	39 (97.5)
Social alcohol consumption in pregnancy	2 (1.7)	1 (2.5)
First baby (n = 118, 41)	54 (45.8)	10 (24.4)
Gestation at booking (weeks) (mean, SD) (n = 123, 41)	20.2, 6.4	23.2, 6.8
Model of care at booking (n = 117, 41)		
MGP## care	110 (94.0)	37 (90.2)
MGP/GPO* Collaborative Shared Care	7 (5.9)	4 (9.8)
Medical conditions at booking (n = 123, 41)		
Anxiety disorder	12 (9.8)	3 (7.3)
Asthma	8 (6.5)	3 (7.3)
Polycystic ovaries	5 (4.1)	3 (7.3)
Previous history depression, excluding PND**	4 (3.3)	0 (0)
Migraines	4 (3.3)	2 (4.9)
Other conditions reported (e.g., psoriasis, dermatitis, hypertension)	23 (18.7)	7 (17.1)

CHARACTERISTIC	Women who booked to receive maternity care at Castlemaine Health (n = 124) n (%)	Women who birthed at Castlemaine Health^ (n = 41) n (%)
Obstetric complications at booking (n = 123, 41)		
Advanced maternal age >35, multiparous	2 (1.6)	1 (2.4)
Advanced maternal age >35, primiparous	1 (0.8)	0 (0)
Anaemia requiring iron transfusion	1 (0.8)	1 (2.4)
Bicornuate uterus	1 (0.8)	0 (0)
Severe hyperemesis gravidarum	1 (0.8)	0 (0)
Pelvic instability	1 (0.8)	0 (0)

^Includes two women who birthed before arrival at Castlemaine Health
#SD: Standard deviation; ##MGP: Midwifery Group Practice; *GPO: General Practitioner Obstetrician; **PND: Postnatal depression

Place of birth and transfers

Figure 10 shows all transfers from Castlemaine Health at the time of data collection. For this report, a postpartum transfer is defined as transfer after the birth of the infant, irrespective of the delivery of the placenta. At the time of data collection, 39 women had birthed at Castlemaine Health and two women booked to receive care at Castlemaine Health birthed before arriving at the service. Twenty-nine women were transferred during pregnancy from Castlemaine Health; 27 of these women were transferred to Bendigo Health, one woman relocated regionally, and one woman chose to have a homebirth, and cancelled her care with Castlemaine Health at 31 weeks gestation (although required transfer to Bendigo Health after the birth of her infant for a retained placenta).

Nine women were transferred from Castlemaine Health to Bendigo Health intrapartum, and five women who birthed at Castlemaine Health were transferred to Bendigo Health postpartum (Figure 10). From discharge summaries available, four women who birthed at Bendigo Health were transferred back to Castlemaine Health for their postnatal stay. Table 16 outlines the transfers and place of birth for all women who had given birth at the time of data collection; Table 17 outlines antenatal, intrapartum and postpartum reasons for transfer.

An audit of transfers to Bendigo Health showed that all were appropriate as set out in the Collaborative Operational Model of Care document [6]. Communication with the MGP Coordinator also confirmed that all births and transfers are reviewed at multidisciplinary case review, and supported by the Traffic Light Management System (April Jardine, personal communication).

Table 16. Place of birth and transfers

CHARACTERISTIC	n
Place of birth (n = 79)	
Castlemaine Health	39
Born before arrival at Castlemaine Health	2
Bendigo Health	36
Born elsewhere*	2
Transfers from Castlemaine Health (n = 43)	
Antepartum transfer to Bendigo Health	29
Intrapartum transfer to Bendigo Health	9
Postpartum transfer to Bendigo Health	5#
Postpartum transfer from Bendigo Health to Castlemaine Health	4

*One woman transferred care due to relocation, and the other transferred care to have a homebirth; #3 of these were for retained placenta

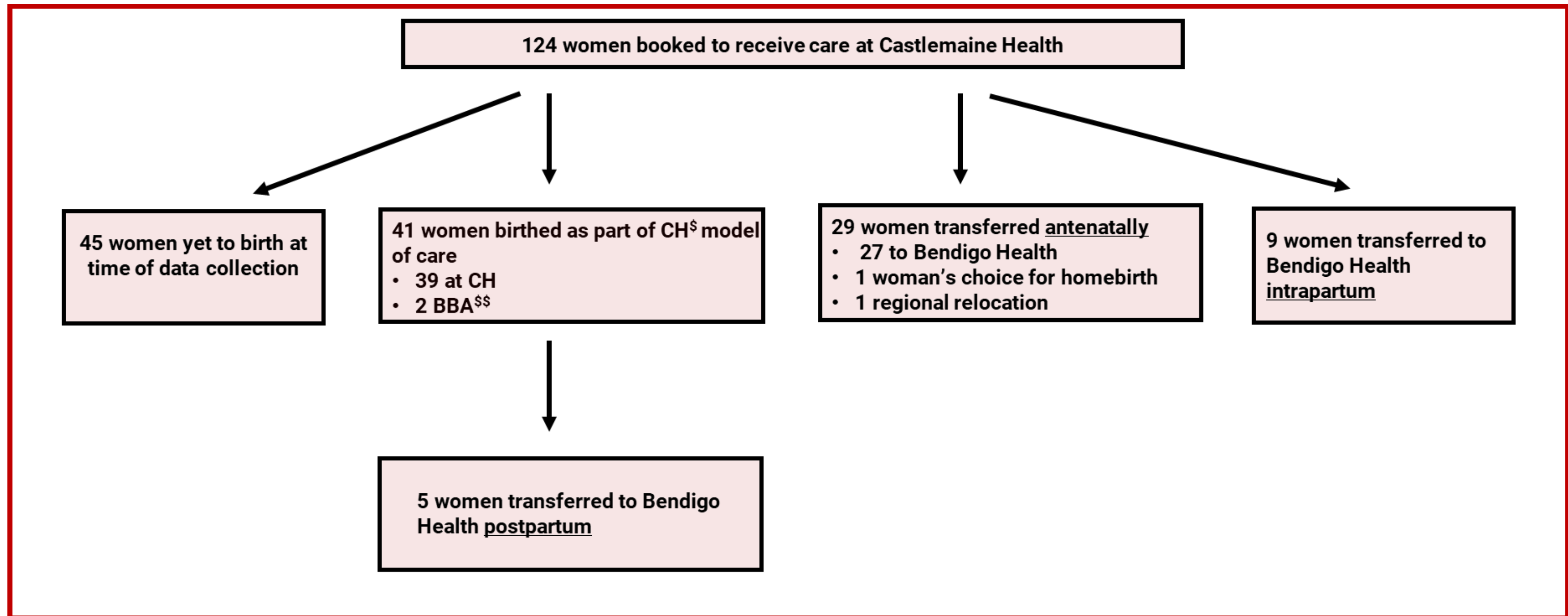


Figure 10. Transfers from Castlemaine Health at the time of data collection (7 June 2022)

Table 17. Timing of, and reasons for, transfer from Castlemaine Health

TIMING OF TRANSFER	REASON FOR TRANSFER	n	TOTAL
Antenatal	Gestational diabetes mellitus requiring medication	3	**29**
	Primipara, requiring IOL*	3	
	Intrauterine growth restriction	2	
	Woman's choice due to anxiety about the birth	2	
	Primipara, post-dates, declining IOL	2	
	Antepartum haemorrhage	1	
	Breech presentation	1	
	COVID-positive symptomatic mother	1	
	Decreased fetal movements	1	
	Failure to attend appointments	1	
	Large for gestational age infant (≥ 95th centile)	1	
	Large fibroid over cervix identified in pregnancy	1	
	Low amniotic fluid index	1	
	Low lying placenta requiring caesarean birth	1	
	Low platelet count, wanting physiological third stage, risk of bleeding identified	1	
	Mental health concerns	1	
	Multipara, post-dates, declining IOL	1	
	Premature rupture of membranes (before 35 weeks gestation)	1	
	Moved house - relocation	1	
	Woman's choice – wanted epidural analgesia	1	
	Woman's choice – wanted homebirth	1	
	Primipara, spontaneous rupture of membranes, not in labour, meconium liquor	1	
Intrapartum	Non-reassuring CTG** following IOL	2	**9**
	Non-reassuring CTG following spontaneous labour	2	
	Face presentation	1	
	Failure to progress, maternal exhaustion	1	
	Non-reassuring CTG following spontaneous labour, meconium stained liquor	1	
	Placental abruption, meconium stained liquor	1	
	Posterior presentation, non-reassuring CTG	1	
Postpartum	Retained placenta	3	**5**
	Mother – unable to pass urine (needed catheter); infant – respiratory distress (both required transfer)	1	
	Repair of perineum (fourth degree tear)	1	
Total			**43**

*IOL: Induction of labour; **CTG: Cardiotocography

Mode of birth, procedures during labour and birth

Table 18 describes the use of analgesia, perineal trauma, blood loss, management of the third stage of labour, labour complications and gestation at birth for women who gave birth at Castlemaine Health (n = 41) and Bendigo Health (n = 36). Discharge summaries were available for 32 of the 36 women who birthed at Bendigo Health (data were available for 23 of the 27 women transferred to Bendigo Health antenatally, and all nine women transferred intrapartum). Both women who birthed before arrival to Castlemaine Health are included in Table 18.

Of the women who birthed at Castlemaine Health, 95% (n = 37) had an unassisted vaginal birth and two women had a vacuum-assisted birth. Both women who birthed before arrival at Castlemaine Health had a vaginal birth, one of which was a breech birth. Among women who birthed at Bendigo Health, over 40% (14/32) had a caesarean section birth.

Nine women at Castlemaine Health and ten women at Bendigo Health had a postpartum haemorrhage, with one woman at Bendigo Health requiring transfusion. The majority of women had active management of third stage. Approximately 44% of women at Castlemaine Health (n = 18) sustained a second degree perineal tear.

Infant outcomes

Table 19 shows infant outcomes. For Castlemaine Health, data for the two women who birthed before arrival to the hospital are also included in this table. Data were available for 32 infants born at Bendigo Health. All infants were liveborn, and none had an Apgar score less than 7 at 5 minutes postpartum. Fourteen infants at Castlemaine Health and 21 infants at Bendigo Health required some neonatal resuscitation, the majority needing tactile stimulation only.

All infants born at both services were receiving breast milk at hospital discharge, and women who birthed at Castlemaine Health received an average of three domiciliary visits (range 1 – 5; Table 20). Where data are available for women who birthed at Castlemaine Health (i.e., where maternal or infant time of hospital discharge are reported; n = 15), the mean length of hospital stay after birth was approximately 16 hours.

Table 18. Labour and birth outcomes for women who birthed at Castlemaine Health^ and Bendigo Health

CHARACTERISTIC	Women who birthed at Castlemaine Health (n = 41) n (%)	Women who birthed at Bendigo Health (n = 36) n (%)
Spontaneous onset of labour (n = 41, 28)	37 (90.2)	16 (51.7)
Gestation at birth, weeks (mean, SD*) (n = 41, 32)	39.9, 1.1	39.8, 1.6
Preterm birth (< 37 weeks gestation) (n = 41, 32)	0 (0)	1 (3.1)
Labour analgesia (n = 41, 28)		
TENS^^ machine	10 (24.4)	6 (21.4)
Nitrous oxide and oxygen	7 (17.1)	13 (46.4)
Sterile water injection	3 (7.3)	0 (0)
Epidural	0 (0)	9 (32.1)
Narcotic, morphine	0 (0)	6 (21.4)
Birth analgesia (n = 41, 32)		
Spinal	0 (0)	12 (37.5)
Epidural	0 (0)	9 (28.1)
Perineal infiltration with local analgesia	1 (2.4)	2 (6.3)
General anaesthetic	0 (0)	1 (3.1)
Pudendal block	0 (0)	1 (3.1)
Primary blood loss (ml) (mean, SD) (n = 41, 32)	405, 290	561, 743
PPH, estimated blood loss ≥ 500 ml** (n = 41, 32)	9 (22.0)	10 (31.3)
Transfusion (n = 41, 32)	0 (0)	1 (3.1)
Labour complications (n = 41, 32)		
Primary PPH**	9 (22.0)	10 (31.3)
Abnormal/non-reassuring CTG$	4 (9.8)	16 (50.0)
Meconium liquor	4 (9.8)	5 (15.6)
Precipitate labour/birth	4 (9.8)	3 (9.4)
Retained placenta/delayed third stage$$	4 (9.8)	0 (0)
Pre-labour SROM# at term	2 (4.9)	1 (3.1)
Prolonged/delayed second stage, failed vacuum	1 (2.4)	3 (9.4)
Undiagnosed breech/breech presentation	1 (2.4)	1 (3.1)
Malposition##	0 (0)	5 (15.6)

CHARACTERISTIC	Women who birthed at Castlemaine Health (n = 41) n (%)	Women who birthed at Bendigo Health (n = 36) n (%)
Failed induction of labour	0 (0)	4 (12.5)
Obstructed labour	0 (0)	3 (9.4)
Maternal pyrexia	0 (0)	1 (3.1)
Placental abruption	0 (0)	1 (3.1)
Prolonged rupture of membranes	0 (0)	1 (3.1)
Prolonged first stage	0 (0)	1 (3.1)
Uterine fibroid	0 (0)	1 (3.1)
Birth type (n = 41, 32)		
Unassisted vaginal birth	38 (92.7)	10 (31.3)
Vacuum assisted vaginal birth	2 (4.9)	2 (6.3)
Forceps assisted vaginal birth	0 (0)	4 (12.5)
Unassisted vaginal breech birth	1 (2.4)	2 (6.3)
Caesarean section birth	0 (0)	14 (43.8)
Third stage management (n = 41, 32)		
Controlled cord traction	32 (78.1)	31 (96.9)
Physiological third stage	9 (22.0)	1 (3.1)
Perineal outcomes (n = 41, 32)		
Intact perineum	13 (31.7)	17 (53.1)
First degree tear	6 (14.6)	3 (9.4)
Second degree tear	18 (43.9)	4 (12.5)
Third/fourth degree tear	1 (2.4)	2 (6.3)
Episiotomy	1 (2.4)	6 (18.8)

^Includes two women who birthed before arrival at Castlemaine Health
^^TENS: Transcutaneous electrical nerve stimulation; *SD: Standard deviation; **PPH: Postpartum haemorrhage;
$CTG: Cardiotocography; #SROM: Spontaneous rupture of membranes; $$Three of these women transferred to Bendigo Health for removal of placenta; ##Examples include: brow presentation or persistent occipio posterior position

Table 19. Infant outcomes among women who birthed at Castlemaine Health* and Bendigo Health

CHARACTERISTIC	Infants born at Castlemaine Health (n = 41) n (%)	Infants born at Bendigo Health (n = 36) n (%)
Birthweight, grams (mean, SD) (n = 41, 32)	3659, 362	3463, 449
Apgar <7 at 5 minutes (n = 41, 32)	0 (0)	0 (0)
Large for gestational age (>4200 grams)# (n = 41, 32)	2 (4.9)	2 (6.3)
Respiratory distress (n = 41, 32)	2 (4.9)	5 (15.6)
Resuscitation required (n = 41, 32)		
Tactile stimulation only	11 (26.8)	16 (50.0)
Other##	3 (7.3)	5 (15.6)

*Includes two women who birthed before arrival at Castlemaine Health
#At Castlemaine Health, both infants required blood glucose monitoring according to local guidelines
##Other includes CPAP with air; CPAP with oxygen; IPPR with air; IPPR with oxygen

Table 20. Postpartum outcomes for women who birthed at Castlemaine Health* and Bendigo Health

CHARACTERISTIC	Infants born at Castlemaine Health (n = 41) n (%)	Infants born at Bendigo Health (n = 36) n (%)
Maternal and infant length of hospital stay#, hh:mm (mean, SD) (n = 15)	15:56, 10:40	-- --
Breastfeeding initiation (n = 41, 32)	41 (100)	32 (100)
Number domiciliary visits (mean, SD) (n = 32)	2.6, 0.9	-- --

*Includes two women who birthed before arrival at Castlemaine Health
#Length of hospital stay not reported for both women who birthed before arrival at Castlemaine Health

Issues with clinical data availability and extraction

Although the outcomes of each woman booked to the model were reviewed by the Castlemaine Health team (as recommended in the Collaborative Operational Model of Care document [6]), there were difficulties associated with obtaining clinical outcome data at both Castlemaine Health and Bendigo Health, not due to a lack of engagement by the staff assisting us, but due to system issues. The process that we expected was that we would be provided with a dataset that included the clinical outcomes for all women booked into the model who birthed at either service, but this was not straightforward, highlighting system issues that need addressing.

At Castlemaine Health, assistance was provided by the Health Information Manager and the MGP coordinator, with further input needed from the BOS database provider, Management Consultants and Technology Services (MCATS). There was no ongoing report available to capture and report on relevant clinical data outcomes for women birthing at the service, and a 'shadow' manual system had been set up in a separate database to track women's outcomes. A BOS report was developed to obtain the relevant data at our request, but this is something that should be in place going forward to obtain clinical outcome data at Castlemaine Health.

We attempted to obtain BOS clinical outcome data for women who had been transferred, and who birthed at Bendigo. However, when women are transferred from Castlemaine Health to Bendigo Health, they are assigned a different medical record number not associated with their Castlemaine Health record number – so there is no way of easily identifying these women. This is something that should be addressed going forward, particularly because a shadow booking at Bendigo Health is made by the MGP midwives for all primiparous women booking to the Castlemaine Health model, so it can be implemented prospectively for better clinical outcome follow-up. For this evaluation, women were identified from Castlemaine Health and cross-checked with records from Bendigo Health. However, even once women were identified, no one was able to provide BOS data to the team; so instead we asked for deidentified hospital discharge summaries, from which we extracted the available relevant outcome variables.

Summary and recommendations

SUMMARY

The aim of this evaluation was to review the first 12 months of operation of the revised maternity model of care at Castlemaine Health. Maternity consumers, clinicians and other stakeholders were invited to take part in the evaluation and provide their views of the revised model, including recommendations for ongoing sustainability. Clinical outcome data for all births were also collected and reported as part of the evaluation, and an audit of transfers was conducted.

There were three components of data collection: component 1 explored the views of key stakeholders, including clinicians, managers and executive staff at the Castlemaine Health, Bendigo Health and other relevant organisations, as well as members of community and advisory groups; component 2 explored maternity consumers' views of, and experiences with, the model; and component 3 was an audit of clinical outcomes for all women who booked for the revised model of maternity care during the first 12 months, and birthed within the evaluation period, regardless of whether they birthed at Castlemaine Health or Bendigo Health.

RESULTS

Component 1: Exploring the views of key stakeholders

We aimed to understand key stakeholders' perceptions and experiences of the implementation, operation, impact and sustainability of the revised model of care. Twenty-nine interviews were conducted between November 2021 and June 2022. Key stakeholders included clinical, managerial and executive staff at Castlemaine Health and Bendigo Health, representatives from Safer Care Victoria (SCV) and the Australian Nursing and Midwifery Federation (ANMF), and members of advisory and community groups.

Most interviewees were overwhelmingly positive about the model, describing it as working very well, but there were mixed views about the need for change from the previous GPO-led model, and many described the suspension of the service as a difficult experience. The previous GPO-led model was described as atypical, impacting on midwives' ability to maintain their clinical experience and competency given their limited exposure to providing care for women in labour. Most supported the need for change, but a number did not, and did not support the revised midwifery-led model. Interviewees highlighted the importance of external, independent roles to develop the new model, and the value of the advisory committees, but while some felt involved in the consultation process, others felt less heard and less supported. The relationship between MGP midwives and GPOs was described as open, collaborative, respectful and supportive, however for core midwifery and nursing staff some aspects of the role and the working relationships required further development. Those who faced significant changes to their roles found the transition particularly difficult.

Several key factors were discussed in relation to model sustainability – health system support, workforce and costs/funding. Underpinning the continued success of the model was the importance

of ongoing support from Castlemaine Health management and from the Department of Health (DoH), as well as from Bendigo Health. The partnership between Castlemaine Health and Bendigo Health was recognised as critical. Many reported an excellent working relationship between the two services, with increased respect and trust between the services, facilitated by good communication. This resulted in good processes around transfers of care when they were needed.

The midwifery-led model of care was seen as attractive to midwives, contributing to sustainability from a workforce perspective, with the proximity to Bendigo an additional strength in relation to recruiting midwives. There were concerns though about recruiting and retaining GPOs and core midwifery staff into the service, and this was acknowledged as a threat. GPOs were described as "*a dying breed*" and there were concerns that the revised model of care (including ceasing operative births) may deter GPOs coming into the service. The decreasing availability and/or willingness of dual-registered midwives and nurses (RM/RNs) to work in the model as the second midwife at births was also raised as a threat to sustainability. Reasons for this were thought to be multifactorial, and included the challenges in managing a patient load when also then being called in to assist with a birth, the question of whether the midwives felt they had retained sufficient skills for intrapartum care, and for others, concerns about the limited scope of midwifery practice in the role. These concerns extended to possible challenges recruiting new staff.

There were also concerns about the increasing (possibly unsustainable) workload of the MGP midwives due to increasing bookings as well as a reduction in the number of core midwives available to act as the second midwife at each birth, meaning that an MGP midwife must fill this role. To support this, the MGP midwives (including the MGP coordinator) have had to take on additional clinical and on-call hours. Suggestions to address this included a transition to an MGP-only model; having all midwives rotate through the MGP model (not likely to be attractive to midwives who wanted to work solely in the MGP model); starting a graduate midwifery program at Castlemaine Health; and that other non-midwifery staff (e.g., registered nurses) could be educated and a credentialing process be developed so that they could act as the second person at a birth should the need arise. The EFT of MGP midwives was also discussed – while some considered 0.7 or 0.8 EFT supported good work-life balance and avoiding burnout (NB: the literature shows burnout is lower among caseload and MGP midwives compared to those not working in this model [16]), many noted that increased EFT overall was an important factor to enhance sustainability. Consideration of the number of days off-call per fortnight was also considered important for sustainability to ensure flexibility within the constraints of the midwives' expected availability, and it was noted that this can be negotiated among MGP groups at the local level to make it work best for them (i.e., how they arrange their on-call within the group). The MGP coordinator role was described as a demanding role and best suited as a position separate to the EFT allocated to the MGP midwifery positions.

The costs of the model and how the collaborative arrangement between Bendigo Health and Castlemaine Health is funded were raised also as potential barriers to sustainability. One issue is the broader maternity service funding model in Victoria – regardless of how much care is provided by Castlemaine Health, when women birth at Bendigo Health (which around half the women booked to the model did), Bendigo Health receives the DRG funding related to that birth, when in reality much of the intrapartum and postpartum care may be provided by Castlemaine Health. Further, if an

MGP midwife has capacity to provide intrapartum care for her allocated woman at Bendigo Health (and does so), this equates to a further cost to Castlemaine Health. Additionally, the requirement for all MGP midwives to do an above ratio shift at Bendigo Health each fortnight is funded by Castlemaine Health. While this might be needed when a midwife begins working in the model, the ongoing requirement is considered both a time and cost burden, and may need revisiting to better reflect the orientation and supervision needs of the MGP. In addition, all GPOs are required to undertake a shift per month at Bendigo Health, also funded by Castlemaine Health. The shifts rostered at Bendigo Health are considered an important component of the model, facilitating skill development and thought to enhance clinical transfers and communication, but consideration of how these are funded is critical to the sustainability of the model.

A number of stakeholders suggested expanding the range of services offered by Castlemaine Heath to offset some of the cost and staffing issues, for example offering elective caesarean sections on site. This was seen as a way to expand the midwifery scope of practice and to perhaps help recruit and retain MGP and core midwives as well as GPOs. Other similar suggestions included expanding gynaecological services to help complement elective caesarean theatre lists and attract and sustain the medical workforce, along with sharing medical staff with Bendigo Health (Bendigo consultants may be able to schedule procedures at Castlemaine Health and/or be available for elective caesarean sections at Castlemaine Health).

When asked about the potential role that midwifery-led models, such as Castlemaine Health's revised model, may have in reinstating birthing at other regional and rural services in Victoria, many interviewees were keen for Castlemaine Health to be the 'blueprint' for other services looking to reinstate birthing, particularly considering the amount of work that went into developing the model. It was acknowledged, however, that the model would need to be adapted to suit the context. Overall, many were hopeful that this would be the start of a move to reinstate birthing across regional and rural Victoria.

A survey of midwifery staff conducted in February 2022 (12/24 midwives responded) found most considered the model safe for women and their babies, and that when transfer out of the model was required (e.g., to Bendigo Health), the transfer criteria and guidelines were clear. The majority thought that the model was well supported by hospital management, and that interdisciplinary communication among clinicians working within the model was good.

Component 2: Exploring the views of maternity consumers

Women who birthed as part of the revised model of care at Castlemaine Health were invited to share their views and experiences of the model. Two thirds (44/66) of the women invited to complete an online survey participated. Women were also asked if they would be willing to take part in a more detailed interview about their experiences, and five women participated. We found that women appreciated and valued their care provision in pregnancy, intrapartum and postpartum. Women who birthed at Castlemaine Health were very positive about their overall experience, and their ratings of care provision during labour and birth were higher than those reported in studies of other models of care in Victoria [9, 10]. Women commented that they felt respected and involved in decision-making during their maternity care experience, they reported low levels of anxiety during labour and birth,

felt able to express their feelings, felt in control and coped physically and emotionally better than they expected, and for women who required transfer at any point, they were generally satisfied with their experience of transfer. For the women transferred to Bendigo Health, they felt safe and well supported by midwives, and overall reported positive experiences. Ratings of care provision and experience of labour and birth was not as high among the women who birthed at Castlemaine Health; however, it should be noted that approximately 50% of the respondents who birthed at Bendigo Health were transferred during labour, which would likely affect their birth experience.

Women's ratings of postnatal care provision were similarly positive: responses to open-ended survey and interview questions confirmed that women felt well supported in the postpartum period, and they appreciated the care they received from hospital staff. Women stressed the value and the importance of the continuity of care provision that they received throughout their maternity experience. Overall, this revised model of care is highly valued by the women who received it, and they felt the whole maternity experience exceeded their expectations.

Component 3: Audit of clinical outcomes

The third component of the evaluation described the clinical outcomes of all women who booked to receive maternity care at Castlemaine Health when the service reopened, and had birthed by 7 June 2022, and included an audit of antenatal, intrapartum and postpartum transfers to other services. There were difficulties associated with data collection from the Birthing Outcome Systems (BOS) database at both services, and assistance was sought from database provider, Management Consultants and Technology Services (MCATS) to provide data for Castlemaine Health outcomes. For outcomes from women birthing at Bendigo Health, we had to extract and collate data from deidentified hospital discharge summaries.

All women who birthed as part of this model of care, irrespective of transfer, had a liveborn baby, with no sentinel or near-miss events occurring at the service. At the time of data collection, 29 women were transferred antenatally from Castlemaine Health: 27 of these were transferred to Bendigo Health, one woman left the model to have a homebirth (i.e., personal choice), and one woman relocated regionally. Nine women were transferred from Castlemaine Health to Bendigo Health intrapartum, and five women who birthed at Castlemaine Health were transferred there postpartum. All transfers audited occurred according to hospital guidelines, with no clinical safety concerns noted for this cohort.

STRENGTHS AND LIMITATIONS OF THE EVALUATION

This evaluation explored the revised maternity model of care from the perspective of consumers, clinicians involved in care provision, and a variety of key stakeholders who played a role in implementation of the model. Our engagement with key stakeholders, including clinicians at Castlemaine Health and Bendigo Health, and with maternity consumers has provided an insight into the transition to the new maternity model of care, the current operation of the model, the views and experiences of those who received care as part of the model, and the sustainability of the model going forward.

Castlemaine Health is a small maternity service, and it is therefore important to note that the outcomes presented in this report are based on a relatively small number of women who received care as part of this model, so no associations can be inferred from data reported – clinical outcome data are presented using only numbers and percentages (or averages). Further, it must be acknowledged that women who were transferred to Bendigo Health intrapartum were experiencing a complication of labour or birth, which may have potentially affected their experience of, and satisfaction with, care provision at the service.

CHANGES TO THE PLANNED MODEL IN THE FIRST YEAR OF OPERATION

The Castlemaine Health Maternity Services Collaborative Operational Model of Care document details care provision to women and their families, and outlines the role of maternity and newborn care clinicians within the model [6]. At the time of writing this report (August 2022), there were four MGP midwives employed at 0.7 EFT with a caseload of 45 women per full-time equivalent and one MGP coordinator allocated 0.4 EFT for this position (and who is also employed at 0.2 EFT as a maternity educator). In addition to the clinical care they provide, the MGP midwives are responsible for making appointments through iPM (Patient Administration System software), creating shadow bookings within the BOS database for primiparous women at Bendigo Health, and other administrative tasks as required.

As per the Castlemaine Health Maternity Services Collaborative Operational Model of Care document [6], core midwives working on acute ward roster provide inpatient postnatal care to women and their infants, with the primary MGP midwife providing a written handover to the core midwife after the birth. Core midwives wishing to maintain their midwifery skills are encouraged to be the second midwife in birth suite, which means leaving their patient load on the acute ward for the period of the birth [6].

For this evaluation, the clinician survey and majority of key stakeholder interviews with Castlemaine Health staff were conducted between January and March 2022. Since that time, there have been changes to the model to accommodate increasing consumer demand and several core midwives have chosen to step away from the role of second midwife for birthing women. It now cannot be assumed that a core midwife can attend as the second midwife at every birth due to the work demands of the acute ward, gaps in the roster, staff shortages and (in some instances) a midwife's confidence in being the only other midwife in the room in a context of limited exposure to births. In addition, the COVID-19 pandemic impacted the workforce at Castlemaine Health, resulting in increased workloads for clinical staff across the service. This has meant that two MGP midwives are now the primary and second midwife at most births. In a model with four MGP midwives working at 0.7 EFT, the pressure introduced when there are unexpected events (e.g., unexpected leave requirements; unexpected presentation in labour) is a risk to long-term sustainability that needs consideration for future workforce planning.

Given the small number of MGP midwives and the current need (as discussed) for two MGPs to be present at most births, on occasions this has meant that the rostered MGPs use all their hours as the second midwife. This has been further impacted by the core midwife staff shortages and gaps in the roster, resulting in the second midwife role being fulfilled by the GPO on-call on occasion. These

circumstances introduce a potential risk to the model should the birth not go to plan, as there may be limited experienced staff to assist. When there are unexpected leave requirements, the workload of the remaining MGP workforce is greatly impacted, and also constitutes a risk to the model, and can impact women's care, e.g., women might need to be transferred to Bendigo Health for intrapartum care. We provide an example below.

On this occasion, due to unexpected leave, the MGP workforce was reduced to three, leaving only one MGP rostered to work on the Friday and two rostered to work the weekend (given the expected workload requirements for that period).

On the Friday, the rostered MGP had used most of her hours completing antenatal clinic, when a woman phoned requiring assessment for spontaneous rupture of membranes. On assessment it was found that the woman was having some tightenings, but was not in established labour and would require an induction over the weekend if labour did not establish within 24 hours. The workload on the acute ward was high that evening and, although the core midwife was happy to look after the woman overnight, no-one could provide intrapartum care should labour commence, and the rostered MGP midwife only had two hours left available for that 24 hour period.

The MGP midwife phoned the coordinator to work out the best plan to avoid a transfer and it was agreed that should the woman establish labour overnight the coordinator would come in and care for the woman (outside of her work hours) until the MGP hours could be reset (occurring at 2am). In circumstances like this, a by-pass can be triggered requiring women to be transferred to Bendigo Health until the hours of the MGP midwives has been resolved. However, this by-pass mechanism was avoided in this scenario, mostly to reduce the impact of transfer on women presenting to birth at Castlemaine. The second MGP midwife commenced her shift at 8am the next morning. This negated the need to transfer the woman, and she birthed at the service over the weekend.

CONCLUSIONS

This evaluation has found that the maternity care model at Castlemaine Health is highly valued by staff, women and the community. Midwifery Group Practice midwives are working within their full scope of practice, fully supported by committed GPOs working within the model, and by Bendigo Health. Each booking at the service is reviewed and assessed as appropriate throughout pregnancy, and multi-disciplinary case review is currently conducted following every birth at the service. Transfers to the higher level service, when required, are occurring as appropriate.

The model has had to evolve in the first 12 months of operation, and some issues were identified, however various measures have been implemented or suggested to address unexpected changes, showing the organisational goodwill. Concerns such as the need to rethink how the second midwife at births can be facilitated, along with concerns about the potential impacts of workforce and cost on model sustainability have all been accompanied by suggestions for going forward. Other issues that came to light that can likely be readily addressed were the lack of streamlined maternity data sharing between Castlemaine Health and Bendigo Health, and the administrative workload of the MGP midwives.

RECOMMENDATIONS

In this section, we provide recommendations specific to provision of maternity care at Castlemaine Health, and also recommendations for other services undertaking a similar revision of their maternity care provision.

Recommendations for model sustainability

The sustainability of the revised model of care is reliant upon the dedication and commitment of all staff providing maternity care to women. Two main areas that may impact model sustainability are staffing and the funding model, both of which have potential solutions. Additionally, there are issues regarding accessing (and therefore accurately reporting on) clinical outcome data that require addressing.

To ensure the sustainability of the model, we make the following recommendations:

1. Given the challenges with coverage and back-up for the MGP midwives, we recommend that Castlemaine Health consider reducing the caseload of each MGP midwife, and/or increasing the overall EFT of the model (i.e., employing more MGP midwives). This would provide adequate coverage for unexpected leave requirements, increased bookings, and the need for MGP midwives to be the primary and second midwife at most births. Other strategies to ensure coverage and back-up need to be considered, and should be in consultation/ discussion with core midwives and the maternity management team. Going forward, we also recommend that Castlemaine Health routinely collects information about how often MGP midwives attend Bendigo Health with women for planned inductions, and how often (or for how long) midwives attend with women who are transferred intrapartum to assist with planning EFT requirements in the future.

2. We recommend that further consideration be given to the standing of the position of the MGP coordinator commensurate with the role, responsibilities and expectations of this position.

3. Due to the current funding model allocation for maternity services, no DRG funding is received by Castlemaine Health when women transfer to Bendigo Health prior to or during labour (around 50% of women in the evaluation period). Further, if an MGP midwife has capacity to provide intrapartum care for her allocated woman at Bendigo Health (and does so), this equates to a further cost to the service. We recommend a re-evaluation of funding allocation consistent with actual service provision.

4. Consideration is given to providing greater flexibility around the number of shifts required for Castlemaine Health MGP midwives at Bendigo Health. Although these shifts are needed to develop and maintain skills, as well as relationships with staff at Bendigo Health, for some midwives there could be a reduction to one shift per month or two weeks per year, with the option for an MGP midwife to travel to Bendigo Health with her allocated woman during an intrapartum transfer or induction of labour. However, other midwives such as new recruits unfamiliar with Bendigo Health may require a higher number of shifts.

5. As is the case with most MGP models of care, there is a complex relationship between core midwifery staff and MGP midwives. However, given the potential valuable contribution of the dual registered midwifery workforce, we recommend that Castlemaine Health explores ways to support this workforce. This could be through incentives and/or ongoing education allowing them to maintain their skills and competencies if they wish to do so. We also believe that some aspects of the working relationships between core and MGP midwives may require further development, and consideration could be given to regular scheduled meetings between the two groups. However, understanding what exact support would help requires further investigation.
6. Castlemaine Health considers the possibility of implementing a graduate midwifery program to ‘grow their own’ midwifery workforce, facilitating the development of a professional identity among graduates, with appropriate support, mentoring and supervision. We recommend that consideration be given to a combined graduate midwifery program between Castlemaine Health and Bendigo Health.
7. The multi-disciplinary clinical case review following every birth is continued, to ensure all clinical outcomes are transparent, and identify any processes or guidelines that might need revising.
8. Given the importance of continuing education provision to maternity staff, we recommend that the 0.2 EFT maternity educator position continues, to facilitate ongoing education provision to midwives, GPOs and acute ward staff.
9. MGP midwives continue to receive allocated time for administrative tasks e.g., BOS shadow bookings and iPM (Patient Administration System software) appointments.

Further recommendations for ongoing sustainability include approaches to increase bookings, and attract and retain midwifery and medical staff, such as:

10. Consideration be given to a more collaborative approach to maternity care between Bendigo Health and Castlemaine Health for low-risk women living in the vicinity of Castlemaine e.g., the potential for women who request MGP-led care at Bendigo Health through their MGP program but who live close to Castlemaine to proactively be offered care through Castlemaine Health instead. If the Bendigo Health MGP program is over-subscribed, eligible women could also be offered MGP-led care at Castlemaine Health.
11. Consideration be given to expanding the range of services offered by Castlemaine Health to potentially offset staffing and cost issues, including the provision of elective caesarean section births at the service. This would expand the range of practices that core midwives have access to, and may attract medical staff to the service, including GP anaesthetists. Gynaecological service provision could also be considered, with the ‘sharing’ of obstetric staff between Bendigo Health and Castlemaine Health used to facilitate these options.

Recommendations for data sharing and reporting

Currently there is no ability to share the data between BOS platforms – each hospital hosts their own BOS database, and maintains custody of clinical data stored on that platform (Andrew Hinterreiter, General Manager MCATS, personal communication). Thus, a risk to the model is the separate BOS platforms at Castlemaine Health and Bendigo Health. With almost half of the women who book to receive maternity care at Castlemaine Health transferred to Bendigo Health before the birth, current requirements to document women across two BOS systems can result in information being lost or inaccurately reported. Further, birthing outcome data for all women who book to receive care at Castlemaine Health should be available to the service to track outcomes among this cohort, irrespective of transfer.

12. For services such as Castlemaine Health and Bendigo Health, where there is a clearly defined service level agreement in place, we recommend the capacity for data sharing to avoid duplication of resourcing and ensure that delivery of clinical care is clearly documented and able to be reviewed in a timely manner. Further, we recommend that Castlemaine Health routinely collects information about how often MGP midwives attend Bendigo Health with women for planned inductions, and how often (or for how long) midwives attend with women who are transferred to the service intrapartum so it can be taken into consideration when planning EFT requirements in the future.
13. Length of hospital stay could only be reported for 15 out of 39 women who birthed at Castlemaine Health. We recommend that time of hospital discharge (maternal and infant) be recorded in the BOS database, allowing the service to report the mean length of hospital stay for mothers and their infants.

Recommendations for other services

For services considering an overhaul of maternity care provision, we recommend that:

14. The Castlemaine Health Maternity Services Collaborative Operation Model of Maternity Care document, along with our recommendations for other services (i.e., recommendations 14 – 18 inclusive), be made available as a framework document to services planning to reinstate birthing, or revise their maternity care provision.
15. Given the benefit of external oversight, that other maternity services interested in revising their model of maternity care more broadly engage the assistance of external consultants (such as maternity model of care experts and regional midwife consultants) to develop or reinstate alternative models of care.
16. Appropriate support is provided to all affected staff before and during the transition to new models of care. Adequate and appropriate engagement with all maternity care clinicians affected by transitions to new models of care is necessary to ensure the ongoing sustainability of maternity service provision at these services across the state.
17. The views of maternity consumers be an important component in shaping maternity models of care, and for maternity planning more broadly. Further, we recommend that advisory groups such as a Maternity Consumer Committee and First Nations Advisory Group be part of any redevelopment of maternity care provision in services across the state.

18. Continued monitoring of the workload of clinicians and coordinators in newly established maternity models of care be undertaken, with adjustments made commensurate on bookings and/or changes to the model. We also recommend regular assessments of staff wellbeing.

Appendices

APPENDIX 1: Statewide maternity and newborn capability levels (2020 – 2021)*

Health service	Maternity capability level	Newborn capability level
Maternity Services – level 6		
Mercy Hospital for Women	6	6a
Monash Medical Centre Clayton	6	6b
The Royal Women's Hospital	6	6a
Western Health	6	6a
Maternity Services – level 5		
Albury Wodonga Health	5	4
Ballarat Health Services	5	4
Barwon Health	5	5
Bendigo Health	5	4
Eastern Health - Box Hill Hospital	5	4
Goulburn Valley Health	5	4
Latrobe Regional Hospital	5	4
Northern Health	5	5
Peninsula Health	5	4
Maternity Services – level 4		
Central Gippsland Health Service	4	3
Eastern Health - Angliss Hospital	4	3
Werribee Mercy Hospital	4	4
Mildura Base Hospital	4	3
Monash Health - Casey Hospital	4	4
Monash Health - Dandenong Hospital	4	3
Northeast Health Wangaratta	4	3
South West Healthcare Warrnambool	4	3
Women's at Sandringham	4	3
West Gippsland Healthcare Group	4	3
Wimmera Health Care Group	4	3
Maternity Services – level 3		
Bairnsdale Regional Health Service	3	2
Bass Coast Health	3	2
Benalla Health	3	2
Colac Area Health	3	2
Djerriwarrh Health Services	3	3
East Grampians Health Service	3	2
Echuca Regional Health	3	2
Gippsland Southern Health Service	3	2
Kilmore & District Hospital	3	2
Mansfield District Hospital	3	2
South Gippsland Hospital	3	2
South West Healthcare [Camperdown]	3	2

Health service	Maternity capability level	Newborn capability level
Swan Hill District Health	3	2
Western District Health Service [Hamilton]	3	2
Maternity Services – level 2		
Castlemaine Health	2	2
Maryborough District Health Service	2	2
Portland District Health	2	2
Maternity services – level 1		
Alpine Health - Bright	1	1
Alpine Health - Mount Beauty	1	1
Alpine Health - Myrtleford	1	1
Casterton Memorial Hospital	1	1
Cohuna District Hospital	1	1
Kyneton Health [Central Highlands Rural Health]	1	1
NCN Health - Numurkah	1	1
NCN Health - Cobram	1	1
Orbost Regional Health	1	1
West Wimmera Health Service	1	1
Yarrawonga District Health Service	1	1
Newborn services		
The Royal Children's Hospital	Not applicable	6b

*From [2]

APPENDIX 2: Clinical outcome data fields requested

FIELD OF INTEREST/DESCRIPTION
1. Baby medical record number
2. Mother medical record number
Demographic information
3. Smoking during pregnancy (y/n)
4. Marital status
5. Country of birth
6. Indigenous status of mother
7. Indigenous status of baby
8. Pension status of mother
Pregnancy information
9. Gestation at booking visit
10. Age (maternal)
11. Model of care at booking visit
12. Model of care at the start of labour
13. Model of care at delivery
14. Intended feeding method at booking
15. Parity
16. Gravidity
17. Planned vaginal birth after caesarean (VBAC)
18. Plurality
19. Standard primipara
20. Obstetric complications (maternal)
21. Medical conditions (maternal)
Intrapartum information
22. Labour type (spontaneous, augmented, induction of labour, no labour)
23. Onset of labour – date
24. Onset of labour – time
25. Date admitted to hospital (for the birth)
26. Time admitted to hospital (for the birth)
27. Rupture of membranes – date
28. Rupture of membranes – time
29. Artificial rupture of membranes (y/n)
30. Artificial rupture of membranes – date
31. Artificial rupture of membranes – time
32. Augmentation of labour – specify if artificial rupture of membranes
33. Analgesia for labour (y/n)
34. Analgesia for – type
35. Complications of labour and birth
36. Fetal monitoring in labour
37. Birth mode
38. Birth date
39. Birth time
40. Place of birth
41. Intended place of birth

FIELD OF INTEREST/DESCRIPTION
42. Presentation
43. Status of baby – live birth/still birth
44. Baby's birth weight
45. Oxytocic drug used for third stage (y/n)
46. Manual removal of placenta
47. Blood loss at birth – volume
48. Transfusion – (y/n)
49. Perineal Status – perineal outcomes
50. Postpartum complications
51. Birth defects and description if possible
52. Apgar score at 1 minute
53. Apgar score at 5 minutes
54. Neonatal resuscitation required (y/n)
55. Neonatal complications
56. Neonatal mortality
57. Maternal mortality
58. Required procedure in theatre (maternal)
Postpartum information
59. Breastfeeding status on ward discharge
60. Breastfeeding status on completion of care provided by the hospital i.e., at last postnatal domiciliary care visit
61. Ever had formula in hospital
62. Length of hospital stay – baby
63. Length of hospital stay –mother
64. Number of domiciliary visits
65. Baby discharge from hospital care – date
66. Baby discharge from hospital care – time
67. Mother discharge from hospital care – date
68. Mother discharge from hospital care – time
Maternal and neonatal transfer information
70. **Maternal transfer** to another hospital antenatal/intrapartum/postpartum a) Whether they were transferred to another hospital; b) From what model to what model (if appropriate); c) When the transfer occurred (gestation if appropriate), d) Where they were transferred from; e) Where they were transferred to; and f) Reason for transfer.
71. **Neonatal transfer** to another hospital (non-birth hospital) after birth a) Date of transfer; b) What hospital the baby was transferred from; c) What hospital the baby was transferred to; and d) Why the baby was transferred.

APPENDIX 3: Midwives' views on extra skills required by MGP midwives

CHARACTERISTIC	n (%)
Minimum years of experience to work in MGP (n = 12)	
Less than 1 year	1 (8)
1 – 2 years	3 (25)
3 – 4 years	4 (33)
5 years	3 (25)
6 – 10 years	0 (0)
More than 10 years	1 (8)
Extra skills MGP midwives should have before they care for women* (n = 12)	
Amniotomy	12 (100)
IV cannulation	12 (100)
Fetal scalp electrode application	12 (100)
Examination of the newborn	12 (100)
Speculum examination	8 (67)
Perineal suturing	8 (67)
Prescribing medications (NOT hospital standing orders)	6 (50)
Facilitation of vaginal breech birth	6 (50)
Prostaglandin insertion for induction of labour	4 (33)
Balloon insertion for cervical ripening for induction of labour	4 (33)
Ultrasound for fetal position	4 (33)
Fetal biometry and amniotic fluid index	2 (17)

*Please note: Respondents could choose more than one option on list

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