Critical Intelligence Unit

Evidence check

Rural maternity and neonatal care

22 August 2025

Evidence check question

What are the key elements associated with safe, effective, and sustainable maternity and neonatal care in the rural setting? What are the enablers and barriers of these services?

What are the unique characteristics of rural level 3 maternity and neonatal facilities in NSW?

Summary

- A number of different models of care exist for maternal and neonatal services in rural areas (also see: Background section and the Australian Institute of Health and Welfare 2023 report). These include midwife-led, general-practitioner (GP)-led, obstetric-led or shared care.[1, 2] Each of these models has varying levels of evidence to support their use. In particular, there is little rigorous evidence to evaluate GP-led or shared models of care. There is consensus that further research is much needed on this topic.[1, 3]
- The available evidence is largely descriptive in nature, with a focus on case studies and stakeholder perspectives.
- Studies which undertake more rigorous evaluation of models of care are typically broad in scope and comprise multiple interventions. This makes it challenging to attribute impact to individual components.

Studies have found an association between **the effectiveness** of services and:

- accessibility of local services and continuity of care[4-16]
- collaboration, including with the community, stakeholders and across services[4-7, 9, 10, 14, 17, 18]
- a highly skilled, sustainable workforce which includes midwives[6, 7, 9, 10, 13, 17, 19-21]
- governance to support all of the above.[6, 7, 13, 18]

Safety concerns with rural models of care as documented in the literature:

- Lack of rural access to emergency caesarean capabilities has been associated with stakeholder concerns of increased clinical risks.[6, 7, 22-25]
- However, low-capability services appear safe for women with low-risk pregnancies,[3, 5, 7-9, 13, 24, 26-29] while having no local birthing service available at all can have range of negative financial, social and psychosocial consequences for women and families.[6, 7, 14, 18, 22-24, 26, 30]
- Main enablers of safety include: models of care that are GP-led especially those with enhances surgical or obstetrical skills,[31-35] or those that are midwifery-led models especially for women that

Rapid evidence checks are based on a simplified review method and may not be entirely exhaustive but aim to provide a balanced assessment of what is already known about a specific problem or issue. This evidence check should not be a substitute for individual clinical judgement, nor is it an endorsed position of NSW Health.

are low risk,[3] accessible local services, collaboration between services and well trained, confident staff.[3, 5-10, 12, 14, 19, 21, 24, 26-29, 36-38]

Sustainability concerns with rural models of care as documented in literature:

- In order to provide some degree of localised care, birthing services in rural areas often operate within models that are only designed to manage women with low-risk pregnancies.[6, 9, 22]
- Enablers of sustainability include: primary maternity units,[6, 10] workforce incentives, support and professional development,[5, 7, 18-20, 24, 26, 38-42] clear policies and collaborative ways of working in place, particularly for escalation and patient transfers.[43, 44]
- Barriers to sustainability include: local workforce recruitment and retention challenges,[6, 7, 21, 22, 25, 28, 39, 41, 45, 46] low birth numbers[6, 47] and facilities without caesarean capabilities nearby.[26, 47]

Benefits of various models of care:

- The benefits of models of care vary depending on their aims and the outcomes measured, as is detailed in Table 1.
  - GP-obstetrician (GPO) and midwife-led models are associated with the benefits of clinical safety, continuity of care, trust and high levels of satisfaction, particularly for low- to medium-risk women.[7, 9, 11, 24, 26, 28, 34-36, 40, 48-51]
  - Obstetrician-led models, meanwhile, confer more clinical and trust-related benefits for high-risk pregnancies where greater monitoring and higher chance of medical intervention is more likely.[22, 31, 32, 36]
- The majority of literature published focuses on models of care that are midwife-led or involve midwives in their staff mix. This literature identifies that these models have strong benefits.[5, 8-10, 13, 17, 24, 26, 28, 29, 36, 40, 50]

Specific barriers and enablers associated with **midwife-led care**, include:

- service design and characteristics, e.g. strong collaborative networks[4-11, 17, 22-24, 26, 28, 38, 40, 46]
- workforce characteristics, e.g. satisfaction and retention[5-7, 9, 13, 19-24, 28, 38-40, 46]
- women's characteristics, e.g. women's knowledge of and preferences for models of care[4, 7-10, 24, 28, 36, 37]
- governance, e.g. supervision and risk management [6, 7, 9, 13]
- implementation considerations, e.g. capacity and organisational culture to implement recommendations.[5, 6, 24, 26, 40]

Aboriginal health lens

- Literature highlights the significant maternal and neonatal health disparities that Aboriginal women and babies, especially those living in rural or remote communities, compared to non-Aboriginal women.[52] Evidence pertaining to rural maternity and neonatal care for Aboriginal people are embedded throughout the evidence check.

Evidence

Effectiveness

In the field, effective maternity and neonatal care in rural settings is understood to relate to accessible, safe care and the sustainability of services that are acceptable to women and staff. There is little available evidence that directly compares care models. Therefore, observational studies and service evaluations are included in this section as evidence. Therefore, the word 'effectiveness' may not necessarily relate to strong, empirical proof of clinical effectiveness.

Specific elements of care associated with effectiveness

- Service characteristics
  - Local or community-based models for low-risk pregnancies[5, 7, 9, 10, 12, 13]
  - Appropriate referral policies, support and clinical governance processes[6, 7, 9, 38]
  - Midwife-led services for low-risk patients[5, 7-10, 12, 21, 24, 26-29, 36, 53]
  - GP-led services for low-to medium-risk patients[34, 35]
  - Continuity of care or carer, which can result in increased women's satisfaction, antenatal and postnatal attendance, quality of care, staff satisfaction and safety,[5, 7-9, 11, 13-15, 26, 28, 36, 38, 46, 54] including for high-risk populations in regional areas, such as Aboriginal mothers[16]
  - Convenient and comfortable location with proximity to community support[8, 10, 24, 28, 30]
  - Community collaboration and co-design to create woman-centred care[4, 7, 8, 10, 14, 28, 55]
  - Includes community ownership for Aboriginal communities[10, 56]
  - Strong collaborative networks and relationships with secondary and tertiary referral services[5, 6, 9, 10, 17, 18, 38]
- Workforce characteristics:[6, 7, 11, 26, 28, 36, 38, 57]
  - Highly skilled
  - Strong communication skills for working with women, families and communities
  - Culturally safe and responsive
- Virtual care:
  - is associated with improved antenatal care, perinatal outcomes in rural settings and up to 75% of women being able to birth in their local hospital[17, 58-60]
  - can improve woman and provider satisfaction, particularly when it enables remote monitoring in-between less frequent face-to-face visits[58, 61]
  - can improve maternal mental health outcomes[62]
  - enables professional development via virtual-supported education.[17, 20]
- Professional development opportunities:
  - Associated with increased ability to maintain a sustainable workforce[7, 18-20]
  - Two studies reported professional development was associated with clinician confidence, improved relationships and clinical referral pathways[19, 20]

Models of care with demonstrated benefits

- Midwife-led models are also referred to as Midwifery Group Practice and Caseload.
- **Midwife-led models** of care have been researched more than other models. They have been associated with overarching benefits for women in rural settings and with low-risk pregnancy, as well as for the health workforce and health system. They:
  - encompass the key service and workforce characteristics associated with effectiveness
  - are associated with good maternal, obstetric and perinatal outcomes for women in rural settings[5, 7-10, 12, 21, 24, 27, 29, 53, 63]
  - have been associated with safe care, staff retention and satisfaction for all stakeholders when implemented in NSW.[13]
- **GP-led models** have little research specifically addressing their effectiveness; however, they are common in rural areas and known to:
  - have favourable clinical safety and clinical outcomes especially for women with low- to medium-risk or with GPs with enhanced surgical skills[31-35]
  - provide continuity of care as women can consistently see the same GP throughout their pregnancy[11, 36]
  - enable access to local care.[11, 36]
- One small study identified that **group prenatal care** (compared to traditional, predominantly one-on-one prenatal care) was associated with lower rates of maternal smoking and higher rates of breastfeeding.[64]

Safety

A lack of rural access to high acuity capabilities has been associated with clinician and governance-level concerns around increased clinical risks.[6, 7, 22-25]

Local birthing services in rural areas have demonstrated safety outcomes for low-risk pregnancies,[5, 7-9, 24, 26-29] while areas that have no birthing capabilities have been criticised for:

- being associated with safety concerns such as women giving birth on route[6, 7, 26, 30, 65]
- prioritising low probability clinical risks over families' practical, social and cultural needs and psychosocial impacts.[6, 7, 22-24, 26, 30]

Enablers to safety

- Model of care
  - Midwife-led models
    - Associated with high levels of maternal screening and satisfaction, and safe obstetric and perinatal outcomes for low-risk women, e.g. low intervention and normal vaginal birth, less adverse neonatal outcomes, less maternal stress and anxiety.[5, 7-9, 24, 26-29]
    - Found to provide culturally safe, high-quality care for Aboriginal women.[8, 28, 29, 56]
    - With regard to general evidence, a Cochrane review not specific to rural settings, found that women enrolled in midwife-led models are less likely to have high-risk births and interventions, such as caesarean section, instrumental birth or episiotomy.[3]
  - Caseload midwifery models

    - Associated with high levels of quality and safe care, including improvements in rates of spontaneous labour, augmented labour, elective and emergency caesareans[3, 13, 66]
  - Medical models
    - Provide access to all service capabilities (e.g. emergency caesarean)[22]
    - High levels of documented safety[6]
  - Hybrid models (where care is in partnership with a caseload midwife and the woman's chosen obstetric doctor, plus or minus shared care with a GP)[67]
    - Allow for provision of a high quality and safe maternity services
  - Aboriginal-led models[10, 56]
    - High rates of antenatal care participation
    - Low rates of birth intervention and perinatal mortality
    - Smoking cessation[68]
  - Service characteristics, design and planning
    - Ensuring services include midwives in their skill mix is associated with improved maternal care, obstetric and perinatal outcomes.[17, 21]
    - Midwifery services being locally available has been associated with increases in: [8, 28]
      - antenatal screening rates
      - antenatal care attendance
      - likelihood of better birth outcomes.[5, 6, 8-10, 12, 13]
    - Good clinical governance for risk management, e.g, case review, supervision, management support, contingency care plan development[5, 6, 9]
    - Strong collaborative networks and relationships with secondary and tertiary services aids efficient referral of high-risk women.[5, 6, 9, 12]
    - Virtual care utilisation
      - associated with improved service access and antenatal care management[17, 20]
      - associated with better obstetric and perinatal outcomes.[17, 20]
- Workforce characteristics:
  - Having an Aboriginal workforce strengthens cultural safety and security.[7, 10, 56]
  - Sufficiently sized and appropriately skilled workforce is associated with better outcomes for women, their families and communities.[6, 9, 26]
  - Clinicians who undertake professional development have:[19, 20]
    - improved confidence and skills for safer maternity care
    - better management of maternity emergencies
    - improved clinical referral networks.

Barriers to safety

Women in rural areas with reduced access to maternity services are disadvantaged compared to women in metropolitan centres,[69] and are more likely to experience:

- worse maternal and perinatal clinical outcomes such as preterm birth, babies born before arrival or low birth weight [18, 22, 26, 39, 65]
- psychosocial consequences including stress, fear, anxiety, and the loss of cultural and spiritual dimensions of birth.[7, 18, 22, 26, 28, 36, 37, 65]

Barriers to safety include:

- a lack of support networks for lower capability services to operate safely[6, 7, 22]
  - insufficient, locally accessible services, which is associated with:
  - increased babies born before arrival at a healthcare facility (i.e. at unplanned homebirth or on route) [26, 65]
  - women avoiding antenatal care, not adhering to facility transfers or presenting late in labour[9, 15, 22]
  - long journeys and relocation (which can be associated with maternal and family stress and separation, birth on route and increased birth complications[7, 22, 23, 26, 28, 30, 36, 65, 70, 71]
- barriers to Aboriginal cultural safety reported in qualitative research have included: power dynamics, lack of choice and control occurring within the context of histories of colonisation and decolonisation.[72]

Sustainability

The sustainability of maternity and neonatal services in rural settings is important to ensure that women always have accessible and quality services.

Enablers to sustainability

- One of the main enablers to service sustainability is a facility having sufficient birth rates to justify remaining open.[43, 47]
- Models of care
  - Caseload models are associated with increased workforce satisfaction and staff retention.[5, 13, 24, 26]
  - Hybrid models of care: where care is in partnership with a caseload midwife and the woman's chosen obstetric doctor plus or minus shared care with a GP. Such models, trialled in South Australia leverage existing infrastructure and staff from local areas to remain sustainable and incorporate continuity of care.[67]
- Service design and planning
  - Primary maternity units with midwifery-led models[6, 10]
  - Strong collaborative networks and communication between primary, secondary and tertiary services, both for clinical support and efficient referrals[5, 6, 9, 10, 12, 17, 44]
  - Rural birth indexes (RBI) enable service planning to be based on community needs and what will be suitable for that area and thus sustainable.[7, 73]
  - Clear inclusion criteria for local births, ability to provide obstetric services, or polices and logistics in place to quickly transfer women to facilities with surgical capabilities.[43, 44]
- Workforce characteristics
  - Skilled, confident, satisfied and adequately sized workforce[5, 6, 24, 26, 40, 43, 44, 74]

  - Dedicated, supportive and collaborative workforce[5-7, 40]
  - Dedicated recruitment and retention strategies, e.g. student programs which place staff in rural and regional areas upon graduating, overseas graduates, increased training positions/programs, funding incentives[5, 7, 17, 38-40]
  - Professional development program and opportunities are associated with upskilling, satisfaction and retention.[18-20]
  - These strategies have also been demonstrated to prevent and manage burnout across other (non-rural) maternity settings in Australia.[42]

Barriers to sustainability

- Insufficient local staff numbers:[41]
  - impacts provision of midwife-led models of care[6, 24, 26, 40]
  - creates difficulties releasing staff for professional development.[20, 26, 28]
- Difficulties recruiting health workforce can be associated with:
  - lack of opportunity to work in preferred model of care[6, 7, 46] or location[28]
  - fear of high levels of responsibility and burnout in Primary Maternity Units and midwife-led models [6]
  - stringent accreditation and staff eligibility requirements[6, 21, 28, 39]
  - decreased available staff who are trained and registered as dual nurse/midwives.[6, 7]
- Difficulties retaining a skilled health workforce include:
  - high workload, stress and burnout-[6, 7, 25, 45, 46]
  - dissatisfaction in dual nurse and midwife roles or roles with narrow scopes of practice-[7, 46]
  - deskilling and lack of confidence in skills-[6, 7, 26, 46]
  - poor succession planning for outgoing staff.[6, 7]
- Service planning and characteristics include:
  - insufficient birth numbers to sustain birthing services[6, 47]
  - facilities without (or not located near) caesarean capability are less likely to retain birthing services.[26, 47]

Table 1: Benefits of various maternity models of care in rural settings

	Clinical benefits (women)	Non-clinical benefits (woman)	Clinician benefits	Economic benefits
GP(O) models	• Clinical safety, especially with GPs with enhanced surgical skills[31-33] • Provides safe care for low-to-medium risk women:[34, 35] ○ including for small surgical procedures[51]	• Provides continuity of care [11, 48] • Holistic[11] • Aboriginal cultural safety[11] • Enables personal, local care [34, 36, 49] • High levels of satisfaction[49] • Reduced need for transfers to higher-acuity services (GPs with advanced training compared to general surgeons or GPs without additional training)[51]	• Job satisfaction for GP-obstetricians[11, 48] • GP-obstetricians' scope-of-practice is adaptable to community needs[11, 48, 75]	• Antenatal care provided by GPs is common-wealth funded, which represents a cost saving to state services
Midwife-led models	• Lower transfer rates compared to other similar units[9]	• Provides continuity of care[50] • Increases local antenatal visits[8] • Enables personal, local care [36] • Culturally safe and responsive for Aboriginal women[28] • High satisfaction with care[9, 24, 26, 28, 40, 50] • Builds trust and relationships between women and clinicians[5, 7, 28] • Enhances autonomy care[24, 28] • Improved confidence in newborn care at home[28]	• High job satisfaction[40]	• Efficient and cost effective [24, 26, 29]
Caseload midwifery models (additional benefits)	For women with low-risk pregnancies: • comparable clinical outcomes to national data[5, 13]	• Women centred care[13] • Continuity of care and comfort in having a known midwife during labour[13, 67, 76] • Decreases maternal stress and anxiety[24] • Hybrid models where caseload midwifery works together with GPs and obstetricians are associated with sustainable services[67]	• Enables flexible, autonomous working arrangements[5, 24] • Greater midwife job satisfaction and decreased burnout[13, 24, 26]	
Obstetric-led model	• Provides safer care for women at higher risk levels[31, 32]	• Women associate model with safety and trust due to clinical capabilities[36] • Models involving GP-obstetricians promote continuity of care[67]		

Table 2: Enablers and barriers to providing rural and remote maternal and neonatal services

	Enablers	Barriers

Service design and characteristics	• Low risk* eligibility criteria enables eligible women easier access to local services[5-7, 9, 10]
	• Strong collaborative networks across secondary and tertiary referral services[5-7, 9, 17]
	• Hybrid models that leverage existing sustainable resources and staff[67]
	• Service linkages between Aboriginal community health services, including Aboriginal Community Controlled Health Services or Aboriginal Medical Services[4, 8, 11, 28]
	
	*See Background for definitions
		• Loss of skilled workforce and inadequate succession planning[6, 7, 26, 40]
		• Staff working in midwife-nurse split posts, which can lead to:[6, 7, 22, 46]
		  ○ deskilling in midwifery care
		  ○ inability to fully staff midwife models of care
		  ○ recruitment challenges
		• Lack of formal professional development pathways for local midwives[7]
		• Logistical issues associated with outreach midwifery care[40]

Workforce characteristics	• Health workforce commitment, support and involvement[9, 16, 22, 24, 40] • Individual staff and organisational flexibility in trialling new models[6, 9, 23, 24, 40] • An increased, satisfied and well-qualified maternity workforce retained over time[5, 6, 24, 40, 48] • Employment of midwives with eligibility for Medicare billing for cost-effectiveness[6] • Funding incentives for health workforce to deliver new models of care[5, 40] • Local professional development education and training, including cultural education[7, 10, 16, 19, 20, 28, 39, 40]	• GPs may not refer women into local midwifery models of care without financial incentives[6] • Challenges with recruitment and retention[6, 7, 21, 28, 39, 46, 48] • Stringent requirements for midwife registration[6, 21, 28, 39]
Consumer characteristics	• Community input, control and support[4, 7-10, 24, 28, 36]	• Lack of community input and poor relationship between health services and community[7, 24] • Women's trust in traditional medical model due to safety concerns[37]
Governance	• Appropriate support and clinical supervision, risk management, referral policies, guidelines and clinical governance processes[6, 7, 9, 16]	• Insufficient professional networks and clinical governance[6, 7, 13]

Aboriginal communities	• Implementing models of care which focus on continuity of care and/or carer
	• Clear documentation and consensus on governance structure
	• Sufficient, appropriate and ongoing funding for service delivery, monitoring and evaluation, including in the longer term
	• Appropriate and sustained support for:
	  ○ Aboriginal women to undertake an education program that leads to registration as a midwife
	  ○ non-Aboriginal staff to upskill in two-way partnerships and culturally responsive ways of working
	• Local innovation and leadership from committed staff and stakeholders
	• Services built on a culturally appropriate knowledge base and philosophy[16, 56, 57, 72]
		• International definition of a midwife and the competency standards required for providers of clinical maternity care in Australia
		• Partnerships and capacity building approaches increase the cost of services
		• Poor continuity of care associated with:
		  ○ services being co-provided by government and non-government organisations
		  ○ staff retention and changes
		  ○ relocation for birth[56, 72]

Implementation	Not applicable	• Organisational cultural and collaborative issues with introducing new models of care into services that have a history of adopting medical models[5, 24] • Lack of translation of frameworks and guidelines into practice[26] • Lack of awareness of research on efficacy and benefits of midwifery-led models[6, 24] • Midwives' fears of change away from medical model and the idea of being on call[24] • Concerns around time and staff capacity to implement new models[40]

Characteristics of level 3 services in NSW

Maternal and neonatal service levels:[77]

- Maternity and neonatal service capability levels range from:
  - Level 1 (antenatal and postnatal care but no planned birthing or neonatal care unit)

    through to
  - Level 6, the 'highest' (most complex) level of care, e.g. specialist health district maternity and neonatal care.
- The levels build on each other, which means services will meet the requirements at their designated level, as well as those outlined for lower levels.
- Each Level 6 maternity and Level 5/6 neonatal service in NSW and the ACT is linked with a designated group of maternity and neonatal services of lower service capability. This is to support those lower level services. The Tiered Networking Arrangements for Perinatal Care in NSW policy outlines the pathways and processes for consultation, referral, transfer of care and/or shared care.[78]

Level 3 services:[77]

- Provide planned care as for Level 2 and in addition:
  - antenatal, intrapartum and postnatal care for other women following consultation and development of a management plan with a suitably qualified clinician within the Tiered Perinatal Network
  - collaborative care is provided by midwives, GP obstetricians and/or specialist obstetricians, particularly for more complex cases
  - intrapartum care for women from ≥37+0 weeks gestation, including induction of labour, vacuum and/or forceps births, vaginal birth after caesarean section
  - provide Common and Intermediate obstetric procedures, e.g. planned Lower Segment Caesarean Section (LSCS) ≥39 weeks gestation − refer to Guide to the Role Delineation of Clinical Services.
- Should not provide planned care for:
  - planned birth before 37+0 weeks gestation or after 42+0 weeks gestation
  - medical induction of labour or augmentation with oxytocin following previous caesarean section
  - caesarean section for major placenta praevia
  - planned birth of women with a multiple pregnancy.

Level 2 services:[77]

- Provide planned care as for Level 1 and in addition:
  - intrapartum care from ≥37+0 weeks gestation
  - may provide care to other women in consultation with a suitably qualified clinician in the relevant Tiered Perinatal Networks (TPNs)
  - antenatal care provided in either a shared care arrangement with GPs or GP obstetricians or midwives in consultation with medical officers within their TPNs when required.
- Should not provide planned care for:

- spontaneous labour and birth before 37+0 or after 42+0 weeks gestation
- induction or augmentation of labour
- elective caesarean section
- vaginal birth after caesarean section
- care of any woman requiring continuous electronic foetal monitoring.

Background

Women living in rural and remote areas can lack access to a similar level of maternity services as metropolitan areas. Having fewer services available in rural areas can be driven by concerns regarding the safety of services that cannot provide emergency caesareans or care to high-acuity, high-risk women.[7, 22, 23, 26, 30, 41, 47, 79]

Lack of local services, however, increases access barriers for women, families and communities, It can decrease women's and staff satisfaction and does not align with the principles of women-centred care, as outlined in the Woman-centred care: Strategic directions for Australian maternity services.[7, 26, 36, 37, 40, 65, 80, 81]

Expert opinion has also highlighted the importance of midwife-led care being supported culturally, with reciprocal relationships encouraged across whole jurisdictions in order to support rural services.[82] These cases highlight that sustainable models of care for maternal and neonatal services requires thorough investigation and planning based on evidence and stakeholder experiences.

The NSW parliamentary inquiry in 2021, into rural and remote health services, drew further attention to this issue. The submissions raised concerns about safe staffing ratios for nurses and midwives in rural and regional areas, as well highlighting the complexities of providing:

- continuity of care
- staff leave cover
- scope of practice
- access to professional development.

The recommendations included implementing a rural workforce recruitment and retention plan, optimising staffing numbers, supporting training and professional development and implementing the midwifery continuity of care model throughout rural, regional and remote NSW.[83-85]

A national consensus framework published by multiple professional associations in 2021 also highlighted that, "Decisions about … rural maternity services must be evidence-based, transparent, subject to independent impact assessment and taken in consultation with the local community."[14]

Definitions:

Low-risk pregnancies:[86, 87]

- Low-risk pregnancies are those where healthy pregnant women have had no serious complications identified prior to the spontaneous initiation of birth and for which the birth is expected to be medically uncomplicated.
- However, a 'low level of risk' in the context of a level 3 NSW service may also refer to women with medium or complex risk factors, whose pregnancies can still be managed safely via collaboration with other units and specialists.
- Low risk is a dynamic condition, one subject to change over the course of the antepartum, intrapartum and postpartum periods. The change can be acute and unexpected.
- Low risk can also be defined regionally or locally within the context of collaborative care. Rates of neonatal and maternal adverse events are low if events are triaged appropriately with skilled clinicians.

Table 3: Models of care

- The Australian Institute of Health and Welfare Maternity models of care in Australia, 2023 report highlights that over 900 models of care for maternity and neonatal care exist in Australia. Of these, a wide range exist in rural and remote NSW and key models are outlined in this table.[1, 2, 6, 7, 13, 29, 36]

		Antenatal care	Intrapartum care	Postnatal care
Public hospital maternity care	11%	• Antenatal care is provided by midwives and/or doctors in onsite or outreach clinics • Models can cover a range of clinics, from those targeted at low-risk women and run by midwives, to those led by public specialist obstetricians for women with specific obstetric complexities, e.g. gestational diabetes, multiple pregnancy or next birth after caesarean section	• Intrapartum (labour and birth) and postnatal care is provided in hospital by midwives in collaboration with doctors as needed	• Intrapartum (labour and birth) and postnatal care is provided in hospital by midwives in collaboration with doctors as needed
Hybrid / shared care	15%	• Antenatal care is provided by a community maternity service provider (doctor and/or midwife) in collaboration with hospital medical and/or midwifery staff, under an established agreement. It can occur in the community and in hospital outpatient clinics. This would usually include an agreed schedule of antenatal care between the two providers	• Intrapartum and early postnatal care usually takes place in the hospital, by hospital midwives and doctors, often in conjunction with the community doctor or midwife (particularly in rural settings)	
Midwifery group practice caseload care (The term midwifery group practice is often synonymous with caseload midwifery)	15%	• Care is provided within a publicly funded caseload model by a known primary midwife, with secondary backup midwives providing cover and assistance, and collaboration with doctors in the event of identified risk factors	• Intrapartum care in a hospital, birth centre or home	• Antenatal care and postnatal care are usually provided in the hospital, community or home

		• More likely to have a target group of low risk or normal pregnancy		
Private obstetrician (specialist) care	11%	• Antenatal care is provided by a private specialist obstetrician	• Intrapartum care is provided in either a private or public hospital by the private specialist obstetrician in collaboration with hospital midwives	• Postnatal care is usually provided in the hospital by the private specialist obstetrician and hospital midwives and care by midwives may continue in the home, hotel or hostel
General practitioner obstetrician care	4% (more likely in rural areas)	• Antenatal care is provided by a GP obstetrician	• Intrapartum care is provided in either a private or public hospital by the GP obstetrician in collaboration with the hospital midwives	• Postnatal care is usually provided in the hospital by the GP obstetrician and hospital midwives

- In some cases, midwives will work within services where they are employed as midwives and as nurses, often on different rostered days of the week.
- In other cases, women may see private midwives who are medicare-eligible.[88]

Limitations

Limited available evidence, and particularly robustly designed research evidence, was identified on general practitioner obstetrician models of care, despite additional targeted searches to ensure balance in reporting on various models. It is noted that absence of evidence does not necessarily indicate poor evidence but rather reflects a known gap in the published research literature, as highlighted and agreed by the expert clinicians who reviewed this Evidence Check.

Appendix

Methods

Critical Intelligence Unit Rapid Reviews are not intended to be exhaustive systematic reviews (multiple databases, formal critical appraisal, etc) but instead rapid, responsive evidence summaries:[89]

- search terms for PubMed developed by CIU and checked by the NSW Agency for Clinical Innovation (ACI) Maternity and Neonatal Network
- restricting the included literature to the highest levels of evidence available for a particular topic
- single reviewer screening and data extraction, with consultation in case of any uncertainty
- review of evidence check by CIU Manager and Executive Lead, ACI Maternity and Neonatal Network, clinical expert advisory group, and at least one external peer reviewer.

CIU evidence checks include searching for literature specific to Aboriginal and Torres Strait Islander people to highlight any relevant literature or gaps in the literature as one means to work towards reducing the gap between Aboriginal and non-Aboriginal people.

PubMed search terms

("infant, newborn"[MeSH Terms] OR "infant*"[Title/Abstract] OR "newborn*"[Title/Abstract] OR "neonat*"[Title/Abstract] OR "pregnant women"[MeSH Terms] OR "pregnan*"[Title/Abstract]) AND ("maternal health services"[MeSH Terms] OR "infant health"[MeSH Terms] OR "prenatal care"[MeSH Terms] OR "postnatal care"[MeSH Terms] OR (("matern*"[Title/Abstract] OR "neonatal"[Title/Abstract] OR "prenatal"[Title/Abstract] OR "postnatal"[Title/Abstract] OR "antenatal"[Title/Abstract] OR "childbirth"[Title/Abstract]) AND ("models, organizational"[MeSH Terms] OR "delivery of health care, integrated"[MeSH Terms] OR "model of care"[Title/Abstract] OR "models of care"[Title/Abstract] OR "pathway"[Title/Abstract] OR "service*"[Title]))) AND ("Rural Health Services"[MeSH Major Topic] OR (("rural"[Title/Abstract] OR "regional"[Title/Abstract] OR "remote"[Title/Abstract]) AND ("communit*"[Title/Abstract] OR "location"[Title/Abstract] OR "setting"[Title] OR "area*"[Title]))) AND ("humans"[MeSH Terms] AND "english"[Language] AND 2012/01/01:2024/12/31[Date - Publication])

1,310 hits on 20 March 2024

Aboriginal health lens search terms

(("infant, newborn"[MeSH Terms] OR "infant*"[Title/Abstract] OR "newborn*"[Title/Abstract] OR "neonat*"[Title/Abstract] OR "pregnant women"[MeSH Terms] OR "pregnan*"[Title/Abstract]) AND ("maternal health services"[MeSH Terms] OR "infant health"[MeSH Terms] OR "prenatal care"[MeSH Terms] OR "postnatal care"[MeSH Terms] OR (("matern*"[Title/Abstract] OR "neonatal"[Title/Abstract] OR "prenatal"[Title/Abstract] OR "postnatal"[Title/Abstract] OR "antenatal"[Title/Abstract] OR "childbirth"[Title/Abstract]) AND ("models, organizational"[MeSH Terms] OR "delivery of health care, integrated"[MeSH Terms] OR "model of care"[Title/Abstract] OR "models of care"[Title/Abstract] OR "pathway"[Title/Abstract] OR "service*"[Title]))) AND ("Rural Health Services"[MeSH Major Topic] OR (("rural"[Title/Abstract] OR "regional"[Title/Abstract] OR "remote"[Title/Abstract]) AND ("communit*"[Title/Abstract] OR "location"[Title/Abstract] OR "setting"[Title] OR "area*"[Title]))) AND ("humans"[MeSH Terms] AND "english"[Language] AND 2012/01/01:2024/12/31[Date - Publication])) AND ("indigenous"[Title/Abstract] OR "aboriginal"[Title/Abstract] OR "first nation*"[Title/Abstract] OR "native*"[Title/Abstract]) Filters: from 2020 – 2025

26 hits on 4 August 2025

Google and Google scholar search terms (only the first 3 pages of search results were screened)

"Maternal care", "neonatal care"; "rural", "regional", "remote"; "*high income country name*"

Inclusion and exclusion criteria

Inclusion	Exclusion
• Published in English • Published since 2012 • Population: Pregnant women, mothers and newborns living in select high-income countries who are members of OECD and with similar health systems or rural population density • Intervention: Maternal and neonatal care models in rural settings • Comparison: no comparison or other types of care models in rural settings • Outcomes: Safety, effectiveness, benefits, usefulness, barriers, enablers and other relevant outcomes • Study types: – Review studies with systematic search strategy and methods – Randomised or non-randomised clinical trials – Before and after studies, time series studies with/without a comparison group – Retrospective chart review studies – Interventional/evaluative studies presenting quantitative data – Evaluative studies with quantitative or qualitative assessment of outcomes with/without a comparison group – Grey literature such as guidelines and consensus statements – Letters, comments, editorials, study protocols, conference abstracts	• Not in English • Published prior to 2012* • Studies that do not meet PICOS criteria *Two exceptions made in order to include important policy documents that have not been updated since their publication

N.B. In some cases, studies from regional or even metropolitan areas have been included in order to highlight information that is unavailable in the rural services literature, however, this is noted explicitly.

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Published June 2025. Next review 2030. ACI/D25/220-09 SHPN (ACI) 250542 ISBN 978-1-74231-160-9