

'Birthing on Country' maternity service delivery models: a rapid review

Sue Kildea, Vicki Van Wagner



An **Evidence Check** review brokered by the Sax Institute for the Maternity Services Inter-Jurisdictional Committee

March 2012

saxinstitute



Maternity Services Inter Jurisdictional Committee

This rapid review was brokered by the Sax Institute for the Maternity Services Inter-Jurisdictional Committee, and was funded by the Australian Health Ministers' Advisory Council.

This report was prepared by:

Sue Kildea¹, Vicki Van Wagner²

1. Director, Midwifery Research Unit, Australian Catholic University and Mater Medical Research Institute
2. Associate Professor, Midwifery, Ryerson University, Toronto Ontario, Canada

March 2012

© Sax Institute 2013

This work is copyright. No part may be reproduced by any process except in accordance with the provisions of the *Copyright Act 1968*.

Enquiries regarding this report may be directed to:

Knowledge Exchange Program
Sax Institute
Level 2, 10 Quay Street Haymarket NSW 2000
PO Box K617 Haymarket NSW 1240 Australia
T: +61 2 95145950
F: +61 2 95145951
Email: knowledge.exchange@saxinstitute.org.au

Suggested Citation:

Kildea S, Van Wagner V. 'Birthing on Country' maternity service delivery models: an Evidence Check rapid review brokered by the Sax Institute (<http://www.saxinstitute.org.au>) on behalf of the Maternity Services Inter-Jurisdictional Committee for the Australian Health Ministers' Advisory Council: Sydney, 2013.

Disclaimer:

This Evidence Check review was produced using the *Evidence Check* methodology in response to specific questions from the commissioning agency. It is not necessarily a comprehensive review of all literature relating to the topic area. It was current at the time of production (but not necessarily at the time of publication). It is reproduced for general information and third parties rely upon it at their own risk.

CONTENTS

EXECUTIVE SUMMARY	5
Background	5
Methods.....	5
Results	5
Review question 1	6
Review question 2	8
Review question 3	9
Conclusion	11
1 Background	13
Policy background	14
This review.....	14
2 Methods	16
3 Results	18
Review question 1.	18
Review question 2.	22
Review question 3.	24
4 Conclusions and recommendations	28
5 References	30
6 Appendices	35
Appendix 1.Glossary of terms	35
Appendix 2. Action 2.2.3. National Maternity Plan 2011	37
Appendix 3. Level of evidence	37
Appendix 4. Database search information	39
Appendix 5. Components of Birthing on Country models	40
Appendix 6. Evaluation of the Birthing on Country models	50

EXECUTIVE SUMMARY

Background

The National Maternity Services Plan¹ was endorsed by the Australian Health Ministers in 2010. Action 2.2 of this Plan aims to: Develop and expand culturally competent maternity care for Aboriginal and Torres Strait Islander people. A key deliverable is Action 2.2.3: To undertake research into international evidence-based examples of Birthing on Country programs to inform the development and implementation of a national Birthing on Country service delivery model that is culturally competent and improves health outcomes for Aboriginal and Torres Strait Islander mothers and babies. For the purposes of this review 'Birthing on Country' was defined as: maternity services designed and delivered for Indigenous women that encompass some or all of the following elements: are community based and governed; allow for incorporation of traditional practice; involve a connection with land and country; incorporate a holistic definition of health; value Indigenous and non-Indigenous ways of knowing and learning; risk assessment and service delivery; are culturally competent; and developed by, or with, Indigenous people.

This review is limited to Indigenous communities of developed countries such as Australia, New Zealand, Canada, and the United States of America. The review questions were:

1. What are the components of maternity service delivery models that have been implemented for Indigenous mothers and babies?
2. Which of these models have been most effective? And why? (Only include models that have been evaluated)
3. What have been the barriers and facilitators of the successful implementation and sustainability of these models? And why? Were the barriers resolved?

Methods

A search strategy utilised 17 databases to identify 2,413 English language articles/reports published from 1985 to November 2011 (Appendix 2). Titles were reviewed to ascertain potential relevance with 362 abstracts downloaded and 200 full text articles/reports kept on file. Of these, 165 were considered relevant to the topic (2 reviewers); with 95 chosen for review inclusion (2 reviewers). Of these, only 18 involved evaluations of services that were deemed to have high relevance to the review questions. The highest level of evidence attained by any study was III-2 (Appendix 3). Most of the 18 evaluations were from Australia (n=13). The largest study was a Canadian study and there was only one from the United States and none from New Zealand.

Results

There is a dearth of high quality research in this area. Most studies were limited by small numbers, short-term evaluation data and a lack of comparison data. Interventions have often been based on research that has improved maternal infant health (MIH) outcomes in other populations with variable success. Interventions have often been multi-faceted making evaluations complex. A widespread desire to see measurable changes in MIH outcomes, coupled with a relatively short

time frame, and/or insufficient funding for evaluation has at times led to claims that are likely to be overstating program effectiveness. This is not to say that the effectiveness would not be evident if there was a longer timeframe for the evaluation. There was little evidence to link the interventions to the outcomes in some studies; and attempts to replicate the findings in other sites, has not always been successful. Limitations were often due to the retrospective nature of some of the study designs.

The wide variation in design, reported outcome data and quality make it difficult to combine results to draw conclusions. Two previous reviews have highlighted the common factors associated with successful programs, which were aimed at improving Aboriginal and Torres Strait Islander MIH in Australia.^{2,3} Broadening this review to include other countries has added valuable information with the largest study included being conducted in the remote Inuit setting. This study is also the only one that could be seen to meet all criteria in the review definition of Birthing on Country. Applicability to the Australian setting is likely. Although there is some difference between the Inuit and Australian Aboriginal communities the similarities are striking. Both are vast countries with small Indigenous communities scattered across remote areas that become isolated in bad weather. Living conditions and literacy and numeracy rates in the remote Canadian communities are not dissimilar to Australian remote communities. Recognition of this has led to a competency-based approach to training and the development of a career pathway that starts with unskilled maternity workers employed in the model and paid time for training and education. The onsite midwifery training is considered essential to the success and sustainability of this model.

The review yielded the following information in answer to the review questions.

Review question 1

What are the components of maternity service delivery models that have been implemented for Indigenous mothers and babies?

In summary, the list below builds on the key elements of successful programs identified previously² to answer Review question 1. Not all services had all components however the following overview presents the ones that were more often associated with success.

Governance and ownership

- Aboriginal leadership and control (though this was not associated with all the successful services it appears very important in some)
- Collaborative community development approach to establishment with strong leadership, shared vision and commitment of staff
- Aboriginal advocacy group involved for cultural guidance and oversight (remunerated and roles described)
- Clinical governance framework.

Philosophy

- Respect for Aboriginal and Torres Strait Islander people and their culture; and integration of local Indigenous knowledge with western knowledge within an effective partnership approach
- A service that values connection to land and country
- Overarching philosophy of 'women's business'

- Respect for family involvement, including men (some services), in health and caring for children
- Continuity of care and provision of known caregivers across the continuum of care including antenatally, in labour; and in some cases in the first year of the infants life/continuing care even when the woman moves out of area/a focus on relationships
- Valuing Aboriginal and Torres Strait Islander staff, and female staff, with local employment that takes a capacity building approach and incorporates mentoring, training and education
- A holistic definition of health, thus providing a broad spectrum of services that integrate with other services (e.g. hospital liaison, allied health, child health, general medical practice) and link directly into tertiary service if required.

Service characteristics

- Culturally competent service and staff
- Community based
- A specific service location intended for women and children
- Designated ongoing funding for the service
- A welcoming and safe service environment with flexibility in service delivery and appointment times; a focus on communication, relationship building and development of trust
- A service that provides high quality care integrated with other services and incorporates outreach activities, home visiting with follow-up care, provision of transport, child friendly/care, mothers groups, parenting classes targeting young women, postnatal depression support group, playgroups, early intervention and prevention including brief interventions, 24 hour call, early childhood care and family orientation to services
- A risk screening process that is seen as a social, cultural, and community process rather than simply a biomedical one; with risk assessment criteria and interdisciplinary perinatal committee
- Effective information technology services
- Integrated with tertiary services with clear referral pathways and formalised networks.

Training and education

- A partnership approach incorporating 'two way learning'
- Having an appropriately trained workforce with support from interdisciplinary team
- Competency-based approach to training, with a career pathway that starts with unskilled maternity workers employed in the model that receives on-site training in MIH and midwifery.

Monitoring and evaluation

- Designated funding for monitoring and evaluation
- Continuous quality assurance framework
- Audit activities that include a recall register.

The figure below provides a graphical presentation of these key points.



Figure 1. Components of maternity service delivery models for Indigenous mothers and babies

Review question 2

Which of these models have been most effective? And why?

The most effective Birthing on Country model reported in the literature is the Inuulitsivik Midwifery Service. It is the only model that met all criteria in the review definition. It is a community based and Inuit-led initiative on the Hudson coast of the Nunavik region of northern Quebec.^{4,5} The service supports on-site birthing centres and midwifery training in three remote communities, many hours from a caesarean section facility. It commenced in the first community in 1986, is a sustainable model, and has excellent MIH outcomes.

The key factors thought to contribute to its success include:

- Inuit leadership – the Board of the Inuulitsivik Health Centre is Inuit
- Community involvement – the service was initiated by, and is strongly supported by, the community
- Midwifery-led care for all women and newborns

- Broad scope of practice for midwives including community health and emergency skills (the scope is similar to the scope of practice of remote area nurse midwives in Australia)
- Local education of midwives ensuring that care is provided within culture and language and is sustainable
- Local students supported financially and seen as valuable team members
- Seeing local birth as an improved health outcomes in and of itself
- Integrating Indigenous and non-Indigenous approaches to birth
- Local culture of normal birth supported by midwifery with use of technology as needed to maximise safe birth in the community
- Collaboration with 'southern' (non-Inuit) midwives and midwifery organisations
- Collaboration with the health care team i.e. local and tertiary physicians and local nurses
- Risk assessment in a cultural and social context.

This model is described in detail in the report. Although this model is in Canada, the context, geography and challenges have more similarities with the remote Australian setting than many urban Australian settings have.

Review question 3

What have been the barriers and facilitators of the successful implementation and sustainability of these models? And why? Were the barriers resolved?

The key facilitators for the success and sustainability of programs are identified under review question one. The barriers to implementation and sustainability are addressed below using the same categories as those described in Review question 1. We provide some examples of how these have been overcome.

Governance

- Facilitating community participation and control of programs can be challenging. Clear documentation and consensus on the governance structure assists the process, as does appropriate remuneration to members, and the provision of transport and other logistical support. At Inuulitsivik there is an Inuit Board and the midwives are integrated into the governance structures. A council of physicians, dentists, pharmacists and midwives set clinical policy for the community hospital and health centres in each of the communities.

Knowledge base and philosophy

- The blending of Indigenous and western approaches to knowledge and care in a meaningful way that legitimises Indigenous knowledge is a challenging area. This requires ongoing Indigenous involvement in governance, leadership and evaluation; and requires acknowledgement and incorporation of social and cultural risk. Local education of Aboriginal midwives and maternity workers that incorporates learning about Indigenous approaches to birth is key. All midwifery education programs need to teach skills of cultural safety and competency/ two way working
- Working in partnership and providing a capacity building approach increases the scope of programs and makes them more costly to run. Many midwives have not worked in this way before and skilled knowledgeable clinicians are not always effective educators. Additionally, the international definition of a midwife and the competency standards required for providers of clinical maternity care in Australia become challenging points

This seems particularly so with the introduction of new MIH workers (Aboriginal MIH worker, Aboriginal Maternal Infant Care Worker, Aboriginal Health Worker), and particularly in tertiary hospitals. Role delineation, competency standards and scope of practice are not always clear with different training programs across the country. Consensus and clear documentation of program philosophy, scope and roles at all levels should be undertaken as collaborative project with all team members

- The overarching 'Women's Business' philosophy is a dynamic concept requiring local interpretation. Some services have remained 'women only' but are finding that younger women are increasingly wanting their partners present and involved in care. Many continue to report a preference for female care providers however some suggest that relationships of trust are more important than gender of caregiver
- Continuity of carer through the birthing episode is difficult when MIH services are based in non-government organisations; or women relocate for birth. Several models are working towards the provision of this. In Alice Spring the Aboriginal Medical Service has a MOU with the hospital with access agreements to assist staff to move with the women. A new model in Darwin (currently being evaluated and not yet published or reported on here) provides continuity of carer for women from remote settings any time they have to travel to town for birth. The team consist of midwives, Aboriginal health workers/student midwives, Strong Women Workers and a senior Aboriginal women, a coordinator and administration officer. Continuity of obstetric oversight is more challenging.

Organisation and delivery of services

- There must be sufficient, appropriate and ongoing funding for service delivery, monitoring and evaluation. Often the demand and perceived need is for a broader scope of services than what is provided, or budgeted for. A clear understanding of, and documented, program scope should be available to staff and service users alike
- Providing a wide spectrum of services is challenging with many services stating that child health and social work services should be integral to the program
- The structural and logistical difficulties of providing continuity of carer when based in the community or non-government organisations need to be addressed practically and in ways that are acceptable to the staff and community; and are cost effective. This may include overarching MOUs, regular meetings, increased use of IT facilitated or teleconference case management meetings. Very few are utilising videoconferencing facilities or software programs such as Skype effectively
- There can be high administration workloads with insufficient time taken for effective inter-cultural working, inter-agency networking, and collaboration. Case management can be onerous and time required often underestimated, especially if interagency support (e.g. housing) is required
- Scope of practice issues must be addressed with clear role delineation of all workers
- High staff turnover is mentioned as a challenging area across many of the reports. This is one of the reasons that communities have commenced local training and education (addressed below).

Training and education

- There must be; appropriate sustained support for Indigenous women to undertake MIH training and become midwives. For non-Indigenous staff there are often difficulties understanding 'two way working'. Resistance by some hospital staff to culturally responsive care has been documented, and is expressed in institutional racism. This can be also expressed in logistical issues, for example, a lack of resources or a designated space for Indigenous workers

- Non-Indigenous staff need training and support to understand the roles of Indigenous workers in their own right; with their own knowledge system. Some programs have highlighted a lack of understanding resulting in Indigenous workers being designated 'taxi drivers' for the women or 'midwifery assistants'
- Family and cultural commitments for Indigenous workers can make regular attendance challenging. Flexible employment models could overcome this but few have adopted an annualised salary approach for all staff members (usually only the midwives).

Monitoring and evaluation

- Data collection and the methods used must meet the needs of the service for ongoing monitoring and evaluation. The routine minimum perinatal data collection across Australia is insufficient to report on these models, or monitor the quality of these services. Many are devising their own databases or spreadsheets for local analysis.

Successful programs

- The successful programs have managed to overcome some or all of these barriers, often with local innovation and leadership from committed people. There are examples of successfully identifying supplementary funding sources and negotiating support and services at a multi-agency level. Services that have been built from the ground up seem to have remained sustainable. The challenge of distance has been overcome by careful risk screening and a broad role and scope of practice for midwives. Workforce challenges have been overcome by training locally and taking a long-term approach.

Conclusion

The review of the literature has shown that improvements in key MIH indicators can be realised through service redesign. Improvements in antenatal indicators, quality and quantity of care, MIH outcomes and service user satisfaction were evident. Active participation of the woman and her family in care suggest a service that is culturally responsive and key factors associated with this were continuity of carer, and known caregivers across the continuum of care including in labour; and in some cases in the first year of the infant's life. Broader roles for both AHW's and midwives were supported in some programs with Indigenous workers being a key factor in the acceptability of services. Involvement of Indigenous elders and services that were developed with the community, or by the community, were particularly well attended and appear sustainable. Incorporation of traditional midwifery knowledge and skills were considered essential to the success of some of these services. The importance of all stakeholders being aware of the limitation of the services from the beginning was acknowledged as being essential. The benefits of community-based birthing services, over and above the improvements in MIH outcomes, include:

- Community 'healing'
- Reduced family separation at critical times
- Reduced family violence
- Restoration of skills and pride
- Capacity building in the community
- Local training and employment
- Supporting community and family relationships
- Increased communication/liaison with other health professionals and service providers

- Comprehensive, holistic, tailored care.

In conclusion, the available evidence suggests that a Birthing on Country model of maternity care would most likely produce significantly improved MIH outcomes for Aboriginal and Torres Strait Islander women. The available evidence would support these models being established in any area; very remote, remote, rural, regional or urban. However, many people find the Birthing on Country terminology challenging and do not have a clear understanding of what it would mean or could look like. The risk associated with using this terminology is that there may be a lack of engagement from key service providers or government departments. This should be discussed at the workshop planned for later in the year. It is clear that a strong research and evaluation framework should be used to be able to report on the process, impact and outcomes of any such developments. Ideally, this would involve a longitudinal design that provides robust evidence and enables identification of the key factors for success, or failure; and clearly outlines how barriers and challenges are overcome. Key components could be developed into a minimum standards document that outlines the overarching governance structure; cultural competencies and requirements; core principles; recommendations for community liaison and participation; minimum resource, infrastructure and equipment requirements; staff competency requirements; support, training and education requirements; minimum data collection requirements with regular quality assurance audit and evaluation which incorporates service users views of the service; and risk assessment criteria. Additionally, a need for secure funding of the services and their evaluation over time is essential.

1 Background

The Indigenous populations of developed countries have lower living standards, higher rates of mortality and morbidity, greater risk factors for disease and poorer reproductive health outcomes when compared with their non-Indigenous counterparts; particularly those living in rural and remote areas.^{6,7,8} There are many contributing factors including: the enduring effects of colonisation, reflected in a higher burden of disease; and poverty, reflected in poor housing, lack of employment and reduced access to services.^{9,10,11} However, the disparities in outcomes between Indigenous and non-Indigenous Australians are wider than they are in comparable countries such as Canada, United States and New Zealand.^{6,7}

In Australia, significantly higher maternal and perinatal morbidity and mortality rates exist amongst the former group, for example maternal mortality (up to 5.3 times greater)¹², low birth weight infants (liveborn infants: 12.3% vs. 5.9%); preterm births (13.3% vs. 8.0%); and perinatal deaths (17.3 vs. 9.7 per 1,000) are all higher than their non-Indigenous counterparts.¹³ Risk factors for poor outcomes are much higher amongst Aboriginal and Torres Strait Islander women compared to non-Indigenous women, for example, teenage pregnancy (20.5% vs 3.5%) and smoking in pregnancy (50.9% vs 14.4%).¹³

The *National Strategic Framework for Aboriginal and Torres Strait Islander Health* proposes a unified, comprehensive approach to reducing disadvantage and closing the gap in health outcomes between Indigenous and non-Indigenous Australians.¹⁴ Six targets, selected as essential elements in closing the gap, and a number of strategic areas for action were identified, alongside a reporting framework. The key indicators for improving MIH include: improved antenatal care provision, alcohol and smoking reduction in pregnancy, reducing the rate of low birth weight babies, reducing the rate of teenage pregnancy and birth, and addressing the causes of maternal mortality and early childhood hospitalisations.¹⁴ The most recent Health Performance Framework Report shows that despite improvements in some areas (34% decline in perinatal mortality between 1999–2008), we are yet to see the expected improvements resulting from the 'Close the Gap' Campaign.⁹

Whilst some indicators for the health of Indigenous Australians (including those for mothers and children) have shown a sustained improvement over recent decades (e.g. teenage pregnancy rates),¹⁵ other work in this area suggests that change has not kept pace with changes in the health status of non-Indigenous Australians and hence, the relative gap between Indigenous and other Australians has actually increased.¹⁶ The Health Performance Framework Report reiterates the need to urgently develop targeted and innovative interventions.

A synthesis of Australian and international research has identified the following 17 potentially modifiable health-related and social factors to prevent adverse birth and infant outcomes: "alcohol use, antenatal care, birth spacing, breastfeeding, diabetes, family violence, home visits, hypertension in pregnancy, infection, nutrition, obesity, poverty, social and emotional wellbeing, Sudden Infant Death Syndrome/Sudden Unexpected Deaths in Infancy, smoking, social support and substance use".¹⁷ The number of modifiable risk factors calls for a public health approach to care provision, which employs targeted interventions in primary health care settings to reduce the prevalence of poor outcomes. Research in Queensland¹⁸ and Western Australia¹⁹ identified that the majority of Indigenous perinatal deaths are due to antenatal factors with significantly more potentially preventable deaths due to infection, preterm birth and sudden infant death syndrome. These are all amenable to targeted interventions with the Queensland authors recommending primary health care initiatives, to reduce the prevalence of low birth weight and preterm birth; and a public health approach inclusive of a domestic violence focus. Any alternative model for delivering MIH services to Aboriginal and Torres Strait Islander women and

their infants should incorporate strategies targeting the 17 modifiable risk factors and will require an intervention across the continuum of care from preconception to infancy.

Over the last 30 years there have been repeated consultations with Indigenous women across remote and rural Australia regarding the cultural responsiveness of birthing services which have documented their suggestions for improvement.^{20,21,22,23,24,25,26,27} Women have identified Birthing on Country as something they believe will improve maternal and perinatal health outcomes.^{20, 21, 22, 23} Indigenous women have stated that their relationship to the land is compromised by birthing in hospitals where many also feel culturally unsafe.^{20,21,22,23,28,29,30} Women also express a belief that the relationship between the new baby, siblings and father would be better if they were together for the birth.^{20,22,23,28} The health of Aboriginal and Torres Strait Islander Australians is integrally linked to their culture and the land³¹, a link that is strengthened by birthing on their land.²¹ Enforced evacuation to distant hospital facilities breaks this link, precludes the presence of family and integration of traditional attendants and practices; and continues cultural disconnection into the next generation.

The disconnection between social, cultural and spiritual risk and western medical biophysical risk is a critical and understudied phenomenon that needs to be investigated and better understood. Aboriginal and Torres Strait Islander leaders feel strongly that the cultural risk of not birthing on their land must be acknowledged and included in the risk assessment process.³² This challenges the understandings of many western trained health providers who are concerned with a lack of onsite access to medical technologies and medico-legal liabilities.³³

Policy background

The health care reform agenda of the current Australian government has a strong emphasis on community based services, primary care and improving care for rural and remote areas and Indigenous communities.¹ In particular, MIH for Aboriginal and Torres Strait Islander women is a key area targeted in all of these strategies as an area requiring significant improvement. All Australian State and Territory Governments have, since 2008, “committed to extending and enhancing primary maternity service models as a preferred approach to providing pregnancy and birthing services to women with uncomplicated pregnancies.”³⁴ Primary maternity services include antenatal, birthing and postnatal care for women with low-risk pregnancies and can be provided in public maternity units, birthing centres, in the community or in a combination of these settings.³⁴ Two goals of care provision described in the Australian Framework document are the provision of care which is culturally appropriate and as close to home as possible.³⁴ The recently released National Maternity Services Plan reiterates the above whilst also highlighting access issues for rural and remote women, and Aboriginal and Torres Strait Islander women, as priority areas for improvement in Australian maternity services.¹

This review

The National Maternity Services Plan was endorsed by the Australian Health Ministers in 2010 and released in 2011.¹ Action 2.2 of this Plan aims to: Develop and expand culturally competent maternity care for Aboriginal and Torres Strait Islander people (Appendix 1). A key deliverable for the initial year is Action 2.2.3: to undertake research into international evidence-based examples of Birthing on Country programs.¹ This is the first part of the process of developing and

¹ National Integrated Strategy for Closing the Gap in Indigenous Disadvantage; National Health and Hospitals Reform Commission; Primary Maternity Services in Australia: A Framework for Implementation; Report of the Maternity Services Review; National Maternity Services Plan.

implementing a national Birthing on Country service delivery model that is culturally competent and improves health outcomes for Indigenous mothers and babies. 'Birthing on Country' was defined as: maternity services designed and delivered for Indigenous women that encompass some or all of the following elements:

- Are community based and governed
- Allow for incorporation of traditional practice
- Involve a connection with land and country
- Incorporate a holistic definition of health
- Value Indigenous and non-Indigenous ways of knowing and learning; risk assessment and service delivery
- Are culturally competent and
- Are developed by, or with, Indigenous people.

This review was restricted to models of care used in the provision of birthing services in Indigenous communities of developed countries such as Australia, New Zealand, Canada, and the United States of America and sought to answer the following questions:

1. What are the components of maternity service delivery models that have been implemented for Indigenous mothers and babies?
2. Which of these models have been most effective? And why? (Only include models that have been evaluated). Effectiveness was to be measured by any of the following health outcomes:
 - Engagement with antenatal care, intervention in birth, mode of birth, complications in pregnancy, birth and postnatally (e.g. Preterm birth, post partum haemorrhage, sepsis), birth weight, apgar scores, engagement with postnatal care, duration of breastfeeding, engagement with child health checks, capacity to parent, engagement with elders/community, development of an Indigenous maternity workforce, incorporation in Indigenous practices, transfer rate, incidence of children entering out of home care, maternal satisfaction, involvement of fathers, reduced rates of domestic violence and sexual assault, community based risk assessment, diet and nutrition, etc.
3. What have been the barriers and facilitators of the successful implementation and sustainability of these models? And why? Were the barriers resolved?

2 Methods

A search strategy was devised to search all scholarly literature and other sources of information from 1985 to November 2011 with a total of 17 databases searched (Appendix 1). The reviewers contacted eminent scholars in the field of Indigenous health and midwifery in both New Zealand and Canada to determine if any other literature was available to the review, for example, papers in press and doctoral theses in review. Articles for inclusion were restricted to those in the English language.

The search yielded a total of 2413 articles. Titles were reviewed to ascertain potential relevance with 362 abstracts downloaded for reading by one reviewer with 200 full text articles kept on file. Of these 165 were considered relevant to the topic (2 reviewers); with 95 chosen for review inclusion (2 reviewers). Of these, only 18 involved evaluations of services and were deemed to have high relevance to the Review questions. The highest level of evidence attained by any study was III-2 (scaled according to NHMRC Scales of Evidence Guidelines, see Appendix 3).

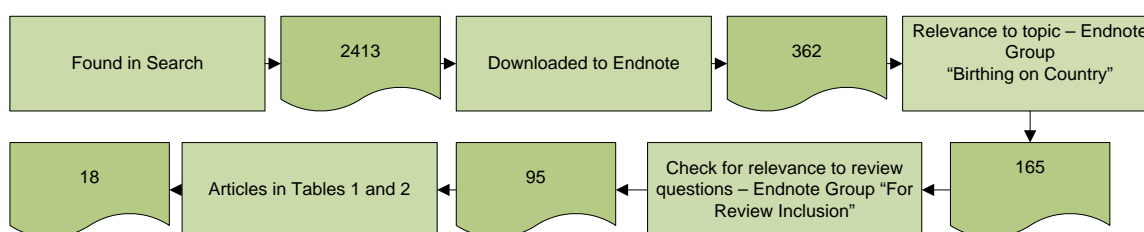


Figure 2. Reviewed articles

Resulting articles were collected and read and a decision was made by two reviewers as to which studies would be included. The remainder of the articles were electronically or physically stored for use as supporting evidence or omitted from the review if they were deemed to be of low relevance. The articles of the highest relevance to answer the review questions were synthesised by two reviewers and are reported within two tables (Appendix 3: Components of Birthing on Country models and Appendix 4: Evaluation of the Birthing on Country models.) It is interesting to note that no New Zealand research met the review inclusion criteria. Information about primary maternity services in New Zealand was downloaded but no research could be found (of any models of maternity care) which specifically targeted Maori women. From the contact the authors had with colleagues in New Zealand, it appears that, due to the comparatively large numbers of Indigenous birthing women in all regions of New Zealand with 15% of the overall population Maori, all programs aim to ensure they provide culturally responsive services. New Zealand has a strong emphasis on facilitating Maori women's access to a culturally competent workforce and 4.6% of New Zealand midwives are Maori.³⁵ However Maori author, Hope Tupara, has stated that despite a strong research tradition within Maori, society the Maori childbirth discourse has remained largely unexplored, though guidelines on caring for Maori women in childbirth do exist.^{35,35} In contrast in Canada, although 4% of the population is Aboriginal, in remote regions such as Nunavik and Nunavut 85–90% of the population is Aboriginal, which may have contributed to the development of models of care for Indigenous women.³⁶ The number of Canadian midwives who are aboriginal is approximately 7.5%.

Research studies found to contain models of care for Indigenous women (which have been implemented and assessed for effectiveness) arise predominantly from Canada and Australia. We acknowledge there may have been other models, particularly those described in the grey

literature, which we were unable to access. We also understand that new service models are being established in Western Australia and a Primary Maternity Service has opened at the Aboriginal Medical Service in Orange, NSW. These, like the NT Health Department MGPs for remote women in Darwin and Alice Springs, and a rural service in Goondiwindi in Queensland, were unable to be included. We also acknowledge that the apparent lack of research that meets the review criteria from the United States of America is unusual and needs further exploration, outside this rapid review process.

3 Results

The results are presented under the headings related to the review questions.

Review question 1

What are the components of maternity service delivery models that have been implemented for Indigenous mothers and babies?

Two literature reviews have documented strategies that aimed to improve Aboriginal and Torres Strait Islander MIH outcomes.^{2,3} The authors of both reviews collectively examined 10 antenatal programs but found little high quality evidence on which to base recommendations, with wide variation in study design, quality, and reporting. The Herceg report, published in 2005, aimed to identify interventions that had been shown to improve health outcomes or intermediate health measures in pregnancy and young children (up to 5 years) in Aboriginal and Torres Strait Islander women. Of the ten reported studies the highest level of evidence was Level III-3 (comparative studies with historical controls). The key elements of successful programs identified in the Herceg review included:

- Community based and/or community controlled services
- A specific service location intended for women and children
- Providing continuity of care and a broad spectrum of services
- Integration with other services (e.g. hospital liaison, shared care)
- Outreach activities
- Home visiting
- A welcoming and safe service environment
- Flexibility in service delivery and appointment times
- A focus on communication, relationship building and development of trust
- Respect for Aboriginal and Torres Strait Islander people and their culture
- Respect for family involvement in health issues and child care
- Having an appropriately trained workforce
- Valuing Aboriginal and Torres Strait Islander staff and female staff
- Provision of transport
- Provision of childcare or playgroups.²

The Herceg report did not list the elements that were associated with unsuccessful programs. The second review³ was published in 2008 and aimed to: *'review evaluations of changes in the delivery of antenatal care for Australian Indigenous women and the impact on care utilisation and quality, birth outcomes and women's views about care'*.^{3p.83} This report and its recommendations are described under Review question 2.

A third important piece of work in this area is Jenny Hunt's doctoral thesis, which described how pregnancy outcomes, care and services could be improved for Aboriginal and Torres Strait

Islander women.³⁷ She identified key features of appropriate and accessible antenatal care services, which included:

- Training and employing Aboriginal health workers to provide pregnancy care
- Involving Indigenous women in the planning and operation of services
- Providing cross-cultural education for all staff involved in maternity care
- Linking hospitals and other providers of maternity care with Aboriginal communities.³⁷

Hunt³⁷ also reviewed various reports of Indigenous women's views of maternity services, though commented on a lack of peer-reviewed literature in this area. Her findings highlighting that many women had expressed "*profoundly negative views and experiences of recent and past involvement with mainstream health systems and providers of care including, in particular, hospital clinics*".³⁷ Specific issues identified included: a lack of Aboriginal staff, transport, and childcare; dissatisfaction with the information being provided; long waiting times; negative staff attitudes; poor communication and limited interpreter services. Care providers identified many of the same issues and the following challenges: the cultural gaps between women and themselves; that lack of time for consultation; the lack of continuity of carer precluding the opportunity for building relationships; and the increasingly complex nature of information sharing required in antenatal care provision (particularly regarding screening tests and their interpretation). Some women saw the interviews with carers as being more like 'Interrogations'.³⁸ Greater involvement of Indigenous women in designing, conducting and writing up research was also recommended.

Another piece of work that is occurring concurrent to this review in response to Action (2.2.1) in the Maternity Plan is: to identify the characteristics of culturally competent maternity care for Aboriginal and Torres Strait Islander people.¹ A report has been delivered to Government and is under consideration³⁹, thus will not be reported on here. This work will however, be important in any future design of services. Recent work in Western Australia (WA) has documented an evidence based framework for maternal and child health services in the Aboriginal Community Controlled Health sector⁴⁰ and a Aboriginal Maternal and Child Project outlines a Strengths and Needs Analysis that identified gaps in services across WA.³⁶

This review has a wider and slightly different scope than the work described above with an additional three Australian studies and six international ones contributing information to the tables (Appendix 4 and 5). Several key points were found to be common to most of the 18 studies tabled. There was seen to be a multidisciplinary approach to the set-up, management and conduct of the models studied.^{3,41} Inclusion of members of the Indigenous communities involved in the receipt of services was thought to be a major prescriptive for the success of some programs.^{42,43,44} Although it is probable that not all models had Indigenous members with controlling voices in their overarching governance structures, and possibly only a few were established by community controlled organisations, this has been cited as an important factor in the Inuulitsivik model in Canada, particularly when non-Indigenous health providers had wanted to close the service.⁴⁵

Some programs provided services to people belonging to more than one cultural group and this was often supported by strategies to gain culturally specific input from 'elders' or senior cultural advisors from each group.^{43,46,47,48} Communities were invited to be actively involved in assisting formulating and overseeing the services for women receiving the perinatal healthcare services and their families. The involvement was often in the form of an Aboriginal Advisory Council which met regularly to administer the service or to advise on changes and cultural alignment of service activities.³⁸ At Alukura in Alice Springs, the Council provides core roles for senior Aboriginal women in the community. These were often remunerated positions and were seen as a way of cementing the program within the community and formally securing community elder participation. However, some programs describe consumer engagement as an ongoing

challenge. It is not clear if a lack of remuneration and appropriate roles are contributing factors to this but it is possible.

Programs with promising evaluation data include programs that have fostered partnerships with Indigenous health care workers, midwives, GPs, obstetricians and other maternity care providers where Indigenous people are employed in key roles within the service. The non-Aboriginal staff members were carefully selected for their cultural competence^{49,50}; requiring knowledge and skills as clinicians (often with a very broad scope of practice), educators and in community development. They were then able to complement Aboriginal staff and work in partnership with them to provide the required services.^{44,51} The partnership approach was also used in the formulation of services both with government and community services and with the women and their families. Literature created and made available to the families clearly defined what services were available and why they were important. One example is the 'Bunjulbai' book (2009), which was produced by the Ngua Gundi Program staff in Rockhampton, Queensland. Government agencies could also access information and liaise with program management about the services provided in the program.

It is probably that many of the programs had the support of energetic champions from a variety of backgrounds who gave impetus to both the program itself and to the research into outcomes of the programs.^{37,42,52} This was often a large, and largely unrewarded, undertaking except for the outcomes themselves and the observance of positive feedback from the women. Some champions reported their disillusionment in mainstream healthcare services available prior to their programs being implemented, a reluctance of women to access services, and a decline in cultural awareness and adherence to cultural childbirth practices in young people in their communities.^{37,42,52}

Some studies reported on education programs specifically targeting young Aboriginal mothers as these populations are significantly larger than in the non-Aboriginal community.^{43,44,47,48} Staff members, both Aboriginal and non-Aboriginal, were carefully selected so as to ensure that those who were working with this teenage group were able to build a rapport with clients and were supportive of them and their choices.⁴⁹ The philosophy of birthing and Birthing on Country is that it provides a spiritual connection to the land of that community for the mother and her baby.^{21,38} Birthing is seen as 'women's business' and, as such, senior Aboriginal women engage in teaching and supporting younger childbearing women within their community. Mothers' groups and other groups were offered in the community to encourage education and communication.^{38, 44, 48, 53}

Lowell⁵² and Panaretto⁴⁹ describe a family-centred approach which encompassed the informing, educating and inclusion of all family members, relatives, and other significant community figures. The support of family was seen to be of significant benefit to the pregnant woman in a variety of ways⁵⁴, for example, psychosocial support, child care, role modelling by elders, cultural education and support of cultural and community values. Education of mothers encompassed cultural education, antenatal and postnatal care of themselves, their baby, and their families. Relatives were also encouraged to receive education during their attendance at individual and groups sessions. Education and healthcare could be provided in a 'culturally safe' environment, which means that, where possible, the cultural rites of birthing could be learned and practiced alongside western maternity practices. Knowledgeable Aboriginal health workers/practitioners or senior Aboriginal women (Strong Women) led this education from their own community.^{38,52,55}

Three studies included a quality improvement framework within their program to assess and maintain the relevance of program services to the women accessing services.^{43,49,56} This may have been purely a requisite to secure funding for service provision and it is unclear how well this was achieved. However, the provision of feedback and outcomes allow services to develop in a more systematic way.

In summary, the list below builds on the key elements of successful programs identified in the Herceg² report to identify the components of maternity service delivery models that have been implemented for Indigenous mothers and babies:

- Community based and/or community controlled services /MOU between services, and with community elders
- Collaborative community development approach to establishment with key leadership, shared vision and commitment of staff
- Aboriginal advocacy group involved for cultural guidance (remunerated and roles described)
- Respect for Aboriginal and Torres Strait Islander people and their culture; and integration of local Indigenous knowledge with western knowledge within an effective partnership approach
- Overarching philosophy of 'women's business'
- A specific service location intended for women and children
- Providing continuity of carer and known caregivers across the continuum of care including in labour; and in some cases in the first year of the infants life/continuing care even when the woman moves out of area
- Providing a broad spectrum of services that integrate with other services (e.g. hospital liaison, shared care, allied health, child health) and link directly into tertiary service if required
- Designated funding for service and evaluation
- A welcoming and safe service environment with flexibility in service delivery and appointment times with a focus on communication, relationship building and development of trust
- Respect for family involvement in health issues and child care including men (in some services)
- Having an appropriately trained workforce with support from an interdisciplinary team, quality assurance framework for continuous evaluation and audit activities that include a recall register
- Competency-based approach to training, with a career pathway that starts with unskilled maternity workers employed in the model who receive on-site training in MIH and midwifery
- Valuing Aboriginal and Torres Strait Islander staff and female staff with local employment in the program and mentoring roles
- A service that incorporates brief inventions, 24 hour call, homebirth, early childhood care and includes family orientation to services
- A risk screening process that is seen as a social, cultural, and community process rather than simply a biomedical one; with an risk assessment criteria and interdisciplinary perinatal committee
- Outreach activities and home visiting with follow-up care, provision of transport, childcare, mothers groups, parenting classes targeting young women, postnatal depression support group, playgroups.

Review question 2

Which of these models have been most effective? And why? (only include models that have been evaluated).

As stated above, another review of evaluations of antenatal care for Australian Indigenous women was published in 2008.³ The authors identified 10 evaluations, which showed benefits across antenatal care indicators and in some cases outcome measures (e.g. preterm birth, perinatal mortality, low birth weight infants and mean birth weight). However, the authors noted that none of the studies had statistical power to report on most of these indicators, or other important MIH outcomes, and highlighted the need for longitudinal data, stronger study designs and robust evaluations when designing future services. Difficulties in accurately assessing the impact of interventions was also identified in the Herceg² review which noted that in some studies, the effectiveness of models varied according to location, thus restricting the rollout to further areas until more is known about the features most likely to be effective. Despite these limitations, some programs demonstrated statistically significant improvements in antenatal clinic attendance, with earlier attendance common across programs^{47,48,49,57,58}; antenatal screening and treatment^{43,48,49,56,57,58}; immunisation rates⁴⁸; mean birth weight^{38,46,49,58}; and a reduction in preterm birth.^{48,49,58} Four of the identified studies reported on women's views of the care they received^{43,48,56,59}, access to female staff and the provision of continuity of carer were positively regarded.^{43,48,56} Some studies reported an increase in smoking rates but in these cases it was thought to be due to better recording and women feeling comfortable enough with their care provider that they reported honestly. The reasons for effectiveness can only be assumed to be the components that are described above under Review question 1.

Information about other Birthing on Country services that have been established in rural, remote and Aboriginal communities in Canada were accessed through the grey literature.⁶⁰ Tsi Non:we lonnerkeratstha Onagrahsta is a maternal child health centre and birth centre in southern Ontario on the Six Nations of the Grand River First Nation, about 23 kilometres from the nearest hospital. Traditional Aboriginal midwives provide care to the local Mohawk community, funded by the Ontario Ministry of Health since 1996. As part of the service, the midwives educate Aboriginal women wishing to learn traditional midwifery.⁶¹ Traditional midwives are able to practice in Ontario under health profession's legislation which recognises their role in Aboriginal communities and the right of Aboriginal communities to govern and set standards.⁶² In Nunavut, local birth services have been provided since 1993 in Rankin Inlet and since 2010 in Cambridge Bay; with a plan for expansion to several other communities as part of the Nunavut government's Maternal and Newborn Health Strategy 2009–2014.^{63,64}

The Midwifery Profession Act passed in 2008, and a midwifery education program set up at Nunavut Arctic College are integral to the government plan to re-establish Inuit midwifery and return birth to local communities. To date there are two graduates with 10 students in the program.^{65,63} Both graduates are Inuit and working in Rankin Inlet, meaning that the majority of care in Rankin is now provided by local Inuit women. In Fort Smith, in the Northwest Territories, midwifery services brought birthing back to the local health centre in 2005. Since that time about 77% of women eligible for community birth have chosen to birth in Fort Smith. The population served is 65% aboriginal and one of the two midwives is Aboriginal. The government of the NWT is currently considering expansion of local birth services.^{66,67}

An exemplary service: The Inuulitsivik midwifery service

Research from Northern Canada has shown that childbirth in very remote areas can offer a safe, culturally acceptable and sustainable alternative to routine transfer of women to regional centres; in spite of initial fears about safety and opposition to these services.^{44,68,69} One service is recognised as the most impressive Birthing on Country model internationally; and also has the

most robust evaluation data.⁴ The Inuulitsivik Midwifery Service is the only model that met all criteria in the review definition of Birthing on Country: *“maternity services designed and delivered for Indigenous women that encompass some or all of the following elements: are community based and governed; allow for incorporation of traditional practice; involve a connection with land and country; incorporate a holistic definition of health; value Indigenous and non-Indigenous ways of knowing and learning; risk assessment and service delivery; be culturally competent; and be developed by, or with, Indigenous people.”*

The Inuulitsivik Midwifery Service, is a community based and Inuit-led initiative on the Hudson coast of the Nunavik region of northern Quebec.⁴ The initiative supports on-site birthing centres and training of midwives in three remote communities: with the first one in Puvirnituk opening in 1986; and the second two opening in response to community demand: Inukjuak (pop. 1,694),^{68,70} and Salluit (pop. 1,302) in 2004. Despite, initially, an eight hour plane trip (in ideal circumstances) to the nearest surgical services, based on 3,000 births since opening, the perinatal mortality rate has fallen and is better (9/1,000) than other comparable Indigenous populations, Northwest Territories (19/1000) and Nunavut Territory (11/1000).⁴⁴ Additionally, comparing 1996 statistics to historical control data (1983), there was a reduction in inductions of labour (10% to 5%), episiotomies (25% to 4%), transfers (91% to 9%) and the community has a 2% caesarean section rate (compared to the Quebec rate of 27%).⁴⁴ Despite a general Health Centre being located in Puvirnituk there are no surgical facilities on site; and no laboratory facilities or blood products on site in the Birth Centres in the other villages, which only have access by plane. Transfer to tertiary care is more than 1,000 kilometres to the south, in Montreal, by scheduled flight or medical evacuation. Emergencies must first fly to Puvirnituk, the only village where there is a jet landing strip, prior to transfer south. There is no road access and transfer can be delayed by many hours due to inclement weather, especially in Salluit. These communities continue to offer birthing services today as newer ones are being established. A further seven years of data has been reported and seen a continuation of excellent MIH outcomes and a sustainable service; (2000-07) from 1377 labours and 1388 babies, (9 sets of twins and 1 set of triplets) with 1182 of the labours (85.8%) occurring in Nunavik (14.2% transferred out).⁵⁰ A total of 86% of births were attended by midwives: 74% Inuit and 12% non-Inuit midwives.

Reports from these communities describe a community development program that links the establishment of a local Birthing Centre to greater social functioning, a decrease in domestic violence and sexual assault and increasing numbers of men being involved in the care of their partners in pregnancy and newborns.^{44,45,68} The regaining of dignity and self-esteem has also been reported.⁷⁰ A key factor supporting the change process appears to have been the open dialogue and debate around risk in childbirth.⁷¹ with a recognition that: *“the cultural aspect of birth is not a mere ‘nicety’ that can be appended to the care plan once all other acute obstetrical techniques are in place. It is essential to perinatal health... it is from within the culture and community that real positive changes in the health of the people begins”*⁷². Birth in the communities is seen as part of community healing from the effects of colonisation and rapid social change by means of: *“women are cared for in Innuvitut, [their own language], and children are born into their culture, in the presence of family. Inuulitsivik’s maternity service builds local capacity, reclaims meaningful roles for Inuit midwives, empowers childbearing women and involves fathers and other family members in childbirth”*.⁴

Some of the key factors in the success of these services include the collaborative community development approach to care; local employment in the program; on-site midwifery training; integration of local Inuit knowledge with western knowledge; the involvement of men (i.e. local birth allows the traditional Inuit custom of men attending births with their partners); a risk screening process that is seen as a social, cultural, and community process rather than simply a biomedical one; and the interdisciplinary perinatal committee. This committee reviews each woman’s case at 32–34 weeks gestation for both medical and social factors, and creates a care plan for birth.⁷³

The Society of Obstetricians and Gynaecologists of Canada (SOGC) strongly support the return of birthing services to rural and remote communities with a policy statement endorsed by the Indigenous Physicians Association of Canada, the Canadian Association of Midwives, and the Aboriginal Council of Midwives.⁷⁴ The following points are considered essential to success:

- “Providing women with the knowledge they need to understand the risks and benefits of giving birth in the community so they can make an informed choice
- Respecting women’s right to choose where they give birth
- Ensuring the support of community leaders and elders and ensuring that women are part of the planning and implementation of birth plans
- Creating policies and procedures to facilitate optimal communication, planning, trust-building, and overall collaboration between caregivers within the community and in the supporting referral centres
- Developing protocols for clinical care for the community birth initiative and the referral centre and in collaboration with all health care providers
- Ensuring that continuous monitoring and evaluation of risk during pregnancy and labour are understood to be critical and are in place at all times
- Ongoing documentation and annual review of experience
- Reporting back to the community on the successes and challenges
- Developing a campaign to inform SOGC members, governments, communities, and the population at large about the benefits of birth in the community”.⁷⁴

Although there is some difference between Inuit and Australian Aboriginal communities the similarities are striking. Both are vast countries with small Indigenous communities scattered across remote areas that get cut off in bad weather. Literacy and numeracy levels in the remote Canadian communities are not dissimilar to Australian remote communities and recognition of this has led to a competency-based approach to training, with a career pathway that starts with unskilled maternity workers employed in the model with paid time for training. The onsite midwifery training is considered essential to the success and sustainability of this model.

Review question 3

What have been the barriers and facilitators of the successful implementation and sustainability of these models? And why? Were the barriers resolved?

The barriers and facilitators of successful implementation and sustainability of programs have been addressed in some of the published and grey literature on MIH care for Indigenous mothers and babies. However, the author is aware that some government reports that do describe the challenges have either not been released, or only been released partially. Much of the literature in this area points out the challenge associated with ‘pilot’ funding for programs that are developed with grant funding. The excessive burden associated with applying for, and reporting on, short term funding is well known. Additionally, the change management processes can be slower than expected, which can compromise evaluations, resulting in small numbers and ongoing requests for funding top ups and extensions to timelines. The key challenges highlighted in the 95 documents included in the review include, but are not limited to:

- Blending Indigenous and western approaches to knowledge and care in a meaningful way that legitimises Indigenous knowledge

- Consultation with Indigenous groups and individuals (including service users) and their ongoing involvement in governance, strategic planning and steering committees/ensuring and maintaining local 'ownership'
- Social and cultural risk assessment and screening that incorporates the risks identified by Indigenous women themselves (e.g. leaving other children in their home community when they travel away for birth)
- Structural and logistical difficulties of providing continuity of carer when based in the community or non-government organisations e.g. clinical privileges for staff to work in the birth centre/ hospital; providing intrapartum care; difference in salaries and awards/sharing of health information/duplication of services
- High administration workloads with time taken for effective inter-cultural working, inter-agency networking, collaboration and case management often underestimated/getting the workload/caseload 'right'
- Appropriate resourcing for the demand on the service and role delineation within the service (i.e. appropriate administration and allied health support e.g. social work support and scope of practice issues)
- Little or no funding allocated for evaluation, particularly longitudinal follow-up, thus insufficient data to provide robust evidence/regular MIH data collection methods don't collect sufficient information nor report in a timely manner/a variety of data collection methods have been developed, often 'in-house' difficulties accessing service users views of the service
- Lack of support from some members of the medical profession
- Recognition of Indigenous midwives in a competency-based course/appropriate sustained support for Indigenous women to become midwives/difficulties working within a partnership approach (more difficult when not working in pairs)/a lack of understanding of 'two way working'/lack of clarity of roles – especially with new job descriptions being developed for Indigenous workers/lack of support for an Indigenous workforce/earning capacity when studying midwifery
- Midwives who are not 'local' gaining the trust of the local community and women/midwives/doctors may not be skilled as both clinicians and educators and many have no training in community development
- Resistance of hospital staff to culturally responsive care/institutional racism
- Ensuring informed consent and having information provided in a way that can be understood
- Lack of transport/a designated space/maintaining privacy and confidentiality/allowing flexible 'drop-ins' whilst maintaining appropriate waiting times.

Many of the models that are included in the tables have managed to overcome many of these challenges in the way that they have been designed; though some highlight ongoing challenges in different aspects related to the points above. Also worth noting was a lack of emphasis on high turnover of staff which suggest staff retention is not as challenging in these models as it can be in other health service and maternity models of care. Also the popularity of these programs, and the staff employed in them, can lead to a workload that is beyond the remit of the program, but which providers have difficulty refusing. The following section describes one of the most challenging discussion points when discussing Birthing on Country models: distance to caesarean section facilities.

The challenge of distance: decision to incision

The Primary Maternity Services framework provides a significant shift in direction for Australia which has seen the closure of more than 130 (50%) rural maternity units in the 15 years till 2005.⁷⁵ Workforce shortages (many closures have been triggered by an inability to retain doctors with obstetric and anaesthetic skills), lack of access to on-site emergency caesarean section and concerns about safety are often cited as having led to closures.²² The distance birthing services can be provided from surgical facilities without compromising health outcomes has also been identified as an issue which will be important to any Birthing on Country model developed in remote Australia. The critical time known as the 'decision to incision/ delivery' interval (D-I), from when the need for a caesarean section is recognised to when it occurs is thought to be 75 minutes, but this evidence is mostly based on research in the tertiary setting.⁷⁶

Evidence regarding safe transfer time in the remote setting is slowly becoming available with evaluations of units operating many hours (some up to eight) from surgical services, sometimes completely cut off in bad weather, demonstrating excellent results.^{44,77} This evidence suggests that early identification of problems is mostly possible and that many emergencies can be well managed in the primary setting until transfer to larger units occurs. In Australia several primary units have been established in settings that can be up to an hour (sometimes longer) from surgical facilities (Ryde in Sydney, Belmont in Newcastle, Mareeba in Queensland) with early evaluations showing safety has not been compromised.^{78,79} Currently a NHMRC funded study to determine the outcomes and costs of providing care in primary level maternity units in both Australia and New Zealand is in progress and due to report in 2012 (ID: 571901). The safety and effectiveness of primary services has recently been confirmed in a large study in the United Kingdom⁸⁰ though the distance to caesarean section has not been reported. It is clear that safety relies on a networked approach to referral to, and treatment in, secondary and tertiary services if required.

New Zealand (NZ) supports a model of care that has primary services across the country with 51 of the 58 units located in rural or remote settings, and 31 over an hour from tertiary services.⁸¹ Some of these do get cut off from the tertiary hospitals due to weather restrictions in the winter months. Despite this, they are still considered an integral part of NZ services to rural women, offering culturally secure services to a diverse population of women. A total of 23% of Maori women planned to birth in a primary unit as did 14% of Pacific women, 10% of Asian women and 18% of New Zealand European women, with over 95% of women birthing in their planned birthplace.⁸¹ This highlights appropriate risk screening processes are in place with little requirement for transfer. Some data show that these units are popular with Maori women, though none are described as models that were developed specifically for Maori women. One Birth Centre, 60 km from the tertiary centre, described as providing culturally appropriate care and facilitating up to 20 support people in labour; and traditional practices.⁸² Another evaluation of a primary unit with 1,203 women birthing between 1999–2001 cited 47% of women were Maori, suggesting a preference for this type of care. Birth outcomes were good in this descriptive study with a 95% normal birth rate, 99% of babies had an Apgar score >7 at five minutes and overall there was only a 11% transfer rate.⁸³ Primary units appear to offer culturally specific support and community elders provide an 'adjunct' support service alongside formal antenatal, birthing and postnatal care.^{82,83} A New Zealand author has explored the role of midwives working in these units and found that midwives need skills in being:

- Confident to provide intrapartum care in a low technology setting
- Comfortable using embodied midwifery skills and knowledge to assess a woman and her baby as opposed to using technology
- Able to 'let labour be' and not interfere unnecessarily
- Confident to avert or manage problems that might arise
- Willing to employ other options to manage pain without access to epidurals

- Solely responsible for outcomes without access to on-site specialist assistance, and
- A midwife who enjoys practicing what participants called 'real midwifery'.⁸⁴

Thus, although this review found limited literature to meet the review criteria, it is clear that primary services, significant distances from tertiary services, are supported across the country. The data that could be found described integrated services that appear safe and culturally secure.

The workforce challenge

International reports highlight a health workforce crisis with critical shortages in some areas, inappropriate skill mix and maldistribution both within and between countries.⁸ In particular, the World Health Report⁸ noted the MIH workforce was one of the most serious concerns of our time, with 700,000 midwives needed to provide skilled care across the world. Shortages of maternity service providers in Australia reflect the international situation with a uneven distribution of the medical workforce evident and predictions showing this will continue well into the future.^{85,86} Critically for rural and remote maternity services is a shortage of procedural general practitioners and those with obstetrics skills with trends suggesting these shortages are worsening.⁸⁷ This leaves the choice of closure of services or supporting primary units. Workforce data on midwifery is extremely difficult to access with the latest national report not separating midwives from nurses.⁸⁸ Available data shows a significant reduction in midwives working in very remote Australia, where Birthing on Country models may be established; from 65% of the nurse/midwife workforce (1995) to 29% (2008).⁸⁹ Thus any new development looking at service provision in these areas will need to incorporate a workforce strategy in much the same way that the Inuulitsivik Midwifery Service did.

In the reviewed studies, capacity building, and training through education programs, often established or provided as part of the maternity program, provide employment for Aboriginal people within their own community; and in some cases, a career pathway to midwifery.^{44,48,54} As important is the recognition of Indigenous knowledge as a separate legitimate knowledge in its own right, with elders the respected custodians of this knowledge, and the skills that stem from it.^{35,44,55,90,91,92}

4 Conclusions and recommendations

The review of the literature has shown that improvements in key MIH indicators can be realised through service redesign. Many reported improvements in antenatal care, for example the first ANC visit at an earlier gestation, increased ANC attendance and less inadequate care (often defined as less than 4 ANC visits) are often shown in cultural appropriate models, reflecting an increased acceptability of services. An increase in antenatal education (quality and quantity), nutritional supplementation and antenatal screening were also reported, with some studies reporting a reduction of smoking in pregnancy and lower rates of preterm birth, a reduced occurrence of low Apgar Scores and a higher mean birth weight. Better quality of care was also reflected by an increase in documentation.

Active participation of the woman and her family in care suggests a service that is culturally responsive and key factors associated with this were continuity of carer, continuing care even when the woman moves out of area and known caregivers across the continuum of care including in labour, and in some cases in the first year of the infants life. Broader roles for both AHW's and midwives were supported in some programs with Indigenous workers being a key factor in the acceptability of services. Involvement of Indigenous elders and services that were developed with the community or by the community were thought to be more successful. Incorporation of traditional midwifery knowledge and skills were considered essential to the success of some of these services. The importance of all stakeholders being aware of the limitation of the services from the beginning was acknowledged as being essential as were the potential benefits of community based birthing services:

- Community 'healing'
- Reduced family separation at critical times
- Reduced family violence
- Restoration of skills and pride
- Capacity building in the community
- Supporting community and family relationships
- Increased communication/liason with other health professionals and service providers
- Comprehensive, holistic, tailored care.⁴

In conclusion, the available evidence suggests that a Birthing on Country model would most likely produce significantly improved MIH outcomes for Aboriginal and Torres Strait Islander women. The available evidence would support these models being established in any area: very remote, remote, rural, regional or urban. It is clear that a strong research and evaluation framework should be used to enable reporting on the process, impact and outcomes of any such developments. Ideally, this would involve a design that provides robust evidence and enables identification of the key factors for success; local adaption; and clearly outlines how barriers and challenges are overcome. Key components could be developed into a minimum standards document that outlines the overarching governance structure; cultural competencies and requirements; core principles; recommendations for community liaison and participation; minimum resource, infrastructure and equipment requirements; staff competency requirements; support, training and education requirements; minimum data collection requirements with regular quality assurance audit and evaluation which incorporates service users views of the service; and risk assessment criteria. Risk assessment should incorporate social, biomedical and cultural risk; risk to individuals, communities, service providers and funders; and should be addressed through a risk management exercise that identifies strategies to address identified risks

in the development of service models. Additionally, a need for secure funding of the services and their evaluation over time is essential.

5 References

1. AHMAC, National Maternity Services Plan 2011. Canberra: Australian Health Ministers Advisory Council, Commonwealth of Australia, 2011.
2. Herceg A. Improving health in Aboriginal and Torres Strait Islander mothers, babies and young children: a literature review. Canberra: Australian Government Department of Health and Ageing, 2005.
3. Rumbold AR, Cunningham J. A review of the impact of antenatal care for Australian Indigenous women and attempts to strengthen these services. *Matern Child Health J* 2008;12(1):83–100.
4. Van Wagner V et al. Remote midwifery in Nunavik: outcomes of perinatal care 2000–2007 for the Inuulitsivik health centre. Ottawa: First Nations and Inuit Health Branch, Health Canada, Ottawa, 2008.
5. Van Wagner V, Osepchook C, Harney E, Crosbie C, Tulugak M. Remote midwifery in Nunavik Québec, Canada: outcomes of perinatal care for the Inuulitsivik health centre, 2000–2007. *Birth* 2012;39(3)230–237.
6. Paradies Y, Cunningham J. Placing Aboriginal and Torres Strait Islander mortality in an international context. *Aust N Z J Public Health* 2002;26(1):11–16.
7. Bramley D, Herbert P, Jackson R, Chassin M. Indigenous disparities in disease-specific mortality, a crosscountry comparison: New Zealand, Australia, Canada, and the United States. *Aust N Z J Public Health* 2004;117(1207):U1215.
8. WHO. The World Health Report 2006: Working together for health. Geneva: World Health Organization, 2006.
9. Australian Institute of Health and Welfare. Aboriginal and Torres Strait Islander Health Performance Framework, 2010 report: Detailed analyses. Canberra: AIHW, 2011.
10. Broome R. Aboriginal Australians, black responses to white dominance, 1788–2001. 3rd edn. Sydney: Allen & Unwin, 2002
11. Wenman WM, Joffres MR, Tataryn IV. A prospective cohort study of pregnancy risk factors and birth outcomes in Aboriginal women. *CMAJ* 2004;171(6):585–589.
12. Kildea S. Maternal deaths high for Indigenous women. *Women Birth* 2008;21:175–176.
13. Laws P, Li Zan Z, Sullivan E. Australia's mothers and babies 2008. Sydney: AIHW National Perinatal Statistics Unit, 2010.
14. Steering Committee for the Review of Government Service Provision, Overcoming Indigenous disadvantage: key indicators. Canberra: Steering Committee for the Review of Government Service Provision, Productivity Commission, 2009.
15. Wilson T, Condon JR, Barnes T. Northern Territory Indigenous life expectancy improvements, 1967–2004. *Aust N Z J Public Health* 2007;31(2):184–188.
16. Condon JR, Barnes T, Cunningham J, Smith L. Improvements in Indigenous mortality in the Northern Territory over four decades. *Aust N Z J Public Health* 2004;28(5):445–451.
17. Middleton PF, for the Strategic Health Research Project Team. Preventing infant deaths among Aboriginal and teenage women in South Australia. Australia: The University of Adelaide 2009;54.
18. Johnston T, Coory M. Reducing perinatal mortality among Indigenous babies in Queensland: should the first priority be better primary health care or better access to hospital care during confinement? *Aust New Zealand Health Policy* 2005;2(11).

19. Fremantle C, Read AW, de Klerk NH, McAullay D, Anderson IP et al. Patterns, trends and increasing disparities in mortality for Aboriginal and non-Aboriginal infants born in Western Australia, 1980–2001: population database study. *Lancet* 2006;367:1758–1766.
20. Biluru Butji Binnilutlum Medical Service. Women's Business Meeting, Darwin, Nov 2–3, Report and Recommendations. Danila Dilba: Darwin, 1998.
21. Carter E, Hussen E, Abbott L, Liddle M, Wighton M et al. Borning: Pmere Laltyeke Anwerne Ampe Mpwaretyeke, Congress Alukura by the grandmothers law. *Australian Aboriginal Studies* 1987;1:2–33.
22. Hirst C. Re-Birthing. Report of the review of maternity services in Queensland. Brisbane: Queensland Health, 2005.
23. Kildea, S. And the women said... Report on birthing services for Aboriginal women from remote Top End communities. Darwin: Territory Health Service: Darwin, 1999.
24. NSW Health Department. The NSW Aboriginal Perinatal Health Report. Sydney: NSW Health Department, 2003.
25. Northern Territory Department of Health and Community Services. Review of Birthing Services in the Northern Territory of Australia. Darwin: Department of Health and Community Services, Australian Government Publishing Service, 1992.
26. Senate Community Affairs References Committee. Rocking the cradle, a report into childbirth procedures. Canberra: Commonwealth of Australia, 1999.
27. Banskott Health Consulting Pty Ltd. Maternity services review in the Northern Territory. Darwin: Department of Health and Community Services, 2007.
28. Fitzpatrick J. Obstetric health services in Far North Queensland: is choice an option? *Aust J Public Health* 1995;19(6):580–588.
29. Ireland S, Wulili Narjic C, Belton S, Kildea S. Niyith Niyith [corrected] Watmam (the quiet story): exploring the experiences of Aboriginal women who give birth in their remote community. *Midwifery* 2011;27(5):634–641.
30. Kildea S. Risky business: contested knowledge over safe birthing services for Aboriginal women. *Health Sociology Review Special Issue*, October 2006.
31. National Aboriginal and Torres Strait Islander Health Council. Canberra: NATSIHC: National Aboriginal and Torres Strait Islander Health Strategy, Consultation Draft, 2000.
32. Wardaguga M, Kildea S. Bring birthing back to the bush. *Aboriginal Health Worker Journal*. 2005;29(5):32.
33. Smylie J. A guide for health care professionals working with Aboriginal peoples - Policy statement of the Society of Obstetricians and Gynaecologists of Canada. *Journal SOGC* 2000;22(12):1056–1061.
34. Australian Health Ministers' Advisory Council. Primary maternity services in Australia: a framework for implementation. Australian Health Ministers' Advisory Council, 2008.
35. Tupara H. Working with Māori women: challenges for midwives. In Pairman S et al. *Midwifery: preparation for practice*. ed. Elsevier Australia 2010;177–193.
36. Larson A, Bradley R. Aboriginal maternal and child project strengths and needs analysis. Geraldton: Combined Universities Centre for Rural Health and Aboriginal Health Council of Western Australia, 2010.
37. Hunt J. Trying to make a difference: improving pregnancy outcomes, care and services for Australian Indigenous women. Melbourne: La Trobe University, Faculty of Health Sciences 2003;430.
38. Carter E, Lumley J, Wilson G, Bell S. 'Alukura ... for my daughters and their daughters and their daughters'. A review of Congress Alukura. *Aust N Z J Public Health* 2004;28(3):229–234.

39. Kruske S. Characteristics of culturally competent maternity care for Aboriginal and Torres Strait Islander women. Maternity Services Inter-jurisdictional Committee for the Australian Health Ministers Advisory Council, 2011.
40. McHugh A-M, Hornbuckle J. Maternal and child health model of care in the Aboriginal community controlled health sector. Perth: Aboriginal Health Council of Western Australia Perth, 2011.
41. Shah PS, Zao J, Al-Wassia H, Shah V, Knowledge Synthesis Group on Determinants of Preterm/LBW Births. Pregnancy and neonatal outcomes of Aboriginal women: a systematic review and meta-analysis. *Women's Health Issues* 2011;21(1):28–39.
42. Douglas VK. Converging epistemologies: the historical evolution of Inuit childbirth in the Canadian Arctic. Canada: University of Alberta 2009;172.
43. Homer C, Foureur M, Allende T. An evaluation of the Malabar Community Midwifery Link Service. Sydney: Access UTS for the Royal Hospital for Women 2009;55.
44. Van Wagner V, Epoo B, Nastapoka J, Harney E. Reclaiming birth, health, and community: midwifery in the Inuit villages of Nunavik, Canada. *J Midwifery Women's Health* 2007;52(4):384–391.
45. Rawlings L. Birth Rites. J. Gheradi ed. Perth: Jag Films, 2002.
46. d'Espaignet ET, Measey ML, Carnegie MA, Mackerras D. Monitoring the 'Strong Women, Strong Babies, Strong Culture Program': the first eight years. *J Paediatr Child Health* 2003;39(9):668–672.
47. Nixon A, J Byrne, J Church A. The community midwives project: an evaluation of the set-up of the northern women's community midwives project, June 1998–November 2000. Adelaide: Northern Metropolitan Community Health Service, 2003.
48. NSW Health. NSW Aboriginal Maternal and Infant Health Strategy Evaluation Final Report 2005. Sydney: NSW Health, 2006.
49. Panaretto KS, Mitchell MR, Anderson L, Larkins SL, Manassis V et al. Sustainable antenatal care services in an urban indigenous community: the Townsville experience. *Med J A* 2007;187(1):18–22.
50. Van Wagner V, Osepchook C, Harney E, Crosbie C, Tulugak M. Remote midwifery in Nunavik, Québec, Canada: outcomes of perinatal care 2000–2007 for the Inuulitsivik health centre. *Birth* 2012;39(3)230–237.
51. Stamp G, Champion S, Zanet P, Anderson G, Taylor J et al. Regional family birthing and Anangu Bibi birthing program: a partnership model between Aboriginal maternal infant care workers and midwives caring for Aboriginal mothers and babies. In: *A bright future for rural health: evidence-based policy and practice in rural and remote Australian health care*. Larson A and SL, ed. Canberra: Australian Rural Health Education Network 2010;34–38.
52. Lowell A, S Kildea S, Easden T. Evaluation of the Strong Women, Strong Babies, Strong Culture Program, Draft Report. Darwin: Charles Darwin University and the Department of Health and Families, 2008.
53. Dorman R, Perkins S. Ngua Gundi: the mother/child project: Woorabinda, Queensland. In *Promoting the health of Aboriginal and Torres Strait Island communities: case studies and principles of good practice*. ed. Canberra: National Health and Medical Research Council 1997;17–22.
54. Stamp G, Champion S, Anderson G, Warren B, Stuart-Butler D et al. Aboriginal maternal and infant care workers: partners in caring for Aboriginal mothers and babies.: *Rural Remote Health* 2008;8(3):883. Epub 2008 Jul 25.
55. Douglas VK. The Rankin Inlet Birthing Centre: community midwifery in the Inuit context. *Int J Circumpolar Health* 2011;70(2):178–185. Epub 2011 Apr 8.
56. Stapleton H, Murpy R, Gibbon K, Kildea S. Evaluation of the Mater Mothers' Hospitals Murri Antenatal Clinic. Brisbane: Midwifery Research Unit, Mater Mothers' Hospitals and Australian Catholic University, 2011.

57. Jan S, Conaty S, Hecker R, Bartlett M, Delaney S et al. An holistic economic evaluation of an Aboriginal community-controlled midwifery programme in Western Sydney. *J Health Serv Res Policy* 2004;9(1):14–21.
58. Panaretto KS, Lee HM, Mitchell MR, Larkins SL, Manassis V et al. Impact of collaborative shared antenatal care program for Indigenous women: a prospective cohort study. *Med J A* 2005;182(10):514–519.
59. Campbell S, Brown S. Maternity care with the women's business service at the Mildura Aboriginal Health Service. *Aust N Z J Public Health* 2004;28(4):376–382.
60. Cook T. Voices from the field—No place like home: Aboriginal midwives in every Aboriginal community. *Encyclopedia on Early Childhood Development*. [Internet] 2011 [cited 2012 February 8]. Available from: <http://www.child-encyclopedia.com/pages/PDF/CookANGps1.pdf>
61. Six Nations Health Services. Birthing Centre. [Internet] [cited 2012 February 8]. Available from: www.snhs.ca/bcMCare.htm
62. Dirmeitis M. Interview with aboriginal midwife Julie Wilson: 'It's an issue of autonomy.' In: *This Magazine*, 2011.
63. Legislative Assembly News. Midwifery graduates pass national registration exams. In: *Nunavut Arctic College News*, 2009.
64. George J. Cambridge Bay celebrates birth closer to home. In: *Nunatsiaq News*, 2010.
65. George J. Midwifery course inspires Cambridge Bay women. In: *Nunatsiaq News*, 2011.
66. Paulette L, Fort S. Health and social services authority midwifery program. *EpiNorth* 2007;9(1):7–9.
67. Becker G, Kotaska A. Provision of birthing services in Northern Health Regions with Level One Centres. In: *Picking up the pace. How to accelerate change in primary healthcare. Conference proceedings*. Montreal: Canadian Health Services Research Foundation, 2010.
68. Houd S, Qinuajuak J, Epoo E. The outcome of perinatal care in Inukjuak, Nunavik, Canada 1998–2002. *Int J Circumpolar Health* 2004;63(Suppl2):239–241.
69. Chamberlain M, Barclay K. Psychosocial costs of transferring indigenous women from their community for birth. *Midwifery*. 2000;16(2):116–122.
70. Tookalak N. Birthing in Puvirnitug in remote Arctic Canada. *Birthplace Magazine*, 1998. Summer 2000–2001.
71. Kaufert P, O'Neil J. Analysis of a dialogue on risks in childbirth: clinicians, epidemiologists, and Inuit women. In: *Knowledge, Power and Practice, The Anthropology of Medicine and Everyday Life*. Lindenbaum S, Lock M, eds. Berkley: University of California Press 1993;32–54
72. Stonier J. The Innulitsivik maternity. In: *Childbirth in the Canadian North: epidemiological, clinical and cultural perspectives*. O'Neil J, Gilbert P, eds. 1990, Manitoba: Northern Health Research Unit 1990;61–74.
73. Couchie C, Sanderson S. A report on best practices for returning birth to rural and remote Aboriginal Communities. *J Obstet Gynaecol Can* 2007;29(3):250–254.
74. Society of Obstetricians and Gynaecologists of Canada. Returning birth to Aboriginal, rural and remote Communities. *J Obstet Gynaecol Can* 2010;32(12):1186–1188.
75. Rural Doctors Association of Australia. Governments must heed the evidence: small maternity units are safer. [Internet] 2005 [cited 7 December 2005]. Available from: <http://rdaa.com.au/>
76. Thomas J, Paranjothy S, James D. National cross sectional survey to determine whether the decision to delivery interval is critical in emergency caesarean section. *BMJ*, 2004;328(7441):665.
77. Leeman L, Leeman R. Do all hospitals need cesarean delivery capability? An outcomes study of maternity care in a rural hospital without on-site cesarean capability. *J Fam Pract* 2002;51(2):129–134.

78. Scherman S, Smith J, Davidson M. The first year of a midwifery-led model of care in Far North Queensland. *Med J Aust* 2008;188(2):85–88.
79. Tracy S, Hartz D, Nicholl M, McCann Y, Latta D. An integrated service network in maternity the implementation of a midwifery-led unit. *Aust Health Rev* 2005;29(3):332–339.
80. Birthplace in England Collaborative Group. Perinatal and maternal outcomes by planned place of birth for healthy women with low risk pregnancies: the Birthplace in England national prospective cohort study. *BMJ* 2011;343.
81. Hunter M, Pairman S, Benn C, Baddock S, Davis D et al. Do low risk women actually birth in their planned place of birth and does ethnicity influence women's choices of birthplace? . *NZCOM Journal*, 2011;44:5-11.
82. Smythe L, Payne D, Wilson S, Wynyard S. Warkworth birthing centre: exemplifying the future. *NZCOM Journal* 2009;41:7–11.
83. Barlow K, Hunter M, Conroy C, Lennan M et al. An evaluation of the midwifery services at a NZ community maternity unit (birth centre). *NZCOM Journal* 2004;31:7–12.
84. Hunter M. *Autonomy, clinical freedom and responsibility: The paradoxes of providing intrapartum care in a small maternity unit as compared with a large obstetric hospital*. New Zealand: Palmerston North: Massey University, 2000
85. Australian Health Workforce Advisory Committee. *The Midwifery Workforce in Australia 2002–2012*, Sydney: AHWAC Report 2002.2. Sydney: National Health Workforce Secretariat: AHWAC, 2002.
86. Australian Health Workforce Advisory Committee (AHWAC). *The Australian Nursing Workforce—An Overview of Workforce Planning 2001–2004*. AHWAC Report 2004.2. Sydney: National Health Workforce Secretariat: AHWAC, 2004.
87. Loy C, Warton R, Dunbar J. Workforce trends in specialist and GP obstetric practice in Victoria. *Med J Aust* 2007;186(1):26–30.
88. Australian Institute of Health and Welfare. *Nursing and midwifery labour force 2009*. Canberra: AIHW, 2011.
89. Lenthall S, Wakerman J, Opie T, Dunn S, MacLeod M et al. The nursing workforce in very remote Australia, characteristics and key issues. *Aust J Rural Health* 2011;19:32–37.
90. Houd S. Midwifery care for every woman, everywhere. [Internet] 2005 [cited March 2012]. Available from: <https://www.birthinternational.com/articles/midwifery/64-midwifery-care-for-every-woman-everywhere>
91. James S, O'Brien B, Bourret K, Kango N, Gafvels K et al. Meeting the needs of Nunavut families: a community-based midwifery education program. *Rural Remote Health* 2010;10(2):10.
92. National Aboriginal Health Organization. *Celebrating Birth —Aboriginal Midwifery in Canada*. Ottawa: National Aboriginal Health Organization, 2008.
93. Cross TL, Bazron BK, Dennis KW, Isaacs MR. *Towards a culturally competent system of care: a monograph on effective services for minority children who are severely emotionally disturbed*. Washington, DC: Georgetown University Center for Child and Human Development, 1989.
94. Dudgeon P, Wright M, Coffin J. Talking it and walking it: cultural competence *Journal of Australian Indigenous Issues*. *Journal of Australian Indigenous Issues* 2010. 13(3):29-44.
95. International Confederation of Midwives (ICM). *ICM international definition of the midwife*. The Hague: ICM, 2011.
96. International Confederation of Midwives (ICM). *The philosophy and model of midwifery care*. Brisbane: ICM, 2005.

6 Appendices

Appendix 1. Glossary of terms

Birth attendant: Anyone who attends and supports a woman during labour and birth. The person may have some training or experience but has no recognised qualifications. In Indigenous communities, there are often senior women in the community who take on this role, are recognised by the community and are experienced in this role.

Birth on country: Maternity services designed and delivered for Indigenous women that encompass some or all of the following elements: are community based and governed; allow for incorporation of traditional practice; involve a connection with land and country; incorporate a holistic definition of health; value Indigenous and non-Indigenous ways of knowing and learning; risk assessment and service delivery; be culturally competent; and be developed by, or with, Indigenous people.

Cultural competence: The term Cultural Competence will be used in line with the term used within the National Maternity Services Plan (2011)¹ and other key national policy documents. The term is widely used across international health care literature and refers to both migrant and Indigenous populations. The concept evolved from the work of Cross and colleagues⁹³ and is supported by Aboriginal academics in Australia:

Cultural competence requires that organisations have a defined set of values and principles, and demonstrate behaviours, attitudes, policies and structures that enable them to work effectively cross-culturally. Cultural competence is a developmental process that evolves over an extended period. Both individuals and organisations are at various levels of awareness, knowledge and skills along the cultural competence continuum.⁹⁴

Midwife: A midwife is a person who, having been regularly admitted to a midwifery educational programme, duly recognised in the country in which it is located, has successfully completed the prescribed course of studies in midwifery and has acquired the requisite qualifications to be registered and/or legally licensed to practise midwifery. The midwife is recognised as a responsible and accountable professional who works in partnership with women to give the necessary support, care and advice during pregnancy, labour and the postpartum period, to conduct births on the midwife's own responsibility and to provide care for the newborn and the infant. This care includes preventative measures, the promotion of normal birth, the detection of complications in mother and child, the accessing of medical care or other appropriate assistance and the carrying out of emergency measures. The midwife has an important task in health counselling and education, not only for the woman, but also within the family and the community. This work should involve antenatal education and preparation for parenthood and may extend to women's health, sexual or reproductive health and child care. A midwife may practise in any setting including the home, community, hospitals, clinics or health units.⁹⁵

Midwifery model of care:

- Midwifery care promotes, protects and supports women's reproductive rights and respects ethnic and cultural diversity
- Midwifery practice promotes and advocates for non-intervention in normal childbirth
- Midwifery practice builds women's self confidence in handling childbirth

- Midwives use technology appropriately and effect referral in a timely manner when problems arise
- Midwives offer anticipatory and flexible care
- Midwives provide women with appropriate information and advice in a way that promotes participation and facilitates informed decision making
- Midwifery care maintains trust and mutual respect between the midwife and the woman
- Midwifery care actively promotes and protects women's wellness and enhances the health status of the baby.⁹⁶

Perinatal travel: When a mother/pregnant woman travels to a regional or tertiary centre to be close to, or treated in, health care facilities which provide services for maternity, obstetric and neonatal care. Travel is often paid for by Government agencies, for example Patient Assisted Travel Scheme (PATS), and accommodation is provided or paid for the mother.

Strong Women Workers: Work collaboratively to promote the Strong Women, Strong Babies, Strong Culture Program and combine traditional Aboriginal culture with contemporary mainstream pregnancy care knowledge to promote healthy pregnancies and support early parenting.

Traditional midwife: Refers to midwives recognised by the local community, who may or may not be formally educated and regulated. In some Canadian jurisdictions traditional Aboriginal midwives and other healers are recognised under health professions legislation as able to serve Aboriginal communities.

Two way learning: Refers to a practice of drawing on two necessarily separate domains of knowledge. More recently, the terms 'two way learning' and 'both way learning' have come to indicate the acceptance of a mixing of western and Indigenous knowledge. The Ganma metaphor, for example, likens the meeting of these knowledge systems to the meeting of two bodies of water in a lagoon where salt and fresh water come together.

Appendix 2. Action 2.2.3 National Maternity Plan 2011

The initial year	The middle years	The later years	Signs of success
<p>2.2.2 AHMAC undertakes research on international evidence-based examples of birthing on country programs</p>	<p>Australian governments develop a framework, including an evaluation framework, for birthing on country programs.</p> <p>Australian governments develop a pilot for a birthing on country program that includes a consultative selection process with Aboriginal and Torres Strait Islander communities and local maternity care professionals to identify initial birthing on country sites.</p>	<p>Australian governments establish birthing on country programs</p>	<p>Birthing on country programs for Aboriginal and Torres Strait Islander mothers are established</p>

AHMAC = Australian Health Ministers' Advisory Council

Appendix 3. Level of evidence

- Level I Evidence obtained from a systematic review of all relevant randomised controlled trials
- Level II Evidence obtained from at least one properly designed randomised controlled trial
- Level III-1 Evidence obtained from well-designed pseudo-randomised controlled trials (alternate allocation or some other method)
- Level III-2 Evidence obtained from comparative studies with concurrent controls and allocation not randomised (cohort studies), case control studies, or interrupted time series with a control group
- Level III-3 Evidence obtained from comparative studies with historical control, two or more single-arm studies, or interrupted time series without a parallel control group
- Level IV Evidence obtained from case series, either post-test or pre-test and post-test
- Source: National Health and Medical Research Council.

Appendix 4. Database search information

Database	'key resources' only 1985–Nov 2011	Searches and MeSH terms used	# found	# d'load'd	# in Endnote
CINAHL Plus Full Text	EBSCOhost	"aboriginal and birth*", "indigenous and birth*", "inuit and birth*", "indian and birth*" "model of care and S1 or S2 or S3 or S4 or S5 or S6"	237	237	169
Maternal and Infant Care	OvidSP	As above	143	16	1
Medline + Full Text	EBSCOhost		32	12	12
Google Scholar		Aboriginal and "midwifery model of care"	0	0	0
Dissertations and Theses PQDT	ProQuest	Aboriginal, indigenous, midwife*, matern*, Aus/NZ/Can/USA	840	1	1
APAIS-ATSIS ATSI Health	Informit	Birth* and aboriginal, birth* and indigenous	13	7	7
Health Collection	Informit	As above		2	2
Aust. Indigenous Health Infonet (Edith Cowan Uni)	Informit		1	0	0
JBI CONNECT			0	0	0
IntermidUK			4	0	0
Wiley Online Library		Birth* and (indigenous or aboriginal) and (model of care)	395	7	0
Health & Medical Complete	EBSCOhost		0	0	0
APAFT	EBSCOhost		0	0	0
Nursing and Allied Health Collection	Infotrac	Birth* and aboriginal or indigenous	99	14	0
Nursing Resource Center			99	14	0
Academic Search Complete	EBSCOhost		380	44	0
AMED	EBSCOhost		0	0	0
Journals searched separately	International Journal of Circumpolar Research (formerly Journal of Arctic Research)	Thru Medline + FT and Mater Library Search terms - in text: "birth*"	86	6	6
(As above)	Rural and Remote Health	Thru Medline + FT Search terms - in text: "birth*"	97	2	2
Totals: 17 (some are composites)			2413	362	200

Appendix 5. Components of Birthing on Country models

No.	Author & year	Model of care	Target population	Year estimate & years of operation	Service delivery + Ops components + Key features that differ from mainstream services	Cultural competencies	Relevance to Australia
AUSTRALIA							
1.	Stapleton H, Murphy R, Gibbons K, Kildea S. (2011)	Mater Mothers Hospitals Murri Antenatal Clinic	Aboriginal and Torres Strait Islander women – URBAN Brisbane Australia	Est. 2004 In operation 7 years	<p>Continuity of carer (Midwife & Obstetrician) in the antenatal period</p> <p>Dedicated clinic space runs one day per week</p> <p>Staffed by an Aboriginal midwife, Aboriginal liaison officer and an obstetrician</p> <p>Refer to services provided by mainstream as and when needed e.g. social worker, dietician; women accompanied by Aboriginal liaison officer to appointments if desired</p> <p>Liaise with external Aboriginal and Torres Strait Islander primary care services when needed</p>	<p>Continuity of carer in the antenatal period</p> <p>Aboriginal Midwife and Aboriginal liaison officers</p> <p>Dedicated space with flexible appointments</p> <p>Provide support in attending mainstream specialities (e.g. social work appointments)</p>	High
2.	Homer C, Foureur M, Allende T. (2009)	Malabar Community Midwifery Link Service	<p>Aboriginal and Torres Strait Islander AND immigrant, families – URBAN Eastern Sydney Australia</p> <p>Evaluation shows 27% and 29% Indigenous women using the service in 2007 and 2008 respectively</p>	<p>Est. 2006 In operation 5 years</p> <p>Evaluation on first 2 years of data n=353 (n=99 28% Aboriginal and Torres Strait Islander women)</p>	<p>CMC, Midwives, child and family health nurse (one only), community-based paediatrician and Paediatric Fellow, Aboriginal Health Education Officer (one only), provide clinic services at La Perouse Aboriginal Community Health Centre Paediatrician screens children at the Gujaga Child Care Centre</p> <p>Koori midwives employed where possible. New Directions federal funding supports an Identified position for 1 FTE Koori midwife. Dedicated social worker recommended. New Directions funding supports Social Worker 24 hrs/week. Enhancement funding for other initiatives secured through Randwick Council grants</p> <p>Women give birth at Royal Hospital for Women. Early postnatal discharge back to the service where possible</p> <p>Midwifery home visits for the first 10 days up to 6 weeks after discharge as needed</p>	<p>Sited at Malabar refurbished community premises and an office within RHW with outreach to La Perouse Aboriginal Community Health Centre</p> <p>Program evaluated and managed by a team which included ACHC organisation members</p> <p>Aboriginal Health worker and Aboriginal Health Education officer employed in model.</p> <p>Continuity of caregiver during pregnancy, and postnatal period.</p>	High

Appendix 5. Components of the 'Birthing on Country' models

No.	Author & year	Model of care	Target population	Year estimate & years of operation	Service delivery + Ops components + Key features that differ from mainstream services	Cultural competencies	Relevance to Australia
					<p>Children seen at Paediatric clinic or child care centre and linked with services at Sydney Children's Hospital</p> <p>Linked women with their local Indigenous community services if they live outside local area</p>	Individual parenting classes targeted at young women	
3.	<p>Stamp G, Champion S, Anderson G, Warren B, Stuart-Butler D, Doolan J, Boles C, Callaghan L, Foale A, Muyambi C.</p> <p>(2006) Report (2008) Qual (2010)</p>	Anangu Bibi Family Birthing Program, based in Whyalla and Port Augusta	Indigenous women– REGIONAL Australia	<p>Est. 2003</p> <p>In operation 8 years across 2 sites</p> <p>Evaluation after first 50 births</p> <p>Views of workers and women - study conducted after the first 45 births</p>	<p>5 part-time Aboriginal Maternal and Infant Care (AMIC) workers, 5 part-time midwives allocated a caseload following a structured selection process</p> <p>Site of services: (a) Port Augusta provided antenatal, intra partum and postnatal until 6–8 weeks and (b) Whyalla provided antenatal and postnatal care until 6–8 weeks</p>	<p>Expert cultural guidance from an Aboriginal Advocacy group</p> <p>AMIC workers in leadership role providing cultural safety</p> <p>Inter-cultural partnerships and skill exchange with midwives with GP back up</p> <p>Education and training for AMIC workers</p>	High
4.	<p>Panaretto K, Mitchell M, Anderson L, Larkins S, Manassis V, Buettner G, Watson D.</p> <p>(2007)</p>	Community-based collaborative, shared antenatal care intervention (The Mums and Babies Program)	Indigenous women– REGIONAL Australia	<p>Est. 2000</p> <p>7 years of study at time of report (781 births over 6 years)</p>	Sustained all previous gains (see # 4 below) including preterm births and now also reduced perinatal mortality rate	Program "refinements" mentioned but not explained	High

No.	Author & year	Model of care	Target population	Year estimate & years of operation	Service delivery + Ops components + Key features that differ from mainstream services	Cultural competencies	Relevance to Australia
5.	Panaretto K, Lee H, Mitchell M, Larkins S, Manassis V, Buettner P, Watson D. (2005)	As above	As above	4 years of study at time of report	Staffed by Aboriginal health workers (TAIHS maternal and child health staff), midwives, doctors (TAIHS female doctors), obstetric team and Indigenous health worker. Delivered through daily maternal and child health clinics at TAIHS, pregnancy register (monthly recalls), daily walk in clinics, family orientation(weekly playgroup and toys, etc), care plans provided, transport provided Program is similar to WHO strategy – focus on screening, nutritional supplementation, education and monthly recalls	Aboriginal health workers employed on program Walk-in clinics daily Family orientation to service Transport provided to clinic	High
6.	NSW Health (2005)	NSW Aboriginal Maternal and Infant Health Strategy (AMIHS)	Indigenous women– NSW Australia URBAN & REGIONAL	Est. 2001 In operation 10 years	Seven targeted antenatal/postnatal programs for Aboriginal women and infants across six former area health services Far West, Mid North Coast, Macquarie, New England, Hunter, Mid Western In five of the AHS, a community midwife and Aboriginal health worker (AHW) or Aboriginal Health Education Officer (AHEO) team provided community based services in conjunction with existing medical, midwifery, paediatric and child and family health staff	Greater success in accessing women occurs when programs linked with the local Aboriginal controlled health services based in the community Employment of AHW and/or AHEO Home visiting services Transport provision to bring women to services	High
7.	Campbell S, Brown S. (2004)	Women's Business Service	Aboriginal women– Mildura VIC Australia URBAN & REGIONAL	Est. 2000	Community controlled primary health care service Operated alongside the general medical clinic at the Mildura Aboriginal Health Service (MAHS) Funded by Victoria Department of Human Services Pregnancy care provided by a registered midwife and an Aboriginal Maternal Health worker Provided antenatal and postnatal care, health education and information, and support for clients during labour and birth in hospital, or at home Clients could attend appointments at the clinic or receive visits from the midwife and health worker at home via an outreach service	Community controlled primary health care service Operated alongside the general medical clinic at the Mildura Aboriginal Health Service (MAHS) Employed AHW Flexible appointments with midwife - in clinic or home Midwife and maternal health worker available during labour and birth Of study participants: 2 home births and 23 hospital births	High

Appendix 5. Components of the 'Birthing on Country' models

No.	Author & year	Model of care	Target population	Year estimate & years of operation	Service delivery + Ops components + Key features that differ from mainstream services	Cultural competencies	Relevance to Australia
					<p>Program provided a 24 hour on-call service and transport to and from hospital for women who need it</p> <p>Weekly baby clinic run which provided information, advice and support for mothers and their babies in the year after birth</p>	<p>Main benefits to women using the service: Empowerment, choice and reassurance</p>	
8.	<p>Jan S, Conaty S, Hecker R, Bartlett M, Delaney S, Capon T.</p> <p>(2004)</p>	<p>Aboriginal Community Controlled Midwifery Service (Daruk)</p>	<p>Indigenous women– URBAN Western Sydney Australia</p>	<p>Est. 1990</p> <p>In operation 21 years</p>	<p>Staffed by a full-time Aboriginal health worker, a non-Aboriginal midwife and two female general practitioners</p> <p>Services include regular antenatal check-ups for clients, booking in to hospital, transport, home visits, labour support and birth, hospital visits, management of high risk pregnancies in the community consultation with a specialist medical team, assistance with infant feeding and provision of cultural awareness sessions with local hospital staff</p>	<p>Community Controlled</p> <p>Employment of Aboriginal Health worker</p>	High
9.	<p>Carter E, Lumley J, Wilson G, Bell S.</p> <p>(2004)</p>	<p><i>Congress</i> Alukura Model</p>	<p>Indigenous women– REGIONAL & REMOTE</p>	<p>Est. 1987, expanded in 1991</p> <p>In operation 24 years</p>	<p>14.5 staff positions</p> <p>Offers the following services: antenatal and postnatal care, gynaecological services, visiting specialist obstetrician</p> <p>Limited mobile bush service</p> <p>Visiting diabetic educator, healthy lifestyle education and counselling, liaison service with hospital and specialist services</p> <p>Transport service to and from the clinic and hospital visits</p> <p>Education program for young women since 1998</p>	<p>Guided by Congress Alukura's Council (comprises of women representing communities and language groups throughout Central Australia)</p> <p>Prioritising of Aboriginal birthing philosophy i.e. birthing and women's health are traditionally women's business and that women's health incorporates traditional language, culture, Grandmothers' Law and women's business</p> <p>Women birth at Alukura Health Centre or Alice Springs Hospital with an Aboriginal or Alukura midwife</p>	High

No.	Author & year	Model of care	Target population	Year estimate & years of operation	Service delivery + Ops components + Key features that differ from mainstream services	Cultural competencies	Relevance to Australia
10.	d'Espaignet E, Measey ML, Carnegie M, Mackerras D. (2003)	<i>Strong Women, Strong Babies, Strong Culture</i> Program	Aboriginal women – Northern Territory Australia REGIONAL & REMOTE	Est. 1993	Initially implemented in three communities in Northern Territory in 1993; a further two communities began the program in 1996 Senior Aboriginal women employed to help younger Aboriginal women prepare for pregnancy, and to support pregnant Aboriginal women by encouraging them to visit clinic for antenatal care early in their pregnancy, by providing advice and encouragement about healthy pregnancy management in relation to nutrition, by promoting the adoption of safe practices such as ceasing or reducing drinking (alcohol) and smoking during pregnancy, reinforcing the need to seek adequate and timely medical help and to take prescribed medicines Fluid program; contents and form of delivery dependent on a variety of factors including the personal and social circumstances of the pregnant woman, the social and health services available in their community, skill level of workers and the amount and type of support provided to the workers by departmental staff	Employed senior Aboriginal women to deliver the program Individualised care of each woman depending on the services available in the local community	High
11.	Nixon A, Byrne J, Church A. (2003)	The Northern Women's Community Midwives Project. Northern Metropolitan Community Health Service Adelaide South Australia	All women in the NMCHS area were offered care by NWCMP N=148 14.2% births reported were ATSI REGIONAL & REMOTE	Est. 1998 Study period June 1998–Sept 2001	Community midwifery program offering antenatal, postnatal and birthing services from local Community Health Centre Clinical caseload midwifery – continuity of care NO AHW's on program linked to other community services only Home birth offered or birth with NWCMP midwife in hospital – 13.6% n=20, State incidence=0.2% planned home births	No specific cultural competencies Home visits or clinic visits Limited transport	Medium to High

Appendix 5. Components of the 'Birthing on Country' models

No.	Author & year	Model of care	Target population	Year estimate & years of operation	Service delivery + Ops components + Key features that differ from mainstream services	Cultural competencies	Relevance to Australia
12.	NSW Health (Cupitt L, Druett A.– Co-authors and consultants) (1998)	NSW Alternative Birthing Services Program	Predominantly Aboriginal women REGIONAL & REMOTE	2 nd Phase 1993/4–1996/7 9 projects evaluated, 4 case studies presented	<p>Birthing Centres established</p> <p>Community midwives employed</p> <p>Aboriginal medical services and AHW's funded</p> <p>Consultations with AHW's and Aboriginal women in the regions being serviced, steering committees set up but not well attended by Aboriginal invitees</p> <p>Focused on antenatal and postnatal service provision</p> <p>Some early childhood services also provided e.g. Koori Babies Day once a month</p>	<p>Services linked with local ACCH organisation</p> <p>Cultural Sensitivity training funded for all for non-Aboriginal staff</p> <p>Greater access to mainstream services</p> <p>Some transport provided for women and children to access mainstream and community-based services</p>	

No.	Author & year	Model of care	Target population	Year estimate & years of operation	Service delivery + Ops components + Key features that differ from mainstream services	Cultural competencies	Relevance to Australia
13.	Dorman R (1997)	<i>Ngua Gundi</i> (Mother and Child) Program Rockhampton /Mt Morgan and Woorabinda communities, Queensland Australia	Aboriginal & Torres Strait Islander women REGIONAL	Est.1996	<p>Community midwifery program</p> <p>Staffed by one full-time midwife and one full-time health worker</p> <p>Situated in a residential house in Rockhampton</p> <p>Transport provided via the employment of a driver (Aboriginal mother) for 15 hours a week</p> <p>Play area for children at the back of the house</p> <p>Midwife as primary care giver with referrals made to medical practitioners as required</p> <p>Care provided at clinic; however home visiting is a major part of the service</p> <p>Close relationship with midwifery services at the hospital</p> <p>3 days a week the health worker visits new mothers at the maternity ward making women aware of the service, offering to home visit them postnatally and inviting them to come and join in activities</p> <p>Antenatal education carried out in either groups or one to one basis between health worker and client</p> <p>Establishment of 'The Mothers Group' which meets weekly and is largely responsible for setting the direction of program activities and is heavily consulted regarding program strategies</p> <p>Postnatal depression support group is meeting regularly with the aid of a social worker from community health</p> <p>One mother has initiated a SIDS support group</p> <p>An under-fives clinic has been established which follows up children coming through the program</p>	<p>Employment of Aboriginal staff (health worker and driver)</p> <p>Strong community participation and consultation through 'The Mothers Group'. Group sessions held for social and educational needs; group tours to mammography unit and labour ward as needed</p> <p>Prayer and reconciliation sessions held</p> <p>Women deliver at Rockhampton Base Hospital with an AHW for support as required</p> <p>Strong emphasis on family support services and health education</p>	High

Appendix 5. Components of the 'Birthing on Country' models

No.	Author & year	Model of care	Target population	Year estimate & years of operation	Service delivery + Ops components + Key features that differ from mainstream services	Cultural competencies	Relevance to Australia
CANADA							
14.	Van Wagner V, Harney E, Osepchook C, Crosbie C, Dennis R, Tulugak M. (2011)	Inuulitsivik midwifery service (comprises of birth centres in Puvirnitug, Inukjuak and Salluit)	Inuit women–remote women from Nunavik, Quebec, Canada	Est. 1986 In operation 25 years	<p>Study of outcomes 2000–2007</p> <p>Low rates of intervention and safe outcomes in young multiparous women (97.5% Inuit population)</p> <p>Support of inter-professional team</p> <p>Education of Inuit midwives</p> <p>High breast feeding rates</p>	<p>Birth attendant known to be Inuit midwife in 67% of all births recorded</p> <p>Formal recognition sought for Inuit midwives and the education program</p>	High
15.	Van Wagner V, Epoo B, Nastapoka J, Harney E. (2007)	As above	As above	In operation 20 years	<p>Midwifery-led interdisciplinary model</p> <p>Midwives are lead caregivers</p> <p>Midwives work as part of a team with nurses, physicians, and social workers</p> <p>Nurses provide on-call first line primary care for non-maternity care emergencies in all of the villages</p> <p>Family physicians based in the largest Hudson Bay communities are available for consults on-site, and also make regular visits by plane to the other villages</p> <p>Women living in Inukjuak, Puvirnitug and Salluit receive prenatal care, low risk births and postpartum care with midwives in the birth centres</p> <p>Women who live in areas with no birth centre, receive prenatal care from nurses in consultation with midwives and travel to one of the birth centres at 37 to 38 weeks gestations for birth</p> <p>Governed by an Inuit board of directors and a council which includes midwives</p>	<p>Employs Inuit midwives and students</p> <p>Inuit midwifery education on-site Involvement of men and community in some care provision</p> <p>Risk assessment interdisciplinary case meeting</p>	High

No.	Author & year	Model of care	Target population	Year estimate & years of operation	Service delivery + Ops components + Key features that differ from mainstream services	Cultural competencies	Relevance to Australia
16.	Douglas VK. (2011)	Rankin Inlet Birthing Centre Nunavut Canada	Inuit women	Est. 1993 Operating 18 years	<p>Only low risk births occur at the centre Low risk births determined through both a clinical risk evaluation tool and through advice from an OB-GYN consultant based in Winnipeg</p> <p>Has returned local birthing to low risk women are no longer sent south for weeks/months for care</p> <p>A slow start to training local midwives and has not yet been seen to have returned traditional Inuit childbirth to Nunavik</p> <p>Fundamentally the centre has been a southern institution. The use of the biomedical risk scoring system to decide whether women will be evacuated, the community based decision making system used in Nunavik</p> <p>Midwives from southern Canada</p> <p>Midwives are not local and so have had difficulties in gaining the trust of the local communities</p> <p>Regional Coordinator (a trained maternity care worker) and other maternity care workers are Inuit however role is limited to prenatal and post-natal counselling and language translation at the birth</p> <p>Midwifery program has been established through a local college with 2 graduates to date and 10 students in progress</p>	<p>All 'maternity care workers' are Inuit</p> <p>No Inuit midwives</p> <p>Ongoing efforts made to incorporate traditional Inuit knowledge and traditions into the midwifery curriculum</p> <p>Not enthusiastically supported by the community who see it as predominantly a 'southern institution' so it remains an important but 'peripheral' institution in Rankin Inlet</p> <p>The staff at the Birthing Centre are aware of its shortcomings and explicitly support more community-centred approaches in other communities</p> <p>Future expansion is likely to adapt to local traditions and requirements, leading to new birthing centres that will be integrated into their communities</p>	High

Appendix 5. Components of the 'Birthing on Country' models

No.	Author & year	Model of care	Target population	Year estimate & years of operation	Service delivery + Ops components + Key features that differ from mainstream services	Cultural competencies	Relevance to Australia
17.	Simonet F, Wilkins R, Labranche E, Smylie J, Heaman M, Martens P, Fraser WD, Minich K, Wu Y, Carry C, Luo ZC. (2009)	Hudson Bay midwife-led maternity care programme Nunavik Canada	Inuit women	Est. 1986	Midwifery led perinatal care and risk screening in close collaboration with local nurses and physicians High risk pregnancies are referred to physicians or obstetricians If caesarean or tertiary care is expected to be necessary, births are planned in an obstetric hospital in Montreal Midwives offer prenatal care, case management, low-risk birth and postpartum care, primarily in the Inuit language Student midwives trained through apprenticeship learning	Employment of Inuit midwives and students Capacity building approach-on-site apprenticeship learning	High
18.	Houd S, Qinuajuak, J, Epoo, B. (2002)	Inukjuak, Nunavik Canada\ (Part of Inuulitsivik midwifery service program)	Inuit women	Est. 1998 In operation 13 years	Multidisciplinary approach with weekly perinatal committee consisting of midwives, nurse, doctors High level, decentralised education system for Inuit women 3 midwives providing caseload care throughout pregnancy, birth and postpartum Senior midwife teaching and evaluating students and providing backup for births and emergencies	Employs Inuit midwives and students	High
U.S.A.							
19.	Leeman L, Leeman R. (2002)	Zuni-Ramah Indian Health Service Hospital Birthing Unit–New Mexico USA	Zuni Pueblo and Ramah Navajo Indian communities	1992 –1996 studied	Local birthing unit in rural area staffed by family physicians and part-time nurse-midwife could deliver low- to medium-risk pregnant women. Other high-risk women transferred to Gallup Indian Medical Centre (33miles north) or Albuquerque NM (147miles east) for mainstream services Local community hospital facility Fetal monitoring and amnioinfusion available No operative births except Vacuum-assisted, no inductions, no epidural anaesthesia	NOT within the brief of this paper. However, authors acknowledge benefit of low-risk birthing in own community No information on cultural activities supplied in this paper	Medium to High

Appendix 6. Evaluation of the Birthing on Country models

No	Author	Model of care	Study design, outcome measures & data collection	Years of study, sample size & level of evidence	Effectiveness	Successful features and reasons for success	Risk of bias	Relevance to Australia
AUSTRALIA								
1.	Stapleton H. et al. (2011)	Mater Mothers Hospitals Murri Antenatal Clinic	<p>Mixed methods</p> <p>Surveys with service users (by Indigenous peer researchers) and hospital staff</p> <p>Comparative analysis of clinical outcomes between Indigenous women who attended the clinic vs. Indigenous women who attended other models of care at the same hospital 2004–2009</p> <p>1- 1 interviews with clinic staff and external stakeholders</p> <p>Focus groups with service users and external stakeholders</p>	<p>Level III-3</p> <p>2010–2011</p> <p>Murri Clinic n=575 (187 birthed elsewhere or non-Indigenous women)</p> <p>Indigenous concurrent control n=441</p>	<p>Highly valued service by service users and external stakeholders</p> <p>The majority of service users (92%) felt that they were understood and respected at the Murri clinic</p> <p>When compared to Indigenous women who attended other models of care in the same hospital, women who attended the Murri antenatal clinic were:</p> <ul style="list-style-type: none"> • Statistically less likely to have perineal trauma, an elective caesarean section, and a baby admitted to the neonatal nursery • Statistically more likely to have a normal birth • Less likely to have iron deficiency anaemia (7.73% vs. 13.5%) <p>Lower levels of reporting of 'unable to ask' for some routine data collection e.g. (domestic violence)</p>	<p>Women reported high levels of satisfaction often recommended by other family members</p> <p>Continuity of carer was particularly valued</p> <p>Aboriginal midwife and Aboriginal liaison officers 'significant drawcard'</p> <p>Respectful and culturally appropriate care approach</p> <p>Flexibility of appointment schedule</p>	<p>Excluded transfers in and non-Indigenous women with Indigenous partners</p> <p>Possible that women attending other models had more antenatal risk factors</p>	High

Appendix 6. Evaluation of the 'Birthing on Country' models

No	Author	Model of care	Study design, outcome measures & data collection	Years of study, sample size & level of evidence	Effectiveness	Successful features and reasons for success	Risk of bias	Relevance to Australia
2.	Homer C et al. (2009)	Malabar Community Midwifery Link Service	<p>Outcome data collection (quantitative)</p> <p>Site visits by evaluation team to conduct focus groups and interviews</p> <p>Time and motion audits conducted</p> <p>Descriptive analysis of review material and recommendations made</p>	<p>Level V</p> <p>2007 and 2008 n=353 (n=99 Aboriginal and Torres Strait Islander women)</p>	<p>Accessibility appropriateness, cost effectiveness, acceptability, and demand for the service are all positive outcomes</p> <p>A Memo of Understanding with the local Aboriginal Community Controlled Service (ACCS) was to be reinvigorated as a result of the evaluation</p> <p>Encouraging results e.g. reduced alcohol use and smoking (but no analysis of outcome data done)</p> <p>Reduced no of women had 1st a/n visit after 20wks</p> <p>Reduced no of perinatal deaths (but no statistical analysis done to interpret this as numbers too small. All deaths in 2008 n=3, none in 2nd yr. All deaths pre-or post-term infants)</p>	<p>Funding to build on an established relationship within the pre-existing Malabar service. Enhanced with New Directions federal funding supporting AHEO (existing position) 1FTE Midwife (Identified) Social Worker 0.63FTE, CFHN .8FTE, Community Paediatrician 0.5FTE and Speech Pathologist 0.63FTE</p> <p>Leadership and vision of the local area health service to assist with the metamorphosis of the service</p> <p>Staff showing commitment in achieving change</p> <p>Aboriginal midwife (no mentored midwife for many years)</p> <p>Support from senior obstetrics services in the area to provide complex care needs</p> <p>Continuity of caregiver during pregnancy, labour and birth, postnatally through a MGP (often early discharge)</p> <p>Flexibility of service provision by midwives</p> <p>Additional council funding for health promotion projects and transport</p>	<p>Possible under statement of staffing difficulties and stress levels of current staff. Currently having sessions on vicarious trauma</p> <p>Success of continued consultation with local Aboriginal community and particularly women (Aboriginal Women's Evaluation Group)</p> <p>Small numbers</p>	High

No	Author	Model of care	Study design, outcome measures & data collection	Years of study, sample size & level of evidence	Effectiveness	Successful features and reasons for success	Risk of bias	Relevance to Australia
3.	Stamp G et al. (2008)	Anangu Bibi Family Birthing Program, based in Whyalla and Port Augusta	Qualitative research methodology; semi structured interviews with all five AMIC workers and four of the five midwives	Level VI n= 9	Effective intercultural partnerships between AMIC workers and midwives founded on two way learning and a deep respect for AMIC workers' cultural knowledge, community links and growing clinical skills	Employment of AMIC workers in a leading cultural role in the partnership appeared to result in a higher use of services Cultural safety		High
4.	Panaretto K et al. (2007)	Community based, collaborative, shared antenatal care intervention (Mums and Babies program)	Before and after evaluation Outcome measures: proportion of women having inadequate antenatal care and screening, perinatal indicators	Level III-3 7 years ops n=781 singleton births	<ul style="list-style-type: none"> • Significant increase in total number of antenatal care visits per pregnancy (3 vs. 6, P<0.001) • Significant positive trends in recorded care planning(P<0.001), smoking cessation advice (P<0.001)and antenatal education activities (P< 0.001) <p>Previously reported gains have sustained</p> <p>Differences between Townsville based women and non-Townsville based were shown to be significant; women missing out on screening tests were significantly more likely to be non-Townsville women (P=0.029)</p> <ul style="list-style-type: none"> • Townsville women had significant reductions in preterm births, perinatal mortality and an increase in mean birth weight 	Community based and focused Completion of key clinical tasks Brief intervention for risk factors Improved access to care Capacity building at TAIHS-empowers people to take greater control of their health Quality improvement framework and continuous evaluation have played significant role in introducing a culture of quality to medical service delivery	Statistical significance improvement in perinatal mortality reported but numbers not large enough (P=0.014)	High

Appendix 6. Evaluation of the 'Birthing on Country' models

No	Author	Model of care	Study design, outcome measures & data collection	Years of study, sample size & level of evidence	Effectiveness	Successful features and reasons for success	Risk of bias	Relevance to Australia
5.	Panaretto K et al. (2005)	Community based, collaborative, shared antenatal care intervention (Mums and Babies program)	Prospective cohort study Measures: patterns of antenatal visits, proportion of women undertaking key antenatal screening and perinatal outcomes	Level III-3 4 Years ops (A) intervention n=456 comparison against (B) 84 historic controls and (C) 540 contemporary controls	<ul style="list-style-type: none"> Significantly more antenatal care visits (3 vs. 7) <p>Improved timelines of the first visit (14 weeks vs. 12 weeks)</p> <p>Fewer pregnancies with inadequate care (52.4% vs. 19.1%)</p> <p>Fewer preterm births than ((A) 8.7% vs. (B) 16.7% & (C) 14.3%) comparable to the rate of non-Indigenous preterm births in Queensland (8.0%) and Australia (7.05)</p> <p>Mean birth weight improved vs (B) (3043g vs. 3239g)</p>	Strength of community relationships, presence of energetic champions and tailoring the interventions to local context	Lower parity in intervention group	High

No	Author	Model of care	Study design, outcome measures & data collection	Years of study, sample size & level of evidence	Effectiveness	Successful features and reasons for success	Risk of bias	Relevance to Australia
6.	NSW Health (2005)	NSW Aboriginal Maternal and Infant Health Strategy (AMIHS)	<p>Evaluation utilising qualitative and quantitative data for the 2004 calendar year</p> <p>Qualitative data included interviews and focus groups with women, clinicians, managers and other stakeholders</p> <p>Quantitative data included program specific information and population based data from the NSW Midwives Data Collection.</p> <p>Outcomes: Maternal age less than 20 years, first antenatal visit before 20 weeks gestation, smoking in the second half of pregnancy, preterm birth (prior to 37 weeks gestation) and low birth weight (less than 2500g)</p>	<p>Level III-3</p> <p>Qualitative Data: n=201 interviews individually or in small groups with extensive number and type of stakeholders</p> <p>Quantitative Data: AMIHS Programs (n=368) vs LGAs (n=2275)</p>	<p><u>Program data (2004) compared with LGA data 1996--2000:</u></p> <p>Increased proportion of women attending their first antenatal visit before 20 weeks gestation (65% pre-AMIHS vs. 78% AMHIS 2004)</p> <p>Reduced rate of preterm birth (20% pre-AMIHS vs. 11% AMHIS 2004)</p> <p>Percentage of preterm birth remained essentially stable (13% pre-AMIHS vs. 12% AMHIS 2004)</p> <p>Population based data 1996–2000 and 2003 (examine five clinical outcomes over time)</p> <p>More women attending their first antenatal visit before 20 weeks gestation than prior t the ext. of AMIHS)</p> <p>Reductions in smoking in the second half of pregnancy (59% from 1996–2000 vs. 55% in 2003), the proportion of women giving birth at age 19 or less and the proportion of preterm births (not statistically significant)</p> <p>Proportion of babies born at low birth weight remained stable</p>	<p>Level of trust that AMIHS clinicians had with women may mean that they disclosed more information than previously</p> <p>Community based care, providing home visits and follow up with women especially those who are hard to find</p> <p>Continuity of carer by a culturally appropriate caregiver extremely important to women</p>		High

Appendix 6. Evaluation of the 'Birthing on Country' models

No	Author	Model of care	Study design, outcome measures & data collection	Years of study, sample size & level of evidence	Effectiveness	Successful features and reasons for success	Risk of bias	Relevance to Australia
7.	Campbell S, Brown S (2004)	Women's Business Service (WBS)	Retrospective cohort Data collection; Questionnaires and data on obstetric and socio-demographic characteristics also collected Statistical comparisons were made between the views and experiences of (1) clients of the Mildura WBS and (2) rural women who had received public maternity care	Level III-3 Clients of the Mildura WBS n=25 vs. rural women who had received public maternity care n=333	Clients of Mildura's WBS were more likely to smoke during their pregnancy and to have an infant weighing less than 2,500g There were no differences in relation to parity, spontaneous onset of labour or method of birth WBS clients were significantly more likely to say that doctors and midwives always kept them informed, that midwives were never rushed, that they never had to wait more than half an hour, and to say they were always happy with their medical care WBS clients were more likely to have known at least one of their midwives who cared for them in labour very well, and to perceive that they had been given an active say in making decision regarding their care	Philosophy of care underpinning the WBS takes account of a broad conception of health which encompasses the emotional, cultural, social and physical needs of clients WBS is flexible and constantly changing to address a range of other needs, which are not necessarily regarded as within the traditional domain of health care providers Strong community involvement and collaboration		High

No	Author	Model of care	Study design, outcome measures & data collection	Years of study, sample size & level of evidence	Effectiveness	Successful features and reasons for success	Risk of bias	Relevance to Australia
8.	Jan S et al. (2004)	Aboriginal Community (Daruk) controlled midwifery service	<p>Data obtained through an analysis of annual financial statements and discussion with staff at two local hospitals; Nepean and Blacktown</p> <p>Cost Analysis – Cost separated into two components: net direct health sector costs and downstream costs</p> <p>Outcomes compared between two groups of Aboriginal women (Aboriginal women who were seen by Daruk for antenatal care and Aboriginal women received antenatal care at Nepean or Blacktown hospitals</p> <p>Outcomes compared were gestational age at first visit, number of antenatal visits, whether routine antenatal tests were undertaken, birth weight and perinatal survival</p>	<p>Level III-3</p> <p>N=834 births to Aboriginal women resident in Western Sydney (387 gave birth at Nepean hospital, 292 at Blacktown hospital and 155 gave birth out of area. vs. n=245 women/ 339 pregnancies attended by the Daruk antenatal service</p>	<p>Running costs of DARUK were \$120,281 per year; this covered three full-time positions, vehicle lease, telephone and postage</p> <p>Consultations conducted in existing premises, administrative functions largely undertaken by midwives themselves and thus such costs were factored into their salaries</p> <p>Net direct health sector costs were estimated by subtracting the cost savings to other centres (\$45,867 per/annum) from the programme running costs (\$120,281 per/annum). As a result, annual net health sector costs were \$74,414 (or \$1,772 per patient)</p> <p>Gestational age at first visit was 17.2 weeks for Daruk clients vs. 21.2weeks for Nepean clients vs. 19.9 weeks for Blacktown clients</p> <p>Higher mean number of antenatal visits at Daruk than Nepean (10.5 vs.5.5)</p> <p>Higher rate of clients attending routine tests at Daruk (94% vs. 71% at Nepean vs. 84% at Blacktown)</p>			High

Appendix 6. Evaluation of the 'Birthing on Country' models

No	Author	Model of care	Study design, outcome measures & data collection	Years of study, sample size & level of evidence	Effectiveness	Successful features and reasons for success	Risk of bias	Relevance to Australia
9.	Carter E et al. (2004)	The Alukura Model	Descriptive analysis of an internal review process of Alukura in 1998 Analysis of documents and reports, service use and perinatal data, interviews with Alukura staff, the Central Aboriginal Congress, local Aboriginal organisations, health care providers and others. Interviews coded for themes and content analysis done	Level VII 63 interviews with 79 individuals	Increase in the proportion of urban Alice Springs Aboriginal women starting antenatal care in the first three months of pregnancy (23% in 1986-88 vs.38% in 1993-1995) Increase in the mean birth weight of babies (3168g in 1986-90 vs. 3271g in 1991-1995 and 3267g in 1996-1999) In 1994, 122 Aboriginal women who lived in the Alice Springs <u>urban</u> regions received antenatal care; out of these 119 (98%) presented to Alukura for this care In 1994, 192 Aboriginal women who lived in the Alice Springs <u>rural</u> regions received antenatal care; out of these 34 (18%) presented to Alukura for this care Birthing at Alukura 1994-1995 54 women interested, 21 booked in at 36/40, 5 t/f out pre-labour, 3 transferred out intrapartum. 13 birthed, then 2 transferred postnatally. 1996-1998 3 births at Alukura No births onsite since June 1997 New Alukura birthing program has Alukura midwives delivering clients at ASH	High quality care both technical and 'holistic and sensitive' Outreach services to local and remote communities. Transport, liaison, screening and follow-up provided More success in service provision than as a 'place for birth' Continuity of care maintained	Aboriginal interviewees may be reluctant to speak to non-Aboriginal reviewers Interviews seen as interrogations Cultural differences Lack of opinion and information from young women themselves—most views from senior women (grandmother) or community elders Interpreters/ interpretation of information from other languages	
10.	Tursan d'Espaignet E. et al (2003)	Strong Women, String Babies, Strong Culture Program	Pre and post Intervention analysis Outcome: birth weight	Level IV Data obtained from the NT Perinatal Data Collection database Only hospital-based live births to	No statistically significant trend (P=0.38) in the mean biennial birth weight over the period 1988-2001 The trend for increasing biennial average birth weight was significant in Group 1 but was not small and not significant in Group 2.	Anecdotal evidence suggests less that the support for the SWSBSC workers servicing group 2 communities was less intense than that received by the workers involved in Group 1. Contents of the program may have been different in the two		High

No	Author	Model of care	Study design, outcome measures & data collection	Years of study, sample size & level of evidence	Effectiveness	Successful features and reasons for success	Risk of bias	Relevance to Australia
				<p>Aboriginal women in rural and remote communities in NT for the 14-year period 1988-2001 were included (n=8326)</p> <p>Analysis compares the three communities where the program was first implemented, the additional communities where the program commenced in 1996 and their respective comparison groups</p> <p>Group 1: n=1406 (577 in pre-intervention period and 829 in post-intervention period), controls for group included 2118 in the pre-intervention period and 3070 in the post-intervention period.</p> <p>Group 2: 814 in pre-intervention period and 322 in post-intervention period), controls for</p>	<ul style="list-style-type: none"> Significant reduction in low birth weight in group 1 from 15.3% in the pre-intervention period to 10.9% in the post intervention period. <p>In group 2, there was a smaller non-significant reduction from 16.8% in the pre-intervention period to 13% in the post-intervention period</p> <p>Analysis of mean birth weights within the categories of low birth weight and infant weighing 2500g or more: Mean gain of 135g for group 1 was composed of a non-significant mean birth weight gain of 130g among low birthweight infants (p=0.15) and a significant gain of 70g among those weighing 2500g or more (p=0.003).</p> <p>For group 2; non-significant overall mean gain of 42g was composed of an apparent worsening of 153g in the mean birth weight for low birth weight babies from 2030 to 1877 (p=0.10), and a non-significant change of 21g from 3171 to 3192g among those who weighed 2500g or more at birth (P=0.50).</p>	groups of communities; qualitative work needed to identify the strengths and weaknesses of the programs.		

Appendix 6. Evaluation of the 'Birthing on Country' models

No	Author	Model of care	Study design, outcome measures & data collection	Years of study, sample size & level of evidence	Effectiveness	Successful features and reasons for success	Risk of bias	Relevance to Australia
11.	Nixon A et al. (2003)	The Community Midwives Project - Northern Metropolitan Community Health Service, Adelaide	<p>Descriptive analysis of first 2 years of service</p> <p>Data collection: clinical outcomes, questionnaires, interviews, focus groups, a time-and-motion study and documents of the CMP</p> <p>Outcome measures: quantitative and qualitative</p> <p>Statistical analysis not done in this evaluation</p> <p>No costings done</p>	<p>group included 3511 in the pre-intervention period and 1677 in the post-intervention period</p> <p>Level VI</p> <p>1998–2001</p> <p>N=148</p>	<p>Early Intervention strategies purported as cost offsets</p> <p>Access to community-based alternative birthing service for mainly disadvantaged women</p> <p>14.2% of clients enrolled were Aboriginal women (21/148) – S. A. % of clients average is 2.5%</p> <p>Aboriginal teenagers (7/35%) of the 21 above</p> <p>20.3% LSCS rate (S.A. rate 25.2%)</p>	<p>Self-referral of women to the CMP or referral from other midwives, doctors, clinics or community agencies. Women who moved outside area could continue if they maintained clinical links with their midwife and the service hospital</p> <p>Homebirth made available to women</p> <p>Increased access to relevant antenatal care</p> <p>Caseload midwives provided quality care and education to a diverse group of clients under difficult conditions e.g. lack of interpreter services, support from health services</p> <p>Empowerment of women, safety vs risk, communication links built midwifery empowerment and skill development</p>	<p>Small client numbers</p> <p>Funding from state government perhaps in response to active promotion by midwives, young Aboriginal women and service advocates</p> <p>Structural difficulties: the status of midwives working in the community e.g. clinical privileges, prescribing rights, industrial awards, etc.</p> <p>High ratio of workload administrative vs. Clinical contact for caseload midwives</p>	High

No	Author	Model of care	Study design, outcome measures & data collection	Years of study, sample size & level of evidence	Effectiveness	Successful features and reasons for success	Risk of bias	Relevance to Australia
							No initial budget for evaluation of project so evaluation was retrospective	
12.	NSW Health (Cupitt et al.) (1998)	NSW Alternative Birthing Services Program 2 nd Phase 1993/4 –1996/7	Report of the evaluation of services specifically funded for 12 month project periods 4 projects, 9 area health services funded to provide a midwife, AHW's, a researcher or other service provision which is midwifery based 4 models of 'good practice' described: 'Healthy Mothers, Healthy Babies' project (Moree), 'DjuliGalban' (Kempsey), 'Walgett Community Midwifery Project', 'Tamworth Midwifery Project'	Level V 1993–1997	Increased access to mainstream services for Aboriginal women Increased breastfeeding rate and lower smoking rate (Kempsey, n=118) Increased attendance for antenatal care Better provision of outreach midwifery service to remote community (Walgett) Better STD treatment and immunisation rates Better consultation processes with Aboriginal stakeholders (Moree)	Culturally appropriate services which were trusted by Aboriginal women who used them Continuity of care provided by midwives	Some area Strategic Plans developed without full consultation or involvement with Aboriginal Medical services and community groups Mixed support of medical practitioners for midwifery and shared care	High
13.	Dorman R. (1997)	Ngua Gundi (Mother and Child) Program	Retrospective cohort	Level III-3	Current literature could not be accessed	Continuity of carer; especially with Aboriginal Health worker Established trusting relationships with Aboriginal Health worker High level participation and support from community		High

Appendix 6. Evaluation of the 'Birthing on Country' models

No	Author	Model of care	Study design, outcome measures & data collection	Years of study, sample size & level of evidence	Effectiveness	Successful features and reasons for success	Risk of bias	Relevance to Australia
CANADA								
14.	Van Wagner V et al. (2011)	Inuulitsivik midwifery service	Retrospective review of perinatal outcome data between 2000–2007 Routinely recorded data analysed using simple descriptive statistics	Level III-3 2000–2007 N=1377 labours and 1388 babies	<p>Birth attendant known in 90.7% of cases – 86% of the births were documented as attended by midwives (74% Inuit and 12 & non-Inuit)</p> <p>Gestational age was known in 92% of cases- of these 89.6% gave birth between 37-42 weeks</p> <p>Preterm birth rate reported as 10.4% occurred between 22–27 weeks, 2.2% occurred between 28–33 weeks and 7.9% occurred between 34–36 weeks</p> <p>Mode of birth was known in 92.4% of cases. 1243 or 97.6% of the births were documented as spontaneous vaginal deliveries</p> <p>There were 20 or 1.6% caesarean sections in this group (including two sets of twins and one set of triplets), all in the group of women that were transferred for birth</p> <p>Perineal outcomes were known for 87.1% of women. In 908 cases an intact perineum was documented (75.7%), with 14 episiotomies reported (1%), a 22.5% rate of 1st and 2nd degree tears combined and a 1.3% rate each of 3rd or 4th degree tears. In the 12.9% of cases where perineal outcomes were unknown 80.8% were transfers</p> <p>The average birth weight of babies was 3200 gms. The average weight of babies >37</p>	<p>High rate of participation in prenatal care</p> <p>Local Inuit midwives provide cultural competency and cultural safety for Aboriginal women in remote communities</p> <p>Collaborative interdisciplinary partnership</p> <p>Inuit midwives skill and knowledge</p> <p>Strong community support</p> <p>Developed a set of practices including local education of midwives, the use of an interdisciplinary perinatal review committee</p> <p>Broad scope of practice for midwives</p>		High

No	Author	Model of care	Study design, outcome measures & data collection	Years of study, sample size & level of evidence	Effectiveness	Successful features and reasons for success	Risk of bias	Relevance to Australia
					<p>weeks was 3478 gms</p> <p>61 or 4.7% of known birth weight babies were noted as low birth weight (<2500 gms)</p> <p>Four stillbirths (.29% or 2.9 in 1,000) and five neonatal deaths (.36% or less than 3.6 in 1,000) occurred in this group</p> <p>Data about infant feeding in 85.4% of cases. 70.5% of babies were documented as exclusively breastfed at birth</p> <p>There were 335 transfers in total. 26% were to Puvinituq and 74% to Montreal, Iqaluit or other locations in Quebec. The overall rate of transfer is 24% (15% antenatal and ntrapartum, 2% maternal postpartum and 9% neonatal)</p> <p>The rate of urgent transfer was documented as 8% (5% antenatal and intrapartum, 1% maternal postpartum and 2% neonatal)</p>			
15.	Van Wagner V et al. (2007)	Inuulitsivik midwifery service	Descriptive study of set up and model of care. Some data reported. No statistical analysis	Level VII 20 years of the Inuulitsivik Midwifery Service	<p>Community consultation process with Inuit elders, traditional midwives, childbearing women and young women</p> <p>Midwifery 'students' hired to work with midwives in the service</p> <p>Midwives work as part of a team of social workers, doctors and primary care nurses to provide care</p> <p>Low risk women can give birth in their own community and other women can 'leave</p>	<p>Community 'owned' the development of the service and were clear about the limitations and potential benefits for their community</p> <p>Risk screening 'seen as a social, cultural and community process rather than a biomedical one'</p> <p>Employment, education and training of Inuit midwives ensures the success and sustainability of</p>		High

Appendix 6. Evaluation of the 'Birthing on Country' models

No	Author	Model of care	Study design, outcome measures & data collection	Years of study, sample size & level of evidence	Effectiveness	Successful features and reasons for success	Risk of bias	Relevance to Australia
					<p>home' to birth 'in their own region, language and culture from Inuit midwives'</p> <p>Perinatal outcomes 'consistent with previous research in the Western Arctic and Canada as a whole'</p>	<p>the service – a 'blend' of approaches to midwifery knowledge and education: Inuit and programs from Southern Canada</p> <p>Service seen to be instrumental in 'community healing' process focusing on: family violence, restoration of skills and pride, capacity building in the community, supporting community and family relationships</p> <p>Promotion of respect for traditional knowledge and skills such as midwifery</p> <p>Promotion of healthy behaviours and effective health education in the community</p> <p>'recovery from the impacts of colonisation and rapid change'</p> <p>Efforts to have Inuit midwives recognised by the Canadian credentialing authorities are continuing with stakeholders anticipating that this will happen</p>		

No	Author	Model of care	Study design, outcome measures & data collection	Years of study, sample size & level of evidence	Effectiveness	Successful features and reasons for success	Risk of bias	Relevance to Australia
16.	Douglas VK. (2011)	Rankin Inlet Birthing Centre	<p>Analytical historical study + Literature review (probably conducted 2008)</p> <p>15 semi structured oral history interviews with current and former employees of the centre, women who had/or who were expecting to do so and community members</p> <p>Interviews conducted in 2007</p> <p>Aimed to construct a narrative history of the Rankin Inlet birthing centre by juxtaposing the insights provided by the oral interviews with the 'official' history of the Centre, as recorded in the literature and primary textual records</p>	<p>Level VI</p> <p>1993–2005</p> <p>n=15 semi structured oral history interviews</p>	<p>Centre has succeeded in becoming an important part of the medical system however it remains limited in its relationship with the Inuit population</p> <p>Has not returned traditional Inuit childbirth to Nunavut</p> <p>Fundamentally the centre has been a southern institution set up in the Arctic region to bring birthing closer to home for Inuit people</p> <p>The use of the biomedical risk scoring system to decide whether women will be evacuated, as opposed to the community based decision-making system used in Nunavik</p> <p>Southern, Canadian Midwives are not 'Inuit' midwives and so lack the cultural and social connections that have made the Inuulitvik maternities in Nunavik so successful</p> <p>Feeling amongst stakeholders that local control over birthing would lead to a lower evacuation rate</p> <p>As a result of the above, simple replication of the centre's model in other communities will likely fail. Future expansion is likely to adapt to local traditions and requirements, leading to new birthing centres that will be integrated into their communities</p>	<p>Regional Coordinator (a trained maternity care worker) and other maternity care workers are all Inuit however role is limited to prenatal and post-natal counselling and language translation at the birth</p> <p>There is a midwifery program that has successfully graduated the first 2 Inuit midwives</p>	<p>Author has reported points from interviews and substantiated them from the historical records</p>	High

Appendix 6. Evaluation of the 'Birthing on Country' models

No	Author	Model of care	Study design, outcome measures & data collection	Years of study, sample size & level of evidence	Effectiveness	Successful features and reasons for success	Risk of bias	Relevance to Australia
17.	Simonet F et al. (2009)	Hudson Bay midwife-led maternity care programme	Retrospective birth cohort study Data obtained for 1989-2000 from Statistic Canada's linked live birth, infant death and still birth data Outcomes: perinatal death, preterm birth, small for gestational age or low birth weight, post neonatal death and total infant mortality	Level III-3 11 years of study Comparative analysis between midwifery led maternity care program in Hudson bay (n=1529 births) and the western physicians in Ungava Bay communities (n=1197 births)	No statistically significant differences in the crude rates of perinatal death and other birth outcomes No statistically significant difference in any cause-specific infant mortality rates Adjusted odds ratio for all adverse birth outcomes controlling for individual (maternal age, parity, marital status, education, infant sex, plurality) and community characteristics (community size, community-level random effects) showed a similar pattern to that for the crude rates	Services provided in Inuit language, within Inuit women's own communities result in a more accessible model of care	Limited power to detect moderate differences in rare outcomes Only had information on a limited number of maternal and infant variables; no information on other potential confounders e.g. maternal smoking	High
18.	Houd S et al. (2002)	Inukjuak, Nunavik Canada	Retrospective analysis Data collated from birth registrations, antenatal records and records and follow up of medical evacuations	Level III-3 1998-2002 5 years N=182	72.5% gave birth in their own community 4.5% women and/or the newborn were evacuated Rate of premature birth was 3.3% Perinatal mortality rate 0.5% of all babies born (some born in Montreal) from Inukjuak And PMR of 0.7% of babies born in Inukjuak (local)	High level, decentralised education system for Inuit women Weekly perinatal committee consisting of midwives, nurse, doctors. At which an audit is conducted on every pregnant woman reaching 32 weeks gestation. A joint decision and recommendations for each woman are made and followed		High

No	Author	Model of care	Study design, outcome measures & data collection	Years of study, sample size & level of evidence	Effectiveness	Successful features and reasons for success	Risk of bias	Relevance to Australia
U.S.A.								
19.	Leeman L et al. (2002)	Zuni-Ramah Indian Health Service Hospital Birthing Unit – New Mexico USA	Historical cohort outcomes study Medical record audit	III (3) 1992–1996 studied N=1132	64.7% gave birth at the local hospital without operative facilities, 25.6% were transferred prior to labour and 9.5% during labour The perinatal mortality rate of 11.4/1000 was similar to the nationwide rate of 12.8 despite this population being classed as high-risk The C/section rate was substantially lower 7.3% vs. 20.7% nationwide rate Lower incidence of low Apgar scores No statistical difference in the no. of infants requiring resuscitation			