Evaluating the Baby Basket program in north Queensland: As delivered by Apunipima Cape York Health Council, 2009 to 2013

Qualitative and quantitative evaluation

Prepared for:

The Lowitja Institute (project sponsor)
Apunipima Cape York Health Council

Authors and affiliations:

Dr Janya McCalman  
James Cook University

Associate Professor Andrew Searles  
Hunter Medical Research Institute and University of Newcastle

Kim Edmunds  
Hunter Medical Research Institute and University of Newcastle

Crystal Jongens  
James Cook University

Rachael Wargent  
James Cook University

Dr Roxanne Bainbridge  
James Cook University

Dr Rod Ling  
Hunter Medical Research Institute and University of Newcastle

Professor Komla Tsey  
James Cook University

Professor Chris Doran  
Hunter Medical Research Institute and University of Newcastle

Corresponding author:

Dr Janya McCalman  
Janya.mccalman@jcu.edu.au

May 2014
The information contained herein is believed to be reliable and accurate. However, no guarantee is given as to its accuracy or reliability, and no responsibility or liability for any information, opinions, or commentary contained herein, or for any consequences of their use, will be accepted by the authors, or by any other person involved in the preparation of this report.

This project was sponsored by the Lowitja Institute.
Executive summary

Background

Indigenous Australians continue to have the poorest health outcomes of any group living in Australia. In Cape York, the northernmost region of Queensland with a large Aboriginal and Torres Strait Islander population, maternal and child health (MCH) is particularly poor with high rates of maternal and neonatal morbidity and mortality in comparison to the rest of Australia.[1] For maternal and child health, regular visits to health professionals (WHO recommends a minimum of four during pregnancy) reduces the risk of disease or complication due to early identification and treatment, as well as providing opportunities for education about healthy parenting behaviours such as good nutrition, alcohol and smoking cessation and the benefits of breastfeeding.

In order to address the region’s poor maternal and child health, the Baby Basket program was developed by Apunipima Cape York Health Council (ACYHC), a community controlled Aboriginal health organisation located in north Queensland (see Figure 1). The Baby Basket program was introduced in 2009. The program is an initiative focused on Indigenous women who are expecting a baby and/or have recently given birth. The program aims to engage Indigenous women with the health system through encouraging early and frequent attendance at antenatal and clinics and regular postnatal check-ups. Engagement is facilitated by the delivery of three Baby Baskets including five food vouchers to mothers. The baskets are delivered in the first trimester, immediately prior to birth and post birth. The program also attempts to improve knowledge about issues that affect the growing baby such as: healthy choices around smoking, alcohol and diet. Through enhanced engagement, the hypothesized impact of the Baby Basket program is better maternal health; reduced complications during and after pregnancy, an increased proportion of normal weight babies; and thriving infants. Ultimately, a healthy start to life should help reduce the gap in life expectancy between Indigenous and non-Indigenous Australians.

Methods

Qualitative and quantitative methods were used to evaluate the Baby Basket program. The qualitative methods were based on interviews and focus groups with women who received the Baby Baskets and their family members, and healthcare workers who delivered the program. A theoretical model of Baby Basket implementation was developed using constructivist grounded theory methods. The quantitative evaluation was a based on three sub-studies that involved: (1) analysis of surveys of women who had received a Baby Basket (this data was collected by ACYHC); (2) a cost analysis to estimate the resources required to deliver the Baby Basket to a cohort of 170 participants, and (3) an analysis of indicators related to the aims of the Baby Basket program (this data was based on routinely collected data from One21Seventy[2]).
Results

Key points from the qualitative evaluation:

Health care workers and women considered the central purpose of Baby Basket program implementation to be working towards an empowering family-centred approach. Implementation occurred through a process of engaging and relating, between healthcare workers and women and their family members. The establishment of a culturally safe space was a condition for engaging and relating. Led by health workers, the responsive approach included home visiting, the provision of social and emotional wellbeing (SEWB) care and involvement of extended family members.

Women appreciated the items provided through the Baby Basket and found them to be highly useful. Receipt of the baskets also paved the way for women to learn what to expect through the processes of pregnancy, birth and motherhood; how to prevent ill-health, and to better care for themselves and their children. They also passed on their learnings to other pregnant women. Additionally, healthcare workers also reflected on their practice, including the consistency of education messages, and applied their learnings to practice improvements. Healthcare workers encouraged women to attend the clinic early for antenatal care, provided education and activities in Cairns while the women waited for the birth of their children, and provided a family-centred approach in the postnatal period.

Working towards an empowering family-centred approach resulted in women making healthy choices such as eating fruit and vegetables and quitting smoking, becoming more empowered health consumers, and becoming advocates for change in their communities. The approach also resulted in organisational changes such as taking control of the Baby Basket’s delivery, a proposal to extend the program further into the postnatal period, and potential to transfer the approach.

Key points from the quantitative evaluation:

The survey of women who received a Baby Basket showed positive results. Highlights were:

- A high proportion (78.8%) of women rated the baskets as ‘very useful’ and the majority of recipients said all of the contents were useful;
- One of the key outcomes was the extent to which information was provided to women. In 2013, the result to this survey suggested that over 98 percent of basket handovers were reported to have been accompanied with advice on smoking, alcohol, nutrition and SIDS. The provision of this information was an aim of the Baby Basket program.

The cost study showed that delivering the Baby Basket program to 170 participants in Cape York:

- Cost about $147,000, or
Approximately $874 per participant.

The costing allowed for the expense of providing the baskets to remote locations and time for healthcare workers to engage with women. This time was used to encourage interaction between the women and the health service and to provide relevant information that could assist women to provide a better start in life for their baby.

The *routinely collected One21Seventy data* was analysed with important caveats. While acknowledging the good quality of the One21Seventy data, the available time series for ACYHC and the control sites was not ideal for a quantitative analysis. Notwithstanding data limitations, the available information provided a quantitative understanding of the impact from the Baby Basket program. Key points from the One21Seventy analysis were:

- Compared with the control sites, in ACYHC a higher proportion of antenatal visits occur when the developing baby is less than 13 weeks old (*see chart*). A substantial improvement in this indicator occurred for ACYHC between 2008 and 2009 (when the Baby Basket program was introduced). This result is in keeping with a key aim of the Baby Basket program: to encourage women to have earlier and more frequent antenatal visits to the clinic.
- For frequency of antenatal visits, ACYHC also has a more favourable result than the control sites.
- The provision of advice to women showed inconsistent results: for some indicators in 2013 (antenatal education, nutrition and breastfeeding) the data suggests ACYHC performed well compared to the control sites. However, the data suggests a lower likelihood of women being provided advice in 2013 on birth plans. (Note that the results on advice provided to women based on the One21Seventy analysis did not correlate with the analysis based on data from the survey of women who received a basket.)
- The detection of risky behaviours showed a trend increase in women who smoked during pregnancy in ACYHC and a trend decrease in women who consumed alcohol during pregnancy. For smoking, ACYHC’s results are close to those recorded by the control sites. The response to these ‘women at risk’ was a high provision of brief anti-smoking interventions.
- In ACYHC the likelihood of women consuming alcohol during pregnancy was declining. All women who placed their baby at risk by consuming alcohol during pregnancy in 2013 were provided a brief intervention on this issue.
• Evidence of scabies infestation has risen in ACYHC since 2010 and is tracking at a similar level to that recorded in the control sites. The rise in this indicator may be due to increased recognition of symptoms, leading more women to seek clinical assistance.

• A core aim of the Baby Basket program has been to prevent low iron levels amongst expectant women. The data suggests a favourable outcome as the reports of deficient iron levels is lower in ACYHC compared to the control sites.

• Evidence of faltering growth (see chart) amongst infants and children in ACYHC is declining from a peak of 26 per cent of audits in 2010 to 5 per cent of audits in 2013. Note that this result may have been influenced by a procedural change between 2010 and 2013. While evidence of faltering growth had been derived from Centre for Disease Control (CDC) growth charts, over this period ACYHC changed to using World Health Organisation (WHO) growth charts. The shift from CDC to WHO growth charts suggests fewer children will be identified as underweight and more children will be identified as overweight[3, 4].

The qualitative study provided insight into how this chain of events occurred. By facilitating an empowering family-centred approach, healthcare workers engaged and related with women and their families. The health worker-led approach included home visiting and the provision of social and emotional wellbeing (SEWB). Engagement was facilitated by delivery of the first basket, and built from the women’s appreciation of its utility. The process of engaging and relating underpinned efforts by healthcare workers to encourage women to attend the clinic early for antenatal care, provide education, and facilitate linkages with the clinic for improved healthcare of their children.

**Conclusion**

Considering the evidence available to this study, and acknowledging the important limitations with the quantitative data, it is not possible to specifically attribute the improvements in many of the indicators examined in this report to the Baby Basket program. It is likely that a combination of factors, including routine maternal health services, have played a role. However, given the aims of the Baby Basket program, its activities and the specific focus on improving attendance at antenatal and postnatal clinics, it is both feasible and likely that the Baby Basket program has contributed to the trend improvements in these measures since 2009. The qualitative findings support this view. If the chain of events from the Baby Basket program leads to
increased clinic visits, and the provision of scheduled services to infants is a component of reducing faltering growth, then the Baby Basket program is likely to have also been a contributor to this recorded outcome in ACYHC. However, this evaluation is not able to identify the extent to which the Baby Basket program contributed to this outcome.

Assuming a relationship between the Baby Basket program and the reported outcomes in antenatal and postnatal visits and the reduction in evidence of faltering growth, a cost per Baby Basket participant of about $874 appears to be a modest investment to provide babies with a better start in life.
## Contents

Introduction.........................................................................................................................1  
Research questions................................................................................................................3  
Key aims for the evaluation....................................................................................................3  
Methods..................................................................................................................................5  
Results.....................................................................................................................................7  
Literature review......................................................................................................................7  
Qualitative evaluation of the Baby Basket program ..............................................................24  
Quantitative evaluation of the Baby Basket program ............................................................63  
  Survey responses from women receiving a Baby Basket .................................................63  
  The estimated cost of the Baby Basket program ...............................................................70  
  Evaluating the Baby Basket program using routinely collected data 74  
  Improving the framework for future quantitative evaluations of the  
  Baby Basket program ..........................................................................................................87  
Discussion...............................................................................................................................95  
Limitations..............................................................................................................................99  
Recommendations....................................................................................................................101  
References..............................................................................................................................103
Evaluating the Baby Basket program: 2009 to 2013
Introduction

Aboriginal and Torres Strait Islander people (herein referred to as Indigenous people) continue to have the poorest health outcomes of any group living in Australia. For maternal and infant health, regular visits to health professionals (WHO recommends a minimum of four during pregnancy) reduces the risk of disease or complication via early identification and treatment, as well as providing opportunities for education about healthy parenting behaviours such as good nutrition, alcohol and smoking cessation and the benefits of breast feeding. However, it is not uncommon for Indigenous women to underutilise maternal and infant health (MIH) services. In Cape York, the northernmost region of Queensland with a large Indigenous population, maternal and child health is particularly poor with high rates of maternal and neonatal morbidity and mortality in comparison to the rest of Australia [1]. In fact, in 2005/06, 70 percent of pregnant women in Cape York were reported to have smoked at some time during their pregnancy; there were high rates of gestational diabetes and more than double the number of low birth weight babies in comparison to the rest of Queensland[5].

In order to address the region’s poor maternal and child health, the Baby Basket program was developed by Apunipima Cape York Health Council (ACYHC), a community controlled Aboriginal health organisation located in north Queensland (see Figure 1). The Baby Basket program was introduced in 2009. The program is an initiative focused on Indigenous women who are expecting a baby and/or have recently given birth. The program aims to engage Indigenous women with the health system through encouraging early and frequent attendance at antenatal and clinics and regular postnatal check-ups. Engagement is facilitated by the delivery of three Baby Baskets including five food vouchers to women. The baskets are delivered in the first trimester, immediately prior to birth and post birth. The program also attempts to improve women’s knowledge about issues that affect the growing baby such as: healthy choices around smoking, alcohol and diet. Through enhanced engagement, the
The hypothesized impact of the Baby Basket program is better maternal health; reduced complications during and after pregnancy, an increased proportion of normal weight babies; and thriving infants. Ultimately, a healthy start to life should help reduce the gap in life expectancy between Indigenous and non-Indigenous Australians.

The Baby Basket program was primarily designed to facilitate engagement by the health service with Indigenous women in remote communities to encourage these women to present at health centres earlier and more frequently during their pregnancy. The Baby Basket program involves the provision of three baby baskets to women corresponding with formative stages in their maternal cycle:

1. Antenatal at pregnancy diagnosis;
2. Delivery or around the time of childbirth; and
3. Postpartum when the baby is six months old.

Baskets are provided in the course of both clinic and home visits. The first basket contains a safe baby sleeper, information on healthy pregnancy to address health behaviours like smoking, drinking and healthy diet, a booklet on pregnancy, birth and the postnatal period written by Indigenous health workers and midwives and a fresh food voucher, which can only be used to purchase fresh fruit and vegetables. The second basket includes nappies and baby clothes for the baby and personal hygiene items for the mother. The third basket is presented when mother and baby are back in community and includes postnatal information, toys, a toothbrush and toothpaste (see Table 1). Basket handover in community increases the likelihood that other members in the family will benefit from the education provided and have the opportunity to ask questions, emphasising the family centred approach. Other visits are encouraged through the use of up to four fresh fruit and vegetable vouchers that can be redeemed in community stores [1]. Within the first two years of program implementation, ongoing evaluations revealed improvements in key indicators in maternal and child health. While there is no doubt the program has achieved successful outcomes for women, in a political environment where health programs must compete for scarce resources, there is a need to know whether these outcomes are cost effective or have cost benefits.

This report represents an evaluation of the Baby Basket program to determine whether there has been a measureable improvement in indicators that are relevant to women and infants. The Baby Basket program was evaluated to determine whether there has been a measureable improvement in indicators that are relevant to women and infants. The protocol for the research project was approved by the JCU Ethics Committee (H5321).
Table 1 Contents of the Baby Baskets

<table>
<thead>
<tr>
<th>Baby Basket #1 (Antenatal)</th>
<th>Baby Basket #2 (Perinatal)</th>
<th>Baby Basket #3 (Postnatal)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baby bed (sleeper)</td>
<td>Baby singlet’s (x5)</td>
<td>Sipper cup</td>
</tr>
<tr>
<td>Shampoo and Conditioner</td>
<td>Breast pads</td>
<td>Plastic fork, spoon, and plate</td>
</tr>
<tr>
<td>Fine Tooth comb</td>
<td>Cotton baby wraps (x3)</td>
<td>Educational soft toy</td>
</tr>
<tr>
<td>Bunjalbi Book</td>
<td>Cotton wool balls</td>
<td>First Aid Kit</td>
</tr>
<tr>
<td>Soap and Soap holder</td>
<td>Deodorant</td>
<td>Towel</td>
</tr>
<tr>
<td>Sorbelene Cream</td>
<td>Emery board</td>
<td>Soap Family pack (x6)</td>
</tr>
<tr>
<td>Toiletry bag</td>
<td>Baby Grooming kit</td>
<td>Band Aides</td>
</tr>
<tr>
<td>Tooth brush and holder</td>
<td>Hairbrush</td>
<td>Educational Book</td>
</tr>
<tr>
<td>Toothpaste</td>
<td>Jumpsuits (x3)</td>
<td>Apunipima Backpack</td>
</tr>
<tr>
<td>Washers</td>
<td>Maternity pads</td>
<td></td>
</tr>
<tr>
<td>Apunipima Tote Bag</td>
<td>Cloth Nappies (x6)</td>
<td></td>
</tr>
<tr>
<td>Fruit and vegetable vouchers</td>
<td>Nappy clips (x2)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Huggies Nappies (Newborn)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Night dress</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Shampoo and Conditioner</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Soap</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sorbelene Cream</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Tissues</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Toothbrush and Toothpaste</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Towel</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Washer</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Baby Soap</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Zinc Cream</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Apunipima Bag</td>
<td></td>
</tr>
</tbody>
</table>

Research questions

The research questions that guided this study were:

What is the evidence-based impact of the Baby Basket program as implemented in Cape York by Apunipima Cape York Health Council?

What aspects of the Baby Basket program are transferable to other regions and to other groups in the population?

Key aims for the evaluation

1. Define the Baby Basket program (as per the Introduction to this report);
2. Provide brief reviews of the relevant child and maternal health literature to a) inform the Baby Basket program evaluation design and b) contextualise the evaluation findings and c) inform the design of a recommended framework to evaluate future iterations of the Baby Basket program;
3. Implement a robust methodology to evaluate the Baby Basket program. This entailed the design of:
   a. A qualitative evaluation of the Baby Basket program;
   b. A quantitative evaluation of the Baby Basket program that included an estimate of the cost of delivering the program;
Methods

The methods used for this evaluation were based on conduct literature reviews, as well as qualitative and quantitative techniques to evaluate the effectiveness of the Baby Basket program. This section briefly identifies the methods used throughout the study. More detail on specific methods is presented in the relevant sections (see Results).

The literature reviews entailed developing a guiding research question, identifying search terms, and utilising electronic databases held at James Cook University and the University of Newcastle. Two literature reviews are presented in the results section. The first investigated evaluations of maternal health programs and indicators used in these evaluations. The second review investigated frameworks for conducting evaluations. This review was undertaken to recommend a framework for evaluating future iterations of the Baby Basket program. This review is presented as a component of the section titled Improving the framework for future quantitative evaluations of the Baby Basket program (see page 87).

The study involved a qualitative evaluation. This was based on an iterative process of sampling and interviewing women who received the Baby Basket intervention, other family members and healthcare workers. The focus of interviews with women was on their recall of the Baby Basket. Women were questioned on what they found useful, whether it influenced their attendance at antenatal care visits, whether it had an impact on their attitudes to nutrition, exercise, smoking or alcohol. Interviews and focus groups were also held with healthcare workers from across Cape York which focussed on their experiences of delivering the Baby Basket program.

The study also involved a quantitative evaluation. This evaluation consisted of three sub-studies: (1) an assessment of survey forms on the Baby Basket completed by women receiving the Baby Basket, (2) an assessment of the program’s cost and (3) an assessment of routinely collected statistical data sourced from One21Seventy[2].

A final step in the study was to triangulate the literature review outcomes with the qualitative and quantitative results. The results of the data triangulation form the basis of the discussion chapter in this report.
Results

Literature review

Purpose

Many Indigenous Australian women have less access to antenatal and postnatal services, and are less likely to use services even when they are offered than other Australian women (Lowitja Institute: http://www.lowitja.org.au/research-topics/child-and-maternal-health). The underutilisation of maternal and infant health (MCH) care services by Indigenous women, along with the lack of appropriate, culturally safe care have been driving factors for improvement efforts. The purpose of this systematic literature search was to identify maternal and child health programs for Indigenous Australians that could usefully inform: 1) the Baby Basket Program evaluation design and its ongoing development and quality improvement; and 2) the contextualisation of the Baby Basket evaluation findings.

Scope

The broader aim of the literature search was to advance understanding of the current evidence base guiding Indigenous Australian MCH and wellbeing practices. It identified and examined those publications describing or evaluating Indigenous MCH programs and services in Australian primary health care settings from 1993 to 2012.

The objectives were to:

1) Identify the number of publications on MCH programs and services for Indigenous Australians;
2) Catalogue publications according to their nature/type;
3) Identify the main characteristics of MCH programs including the reported outcomes; and
4) Assess the methodological quality of intervention studies.

The search was based on an examination of academic databases and grey literature. Drawing upon grey literature as well as academic literature recognised the fact that many health service evaluations are undertaken and presented as reports rather than being published in academic journals.

Methods

Search Strategy

Appendix 1 summarises the databases searched, the search terms used, the exclusion criteria, and classification of studies. Consistent with methods detailed in Cochrane guidelines for systematic reviews [11] and those used in previous systematic reviews [12, 13], the search strategy comprised three steps. First, consultation with a qualified
librarian identified six electronic databases: Informit, Proquest (Health and Medical and Social Sciences), PubMed, Scopus, Wiley, and Cinahl. The following terms were searched in either the title or abstract, article or MESH heading of publications: (Aborigin* or Indigen* or Torres Strait Island* or oceanic ancestry group or australoid*) and (wellbeing or health) and (Australia) and (child or maternal or parent* or women* or pregnan* or infan*) and (program* or service*) (n=3507).

Second, to maximise coverage of the grey literature, the same librarian searched 9 websites and clearinghouses related to Indigenous child and maternal health. Included were the Australian Aboriginal and Torres Strait Islander Health Infonet, Lowitja Institute, National Aboriginal Community Controlled Health Organisation, National Indigenous Child and Maternal Health Exemplar Site Initiative, Telethon Institute for Child Health Research, Secretariat of National Aboriginal and Islander Child Care Resource Clearinghouse, Australian Institute of Aboriginal and Torres Strait Islander Studies, Australian Government Office of Aboriginal and Torres Strait Islander Health, and the Australian Institute of Family Studies (n=1246). The date last searched was 17/05/2013. Third, the reference lists of reviews of Indigenous health and wellbeing interventions identified by the electronic database search for relevant studies not yet identified (n=12) were hand-searched. The initial search yielded 4765 search results (see Appendix 1).

**Step 1: Identification of studies for exclusion**

Studies were excluded if they: (a) were duplicates (n=42); (b) did not focus on child and/or maternal health, or if the outcomes or predictor variables did not include or specifically relate to child and/or maternal health (n=837); (c) did not focus on Indigenous people in Australia (n=1587); (d) were not on primary health care programs and services (n=429); e) were not journal articles, reports or book chapters (n=621); f) were reviews, discussion papers, commentaries or case reports (n=984); g) were focused only on child health (n=8) and h) were published pre 1993 (n=234). Step 1 excluded 4726 references, leaving 23 search results.

**Step 2: Classification of studies**

The remaining 23 studies were examined to identify studies that were: 1) **Intervention research**: defined as studies which test the effectiveness of public health Indigenous child and maternal health responses or examines the impact of interventions designed to alter health-related knowledge, attitudes or behaviours, or to improve health care delivery; or 2) **Program descriptions**: defined as literature which describes the methods or processes applied to implement a child and maternal health response, but in which no data-based evaluation was reported [6].
Data extraction

The characteristics of studies of Indigenous maternal and child health responses were categorised by: 1) 1st author & year; 2) publication type and study design; 3) location and organisational setting; 4) intervention issue; 5) intervention types and components; 6) target age, sample; 7) outcomes or effects; and 8) study quality (intervention studies only). Two researchers reviewed the publication characteristics and agreed on 22 out of 23, achieving 95.6 per cent inter-rater reliability.

Study quality assessment

Methodological quality of quantitative studies was assessed using the Dictionary for Effective Public Health Practice Project (EPHPP) Quality Assessment Tool for Quantitative Studies [14]. Sections A to F (A. selection bias; B. study design; C. confounders; D. blinding; E. data collection methods; and F. withdrawal and drop-outs) were coded weak, moderate or strong, consistent with the component rating scale of the Dictionary. For Sections G (intervention integrity) and H (analyses) descriptive information will be recorded, in line with the Dictionary recommendations. For qualitative studies, the Critical Appraisal Skills Program (CASP) quality assessment tool was used [15]. The CASP tool assesses the clarity of study objectives, the quality of the methodology, research design, data collection and analyses, ethical considerations, whether there is a clear statement of findings and the value of the research. To assess the study quality of those using mixed-methods study design, the qualitative and quantitative components were assessed separately using both of the aforementioned tools.
Results

Appendix 2 summaries the characteristics of included studies.

Publication year and study design

From a low during the 1990s, there was a significant increase in publications from 2003. With only three studies published in the period from 1993-2002 (13%) [16-18], the largest number of publications found were for the period 2003-2007 (9/23, 39%) [4, 19-26] and another five (22%) were published in the period 2008-2012 [27-31]. Publication dates were not available for a further 6 (26%) search results as these were from websites and no dates were recorded [32-37]. 52% (12/23) of the publications were intervention studies i.e. evaluations of programs or services [4, 17-19, 21-26, 28, 31]. The other 48% (11/23) were program descriptions [16, 20, 27, 29, 30, 32-37].

Location and organisational setting

The programs and services identified in the literature operated from a range of locations throughout Australia. The distribution of documented programs and services by state was Western Australia (5/23, 22%) [17, 32-35], New South Wales (4/23, 17%) [19, 22, 27, 29], the Northern Territory (4/23, 17%) [18, 21, 25, 37], Queensland (3/23, 13%) [4, 16, 24], South Australia (3/23, 13%) [20, 28, 36], the Australian Capital Territory (2/23, 9%) [30, 31] and Victoria (1/23, 4%) [23]. One additional publication reported on three programs operating in South Australia, New South Wales and Queensland [26].
Program locations

The majority of publications reported on programs and services operating from Aboriginal Community Controlled Health Organisations (ACCHO) (12/23, 52%) [4, 21-24, 26, 29-31, 33, 36, 37]. There were 5 publications documenting government programs (22%) [18, 19, 25, 27, 32] and 3 documenting programs operating out of mainstream primary health services (13%) [16, 34, 35]. One study documented a program delivered by an Aboriginal Maternal and Infant Care team across a range of sites, including local Aboriginal Health Service’s [20]. Another study was on a community initiated program operating across several communities using a government developed program delivered by local Aboriginal women [17]. There was also an evaluation of a joint government and community initiative [28].

Target population and intervention issue

Six of the publications stated the target group for programs and services generally as Indigenous mothers and their children/babies/families (6/23, 26%) [21, 22, 28, 30, 32, 38]. They did not specify whether care was provided pre-pregnancy and until what age after birth. Aboriginal and/or Torres Strait Islander or Indigenous women (4/23, 17%) [4, 23, 24, 31], Aboriginal women who are pregnant or of childbearing age [18, 25] and teenage mothers and young Aboriginal mothers [20] were also stated target groups. Several of the studies documented programs and services which provide postnatal and child health services for infants and children of ages varying from 4 weeks up to 14 years [24-31]. There were only three publications which specified that the service was for women prior to pregnancy [16, 21, 29].

Nineteen studies (19/23, 83%) [4, 16, 19-24, 27-29, 31-34, 37, 38] identified the intervention issue under the broad category of Indigenous maternal and infant health and wellbeing. More specific or targeted intervention issues such as low antenatal attendance [20], low infant birth weight [17, 18, 20, 25], high teenage pregnancy rates [20], poor child growth [17] and perinatal and infant social and emotional wellbeing (mental health) [30] were also referred to in the literature.

<table>
<thead>
<tr>
<th>Intervention Issues Addressed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maternal and infant health and wellbeing</td>
</tr>
<tr>
<td>Antenatal attendance</td>
</tr>
<tr>
<td>Infant birth weight</td>
</tr>
<tr>
<td>Teenage pregnancy rates</td>
</tr>
<tr>
<td>Child growth</td>
</tr>
<tr>
<td>Perinatal and infant social and emotional wellbeing (mental health)</td>
</tr>
</tbody>
</table>
**Intervention type and components**

Antenatal and postnatal care constituted the main intervention types; these represented 14 (61%) of the search documents [16, 18, 19, 21-23, 25, 27, 29, 31, 32, 34]. Another 4 (17%) publications identified an integrated or continuum model of maternity care as the main intervention [4, 20, 24, 28]. One publication documenting a service targeting mothers and infants identified health promotion and education as the primary intervention [37], another identified advocacy, support and psychotherapy as the main interventions [30] and two did not state a main intervention type [17, 33].

The most common component of interventions cited in the literature documenting maternal and infant health was health promotion/education and advice/support (16/23, 70%) [4, 16, 17, 20, 21, 23, 25, 29, 30, 32-34, 37, 38]. Health promotion topics documented included nutrition [4, 25, 32, 34, 37], breastfeeding [4, 34], immunisation [34], infant care [34] and accessing groups and services [34]. Publications that described or evaluated these health promotion/education and advice/support activities focused on the health issues of smoking cessation [4], sexual and reproductive health [32], substance misuse [25, 37], early warning signs of complications [20] and Sudden Infant Death Syndrome (SIDS) [4]. Other common intervention components included home visitation (8/23, 35%) [16, 29, 31-34, 37, 38], antenatal and postnatal check-ups and support (5/23, 22%) [20, 23, 31, 34, 37], transport services (4/23, 17%) [4, 21, 31, 37], labour/birth support (3/23, 13%) [23, 31, 37], assistance making or attending appointments and hospital bookings (3/23, 13%) [22, 31, 32], pregnancy screening (2/23, 9%) [23, 29], counselling/psychotherapy (2/23, 9%) [17, 30], referrals (2/23, 9%) [16, 38] and training and support for midwives and Aboriginal Health Workers (2/23, 9%) [21,27].

<table>
<thead>
<tr>
<th>Key Intervention Components: Health Promotion, Advice and Support</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Complications</td>
</tr>
<tr>
<td>- Sudden Infant Death Syndrome</td>
</tr>
<tr>
<td>- Home visitation</td>
</tr>
<tr>
<td>- Transport services</td>
</tr>
<tr>
<td>- Labour/birth support</td>
</tr>
<tr>
<td>- Pregnancy screening</td>
</tr>
<tr>
<td>- Counselling/psychotherapy</td>
</tr>
<tr>
<td>- Referrals</td>
</tr>
<tr>
<td>- Making or attending appointments and hospital bookings</td>
</tr>
<tr>
<td>- Antenatal and postnatal check-ups and support</td>
</tr>
<tr>
<td>- Training and support for midwives and Aboriginal Health Workers</td>
</tr>
</tbody>
</table>

**Outcomes and effects**

Of the 23 publications, 14 (61%) reported program outcomes and/or effects. These included the 12 intervention studies plus two program descriptions (one was based on an evaluation report [27] and the other simply claimed outcomes without providing evidence [32]. The outcomes and effects described in the literature on maternal and
infant health services included an increase in antenatal attendance (6/23, 26%) [4, 21, 22, 24, 27, 38], an increase in infant birth weights (5/23, 22%) [18, 21, 25, 27, 38], a decrease in, or lower proportion of, pre-term births (4/23, 17%) [24, 27, 31, 38], earlier antenatal attendance (4/23, 17%) [19, 21, 22, 38] and a decrease in, or lower proportion of, low birth weight babies [19, 31, 38]. Decreased perinatal mortality [4, 19, 27], reports of positive views and/or experiences of the service from service users [22, 23], improved breastfeeding rates [19, 27] and improved nutritional status such as decreased rates of stunting and malnutrition [32, 38] were also reported. Other outcomes included higher rates of childhood immunisation coverage [38], improvements in care planning [4], lower caesarean rates [31] and changes in birth weight associated with changes in maternal weight [18]. Completion of cycle of care [4] and reduction in overdue immunisations [32] were each cited as outcomes along with an increase in infant weight after six months [17]. One study reported the outcomes of all women having an antenatal plan, women having successfully engaged with the service, all women having birthed at their local maternity service and an increase in referrals to appropriate support services [28]. One evaluation study described no changes in the proportion of women smoking during pregnancy [19].

<table>
<thead>
<tr>
<th>Intervention Outcomes</th>
<th>Methodological quality of intervention studies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improvements in care planning</td>
<td>The 12 intervention studies were assessed for study quality. All 6 studies which employed solely quantitative methods were rated as weak. There were four mixed-method studies, three of which were rated as weak for the quantitative aspect, and the other moderate. Quantitative studies most commonly received weak ratings for confounders, data collection methods and withdrawals and drop outs (see additional file 2 for further details on study quality assessments). For the qualitative component of mixed-method evaluations, two were rated moderate, one weak, and the other strong. There was a further qualitative study which was rated strong, and one study that was rated weak due to lack of information regarding the study design and methods used.</td>
</tr>
<tr>
<td>Lower caesarean rates</td>
<td></td>
</tr>
<tr>
<td>Reduction in overdue immunisations</td>
<td></td>
</tr>
<tr>
<td>Completed cycles of care</td>
<td></td>
</tr>
<tr>
<td>Increased infant weight after six months</td>
<td></td>
</tr>
<tr>
<td>Increased antenatal plans</td>
<td></td>
</tr>
<tr>
<td>Successful client engagement</td>
<td></td>
</tr>
<tr>
<td>Childhood immunisation</td>
<td></td>
</tr>
<tr>
<td>Increased birthing at their local maternity servi</td>
<td></td>
</tr>
<tr>
<td>Increased referrals to appropriate support services</td>
<td></td>
</tr>
<tr>
<td>Changes in birth weight associated with changes in maternal weight</td>
<td></td>
</tr>
<tr>
<td>Positive views and/or experiences of the service from service users</td>
<td></td>
</tr>
<tr>
<td>Increased infant birth weights</td>
<td></td>
</tr>
<tr>
<td>Decreased pre-term births</td>
<td></td>
</tr>
<tr>
<td>Earlier antenatal attendance</td>
<td></td>
</tr>
<tr>
<td>Decreased perinatal mortality</td>
<td></td>
</tr>
<tr>
<td>Improved breastfeeding rates</td>
<td></td>
</tr>
<tr>
<td>Improved nutritional status</td>
<td></td>
</tr>
<tr>
<td>Decrease in low birth weight babies</td>
<td></td>
</tr>
</tbody>
</table>
Discussion

**Organisation setting: Community controlled health services and empowerment**

The finding that the majority of publications reviewed (52%) reported on MCH programs operating out of ACCHO’s is significant considering the connection between the need for self-determination and Indigenous health and wellbeing. A lack of power and control has long been recognised as contributing to the health inequality experienced by Indigenous peoples [39]. To address the social determinants of these health inequalities, Indigenous peoples need to have greater control and agency over their health and wellbeing [40]. Community control of basic services is one expression of the central right of Indigenous peoples to self-determination [41], a concept fundamental to the holistic definition of health for Indigenous peoples [42] which encompasses the emotional, social and cultural wellbeing of entire communities [43]. Hence the significance and continuing use of community control of decision-making processes and resources as a strategy to improve the health of Indigenous peoples [39].

Along with the prevalence of community controlled MCH care programs, a further two studies reviewed documented a community-based program developed by the NT government in conjunction with Aboriginal people [18, 25] and another one on a community initiated program developed and administered by the government [17]. This finding supports that of Herceg [6] where it was found that being community based and/or community controlled is one factor important in successful Indigenous MCH programs around Australia. This strong presence of community controlled and community-based or initiated programs is a positive indicator of efforts to enhance the overall wellbeing, not only of Indigenous women and their babies, but also of the communities in which they live.

**Program content and components**

In regards to the types of responses outlined, the main intervention type reported in the publications was antenatal and postnatal care (61%), however details of what this care entailed were not provided. There are currently no Australian national guidelines for the provision of antenatal care and research has found that, although protocols used in different antenatal care settings have common areas, there is significant variation in coverage and recommendations about schedules and tests [44]. In the absence of thorough documentation of tests, screening procedures and treatments undertaken in the studies reviewed, it was impossible to assess quality of antenatal and postnatal care for Indigenous women and infants. A further 17% of publications identified an integrated or continuum of care model as the main intervention type. A lack of continuity of care has been identified as a common issue affecting communication and quality of care in antenatal and postnatal services for Indigenous women [44]. Research shows that fragmented maternity care can increase medical
risks and compromise patient safety, causing adverse outcomes for women and infants [45-47]. This focus on models of continuity of care demonstrates the efforts of several Indigenous MCH programs to address these concerns and ensure quality care that meets the needs of the women using these services.

The most common component of MCH interventions, documented in 70 per cent of the literature reviewed, was health promotion/education and advice/support, a finding not identified in previous reviews. Education and health promotion is a prominent MIH care strategy, particularly used by midwives who emphasise their role in promoting the health and wellbeing of pregnant women [48]. Brief health education interventions have been shown to reduce alcohol [49] and tobacco [50] consumption during pregnancy and nutritional education and counseling has been associated with improved gestational weight gain, a reduced risk of anaemia, an increase infant birth weight and a decreased risk of pre-term birth [51]. Research has found that the provision of additional support for at-risk pregnant women reduced the likelihood of caesarean births and hospital admissions, however no impact was shown on the incidence of babies born with low birth weight, pre-term birth, perinatal deaths, maternal satisfaction with care or depression [52]. While there appears to be a lack of evidence documenting the effectiveness of health education/promotion and advice/support for pregnant Indigenous women, it has been suggested that, embedded within a broader antenatal program, these approaches can contribute to better birth outcomes by improving cultural safety and engagement [53].

Home visitation and transport services were other intervention components commonly found in the literature, consistent with the findings of Herceg [6]. However, while there were common program components seen across multiple studies, more apparent was the diversity of responses in MCH programs. This may be a reflection of the focus of primary health care in Indigenous contexts, which is on providing appropriate, holistic care to meet the unique health needs of each community [43]. However, this lack of consistency between Indigenous MCH programs means it is difficult to assess the effects of particular components or combinations of components on the pregnancy and birth outcomes of mothers and infants. More rigorous evaluations which study the impact of specific program components would be needed to further explore this issue.

This review also identified some significant gaps in the literature. Consistent with previous research indicating the underutilisation of smoking cessation interventions with Indigenous women who smoked during pregnancy [44], this review found documentation of interventions targeting smoking during pregnancy in only two publications reviewed [4, 25]. While there is evidence that smoking cessation interventions can not only help women reduce or stop smoking but also have an impact on birth weight and pre-term birth [50], a recent systematic review found that there is currently no evidence for effective smoking cessation interventions for pregnant Indigenous women [54]. Given the current lack of an evidence base there is
a need for high quality evaluations of approaches to smoking cessation among pregnant Indigenous women [54].

Another important factor found to be lacking in evaluations was women’s subjective views and experiences of their health care, with only two publications reporting on this [22, 23]. The need to consider and prioritise the feelings, experiences and preferences of Indigenous women regarding their pregnancy is consistently reiterated in the literature [44, 55, 56] and is something that needs to be addressed in future evaluations. There was also a lack of documentation on programs which linked women’s pre-conception health to pregnancy and birth outcomes. Only three publications explicitly stated that the service was available for non-pregnant women [18, 25, 29], with only one program stating goals to improve the pre-conception health of women and increase pre-conception immunisation [33]. This finding supports that of previous research which has shown that many women do not receive pre-conception advice from health care professionals and that most women have low levels of knowledge about pre-conception health care, despite the strength of evidence on the positive benefits of this for MCH outcomes [57]. There is a strong imperative to enhance the pre-conception health of Indigenous women given that many factors which contribute to the poor birth outcomes of Indigenous are preventable, especially when addressed before pregnancy [58].

**Outcomes and study quality**

Similar to those reported by Eades [7] and Herceg [6], many of the publications reviewed reported positive outcomes. The main outcome identified across the studies on MCH programs was an increase in antenatal attendance (26%), with earlier antenatal attendance also reported in several evaluations (17%). This is an important outcome considering the late and low antenatal attendance rates typical of Indigenous women [8, 44] and concerns around poor management of complications resulting in increased morbidity and mortality [27]. However, while equity in antenatal care utilisation is important, it should not be assumed that increased antenatal coverage will necessarily impact on other maternal and infant health outcomes [59]. Hunt (2006) demonstrated that when programs of enhanced antenatal attendance have been rigorously evaluated, controlling for confounding factors such as socio-economic status, earlier and more frequent antennal care did not improve perinatal outcomes, such as low birth weight [44]. Equally important to antenatal utilisation was a focus on aspects of quality care, such as ensuring that recommended brief interventions, advice, screening procedures and treatments were adhered to [60].

Other key outcomes reported included an increase in infant birth weights after birth (22%) and a decrease in, or lower proportion of, infants born with low birth weight (13%). Although birth weight is a crucial measure of maternal and infant health being associated with a range of poor health outcomes throughout the lifetime [61, 62], it is also a measure that requires further investigation. While pregnancy is important in
determining the birth weight of babies, there are many other influencing factors, such as socio-economic status, generational maternal nutrition, health risk behaviours, maternal age and size, and medical conditions during pregnancy [56, 59]. Not discounting the importance of these key indicators, it is necessary to critically examine the primary MCH measures used to assess the effectiveness of MCH programs for enhancing the health and wellbeing of Indigenous women and infants.

The outcomes reported in the literature reviewed paint a positive picture for progress in improving the health outcomes of Indigenous mothers and infants. However it is impossible to conclusively state any cause and effect relationships between these and MCH programs due to issues of study quality. The methodological quality of intervention studies varied considerably, with quantitative evaluations and the quantitative components of mixed-method studies predominantly rated as weak. As found in previous reviews of Indigenous MCH care programs, good quality longitudinal data on MCH care is needed to demonstrate clinically significant perinatal outcomes [8]. It is also important to consider that, given the disparities in health outcomes faced by Indigenous women and babies compared to non-Indigenous women and infants, significant improvements in maternal and infant health outcomes are unlikely to be achieved over a short period of time. For this reason, it is important to take a long term vision for assessing the impact of antenatal care programs and services.

### Limitations
Although a rigorous and thorough search strategy was employed, limitations include the possibility that the search did not locate all relevant studies. There is also a risk for

---

**What Works?**

- Continuing use of community control of decision-making processes, resources and basic services as strategies to improve the health of Aboriginal and Torres Strait Islander people
- Processes that support Aboriginal and Torres Strait Islander people in having greater control and agency over their health and wellbeing
- Programs operating out of ACCHO’s including MCH care programs
- Community controlled and community-based or initiated programs
- Community-based programs supported and administered by governments
- Continuity of care
- Integrated or continuum of care models
- Health promotion/education and advice/support embedded within broader antenatal programs
- Brief health education interventions
- Additional support for at-risk pregnant women
- Home visitation and transport services
- Responsive MCH programs
- Holistic care to meet the unique health needs of each community

**What Doesn’t Work?**

- Fragmented maternity care
publication bias in that programs and services which resulted in no overall benefit, or harmful effects may not have been reported on or published, and would therefore would not be included in this search. Other programs and services are likely to exist but were not included in this review because there was no publicly available literature concerning them. Since evaluations with statistically significant findings are more likely to be published, it is also possible that the published evaluations reviewed may over-estimate the true effectiveness of interventions [63]. The general weakness of quantitative studies is consistent with previous reviews of Indigenous intervention research [13]. While this weakens the evidence base of reported outcomes, it also provides an opportunity for researchers to improve the quality of evaluations of Indigenous health and wellbeing programs and services through the application of more rigorous study designs.
Conclusion

There has been a substantial increase in publications documenting Indigenous child and maternal health programs and services over the past decade. These publications outline responses to a range of health and wellbeing issues relevant to Indigenous mothers, infants and children, with the majority of studies documenting programs targeting mothers and their babies through antenatal and postnatal care. There was a significant difference in the components of programs and services outlined in the literature, with health promotion/education and advice/support reported across a majority of maternal and infant health publications. The literature documents a serious underutilisation of tobacco smoking cessation interventions in antenatal care. Some improvements in health outcomes were reported on, however the true effectiveness of interventions documented in the quantitative studies is unclear due to poor study quality. Considering that it is unlikely that significant improvements in health outcomes will be achieved in the short term, research efforts need to focus on developing good quality longitudinal data to assess the impact of Indigenous child and maternal health programs and services over several decades.

What Else Needs to Happen?

- Australian national guidelines for the provision of antenatal care
- Consistency between Aboriginal and Torres Strait Islander MCH programs
- Assessments of the effects of particular components or combinations of components on the pregnancy and birth outcomes of mothers and infants
- More rigorous evaluations about the impact of specific program components
- Evidence for effective smoking cessation interventions for pregnant Aboriginal and Torres Strait Islander women
- Smoking cessation interventions
- Evaluations of women’s subjective views and experiences of their health care
- Documentation on programs which linked women’s pre-conception health to pregnancy and birth outcomes
- Pre-conception education and advice from health care professionals
- Improving antenatal attendance rates
- Improving quality of care e.g. brief interventions, advice, and adhering to screening procedures and treatments
- Critically examining the primary MCH measures used to assess the effectiveness of MCH programs
- High quality rigorous intervention studies that examine impact and cause and effect relationships between outcomes and MCH programs
- Good quality longitudinal data on MCH care is needed to demonstrate clinically significant perinatal outcomes
References (Literature review only)


6. Herceg, A., Improving health in Aboriginal and Torres Strait Islander mothers, babies and young children: a literature review. 2005, Department of Health and Ageing: Canberra, ACT.

7. Eades, S., Maternal and child health care services: Actions in the primary health care setting to improve the health of aboriginal and torres strait islander women of childbearing age, infants and young children, in Aboriginal and Torres Strait Islander Primary Health Care Review: Consultant Report No 6, 2004, Commonwealth of Australia.


58. Muscat, M. *Blackgammon: a grounded participatory design of a preconception health promotion 'alternate reality game' for adolescent indigenous australian women*. ACM.


Qualitative evaluation of the Baby Basket program

The aim of the qualitative evaluation was to theorise the implementation of the Baby Basket program and how it was experienced by maternal and child health clients who received the Baby Baskets (hereafter women) and healthcare workers (midwives, nurses and Indigenous health workers). The qualitative evaluation also considers the consequences of Baby Basket implementation, including the actions, outcomes or benefits to women and their babies and families, and the potential for improvements and spread to other settings.

Qualitative methods

Qualitative data was obtained from interviews and focus groups held with women who received the Baby Basket, family members, and healthcare workers (midwives and Indigenous healthcare workers) who implemented the program. The transfer of Cape York expectant women to Cairn Base Hospital at 36 weeks gestation to have their babies provided a unique opportunity to interview women in Cairns. Additionally, women from Mossman Gorge (near Cairns) were interviewed in their home community. The research team liaised closely with ACYHC MCH staff to access the contact details for participants and arrange interviews. The evaluation was verbally described and an information sheet and consent form provided to each participant.

Semi-structured interview guides for women and healthcare workers were developed based on the themes and principles from the literature review. The initial emphasis of the focus groups and interviews with women was on their recall of the Baby Basket and associated healthcare worker visit, what they found useful, whether it influenced their attendance at antenatal care visits and/or nutrition, exercise, smoking or alcohol-related behaviours and care for their babies. What was not useful about the Baby Basket and suggestions for improvement were also asked. The interviews were conducted at the time, place and with the people of the participant’s choosing. Participants were encouraged to tell stories and provide examples of their experiences.

The constructivist grounded theory methods of iterative sampling, data collection and analysis was used. Initial purposive sampling of women was followed by theoretical sampling by identifying women who were likely to provide divergent views about emerging theoretical issues. As interviews continued, the focus of questioning changed to elicit further information about emerging issues. Interviews with women were continued until recurrent themes began to emerge in their stories. At this point, two ACYHC healthcare workers were interviewed; they had witnessed interviews with eleven additional women in Pormpuraaw, Mapoon and Mossman Gorge for the filming of an ACYHC DVD about the Baby Basket project. The healthcare workers were asked to provide their reflections about the experiences of those women in receiving Baby Basket. One of the strengths with grounded theory method is that it
allows for the concurrent collection, analysis and development of theoretical models – this prevents the collection of unnecessary data once saturation is reached.

Table 1 provides the characteristics of the women interviewed. They included women from Aurukun, Kowanyama, Lockhart River, HopeVale, Wujal Wujal and Mossman Gorge. The women ranged in age from 21 years to a family member in her 60s. Six were interviewed at Mookai Rosie Aboriginal hostel, one at the Red Cross hostel, one at ACYHC, one at the Wellbeing Centre in Mossman Gorge, and one at the woman’s home in Mossman. Seven of the women had received the Baby Basket; the other three were family members and/or friends.

Table 2 Women interviewed, community of origin, age and Baby Baskets received

<table>
<thead>
<tr>
<th>Participant</th>
<th>Community</th>
<th>Age</th>
<th>Where interviewed</th>
<th>BB1</th>
<th>BB2</th>
<th>BB3</th>
<th>Bath</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Aurukun</td>
<td>late 20s</td>
<td>Mookai</td>
<td>y</td>
<td>y</td>
<td>y</td>
<td>n</td>
</tr>
<tr>
<td>2</td>
<td>Mossman</td>
<td>34</td>
<td>At home</td>
<td>y</td>
<td>y</td>
<td>y</td>
<td>y</td>
</tr>
<tr>
<td>3</td>
<td>Wujal Wujal</td>
<td>early 20s</td>
<td>Mookai</td>
<td>y</td>
<td>y</td>
<td>n</td>
<td>n</td>
</tr>
<tr>
<td>4</td>
<td>Wujal Wujal</td>
<td>21</td>
<td>Mookai</td>
<td>y</td>
<td>y</td>
<td>n</td>
<td>n</td>
</tr>
<tr>
<td>5</td>
<td>Kowanyama</td>
<td>40+</td>
<td>Mookai</td>
<td>n</td>
<td>n</td>
<td>n</td>
<td>n</td>
</tr>
<tr>
<td>6</td>
<td>Kowanyama</td>
<td>40+</td>
<td>Mookai</td>
<td>n</td>
<td>n</td>
<td>n</td>
<td>n</td>
</tr>
<tr>
<td>7</td>
<td>Hope Vale</td>
<td>mid 20s</td>
<td>ACYHC</td>
<td>y</td>
<td>y</td>
<td>y</td>
<td>n</td>
</tr>
<tr>
<td>8</td>
<td>Cairns</td>
<td>60s</td>
<td>Mookai</td>
<td>n</td>
<td>n</td>
<td>n</td>
<td>n</td>
</tr>
<tr>
<td>9</td>
<td>Mossman</td>
<td>23</td>
<td>Mossman Wellbeing Centre</td>
<td>y</td>
<td>y</td>
<td>y</td>
<td>n</td>
</tr>
<tr>
<td>10</td>
<td>Lockhart River</td>
<td>24</td>
<td>Red Cross</td>
<td>y</td>
<td>y</td>
<td>y</td>
<td>n</td>
</tr>
</tbody>
</table>

Additionally, one focus group was conducted with 16 healthcare workers who were attending an in-service training workshop in Cairns and three interviews were held with ACYHC healthcare workers (one had attended the focus group) to elicit their experiences of Baby Basket implementation. The focus group and interviews with healthcare workers followed a similar line of questioning from a provider perspective. Of the 18 healthcare workers, 14 provided services to all 11 ACYHC PHS and four were based in Cairns. Eight were Indigenous health workers, four clinical nurses, four midwives, one a child family health nurse and one a doctor. All but two staff worked for ACYHC; the others for Mookai Rosie. Eleven had provided Baby Baskets; five had not and two did not respond to that question. Similarly, all but two staff provided education in association with Baby Basket delivery.

The transcripts of all interviews and focus groups were imported into NVIVO software and coded to identify recurrent themes and theoretical constructs (Glaser & Strauss, 1967). The identified themes were then categorised into higher order
concepts and the relationships between constructs identified. The process of examining the themes and their interrelationships was repeated until the theorist was satisfied that higher order constructs and their relationships could be modelled in such a way that explained the great majority of the data and that the central concern of those involved in the project and the basic process that facilitated that concern were identified (Glaser & Strauss, 1967). The constructed model of program implementation was then workshopped at a Baby Basket steering committee meeting. Potential improvements to maternal and child health outcomes and potential spread of the approach to other settings were identified as part of the model.

Findings

Figure 2 depicts the social environment which influenced Baby Basket implementation (outer circle), the central concern and process by which Baby Basket implementation occurred (inner circle); and the strategies that combined to comprise implementation (intermediate ring). These three elements of the theoretical model are intrinsically interrelated, with each influencing the other. They are discussed in turn.
The social environments which influenced Baby Basket implementation

The social environments in which Baby Basket was delivered influenced implementation. Particularly important were: 1) the remoteness of the Indigenous communities; 2) the women’s and families’ knowledge, skills and behaviours in regards to pregnancy, birth and early care for their children; and 3) the organisational and service approaches and capacities (see Figure 2).

Figure 2 Theoretical model of working towards an empowering family-centred approach by engaging and relating
The remote Indigenous communities

The Baby Basket is delivered through primary healthcare services managed by ACYHC in eleven remote Cape York communities (see map, p1). The majority of Cape York communities were formed historically as mission settlements, with Indigenous people relocated to the settlements in the late 1800s. Each has a distinctive history, tribal population groups and church influence. Communities are now controlled by community councils.

Although every community is different, one important factor enabling Baby Basket implementation has been the high birth rate within these communities. One woman referred to her community as: “getting bigger… More babies. So baby boomin’ in [community name].” The high birth rate meant that women rarely experienced the process of pregnancy, birth and early child rearing on their own. One woman recalled: “Me and my friend didn’t know we were pregnant, well this girl up here is 3 weeks in front of me. All of a sudden, we went to the clinic. One found out she was 6 weeks - another 2, and 3 weeks later I found out I was 8 weeks pregnant…. next minute, you see all these little tribe running around”. The high birth rate created a strong demand for Baby Basket; particularly in large communities, healthcare workers were stretched to keep up with demand.

Additionally, there are high rates of chronic and infectious diseases in the remote communities. The common health issues affecting young children were described by a health worker:

“…we have is ear health, skin, so scabies, hepatico, are mainly my ones. I don’t know about any other communities but we do, I mean we gave four vicilins in one day to children, like it was that bad. Head lice, eye…”.

The prevalence of such preventable conditions provides an imperative for MCH checks, education and treatment efforts.

Queensland Health’s policy of universal evacuation for Cape York women to birth at Cairns Base Hospital, due to the high frequency of risky pregnancies, affected the timing and place of Baby Basket delivery. Basket 1 was implemented in communities upon first pregnancy diagnosis, the second basket was delivered in Cairns at Mookai Rosie or other Aboriginal hostels prior to hospital admission, and the third was delivered again in communities when the baby reached six months of age. The logic of providing three baskets was well understood by women. One woman explained: “We got one, two, and three. But they don’t all come at once; they come in terms of our pregnancy.” Generally, evacuation to Cairns occurs at 36 weeks gestation, but some women require emergency evacuation.
Women’s roles in the community and child rearing practices, including the mean (young) age at which many women became pregnant, the (large) number of children that many had, and associated family responsibilities, affected Baby Basket implementation. The pregnant women interviewed ranged in age from 21 to 40+ and from expecting their first baby to having seven children. While many of the women had prior experiences of being pregnant and having babies; Baby Basket was particularly valuable for first time mothers. Whilst the Baby Basket items are standardised, healthcare workers tailored the education associated with Baby Basket to individual women’s needs.

The women who received Baby Baskets were not simply individual clients, but also embedded within extended families and in addition to already having children, some also had other family responsibilities and/or work responsibilities. For example, one woman revealed:

“I got my own place; I look after my little brother and sister too … My mum passed away when my little one was 9 months. Everybody always tells me I’m doing a good thing and stuff, but I don’t realise I am doing it…. No one else is going to look after them, so it’s like, I don’t want to see my little brother and sister going to people that won’t help them.”

Another woman, who worked as a youth worker was interviewed in Cairns while waiting for the birth of her baby. She described the emotional pull of being absent from her home community for the birth, while also being concerned about her young clients:

“Yes I drag them down to the community hall, the youth centre, and they don’t even realise they have gone four hours not smoking marijuana. It’s good for their health. There one problem with one youth, they all are waiting for me to go back. But I haven’t had my baby yet”.

Living in communities with poor long term MCH outcomes, the women experienced implementation of Baby Baskets during the life-changing processes of pregnancy, birth and early childrearing; a dynamic life phase that consequently provided opportunities for additional personal changes.

The organisational and service approaches and capacities

ACYHC’s strategic objectives are to create and coordinate community controlled clinics and to foster a community based workforce in all Cape York communities. From the start, one of the factors deemed critical to the success of Baby Basket was that it be delivered through a community controlled organisation. An ACYHC health manager recalled:
“The GP [general practitioner] had worked in community trial for us and it was very considered opinions that it shouldn’t sit with government, it should sit with community control health organisation, so the result was that we got funding for this program”.

Led by ACYHC, program implementation has been developed responsively to community needs and feedback. The importance of self-determination of health service delivery through community control was described by healthcare workers and women as an important factor influencing implementation.

MCH primary health care and advocacy services are provided by ACYHC’s Family Health team. Consistent with community control, Baby Basket implementation has been a health-worker-led, family-oriented and home visiting approach. Nurses and midwives play a clinical, educative and support role. Another health manager reflected:

“For us at Apunipima, if we are going to follow the Apunipima way of model of care, that’s about home visiting, so it’s changing that thought process of whoever is working. If you are choosing to work at Apunipima, you have to adopt that philosophy”.

The presence of Indigenous staff and female staff has been critical components of the approach.

Initially lacking capacity to implement Baby Basket across the Cape York communities, ACYHC partnered with other health service providers – Queensland Health, the Royal Flying doctor service (RFDS), and in Cairns, Mookai Rosie Aboriginal hostel to deliver the baskets. The partner organisations were involved in the developmental and piloting phases of the program, and were initially delivered the Baby Basket in all communities. A health manager recalled:

“it was really important - there were many kinds of organisations providing care to the Cape …[so]…we invited representative of Royal Flying Doctor Service, also Queensland Health, also Mookai Rosie over to give their 20cents worth of what it might look like …They went: ‘that’s really great and it will really fill the need’. So it was a really lovely process to be involved with … And there wasn’t a lot of dissention.”

Program delivery through partner organisations has not always accorded with ACYHC’s conception of the program. For example, a healthcare provider who had recently relocated to ACYHC from another organisation reflected:

“I’m sitting feeling very new to this organisation having worked somewhere else. The way the whole Baby Basket concept was explained is completely different to everyone’s understanding here. I mean, it’s just different … you’re working in a different capacity… to be honest my focus wasn’t on
Baby Basket three and we didn’t have a child health worker with us. So it wasn't, I’m sitting here and realising that actually it’s a health worker led program and I’m sorry for my ignorance around that”.

As the capacity of ACYHC to deliver MCH services has grown, the role of partner organisations is being phased out and ACYHC is assuming complete responsibility for implementing the program. By doing so, it becomes feasible to further tailor the program according to feedback from women and healthcare workers.

Thus this retrospective evaluation occurred during a window of opportunity when service delivery was being transitioned to greater control by ACYHC. Participants reflected on issues of the social environments within which Baby Basket was implemented, including the remoteness of the communities, their differing mission histories and consequent tribal groupings and social characteristics, relatively higher fertility rates than the Australian mean, high levels of chronic and infectious diseases, and broad family responsibilities of the women as carers for young families. Participants also noted issues of organisational approach and capacity in the developmental phase of Baby Basket implementation, including ACYHC’s vision of community control and partnerships with other service providers.

**The core concern for implementing Baby Basket: working towards an empowering family-centred approach**

The women and healthcare workers were motivated to implement the program in order to ensure that women were well prepared for birth and motherhood, and babies had the best start in life. This core concern was termed *working towards an empowering family-centred approach* (see Figure 1). One manager commented: “If you have a disempowered, sad woman, she is not going to be able to make any of those behavioural changes, because they are all behavioural changes…. the program needs to be developed around that”. She continued:

“It’s more than a basket, it’s a program…but yeah it then becomes bigger than a program, cause it’s a part of living, it’s a part of breathing. And that’s why that vision … is to measure the empowerment of the infant, because we often measure the empowerment of the mother, but I mean how do you measure the empowerment of an infant? … and what happens to them when they are 15?”

Women and healthcare workers found that the items provided through the Baby Basket program were useful, and appreciated their role in empowering the women to prepare for their changing roles and responsibilities in their families. Families were important not only because the Baby Basket aimed to better prepare women for their prospective roles as mothers but also because of the involvement of extended family members in the care and support for the wellbeing of women and their new babies. A health worker observed:
“It doesn't really matter who is in the house hold. Because the older siblings will be looking after the kid, or the grannie, or the granddad. So when you do the education, regardless if mum not there, if she is at work or at the shops or something, it’s whoever’s looking after the kid as well who gets that education”.

A health manager summarised this approach as:

“allowing the family to understand that you are prepared to advocate for a holistic thing. Not just the sores that you see in clinic, but that you are concerned about them as a family, as a community, as what they belong in”.

Important in working towards an empowering family-centred approach was the establishment of a culturally safe space led by health workers wherein healthcare workers could engage and relate with women responsively through home visiting, the provision of social and emotional wellbeing (SEWB) care and involvement of extended family members. Within this safe space, women could learn what to expect through the processes of pregnancy, birth and motherhood, how to prevent ill-health, care for themselves and their children, and pass on their learnings to other pregnant women. Healthcare workers could also reflect on their practice, including the consistency of education messages, and apply their learnings to practice improvements. Working towards an empowering family-centred approach also extended to the clinic. Health workers encouraged women to attend the clinic early for antenatal care, provided education and activities in Cairns while the women waited for the birth of their children, and provide a family-centred approach in the postnatal period. Working towards an empowering family-centred approach resulted in women making healthy choices such as eating fruit and vegetables and quitting smoking, becoming more empowered health consumers, and advocates for change in their communities. For example, a health worker reflected:

“The information they get from us, will also help them when they come down to Cairns, you know, there will be days when we are not here, and they will go to the clinic. You know, as long as they are not intimidated, they will be able to relate to the doctor and understand what they are talking about”.

Additionally, the approach resulted in organisational changes such as taking control of Baby Basket delivery, a proposal to extend the program further into the postnatal period, and potential to transfer the approach

**The process of implementing Baby Basket: Engaging and relating**

The process by which the Baby Basket was implemented in Cape York communities was through engaging and relating (see Figure 1). Engaging and relating occurred primarily between healthcare workers and women and their family members. Engaging and relating also occurred within ACYHC’s transdisciplinary health team between nurses, midwives and Indigenous health workers, and between ACYHC and
staff of partner organisations. For women, engaging and relating occurred with their partners, family and community members, and other women.

Engaging and relating between healthcare workers and women

One healthcare workers spoke about the baskets as a “tool for engagement”; while others said “it’s almost like your ticket in”, and “being that interface” with the women. At the same time, the women spoke of their engagement with healthcare workers as: “local faces at the clinic”; and “she [nurse] gave me the basket… she told me about the basket, she introduced me to the girls who were working for Apunipima.” Such descriptors of engagement contrasted with women’s descriptors of the non-engagement experienced when they arrived at Cairns Base Hospital. For example, one woman reflected: “some of them are new, not knowing your health, you know, and instead of them looking at your chart, they want you to tell your story again”; and: “that cranky old lady that … don’t even talk to you; you just feel very uncomfortable.”

Engagement between healthcare workers and women occurred at the time of the first (antenatal) basket which provided products to enhance the woman’s health during pregnancy. The women appreciated that the goods they received were for themselves, and this appreciation established the basis for building their subsequent relationship with the healthcare worker. Two women stated: “the first one was nice because it was mainly for me” and “The first one is really good, they provide for mothers, all this stuff you need”. Another woman said that she “felt really comfortable with [nurse’s name]. As well as [another midwife], the first one, she was alright aye. She would always come with chocolate or something for me. She was naughty.” This engagement paved the way for building more enduring relationships.

Relating for healthcare workers involved a lengthy process of establishing trust and rapport with the women. For example, one health worker said: “For me to relate to the people, I have to get to know them first. If I just chuck myself at them, they won’t bite it”. Establishing relatedness, however, was critical to facilitating the provision of health care. For example, one health worker reflected on visiting women in hospital that “on many occasions I’ve taken ladies with mastitis and urine infections, and they would have seen the EMS [Emergency Medical Services] lady that day. But I get the phone call and I take them... so it’s not the EMS haven’t done their job. They just haven’t told them”. A health manager also spoke of the importance of relating with women’s families: “a health worker that can provide you the access to a family - and that might mean the whole family; not just the mum and their baby.” Healthcare workers emphasised the importance of relating with women and their families as the basis for providing health and wellbeing care.

Apunipima health care workers engaging and relating with each other and partner organisations
ACYHC’s Indigenous health workers, nurses and midwives also engaged and related with each other in working towards an empowering family-centred approach; recognising two-way learning across roles. A health manager reflected:

“the health worker is learning at the same time, and the nurse is also learning what the best way is to approach a family and what the wording has to be, what the languaging is around things, what the traditional words are for Indigenous language and are appropriate for use in certain circumstances. So you know there is a lot that can happen in that a fairly simple interaction”.

Midwives and health workers worked closely together. A midwife explained:

“the way we’ve always worked is that we do our clinical component together and then she [health worker] does a home visit to follow up all that we talked about which is in the patient health record, which includes a lot of this information. And then she would go into the home or wherever appropriate and then back it up with ‘here’’s that sleeper we talked about. And remember we talked about SIDS [sudden infant death syndrome] with that. And here’s … you know … the Bunjulbi, remember we talked about this, this and this.”

ACYHC healthcare workers also spoke of the importance of engaging and relating with partner organisations to develop and implement the Baby Basket program. Through engaging and relating with each other, healthcare workers were able to offer more comprehensive care by complementing each other’s skills and experience.

Women engaging and relating with their partners, family and community members, and other women

Women also spoke of engaging and relating with others in their family or social circles and other women. For example, one woman recalled: “I sat down with my partner and he was reading it (Bunjalbi Book included in the antenatal basket) and he’s like, ahhh. He’s a first time father as well you know.” Through engaging and relating with each other, pregnant women assisted each other with information about pregnancy, accessing healthy foods, linking with the clinic and other health enhancing behaviours.

The strategies

Five strategies were identified that represent the broad actions that healthcare workers and the women considered necessary for engaging and relating to improve maternal and child health and wellbeing. The strategies were: 1) providing pregnancy, birth and baby goods, 2) creating a culturally safe space, 3) learning about prevention and care, 4) linking at the clinic, and 5) taking responsibility for health (see Figure 1). The strategies are presented here as sequential, but in practice, they overlapped.
Providing pregnancy, birthing and baby goods

The first sub-process, termed providing pregnancy, birthing and baby goods, refers to the items provided in the three Baby Baskets as an asset to improve the health and wellbeing of pregnant women and their young children. Four aspects of providing pregnancy, birth and baby goods were important influencers of how engaging and relating occurred. These were: appreciating Baby Basket, preparing for baby; developing and delivering the baskets; and suggesting improvements.

Appreciating Baby Basket

When asked what they thought of the Baby Baskets, the women interviewed were very appreciative, finding the Baby Baskets to be very useful for preparing for their own and babies’ needs. For example, one woman replied:

“Really good, they come in handy. The first one is really good, they provide for mothers, all this stuff you need, which many young girls wouldn’t go to the shops to get. They are too lazy… the second one … they meant to give us before we go in, it’s got all the baby singlet, clothes, basket, shampoo, singlet, their own towel. I felt over the moon. I thought that’s really good.”

Another woman concurred:

“the Baby Basket is beautiful to have, especially for women like us Cape York girls, like Indigenous women…its good because more of young girls are getting pregnant … I think there’s everything there for a woman who need for themself and their child. It’s sort of like a push; a sort of kick on the butt. It’s a good start for them you know; good motivation to get more things; at least to know what to get next time, when they go shopping.”

All of the women expressed a great appreciation for Baby Baskets.

Healthcare workers too, appreciated the Baby Baskets. One health manager recalled of the early development of the Baby Baskets:

“I had a 2 year old at the time, an 18 month old actually, so I was still in the throes of buying all that stuff. And I had just donated a heap of stuff to the hospital because they were always on drives with people coming down from the Cape because they didn’t have anything, particularly the younger mums. So that really struck a chord with me. it just seemed such a lovely opportunity not to just give people things, but to marry that in with an education program. And so that’s what really fired me up.”

A midwife considered: “it was good to see that someone actually recognised it being a good tool to use, not more so a hand out kind of thing”. Another midwife added: “And it’s also an icebreaker and it’s a really nice way to say ‘you should brush your teeth..."
twice a day.’ Look here’s these toothbrushes”. All healthcare workers interviewed supported the Baby Basket program.

Specific items were mentioned by some women as being particularly useful. In the antenatal basket, these included the Bunjalbi book and food vouchers. A health provider noted that the Bunjalbi book, which was tailored for the Baby Baskets, proved enormously popular in the early baskets. The book provided information about what Cape York women could expect when they came to give birth at Cairns Base hospital. A woman commented:

“it tells you a lot of good stories about how babies start before, and during the time of baby growth, and after the time of baby born, and time from newborn to five or six, and tell a story about that; It’s a really good book.”

Likewise, another woman said: “I read it; it was good. It was nice ‘cause as I said, it is really lonely in the hospital and the little book came in handy. I was reading it and it was very entertaining”. These and other comments suggest that the Bunjalbi book was considered to be very useful.

Similarly, the five $40 fruit and vegetable vouchers were particularly appreciated. A health manager described the rationale for the vouchers such: “Often a lot of people fish and hunt. And so they can get protein quite easily, but the fruit and veg is a little bit more difficult”. One woman stated: “When we got the Baby Basket and fruit and vegie voucher we made a big juice, cause … when I stay with my nephew, and he’s got everything, like a blender.” Another woman recalled: “She gave me this $40 voucher. I said yeah, good tucker. Good fruit and vegies.” Though appreciated, one woman had difficulty in using the vouchers to access the fruit and vegetables:

“most of them didn’t work! I dunno most of them bounced back … every time I go there they said sorry it doesn’t work; you have to go back to the hospital. So I would and they would write me out another cheque and then it would work”.

The only issue raised regarding the usefulness of items was the branding on the antenatal bag. Healthcare workers were concerned that this might stop women from attending the clinic for pregnancy tests since receipt of the bag with its identifiable branding, signified that the woman was pregnant. However, the healthcare workers did not consider that the branding on the bag or other items should be changed.

The second basket provided in Cairns, was also widely appreciated. A midwife reflected: “I’ve never heard any negative stuff coming back about the second bag”. Particularly appreciated at this point in the women’s processes was the bag in which the items were packed. A health worker jokingly commented: “I think they like the bag. I know a couple of the staff they would’ve like the bag (laughs). I say ‘ah, ok, you’ve got to get pregnant’(laughs).” She continued: “I think it’s just the bag too, it a
cool colour, it’s very useful. You don’t only have to use it for one thing. You see a lot of mums walking around with those bags”. Women agreed that the bags were very useful, being applied as a nappy bag, travel bag and fishing bag among other uses. One woman, for example, said: “A lot of zippers. A lot of space. I use it when I travel down up and down”. Another queried the strength of the bag, but said:

“They go fishing. So they got to carry there line in it. So they carry it from the landing, so they got bubba gear in there and some of their stuff so that’s why it’s breaking. Because they’re walking from their house to the landing, pushing a pram and everything”.

Other items considered useful in the second bag were the creams, wipes, nappies, powder, shampoo and baby clothes.

The baby bath, provided immediately after birth, was also seen to be useful, although one Mossman Gorge woman said that she had a bath already, so she gave it back to the clinic. There were no particular comments about the items in the third and final basket, provided to the woman six months after birth.

Women appreciated the items in the baskets and found them useful in preparing for their own and baby’s needs. Health care workers also appreciated the baskets as a useful engagement tool. Specific items highlighted as useful were the Bunjalbi book, food vouchers and the second bag.

Preparing for baby

Women suggested that the Baby Baskets were particularly useful for those women who were likely to be less well prepared for birth and motherhood – for example, those who were having their first baby, were young and/or required emergency evacuations from communities. For example, the same woman said:

“… their first baby, they don’t have anyone to support them, you know, it’s really good. It comes in handy. It’s support for them. For us, you know, for women who are pregnant. It’s sort of like a showing of idea of what baby needs, and for themselves, before baby born and after he or she born, you know.”

Another woman concurred that the second basket:

“really comes in handy for mothers, especially for first time mums, they don’t know what to expect. They know babies are babies, but they don’t know what they need. The Baby Basket has got everything, cream, wipes, nappies, powder, shampoo, and yeah it’s come in really handy.”
A midwife reflected: “You know, you tend more of your attention to women that are younger, you know first time pregnant, or teenagers”. A health worker explained that Baby Basket was also particularly useful for women who experienced emergency evacuations to Cairns since: “mums can often come to Cairns without stuff … due to being medivac’ed to Cairns before they’re prepared.” One woman related:

“Last year my cousin had a baby, first baby. And she got upset. Like, she is one of those types of people who get upset like she doesn’t have everything there or she doesn’t have any support … And it was cause they just rushed there man, and she ended up having the baby. I went up to the hospital and she was just breaking down. She was worrying about clothes, and she didn’t have anything for her. So I said there is a lady coming around with a Baby Basket.”

Thus, first time mothers, young mothers and others who were less well prepared for birth and baby benefitted most from the Baby Baskets.

Nevertheless, the Baby Basket was also valued generally by all. For example, a woman having her second baby said:

“it’s good to get them to um just to set your mind on what you need and have for the baby, because for my first one, I didn’t have many clothes. What do they need to pack and whatever? And um, the Baby Baskets just gave me an idea of what I needed. And it did prepare me a lot.”

Another woman who was expecting her third child said: “you know this is, we’ve never had this before… ‘It’s really good.’ Many women lacked the money needed to buy goods for their own or baby’s needs. A health manager explained,

“people in the Cape are very, very poor, and I mean most people don’t realise just how poor you are when you are in the Cape …If you are really poor in Cairns, you’ve got all the Saints things, you’ve got all the op-shops, you’ve got resources that you can access on a weekly basis where you can get a free feed. In the Cape that doesn’t fit, so you are actually poorer. And you have to work for your dollar, you have to do all these work schemes, and if you are sick because of morning sickness, you don’t get work and your pay stops”.

One woman provided her story of lacking income to buy goods for her baby’s needs:

“Some mums don’t have money, like me. I had to fight through Centrelink, since I come down [to Cairns for the birth of her child], I had to receive a little bit of benefit because I am on maternity leave, and work won’t pay me until after I have my baby, and that’s ridiculous. Cause I don’t know when my baby is coming … See for a problem like that, the Baby Baskets do come in handy for parents or mums without any benefit from Centrelink or training.”

Additional barriers to obtaining the necessary goods in Cairns were described by one
woman as: “Some parents, they don’t have time to go shopping, too lazy or, especially when you live in the city, you need money for taxi, transport to go buy some stuff”. Further, many of the goods required for pregnancy, birth and early child rearing are not available through community stores. A Mookai Rosie health provider commented that many first time mums came to Cairns to have their babies without anything at all for either themselves or their newborn babies.

Developing and delivering the basket

The composition of baskets has been relatively stable since they were first developed in 2008. The original prototype, developed by an ACYHC health manager, was piloted with the clients and staff of ACYHC and health service partners. As described by the health manager, we:

“got a bit of feedback from Mookai … and that was really interesting because of the quality of the input of the Aboriginal women and staff really started improving once they had something to play with, so once they had ideas of what we were thinking about, they came up with their own. A lot of them were really interesting … that stuff can only come from a user”.

The first prototype has remained stable with most of the items still delivered. As the health manager recalled:

“there wasn’t really a lot of change, we were probably a bit lucky with the piloting … in essence the changes have not been big … There has been a bit more warmer clothing requested in the winter months for example than was first initially, but other than that there wasn’t a lot of other things people suggested. …The one area that did change a little bit was the provision of health food vouchers, and then extending them into the postnatal period, I think makes a lot of logical sense”.

The women, however, were aware of the small changes that had occurred in the provision of items. One woman, for example, said:

“I have received a Baby Basket in 2010, and me looking at it today, there is more helpful items in there. Like there is more books, there more like soaps and conditioners. When I received it there was some holders, one soap and a shampoo and conditioner… Yeah, I know they receive baby baths, and I never received one when I got it”.

Another woman noted that the food vouchers had increased in value: “there was only $20, and that can only get like two vegetables, because this is [community name] store. But I think the vouchers are a bit more now from when it got them”. This awareness suggests the high value placed by women on the baskets.
The usefulness of the current baskets for preparing women for baby, and their appreciation of the baskets suggests that changing the number and composition of the Baby Baskets would be complex. For example, when asked whether provision of a basket at the twelve month immunisation would be a good engagement tool for conversation about infant nutrition, a health worker replied:

“I don’t know. Not really. Its only when we capture them at the twelve month immunisation at the child check that we are finding the low Hb (haemoglobin). And we just worm the whole family and just treat. And talk about iron rich food. And we also bring in the dietitian and I go out with her and we do all the stuff that we do anyway”.

In reflecting on the feedback from women who were filmed for the recent ACYHC Baby Basket DVD, however the health manager noted that women liked the currently provided items:

“certainly the feedback from the women was really good because…we gave them everything they needed. And at that point I, hah, well maybe I got this all wrong, maybe we are just meant to hand out a whole heap of stuff.”

However, she questioned:

“Are we meant to be just handing over to people, making it easy? Or are we not? And certainly when you sit with women who you know that they are on poverty line and you know how much it costs people, and they come to Cairns for the four weeks, and it is a whole lot cheaper than the community store. Do they have the capacity to save that money through their pregnancy; maybe not?”

The high pregnancy and birth rate posed challenges for keeping track of Baby Basket provision. Health workers suggested that the logistics of providing three baskets plus the bath meant there is: “too much stuff to carry”. A health worker reflected on her attempts to keep track of each of the three baskets provided to women in a large Cape York community:

“Did I do the Baby Basket then, oh no, did I do this other one, shit. There is other kids - did we get them for their immunisations and child health checks. You know what I mean. It’s mind boggling the amount of women that are pregnant and the amount of kids that are tiny”.

As well, women’s high levels of transience between communities made it challenging to keep track of Baby Basket delivery to individual women. Healthcare workers questioned the associated paper as: “just a lot of unnecessary listing, ticking and it’s a lot of time for you guys”. However, healthcare workers felt that the inventory of contents was useful and provided a surety that the items would not go missing. Thus, the current number and composition of baskets was generally seen to be appropriate
and suggestions for increasing the number of baskets were met with reluctance.

**Women and health care workers valued the current composition and number of Baby Baskets and considered that any changes in composition should be made in reference to the roles of the baskets in facilitating engagement and promoting women’s and babies’ health and wellbeing.**

**Suggesting improvements**

Both women and healthcare workers suggested improvements to the contents of the baskets. Women suggested: replacing the sorbalene cream with nivea cream; providing the Johnson pack that includes baby powder, baby cream, baby shampoo and a baby oil; button-front (rather than lift up) nighties; a pair of slippers for the hospital; baby Panadol; changing the brand of the nappies to one that baby is less likely to get nappy rash from; disposal nappies rather than cloth; information on pregnancy and how baby develops; information on safe medicines for babies and contact numbers for support if the clinic is not open; stronger baths left in the clinics in the community; maternity bras with size noted when basket one is provided and the bra included in the second basket; educational books for children such as Dreamtime stories to encourage mothers to read to their babies at an early age; and a book (like Bunjalbi) with childrearing tips to share with other women. The only item that women suggested removing from the baskets was the nail emery board.

Healthcare workers suggested: a family bag to be given after the baby is born which included resources about looking after skin, teeth and hair; two recipe books appropriate to pregnancy and for first foods for baby and for toddlers; and information related to early childhood health collated into one book/let. They also suggested that information about scabies, hearing loss and foot and mouth disease could be incorporated within the baskets or provided individually as part of a normal child health check. These conditions usually present in older children but healthcare workers suggested that information could be provided from the first bag because of the ongoing nature of such problems.

**Suggestions for improvement entailed relatively minor changes to content.**

**Creating a culturally safe space**

The second sub-process, termed creating a culturally safe space, refers to the important pre-requisite for women and healthcare workers to feel culturally safe in order to engage and relate. Cultural safety involved midwives and health workers working together, and with women and their families, in a respectful and inclusive manner in a way that supported and empowered all. Five aspects of creating a culturally safe space were important influencers of how engaging and relating occurred to implement Baby Basket. These were: being responsive, being health-worker led; involving families; enhancing access through home visiting, and providing social and emotional wellbeing (SEWB) care.
Being responsive

The Baby Basket approach has been delivered flexibly in response to women’s preferences for where and how the baskets should be provided, and by whom. Healthcare workers said that providing culturally appropriate care required them to be responsive and flexible. A health worker commented:

“to me, it is like you care, from being in an Aboriginal community, it’s like you come out of your comfort zone and you actually are in their environment and you see what they are going through. It may not be anything to do with child health. You’re just sitting there, knowing. And they’re young and you just having to listen to what people complain about. It may not even be relevant to your job but you’re there, you’re listening.”

Being assured that confidentiality would be maintained was an important aspect of responsively creating a culturally safe space. Health workers said that they assured women of confidentiality: “like I always tell them I can lose my job if start talking to youse about family after hours. So I reinsure that everything is kept confidential”. One woman, however, said that she preferred to obtain the Baby Basket from the nurse/midwife because of her perception that Indigenous health workers may not maintain confidentiality in the community.

Healthcare workers also spoke of the importance of obtaining ongoing feedback from women about their experiences of the program. One said:

“they need to sit down and get a lot of feedback from the mums because they are the ones who are receiving it, they are the ones who are going to the clinic and getting information you know. And for us, how to improve our Baby Basket to make it run smoothly across the Cape, we need to actually ask the women how they like it, what are they getting out of it, is it helping them when they come to Cairns, you know, give them the information that they need, make sure they understand it.”

Such feedback from women could then inform Baby Basket improvements in response.

Although the Baby Basket program was framed as a health-worker led home visiting program, being responsive to the preferences of women was seen to be critically important. Thus the Baby Basket approach was delivered flexibly.

Being health-worker led

Health workers are generally from their community of origin and have an intimate knowledge of the social and cultural dynamics of those communities. These dynamics differ across communities; hence the health worker’s knowledge is critical to ensuring
that implementation is done appropriately. For example, a non-Indigenous midwife reflected:

“I find [name of health worker]..., you come back and you know exactly what is going on in that family and what might be happening in their community that has affected them and you always know when there are deaths in the community and when the funerals are and stuff like that. I can’t, I don’t often get... But you just go in there and always, all of those dynamics”.

A health worker explained that the language used was critical to the women’s interpretation of the messages: “Yeah we usually speak more Kriol to them and they understand it much better than you speak”. The presence of Indigenous staff made women feel comfortable and in many cases, more willing to seek care. For example, one health worker noted: “Some women are in shame for baby, and they go to clinic for check; black nurse they’re alright”. A non-Indigenous midwife described the critical importance of health workers in making sure that the women understood the health education and care provided. She recalled:

“often when we sit there and explain things, the ladies will sit there and go 'yes, yes, yes.' it’s only when [names of two health workers] have gone out after me and they’ll come back and say 'actually when you said that ... they didn't quite get that, so we'll talk about that on the next, when you see them again.' …You know, and that’s where we learn so much”.

Healthcare workers and women consistently agreed that the Baby Basket program should be health-worker led.

When asked who usually provides the Baby Basket to the women, eight/19 health care workers interviewed said the health worker, seven said the health worker and midwife/nurse and only one said the midwife. All of the women were happy about their engagement with the Baby Basket provider, regardless of who it was. But given the role of Baby Basket as an engagement tool, ACYHC managers and midwives emphasised the importance of supporting health workers to deliver the baskets. An ACYHC health manager stated:

“if you are making sure that you have access to people’s homes, or verandas or under a tree of whatever, then health workers are the people who know where the people are. Whether the house is safe, whether it’s somewhere where they need to be, you know what the day of the week is. Is it pay week? Am I going to be safe this week? They are the ones who hold all that knowledge. They are also the ones often with a prior relationship, and some of that relationship can be quite tricky. So it’s a very nice way of cementing a relationship in a very positive way, and so I’m sure, particularly given some of the jobs health workers get, and they always get the shit ones in clinic, this is a really important one for them. It’s where they can really show them”. 

Health workers spoke of the need for midwives to be confident in their competence, and to provide support for them to lead the BB program. One said:

“if the health worker is away for the week or something, it can wait because it is a health promotion tool and it is an engagement to build that relationship between the health worker and the family. I really think it is really important that these are health worker led. And that nurses have got to understand that.”

Some Cape York communities, however, have not had MCH health workers, so Baby Basket has been provided by the midwife or nurse.

The responses from the women regarding who provided the baby basket were not as definitive. One said that the important issue was that Baby Basket were provided; not who provided them. Another said: “It’s good that the midwife hand it out, but like how often in a community do we get a blackfella in the community, from a health centre”. In reflecting on the responses of women who were filmed for the Baby Basket DVD, an ACYHC manager said:

“Certainly from my observation, it depended on who the main stakeholder was in each community … They related to having great relationships to [name of child health nurse] and enjoyed the fact that she gave the baskets out. Then having worked in [community name], [name of health worker], she really led it, and that was her program … So depending on where you are at, who the stakeholder was, their experience, and what information they gave with it. And you know how they value gift giving. I think that that then becomes that ethical question to the person, some people love gift giving and others don’t”.

This variance implies that it is the relationship that is important rather than necessarily the professional role played.

Similarly, variance was reflected in the effectiveness of the health worker-led approach. A health manager said:

“It was always considered that the Baby Basket was a health worker-led initiative but all of us will say that it hasn’t quite at times worked. In some communities it has worked well, at some places and in some communities it has worked well at certain times but then at certain times, it hasn’t kind of worked quite so well.”

Health workers attributed this variance to the level of support for a health worker-led approach within each primary health care clinic. In some clinics, there were supportive staff members, a vehicle and a proactive health promoting approach. In others, the focus was more strongly on acute clinical care, and as a health worker observed: “it was a bit of a struggle to say 'no you can’t give them out because it’s an Apunipima initiative. I have to do it.” The healthcare workers considered that training would assist in managing such issues.
Involving families

An important aspect of providing culturally safe care was the involvement of partners and other family members in the women’s and babies’ health care. Health workers involved family members through their pre-existing relationships in the community. A health worker explained:

“What is actually happening with my, my side of the thing is that I am working with mums and bubs as well as mums and dads too, like with chronic disease. So when I go to see the kids, I go to see the mother and the father as well … It is good because you are actually getting them together and sitting down, you know.”

Healthcare workers felt that educating family members was also critically important. By providing access to the whole family, a health manager reflected:

“Which is so much better if you have 5 pairs of ears listening rather than one. Including the one who does the cooking and the one who decides who is going to sleep where, and all those things that are really important regarding early life experiences.”

Healthcare workers spoke of the opportunity provided by Baby Basket engagement to ask women and their families about other health-related issues. An ACYHC health manager suggested: “you could choose one [issue] every year and decide, what is your bang for buck.” Women spoke of telling their partners, sisters and aunties and other family members about the information provided through the Baby Basket program. They also spoke of the importance of engaging with Elders in their communities. One woman said:

“It’s really sad when culture dies. Our main person is sick now old fella, Elder is sick. We really struggle with them, you know, our Elders are dropping like flies, and that’s why we are trying to get to our youngsters. That’s why it’s really, really good that our partnership with Apunipima and other you know… is Indigenous based”.

Such engagement with families assisted in making the women feel supported and comfortable, and improved the health service’s capacity to provide healthcare to all family members.
Enhancing access through home visiting

Creating a culturally safe space meant that the health provider delivered the Baby Baskets in the place and situation best suited to the client. Home visiting was supported by both healthcare workers and women so long as it accorded with the women’s preferences. A health worker considered that home visiting allowed more personal care: “to me it is like you care, from being in an Aboriginal community, it’s like you come out of your comfort zone and you actually are in their environment and you see what they are going through”. Healthcare workers also felt that home visiting enhanced cultural safety through creating a more intimate and personal engagement and relationship with the woman and family. For example, a health worker reflected: “There is intimacy there as well, if you know what I mean when I use the word intimacy. So for me it is more personal and then, the same thing, we get yarning”. Additionally, home visiting provided an opportunity to engage and relate with the women’s family. One provider commented:

“the quality of the information you get about a family and how that family operates is just like the difference between a couple of words of description and a picture. It is hugely different. So in terms of information that the family get in a setting where they are comfortable, where they are surrounded by their family, so they are much more relaxed and more likely to get input.”

For women, home visiting relieved the stress of having to obtain transport to get to the clinic: “it was a great stress relief, cause some of the women couldn’t make it to the hospital, the home visits really helped them out transport wise”. The women also experienced home visiting as a useful strategy for building relationships with healthcare workers. A health worker related, for instance, that one woman was sad that a nurse who had visited her home had left the community. “she was a bit thingy that yeah [name], she didn’t know that [name] wasn’t coming in anymore. … So just things like that are important for a home visit”. This establishment of trusting relationships enabled healthcare workers to provide more relevant healthcare.

Home visiting also allowed the health provider to better assess the living situations of women and their families and to advocate for health improvements. A nurse explained:

“it can be very important when you have someone that has repeated gastro or something like that and then you go to the house and find out it’s because they are actually living in a flood of sewage or something and no one actually told you that. And then you can do something about it that will actually help …”

Home visiting also enabled identification of and care for women who were just pregnant. The same health worker continued “… I spotted one girl and I pulled her
over and I said 'are you going again' 'no' and I said 'don’t gammon. You’re going again’.

Health workers also spoke of the value of home visiting for protecting the anonymity and confidentiality of women. For example, a health worker spoke of a young woman who was just pregnant:

“That’s when, if you approach them at the home visit because being so young, and you know they don’t come to the clinic very often, so they walk into the clinic and your belly is out there they’ll be like looking at the people and going ‘sh*t they know I’m pregnant’.

A midwife gave an example of the value of home visiting in checking extending family members’ health:

“[Health worker’s name] has gone out to deliver the 6 month one. After we've done immunisation, she’s gone and done a separate one, given me a call to come over, and we were talking about pap smears. We ended about doing about 6 pap smears in that house from that, one after the other in the house because all the ladies were there… I just sort of came in and went out that back room with my head torch on and off I went. Because [Health worker] was doing the education and I thought, well no one will know because everyone thought we had come out here to talk about the baby”.

Thus, home visiting served to enhance healthcare through improved information, access to clients and the cultural safety provided by the privacy and anonymity of women’s homes, rather than the public space of the clinics.

However, healthcare workers also spoke of barriers to home visiting including women’s reluctance to allow healthcare workers into their private homes: “some mums that came out, and didn’t want us to come inside”. Another health worker observed: “some of them are ashamed of how they live. It’s things like that you know, you don’t want to pry; you just have to wait until they invite you”. One woman felt that the clinic should be the primary place of antenatal care because:

“some women get too lazy, and you need to exercise to help with your delivery and stuff like that. So um I reckon the home visits are ok, probably do it like once. Probably only two through the pregnancy … But I reckon it’s the mothers’ responsibility to go to the clinic to make sure their baby is ok, they’re ok, cause that their worry, their priority”.

A health worker considered that a flexible and tailored approach was required to provide culturally safe care. She said:
“it’s about the comfort of the person who is doing the visit, and about the culture of whether it should happen. And certainly if you put somewhere like [two communities] where it is very normal to do a home visit, it happens”.

In contrast, a health worker from another community said:

“And I don’t go into homes in [community name]. I won’t walk in; I’ll sit in the car, I’ll toot the horn. Some will come out and then I’ll jump out of the car. But I will not physically go into the yard. And again, for me, that’s a cultural aspect.”

Hence, it was critical that women were provided a choice as to where they receive the baskets and associated care. The home visiting approach needed to be administered flexibly to account for such varied preferences beliefs and practices. Home visiting also required resourcing, with many healthcare workers commenting on the need for access to a dedicated vehicle. One health manager commented that

“they tried to do a home visiting program in 2011 and it never worked. … And it didn’t work because they didn’t support it. You know they just told health workers to go and do it. … So there needs to be the guidelines, framework”.

The same health manager continued:

“That’s an asset that is essential. You can’t just say try and use someone else’s car; you must have it, it’s as important as the bags… If we are saying that we are trying to roll out a home visiting program, how can you possibly do that without a car?”

A health worker commented on the logistics of carrying several bulky baskets: “I’ve carried that many bags and sleepers to actually see if I can actually give them to people in the household”. Hence, home visiting is likely to be facilitated by resourcing, including dedicated vehicles for the child and maternal health team to be able to deliver this program.

### Flexibility based on women’s preferences

- Allowing more personal care;
- Relieving women’s stress about obtaining transport to the clinic;
- Enabling healthcare workers to better assess living situations;
- Enabling healthcare workers to identify women with undiagnosed pregnancies; and
- Protecting the anonymity and confidentiality of women and their families.

### Barriers to home visiting

- Women’s reluctance to allow healthcare workers into their homes;
- A perception that it was women’s responsibility to attend the clinic; and
- Need for resourcing with a vehicle to enable healthcare workers to get to women’s homes.
Providing social and emotional wellbeing (SEWB) care

Creating a culturally safe space also meant that the healthcare workers’ care extended beyond a siloed maternal and child health role to a more holistic role in which they addressed aspects of the women’s and families’ wellbeing and determinants of health. As described by a health worker: “it’s not only child health, like there could be other stuff that they might ask you that’s not even relevant to health.” Despite individual efforts by healthcare workers to provide SEWB care, health managers were concerned that while SEWB care was critical to behaviour change, a consistent framework for addressing SEWB was lacking. Healthcare workers gave examples of the holistic care they provided such as advocating for housing, linking with child safety and assisting women with Centrelink.

The lack of consistent framework for SEWB was associated with mixed responses from healthcare workers and women regarding the role of the Baby Basket program in raising issues related such as alcohol, drug use, violence, or exercise. When asked if information should be currently provided in Baby Basket about SEWB issues, 12/16 healthcare workers at the focus group supported the inclusion of information about family violence, 11/16 about drinking alcohol during pregnancy and 13/16 about smoking during pregnancy. However, one woman said:

“not the domestic violence and the sexual… I reckon they are inappropriate for the situation for the Baby Basket itself. But in the case of sexually transmitted infections, you get information on that when you go for your Pap scans. And the alcohol one, um yeah, naa. But that should be spoken about when you go to the clinic, but no books in the bags”.

Healthcare workers felt that the sensitive nature of some SEWB issues meant that these were best dealt with through established relationships with health workers. One health worker said: “They’re too shamed to talk about their social emotional sides, whereas with us they are so connected to us, because they know us”. She suggested that health workers could consistently ask two simple questions to elicit conversations about wellbeing: “the first question I ask them:

'How are you?' and I say 'And how has your day been?' And from those two questions they give you everything. 'Oh, mum my days been great, blah, blah' and then they start and they say to me 'oh, this bloody teacher' and they start ratting down their teacher. And I say 'oh, what happened' and kind of more dissecting it, more or less, and find out what the main cause”.

An ACYHC health manager suggested that there was scope for Baby Basket to be used as a vehicle for promoting stronger messages. She reflected: “we haven’t really gone down that path of using it as tool to sort of start pushing people for quitting”. Thus, while it may not be appropriate to include assets (such as pamphlets or other information) related to wellbeing issues such as violence within the Baby Baskets, the
relationships engendered by the program provide a critical pre-requisite for primary health services to (more) systematically responding to women’s social and emotional problems. Healthcare workers and women considered that the engagement and relating provides an opportunity to ask women about their cigarette smoking, marijuana use, nutrition and other health issues that could be improved.

Healthcare providers considered that a consistent framework was needed for addressing SEWB. Engaging and relating to implement Baby Basket provided an opportunity to ask women about their cigarette smoking, marijuana use, nutrition and other health issues.

Learning about prevention and care

The third sub-process, termed learning about prevention and care, refers to the importance of education for women and families as part of an empowering family-centred approach. As well, a learning process was experienced by midwives, health workers. Four aspects of learning about prevention and care were important influencers of how engaging and relating occurred. These were: educating women and family members; telling other pregnant women, providing consistent messages, and reflecting and improving.

Educating women and family members

Several women said that they did not know much about pregnancy, birth or childrearing before becoming pregnant. One said: “I wish I’d had done this before. When my first baby. At least I would have known.” Another said: “my mum never talked to me about stuff like this. You know even teenager or growing up”. Women recalled that during the antenatal period, they received education from midwives and health workers about breast feeding, nutrition, promoting safe sleeping, smoking and foetal alcohol syndrome. For example, one recalled:

“when we found out we were pregnant, we got our Baby Baskets, and the midwife and you know, Apunipima will tell us um, about the fruit and vegie. And each time they gonna come up … they do a class with the mother, but they provide lunch and, knowing the safety of the baby, and yourself, and not hurting yourself.”

A healthcare worker reflected:

“sometimes you talk about vegies to young mums, really young mums to be. And they’ll turn around and be like, well what’s real vegies? And I’ll, say 'broccoli’ and give all the real vegies to them”.

The entrenched nature of some health issues meant that although education was regularly provided, healthcare workers remained concerned about the effectiveness of their education in shifting behaviours. For example, a midwife said:
“certainly we are giving out those messages about scabies and hearing health and all the rest of it every time. Because that a real public health issue. And each community as it goes though we address with the public health team, and with the whole community, and we can’t do anything in isolation with these because its long term and these issues have been around for a long time.”

Anaemia in pregnancy is another common health issue that results in the baby starting life with low levels of iron. The same health worker gave an example of how she talked to women about providing baby with iron-rich foods:

“...I know it’s hard to keep track of what kids eat, but if they’ve got a little container in the fridge, like vegemite sandwich cut up or like cheese, you know, they’ll go to the fridge and go straight to their little container of yoghurt and eat it. But I said make sure it contains iron rich ingredients. So like baked beans, boiled egg sandwiches, just stuff that they can have prepared for them …Yeah like we talk about fish soups and common stuff like that”.

Similarly, the same health worker described how she provided education about skin in conjunction with the baby bath demonstration: “We talk about how tiny the canal is. And it’s so immature. We talk about ‘that wasn’t there yesterday; I should take him up today.’” Health workers utilised the engagement through the baskets; adding value through providing tailored education such as pamphlets relevant to the health issues of concern.

In providing education, healthcare workers were sometimes required to negotiate sensitive issues. For example, in relation to foetal alcohol syndrome (FAS), one health worker said that she:

“felt a bit uncomfortable with talking about the FAS, and they didn't know anything about it. And some of them go really quiet because they may have drunk early and I feel like it might be too late to be talking about that. But it is good. Then they’ll know for next time.”

Another sensitive issue related to sleeping with baby in the bed. A health manager reflected:

“I suppose safe co-sleeping happens if you are a non-smoker and your partner doesn’t smoke, and a non-drinker. And we know that 70 percent of our mums are smokers and their partners. So if you’re going to home visit in Cairns and she says to you "Yeah, I smoke. No I don’t want to give up. And you say ‘where are you sleeping baby?’, ‘on bed with me.’ Well then you go … I don’t know where I would go with that conversation, I would just reinforce that for safe sleeping ...”
A midwife reflected: “And whether they take it on board is totally different”. The healthcare workers concurred that their role was to provide the information to women, but it was the women’s choice as to whether to heed that advice.

Women had varying levels of knowledge regarding pregnancy, birth and motherhood. Given the entrenched nature of health issues in the remote communities, healthcare workers were concerned about the effectiveness of the education they provided. Providing relevant education sometimes required negotiating sensitive issues. Women exercised autonomy as to whether or how they heeded the education messages provided.

Telling other pregnant women

Once informed, women were keen to share their knowledge to support other family and community members. A health worker observed: ‘they’ll tell others... they’ll pass the word around’. Through engaging and relating with each other, pregnant women assisted each other with information about pregnancy, accessing healthy foods, linking with the clinic and other health enhancing behaviours. For example, one pregnant woman provided support to another, reflecting: “she was getting scared…. And so I go ‘look we go in here, they have got the Apunipima staff here too. You sit down with them and they tell you stories about how big it is, and it’s not scary”’. One woman who worked as a youth worker also talked to other young women about preventing pregnancy and played an active role in distributing condoms.

Providing consistent messages

When asked about the education they provided, 13/16 healthcare workers at the focus group said they provided education about safe sleeping for mum and baby, healthy food and nutrition, breastfeeding baby, and general hygiene for mum and baby. Additionally 12/16 healthcare workers said they provided education about smoking during pregnancy and drinking alcohol during pregnancy; and 11/16 talked about taking other drugs during pregnancy and information about SEWB. However, healthcare workers expressed concern that health promotion messages were not consistent. One healthcare worker commented: “We’re not giving consistent messages; we need to look at that.” There is currently no mechanism for checking the consistency of health education provided through Baby Basket. A health manager said:

“you tick off that all the stuff is in there, and that makes everyone feel happy that it has all arrived, and then four little tick boxes saying you gave education on smoking, alcohol and other drugs, nutrition and SIDS. But it doesn’t tell what you gave them or how you gave it or what your expertise in those fields is”.

Evaluating the Baby Basket program: 2009 to 2013

Page | 52
Concerns about the consistency of health promotion messages suggested that an instruction manual with appropriate information about the Baby Basket approach and priority education messages would be useful.

Training has never been provided to those who deliver the Baby Basket, as reflected by one midwife: “I know the first time I saw the bags and, um, certainly never going through any training on what the baskets mean and how they should be delivered.” Training would allow standardised education and a quality assurance process to ensure that those healthcare workers providing education come from a consistent knowledge base. A nurse hypothesised that the aim of training should be:

“by the time you leave [MCH care], all of these topics have been discussed. So that we have a consistent, everyone is talking about the same stuff, depending on the family. And you know … what’s the most appropriate within each family…. We definitely need training so that we are all on the same level.”

Another nurse reflected:

“It would be good if you kind of knew 'Oh, yeah' and you can sort of say 'but when you saw [name of health worker] she probably talked to you about this and we still need to be thinking about that. If you've got that understanding that that message goes across the Cape’.

Healthcare workers suggested that an instruction manual be developed with appropriate information about the Baby Basket approach and priority education messages, and that those who provide the Baby Basket approach be trained.

Reflecting and improving

Healthcare workers reflected that MCH and wellbeing improvement provided many opportunities for them to consider how they could do things better. A health worker provided advice related to the first solid foods for a baby:

“we don’t have iron, iron rich food, or iron rich information. Because this is what we’re finding that when we do the Hb levels at the six month check we are finding them very low. So we actually have to follow up on that. And we’re finding at twelve months as well and at 18 months. And we worm the whole family so we just need kind of information, posters or stuff on those areas”.

Similarly, a midwife said:

“If you’re someone who’s a newish nurse to child health and you’ve never had children yourself and you’re sitting there thinking: 'Oh God, I’m really not too sure what a six month old eats but I’m hoping I’m giving the right advice… And I think you need that experience, and if you don’t have that experience…
I’m so sure that the advice that you’d be giving would be so perfect at ticking it all off. But we can’t be sure. Especially if it’s ... there is nothing to say that it is okay.”

These comments suggest a need to better monitor Baby Basket delivery.

The reflections of healthcare workers could provide a useful basis for improving the quality of Baby Basket.

Linking at the clinic

The fourth sub-process, termed linking at the clinic, refers to the importance of health screening, checks and treatment in engaging and relating to improve the health and wellbeing of pregnant women and their young children. Three aspects of linking at the clinic were important influencers of how engaging and relating occurred. These were attending early for antenatal care, handing them out in Cairns, and focussing on postnatal care.

Attending early for antenatal care

The antenatal and postnatal baskets have been provided through the clinic as well as through home visiting. One healthcare worker mentioned that women were happy to visit the clinic because the staff at the clinic had built good rapport with the women and family members. She attributed this to the large number of local faces at the clinic and community members’ understanding that ACYHC is community controlled and owned. Another factor important in the good relationship between the clinic and women was the role of long standing midwives. For example, one nurse had birthed the women who were now having babies in the community. However, clinics were not always an appropriate environment in which to provide Baby Basket. A midwife reflected:

“you’ve done all this stuff and it’s like ‘oh baby basket’. It’s like an afterthought. …I don’t know if it really got the attention it deserved. Because it was being done in a very busy clinic, where you were very aware who was waiting outside and all the other demands that were upon you. In retrospect, it wasn’t a very good environment to give it out in”.

Thus, the role of the clinics was critical for provision of antenatal care but not a preferred option for handing out the baskets or associated education.

One of the core aims of the Baby Basket program was to prompt women to attend the clinic earlier for antenatal care. Though the quantitative evaluation demonstrates the effectiveness of Baby Basket in achieving this aim, healthcare workers indicated that
encouraging early presentation was an ongoing task. A health worker provided an example:

“Here in [community name], there was a lady who gave birth to a baby in the community, I don’t know if you’ve heard, but she said she didn’t realise she was pregnant. She had the baby in the bathtub. Personally I find that hard to believe but anyway, she didn’t have any antenatal care at all she just gave birth to this piccaninny”.

The same health worker added:

“We don’t normally catch them very early. Like we’ve got two ladies that are young; like one is probably 17 or two of them are 17, and their bellies are out. So we hear from family that they are pregnant but they never come to the clinic yet. So I don’t know how long they want to hide it for”.

One of the roles played by the health workers is to provide a bridge into the clinic. Through their home visits and knowledge of the community, health workers refer women for pregnancy testing and antenatal care. One health worker, for example, suggested to a young woman: “[name of nurse] is coming in, so you go to the clinic. Go and get checked out”. As well, women supported other pregnant women to attend the clinic. One woman related:

“there is this one lady ... she say 'hay auntie' I go ‘yeah bub'. 'Can you and me go hospital? You busy?' I go 'no bub, I just finished meeting, I am having lunch' 'can you go to the hospital, I am sure I am pregnant'. So I go' alright, jump in, jump in' so we jump in her car”.

Within ACYHC’s family centred approach, the approach to antenatal care is for well-based care. However, the health issues of many women meant that they had high risk pregnancies with health concerns related to high blood pressure, an ear infection, multiple miscarriages, rheumatic heart disease and “sugar [gestational diabetes]” during pregnancies; as well as haemorrhages, and mastitis post-birth. A health worker related:

“like if you have a rheumatic heart disease, like a pregnant lady, why it is important for you to attend your appointments. And that information is so we can explain to them; this is what is happening with your heart. You know like the echoes or the visit to the physicians... But it’s hard to kind of drag them in.”

These examples illustrate the importance of the integrated roles played by health workers in encouraging early antenatal care and midwives in providing antenatal care to facilitate working towards an empowering family-centred approach.
Handing them out in Cairns

The second baby basket program provides a tool for the initial engagement between ACYHC MCH workers and the women when they first arrive in Cairns at 36 weeks gestation to give birth at Cairns Base Hospital. One explained:

“this is our first visit with them, and often, it’s almost like your ticket in. You say to them ‘we’ve had to come down. This is our team. This is what we do. I’d like to give you a basket. Can we come see you at your accommodation tomorrow?’ And then after that you build that rapport. So you know, you can see them over the next six weeks”.

A health worker at Mookai Rosie reflected: “the mothers come and stay with us so we build a really strong relationship with them and they do ask for the bags, which is good because you guys tell them up in the communities”. Women also developed close relationships with each other and their new babies. One woman observed: “you get clucky when you see their babies, you want your baby in your hands”. But the women’s experience of hospital care was less positive. Women saw multiple and changing health practitioners and were not able to establish an enduring relationship with them. One woman commented: “not knowing your health, you know, and instead of them looking at your chart, they want you to tell your story again”.

Staying at the hostels provided an opportunity to reinforce and add value to the Baby Basket health education messages, and to promote healthy behaviours. One woman commented: “they provide healthy cooking, massage, health messages. Yesterday they had breast screen. … They go fishing and like take people fishing. It’s good.” Providing the second basket in Cairns, however, meant that the women had to pay for extra luggage to return the goods back to their home community. The value placed on the basket by the women is suggested by the strategies employed by the women to get the basket home. A Mookai Rosie health worker reflected:

“it is a big bag … [ but]…. I think I’ve only seen two out of, well I’ve been at Mookai for three years, which the ladies did leave the bag but took everything out….they know they have to pay for extra luggage, so they do put money away, they know to put hundreds of dollars … but also too they work it out with the family to take half. So they’ll work it out”.

Healthcare workers considered the benefits of potentially providing the second basket in communities so that women did not need to transport the basket; or to flexibly leave some items in the community clinics; thus allowing women to choose to either take it home or keep it at the clinic while in Cairns. One suggestion was to provide a list and visual reminder of the Baby Basket contents; as a health worker reflected:
“look this is what you’re going to get when you go down to Cairns. Then maybe you could …’ you know what I mean? Just say ‘look you’re going to get this baby and come back, you can just sort out what you want to buy.’”

A nurse reflected: “I think that second bag should be distributed by encouraging woman to have their postnatal check. I on return to the community instead of going straight to the child health nurse. Because I thought that’s a gap”.

### Delivering the second basket while women stayed at hostels in Cairns provided an opportunity to reinforce and add value to Baby Basket education messages and to promote healthy behaviours. Providing the basket from community clinics is also a feasible option.

### Focussing on postnatal care

Extending the focus of the Baby Basket program into the postnatal period offered an opportunity to build on the engagement and relationships between women, their families and healthcare providers established in the antenatal period. One health worker explained to her clients:

“I told them my job is to look after mum or babies from the time of conception up until they’re 15. And I said that is right through so you’re making sure you get your baby basket, your antenatal visits, you making sure you go and see the doctor”.

Postnatal visits were important for checking for and treating the diseases experienced by Cape York children and attending to the varied situations of women and children. For example, one woman spoke of a local woman: “Now she had a boy who is probably 8 months, not even that. He was rid with scabies”. In another situation, a health worker recalled:

“One lady had her babies taken off her through child safety. I said to her; ‘you know, bub, for you to have these, you got to attend the antenatal. You got to bring bubby, when bubby’s born, to have a health check. If you don’t then I go back home, I actually write it in your notes, I say you didn’t attend. And it doesn’t look good on your behalf.”

The relationships between the clinic staff and women’s family members were particularly important in the postnatal period, and provided regular openings for opportunistic health care and education provision for the whole family. Postnatal visits were also important for caring for the women’s postnatal health. An example was provided by a health worker who related an incident about mastitis:

“I had a lady pull me up in the shopping centre and she said 'Oh, sis, bubby’s not attaching properly, like it’s sore, it hurts when he gets on my susu.' And I go 'ok'. And she said 'and he’s heavy now, sore' and I said: 'Aw, bub, have you
had a temp? Like, have you had a fever?’ And she said 'yeah, I’ve been sick and tired and sleeping all day' and I said: 'now darling you really need to go to the hospital. Like now! You really need to go and see them because you might have to go on drips. It sounds like you got mastitis and if your susu are kind of sore and heavy like lead and bubby’s not drinking any of the milk...' And she said 'yeah, it’s got pus coming out'. And I said: 'YOU REALLY NEED TO GO. NOW.' And so she went and, you like, know what I mean, it’s more like they can talk to you after hours as well.”

The importance of such health worker-led mediation illustrates the important foundation of relationships between healthcare workers and women in facilitating healthcare provision.

Extending into the postnatal period offered an opportunity to build on the engaging and relating established in the antenatal period. Particularly important for children were checks for scabies, iron levels, and growth. Again, health workers provided the bridge linking women with the clinic.

Taking responsibility for health

The fifth and final sub-process, and consequence of Baby Basket implementation, is termed taking responsibility for health. Four aspects of taking responsibility were important influencers of how engaging and relating occurred. These were: making healthcare choices; planning and advocacy; making organisational changes; and potential for transferring the approach.

Making healthy choices

While acknowledging that it was the women’s right to take education messages on board and to change behaviour, health care workers were heartened by examples of women who had made health behaviour changes. For example, one woman related:

“At first I was a really heavy smoker. Like two packets a day… Yeah and when I found out I was probably only three weeks pregnant. And so I gave up straight away. I gave for two years before I started back up again…Yeah yeah I was really surprised myself”.

Another woman quit drinking and smoking when she discovered that she was pregnant. As related by a health worker: “she actually changed her life around because of her baby. I was very surprised myself. And she actually comes to the clinic”. Another woman responded to the advice of the nurse that: “it’s good to eat a lot of fruit and vegies and keep it up. She told me it’s ok to eat a lot of meat but not too much”. She reflected: “I hardly ever ate any fruit. I just couldn’t eat it. I ate heaps of vegies! I would only eat it if it was steamed”. Such examples of behaviour change
were heartening and provided role modelling for others. They could be highlighted in educational booklets for inclusion in Baby Baskets.

Examples of women’s behaviour change associated with the baby Basket program included quitting smoking in pregnancy, quitting alcohol consumption and eating healthy food.

Empowerment and advocacy

As previously discussed, many women said that they were better able to plan for their pregnancy, birth and motherhood as a result of the Baby Baskets. For example, one woman said:

“Just learning what happens when your baby comes, or what to expect in labour. Yeah they [healthcare workers] come tell us, like during the time of carrying your baby, and after your baby, and when your baby grows”.

A nurse commented:

“it’s about planning. And sort of think it’s not just about right now, it’s about, ok when you go to Cairns, this and this that you might need, or the introductory to the six month one… and talking about prevention; and thinking about that anticipatory guidance type of stuff”.

Being aware of what they could expect through the healthcare process enabled them to feel more empowered as health consumers. For example, one woman recalled:

“I didn’t want to go through with the pregnancy there [Gulf community] because they don’t send their patients to Cairns, they send them to Mount Isa and I have seen the hospital there. I wasn’t very impressed with their service…the hospital wasn’t very clean, um so I decided to come back home.”

Being prepared for the births of their babies relieved stress and shame for the women, and provided a better start for new babies.

Control and empowerment was also reflected in advocacy for other women’s MCH and wellbeing. A health worker recalled that a woman:

“wasn’t shy of anything. But she really wanted to help other mothers across Cape York. So she actually sent …a really, really strong message [on the ACYHC Baby Basket DVD] … around the baby basket information … and how it will help future generations to receive information, learn how babies develop, and stuff like that.”

The role of pre-conception health for women was notably mentioned by one woman. She worked as a youth worker, and mentioned the important role of providing
contraceptive advice and condoms to young people who wished to prevent pregnancy.

Comments by two women about broader issues to do with the availability of quality and affordability of fruit and vegetables in the stores in remote communities suggest a need for ongoing advocacy for improvements in the supplies of fresh fruit and vegetables. One woman advocated for improved quality of fruit and vegetables:

“The fruit and vegie not very good though; people are buying rotten because of the weather. Whenever I go in the shop, I fight for the health of young women, pregnant women, you know, women that are old people. I say, ‘why do you put out rotten fruit on the shelf when you know you can’t sell it and people won’t buy it. People are going to waste money on it. You going to kill someone with food poisoning. And it’s all going to come back at you. ... We get young women who are having babies, and they need fresh fruit and vegies. And they can’t eat no good, rotten food, ‘cause the baby will get sick. Yeah, and they will have problems down the track like diabetes, and all these other disease coming along in their pregnancy due to lack of supplying fresh fruit and vegies’. And he’s like ‘ahh [name] yeah you are always coming here and arguing with me’. ‘Well do the right thing and you won’t have to pick a fight’”.

The other woman worked at one of the community stores and used the opportunity to help other mothers to know which were the supply days; and hence when to come to the store for the freshest fruit and vegetables.

There have also been unanticipated outcomes of Baby Basket implementation. In the early days, ACYHC was asked by the Commonwealth to advise on how Cape York women accessed the Centrelink baby bonuses. An ACYHC manager reflected:

“At the time, women were not able to access that money until they went back into the Cape communities, where the money was pumped out of them. So we investigated. We had a social worker at that time and she investigated how to streamline that process so they had access to the money in Cairns; so that they could buy what they wanted for their baby. And we actually in the first iterations of the baby basket provided some options for what they might like to spend that money on while they were down in Cairns”.

Such advocacy by healthcare workers and women, prompted by the Baby Basket program, is an important aspect of comprehensive primary health care and could be more actively supported by ACYHC.
Making organisational changes

In creating a sustainable MCH service, the retention of staff in Cape York primary health services has been critical. This is influenced by job satisfaction; and in turn, by the relationships that they are able to forge with their clients and colleagues. A health manager reflected:

“then that becomes self-sustaining. The staff become more happy to be around, and more likely to hook up with that same women … that’s part of the reason why I think that not exploring in any more detail what that relationship meant and how it was formed with was a bit of a narrow point of view looking back. I mean you can always do things better can’t you, but that was always a huge bit that we should have picked up earlier”.

The retention of quality staff is a critical factor underpinning the effectiveness of the Baby Basket program.

Potential for transferring the approach

While appreciating receiving the Baby Basket, two women mentioned that they wished that the baskets could be more widely available so that others could also enjoy their contents. For example, one said: “every mum should be able to get it’. This suggests that the Baby Basket program is highly acceptable, appropriate and appreciated in Cape York, and could potentially be transferred to other communities.

The willingness and capacity of health providers such as Queensland Health, RFDS, Mookai Rosie and other services to develop and implement the Baby Basket program in collaboration with ACYHC also suggests the feasibility of transferring the approach. Only recently has ACYHC taken full control of delivery. A health manager recalled:

“we were very reliant on other people to do that service. I think because of it
was such a good idea most people went along with it quite happily, if it had been a slightly harder product to sell, I think we would have had a lot more difficulty”.

The baskets themselves are likely to be replicable in other sites, but experience from Cape York suggests that the process of implementation is likely to be most effective if implemented collaboratively and responsively for *working towards an empowering family-centred approach by engaging and relating*. Given the foundational process by which the program is implemented (engaging and relating), with adequate resourcing, the sustainability of the approach is likely to be high.

```
The Baby Basket program is highly acceptable, appropriate, appreciated and replicable. Given adequate resourcing and careful developmental piloting, it is likely that the approach is transferable.
```

**Summary**

Health care workers and women considered the central purpose of Baby Basket program implementation to be working towards an empowering family-centred approach. Implementation occurred through a process of engaging and relating, between healthcare workers and women and their family members. The establishment of a culturally safe space was a condition for engaging and relating. Led by health workers, the responsive approach included home visiting, the provision of social and emotional wellbeing (SEWB) care and involvement of extended family members.

Women appreciated the items provided through the Baby Baskets and found them to be highly useful. Receipt of the baskets also paved the way for women to learn what to expect through the processes of pregnancy, birth and motherhood; how to prevent ill-health, and to better care for themselves and their children. They also passed on their learnings to other pregnant women. Healthcare workers encouraged women to attend the clinic early for antenatal care, provided education and activities in Cairns while the women waited for the birth of their children, and provided a family-centred approach in the postnatal period.

*Working towards an empowering family-centred approach* resulted in women making healthy choices such as eating fruit and vegetables and quitting smoking, becoming more empowered health consumers, and becoming advocates for change in their communities. Additionally, healthcare workers also reflected on their practice, including the consistency of education messages, and applied their learnings to practice improvements. The approach resulted in organisational changes such as taking control of Baby Basket delivery, a proposal to extend the program further into the postnatal period, and potential to transfer the approach.
Quantitative evaluation of the Baby Basket program

The quantitative evaluation aimed to:

1. Provide an analysis of the perceptions of Baby Basket recipients toward the baskets;
2. Estimate the cost of the Baby Basket program;
3. Use routinely collected data to retrospectively assess the impact of the Baby Basket program.

Each of these aims is addressed in separate sub-sections that outline the methods and key results. There are three sub-sections that address the above aims:

1. Survey responses from women receiving the Baby Basket;
2. An estimated cost of the Baby Basket program; and
3. Evaluating the Baby Basket program using routinely collected One21Seventy data.

Survey responses from women receiving a Baby Basket

This section presents results to the analysis of survey responses collected from women who received a Baby Basket between 2009 and 2013.

Methods

This survey data was provided to the authors by ACYHC. Data was collected by ACYHC during face-to-face interactions between healthcare workers and women receiving the Baby Basket. Healthcare workers were predominantly from ACYHC while some Cape York communities had their baskets delivered by Queensland Health and Royal Flying Doctor Service (RFDS) employees.

Women were provided paper-based questionnaire to complete. The questionnaire covered key aspects of the Baby Basket program and included an overall assessment of the baskets’ usefulness as well as open-ended comments on the usefulness of specific items in the baskets. The survey also captured women’s views on what might be included in future baskets. Further information was collected that allowed coding by community name and the year in which data was collected. If necessary, healthcare workers assisted women with the completion of the questionnaire. All data entry was undertaken by ACYHC.

Analysis was performed in Microsoft Excel and SPSS. Open-ended responses were numerically coded. Some open-end questions allowed respondents to nominate multiple answers. These questions were analysed using the multi-response functions in SPSS. Note that when multiple responses were permitted, the tally of answers may add to more than 100 per cent. The analysis has not included statistical tests of significance to determine whether differences between years or communities are
statistically significant. The surveys are a close approximation of the number of baskets provided to women and, therefore, the responses are assumed to be a census of this population rather than a sample.

Note, community locations with less than five responses were grouped together for privacy reasons. These locations were Bamaga, Cairns (Mookai), Cooktown and Weipa.

Results

Between 2009 and 2013 a total of 967 survey forms were completed and entered into an Excel spreadsheet. As survey forms were often incomplete, the results of analysing specific questions may total to less than this number.

Describing the data

Data were collected between 2009 and 2013. As shown in Table 3, the number of entered surveys has been rising as the Baby Basket program has been more widely implemented.

Table 3 Year of data collection

<table>
<thead>
<tr>
<th>Year</th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>101</td>
<td>10.4</td>
<td>10.5</td>
<td>10.5</td>
</tr>
<tr>
<td>2010</td>
<td>90</td>
<td>9.3</td>
<td>9.4</td>
<td>19.9</td>
</tr>
<tr>
<td>2011</td>
<td>231</td>
<td>23.9</td>
<td>24.0</td>
<td>43.9</td>
</tr>
<tr>
<td>2012</td>
<td>283</td>
<td>29.3</td>
<td>29.4</td>
<td>73.3</td>
</tr>
<tr>
<td>2013</td>
<td>257</td>
<td>26.6</td>
<td>26.7</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>962</td>
<td>99.5</td>
<td>100.0</td>
<td></td>
</tr>
<tr>
<td>Missing</td>
<td>Not identified</td>
<td>5</td>
<td>.5</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>967</td>
<td>100.0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The responses collected from women refer to three deliveries of the Baby Basket. However, most data (41.8%) relate to Baby Basket #2 (see Table 4).

Table 4 Number of the Baby Basket

<table>
<thead>
<tr>
<th>Baby Basket</th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>BABY BASKET #1</td>
<td>289</td>
<td>29.9</td>
<td>29.9</td>
<td>29.9</td>
</tr>
<tr>
<td>BABY BASKET #2</td>
<td>404</td>
<td>41.8</td>
<td>41.8</td>
<td>71.7</td>
</tr>
<tr>
<td>BABYBASKET #3</td>
<td>263</td>
<td>27.2</td>
<td>27.2</td>
<td>98.9</td>
</tr>
<tr>
<td>basket # not identified</td>
<td>11</td>
<td>1.1</td>
<td>1.1</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>967</td>
<td>100.0</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>
Communities across Cape York are represented in the data as shown by Table 5. Four communities have less than five responses and for this reason they have been grouped together under a separate heading. To protect the confidentiality of these responses, all analysis using ‘Community’ as a basis for cross-tabulation has grouped these answers into a recoded variable: “Communities with less than 5 responses”.

Table 5 Unadjusted data – number of responses from Cape York communities

<table>
<thead>
<tr>
<th>Community</th>
<th>Frequency</th>
<th>Percent</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aurukun</td>
<td>101</td>
<td>10.4</td>
<td>10.4</td>
<td>10.4</td>
</tr>
<tr>
<td>Bamaga</td>
<td>1</td>
<td>.1</td>
<td>.1</td>
<td>10.5</td>
</tr>
<tr>
<td>Coen</td>
<td>59</td>
<td>6.1</td>
<td>6.1</td>
<td>16.6</td>
</tr>
<tr>
<td>Cooktown</td>
<td>1</td>
<td>.1</td>
<td>.1</td>
<td>16.8</td>
</tr>
<tr>
<td>Hopevale</td>
<td>144</td>
<td>14.9</td>
<td>14.9</td>
<td>31.6</td>
</tr>
<tr>
<td>Kowanyama</td>
<td>186</td>
<td>19.2</td>
<td>19.2</td>
<td>50.9</td>
</tr>
<tr>
<td>Laura</td>
<td>13</td>
<td>1.3</td>
<td>1.3</td>
<td>52.2</td>
</tr>
<tr>
<td>Lockhart River</td>
<td>75</td>
<td>7.8</td>
<td>7.8</td>
<td>60.0</td>
</tr>
<tr>
<td>Mapoon</td>
<td>25</td>
<td>2.6</td>
<td>2.6</td>
<td>62.6</td>
</tr>
<tr>
<td>Mookai</td>
<td>1</td>
<td>.1</td>
<td>.1</td>
<td>62.7</td>
</tr>
<tr>
<td>Mossman Gorge</td>
<td>48</td>
<td>5.0</td>
<td>5.0</td>
<td>67.6</td>
</tr>
<tr>
<td>Napranum</td>
<td>143</td>
<td>14.8</td>
<td>14.8</td>
<td>82.4</td>
</tr>
<tr>
<td>Not identified</td>
<td>17</td>
<td>1.8</td>
<td>1.8</td>
<td>84.2</td>
</tr>
<tr>
<td>Pormpuraaw</td>
<td>122</td>
<td>12.6</td>
<td>12.6</td>
<td>96.8</td>
</tr>
<tr>
<td>Weipa</td>
<td>1</td>
<td>.1</td>
<td>.1</td>
<td>96.9</td>
</tr>
<tr>
<td>Wujal Wujal</td>
<td>30</td>
<td>3.1</td>
<td>3.1</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>967</td>
<td>100.0</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>

**Overall usefulness of the Baby Basket**

Women were asked to rate the overall usefulness of the Baby Basket (see Table 6). The responses show a high proportion of women (96.6%) rated the baskets as ‘useful’ or ‘very useful’.
Table 6 Overall rating of the Baby Baskets by basket number

<table>
<thead>
<tr>
<th>Overall rating of BB by recipient mothers</th>
<th>Number of the Baby Basket: 1 or 2</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not useful</td>
<td>Count</td>
<td>BABY BASKET #1</td>
</tr>
<tr>
<td>2</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td>A bit useful</td>
<td>Count</td>
<td>BABY BASKET #1</td>
</tr>
<tr>
<td>0</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Of some use</td>
<td>Count</td>
<td>BABY BASKET #1</td>
</tr>
<tr>
<td>2</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Useful</td>
<td>Count</td>
<td>BABY BASKET #1</td>
</tr>
<tr>
<td>45</td>
<td>70</td>
<td>54</td>
</tr>
<tr>
<td>Very useful</td>
<td>Count</td>
<td>BABY BASKET #1</td>
</tr>
<tr>
<td>334</td>
<td>320</td>
<td>202</td>
</tr>
<tr>
<td>No answer</td>
<td>Count</td>
<td>BABY BASKET #1</td>
</tr>
<tr>
<td>6</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td>Count</td>
<td>BABY BASKET #1</td>
</tr>
<tr>
<td>260</td>
<td>404</td>
<td>263</td>
</tr>
</tbody>
</table>

Women who had received a baby basket were asked to identify the items ‘most used’ (see Table 7). While the largest group of respondents (57.4%) said all the items in the baskets were used, some specific items were nominated as being used more frequently. These included: ‘Information, education, booklets’ (5.2% of respondents) and ‘toiletries’ (3.4% of respondents). Note, this question allowed an individual participant to identify more than one item therefore the column titled ‘Percent of cases’ totals to more than 100 per cent.
Table 7 Items most used from the Baby Basket

<table>
<thead>
<tr>
<th>Items most used in the Baby Basket</th>
<th>N</th>
<th>Percent</th>
<th>Percent of Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>All items were used</td>
<td>512</td>
<td>57.4%</td>
<td>63.3%</td>
</tr>
<tr>
<td>Baby brush</td>
<td>5</td>
<td>0.5%</td>
<td>0.5%</td>
</tr>
<tr>
<td>Nappies/pads</td>
<td>35</td>
<td>3.3%</td>
<td>3.6%</td>
</tr>
<tr>
<td>Baby clothes and wraps</td>
<td>9</td>
<td>1.8%</td>
<td>2.0%</td>
</tr>
<tr>
<td>Soap and washcloth</td>
<td>18</td>
<td>2.0%</td>
<td>2.3%</td>
</tr>
<tr>
<td>Bed</td>
<td>30</td>
<td>2.8%</td>
<td>3.1%</td>
</tr>
<tr>
<td>Toilettries</td>
<td>38</td>
<td>3.4%</td>
<td>3.7%</td>
</tr>
<tr>
<td>Light</td>
<td>1</td>
<td>0.1%</td>
<td>0.1%</td>
</tr>
<tr>
<td>Toy</td>
<td>26</td>
<td>2.4%</td>
<td>2.7%</td>
</tr>
<tr>
<td>Suitcase, bag</td>
<td>16</td>
<td>1.5%</td>
<td>1.7%</td>
</tr>
<tr>
<td>Food vouchers</td>
<td>17</td>
<td>1.6%</td>
<td>1.8%</td>
</tr>
<tr>
<td>Information, education, booklet</td>
<td>55</td>
<td>5.2%</td>
<td>5.7%</td>
</tr>
<tr>
<td>Towel</td>
<td>16</td>
<td>1.5%</td>
<td>1.7%</td>
</tr>
<tr>
<td>Tablets</td>
<td>3</td>
<td>0.3%</td>
<td>0.3%</td>
</tr>
<tr>
<td>Plastic containers</td>
<td>2</td>
<td>0.2%</td>
<td>0.2%</td>
</tr>
<tr>
<td>First aid kit</td>
<td>27</td>
<td>2.6%</td>
<td>2.8%</td>
</tr>
<tr>
<td>Shampoo, conditioner</td>
<td>18</td>
<td>1.5%</td>
<td>1.7%</td>
</tr>
<tr>
<td>Breast pads</td>
<td>10</td>
<td>0.9%</td>
<td>1.0%</td>
</tr>
<tr>
<td>Cup</td>
<td>9</td>
<td>0.8%</td>
<td>0.9%</td>
</tr>
<tr>
<td>Sorbolene</td>
<td>3</td>
<td>0.3%</td>
<td>0.3%</td>
</tr>
<tr>
<td>Plate &amp; spoon</td>
<td>25</td>
<td>2.3%</td>
<td>2.5%</td>
</tr>
<tr>
<td>Wipes</td>
<td>6</td>
<td>0.6%</td>
<td>0.7%</td>
</tr>
<tr>
<td>Nightie</td>
<td>3</td>
<td>0.3%</td>
<td>0.3%</td>
</tr>
<tr>
<td>Folic acid</td>
<td>6</td>
<td>0.6%</td>
<td>0.6%</td>
</tr>
<tr>
<td>Telephone</td>
<td>26</td>
<td>2.4%</td>
<td>2.7%</td>
</tr>
<tr>
<td>Baby clips</td>
<td>1</td>
<td>0.1%</td>
<td>0.1%</td>
</tr>
<tr>
<td>Blanket</td>
<td>1</td>
<td>0.1%</td>
<td>0.1%</td>
</tr>
<tr>
<td>Sanitary pads</td>
<td>1</td>
<td>0.1%</td>
<td>0.1%</td>
</tr>
<tr>
<td>Baby items - unspecified</td>
<td>1</td>
<td>0.1%</td>
<td>0.1%</td>
</tr>
<tr>
<td>None of it</td>
<td>23</td>
<td>2.2%</td>
<td>2.4%</td>
</tr>
<tr>
<td>Not identifiable</td>
<td>2</td>
<td>0.2%</td>
<td>0.2%</td>
</tr>
<tr>
<td>Not answered</td>
<td>15</td>
<td>1.4%</td>
<td>1.6%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>1086</td>
<td>100.0%</td>
<td>110.2%</td>
</tr>
</tbody>
</table>

Information provided to women

A key aim of the Baby Basket is to foster engagement between healthcare workers and women. The engagement was initiated with the process of handing over the basket from healthcare worker to women. During the handover, which typically ranged from 45 minutes to 1.5 hours, healthcare workers raised specific information regarding:

- Smoking
- Nutrition
- Alcohol
- Sudden Infant Death Syndrome (SIDS)
A time series of data between 2009 and 2013 shows a marked trend improvement in information provided to women on these four topics. For example in 2009, 32.7 per cent of women receiving Baby Baskets were provided information on smoking; by 2013 this had risen to 98.8 per cent (see Table 8). Similar trends were recorded for alcohol, nutrition and SIDS.

Table 8 Information provided to women through the Baby Basket program on smoking, alcohol, nutrition and SIDS

<table>
<thead>
<tr>
<th>Year of data collection</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>INFO ON SMOKING</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>YES Count</td>
<td>39</td>
<td>40</td>
<td>223</td>
<td>282</td>
<td>254</td>
<td>932</td>
</tr>
<tr>
<td>% within Year of data collection</td>
<td>32.7%</td>
<td>44.4%</td>
<td>96.5%</td>
<td>99.6%</td>
<td>98.8%</td>
<td>96.5%</td>
</tr>
<tr>
<td>NO Count</td>
<td>68</td>
<td>50</td>
<td>8</td>
<td>1</td>
<td>3</td>
<td>130</td>
</tr>
<tr>
<td>% within Year of data collection</td>
<td>67.3%</td>
<td>55.6%</td>
<td>3.5%</td>
<td>0.4%</td>
<td>1.2%</td>
<td>13.5%</td>
</tr>
<tr>
<td>Total</td>
<td>107</td>
<td>90</td>
<td>231</td>
<td>283</td>
<td>257</td>
<td>962</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year of data collection</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>INFO ON ALCOHOL</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>YES Count</td>
<td>34</td>
<td>41</td>
<td>223</td>
<td>282</td>
<td>255</td>
<td>835</td>
</tr>
<tr>
<td>% within Year of data collection</td>
<td>33.3%</td>
<td>45.6%</td>
<td>96.5%</td>
<td>99.6%</td>
<td>99.2%</td>
<td>96.9%</td>
</tr>
<tr>
<td>NO Count</td>
<td>67</td>
<td>49</td>
<td>9</td>
<td>1</td>
<td>2</td>
<td>127</td>
</tr>
<tr>
<td>% within Year of data collection</td>
<td>66.7%</td>
<td>54.4%</td>
<td>3.5%</td>
<td>0.4%</td>
<td>0.6%</td>
<td>93.1%</td>
</tr>
<tr>
<td>Total</td>
<td>101</td>
<td>90</td>
<td>231</td>
<td>283</td>
<td>257</td>
<td>962</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year of data collection</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>INFO ON NUTRITION</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>YES Count</td>
<td>48</td>
<td>63</td>
<td>223</td>
<td>282</td>
<td>255</td>
<td>844</td>
</tr>
<tr>
<td>% within Year of data collection</td>
<td>39.8%</td>
<td>54.6%</td>
<td>96.5%</td>
<td>99.6%</td>
<td>99.2%</td>
<td>96.9%</td>
</tr>
<tr>
<td>NO Count</td>
<td>68</td>
<td>49</td>
<td>8</td>
<td>1</td>
<td>1</td>
<td>118</td>
</tr>
<tr>
<td>% within Year of data collection</td>
<td>60.2%</td>
<td>45.4%</td>
<td>3.5%</td>
<td>0.6%</td>
<td>0.6%</td>
<td>93.1%</td>
</tr>
<tr>
<td>Total</td>
<td>106</td>
<td>90</td>
<td>231</td>
<td>283</td>
<td>257</td>
<td>962</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year of data collection</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>INFO ON SIDS</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>YES Count</td>
<td>41</td>
<td>49</td>
<td>221</td>
<td>282</td>
<td>254</td>
<td>849</td>
</tr>
<tr>
<td>% within Year of data collection</td>
<td>40.6%</td>
<td>54.6%</td>
<td>95.7%</td>
<td>99.6%</td>
<td>99.2%</td>
<td>96.9%</td>
</tr>
<tr>
<td>NO Count</td>
<td>59</td>
<td>41</td>
<td>10</td>
<td>1</td>
<td>1</td>
<td>113</td>
</tr>
<tr>
<td>% within Year of data collection</td>
<td>59.4%</td>
<td>45.4%</td>
<td>3.3%</td>
<td>0.0%</td>
<td>0.8%</td>
<td>3.1%</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>90</td>
<td>231</td>
<td>283</td>
<td>257</td>
<td>962</td>
</tr>
</tbody>
</table>

Summary of the survey findings

The survey of women who received a Baby Basket showed positive results. A high proportion (78.8%) of women rated the baskets as ‘very useful’ and the majority of recipients said all of the contents were useful. One of the key outcomes was the extent to which information was provided to women – in keeping with an aim of the Baby Basket program.
Basket program. In 2013, over 98 per cent of basket handovers were reported to have been accompanied with advice on smoking, alcohol, nutrition and SIDS.
The estimated cost of the Baby Basket program

A cost model was developed with the aim of identifying the health system resources required to deliver the ACYHC Baby Basket program to a cohort of 170 women. The perspective focused on the delivery of the program and did not include downstream resource use that may be attributed to the Baby Basket program. For example, the costing did not include the cost of additional antenatal visits that may have been associated with the increased engagement between women and the health service, as facilitated by the Baby Basket program.

Methods

There are multiple methods for determining costs in health-related studies.[7] One is to identify the process of costing by stipulating:

(a) The resources considered appropriate to be included in the costing
(b) The measurement of these items; and
(c) How monetary units were applied.[8]

The costing in this study reflects the direct resources, and overheads, required to deliver the Baby Basket program to an average annual cohort of 170 women in 2013 (i.e. the base year for the cost estimates is 2013).

Resources included and excluded in the study

Resources included in the costing were those expended or compensated by ACYHC and other health providers when delivering the baskets. This included labour to organise and deliver the baskets, clinical inputs to the process (i.e. at handover), and materials.

Due to the perspective of the study, the cost of the women’s and other family members’ time in receiving the Baby Basket was excluded.

Measuring the quantity of resources

The measurement of the quantity of resources relied on discussions with ACYHC staff to understand the typical pathway for preparing and delivering Baby Baskets across the Cape. Costing focused on the resources used to prepare and deliver the three Baby Baskets plus the estimated value of fresh fruit vouchers provided as part of the program. The vouchers allowed the recipient to purchase fresh fruit and vegetables, up to the value of the voucher. Materials and ancillary costs formed an important component of the resources required to deliver the Baby Baskets and included the cost of the baskets’ contents, transport and administration expenses.

Other key assumptions regarding the quantity of resources were:
Handover of the Baby Basket to each woman requires at least one person, either an Aboriginal health worker or other healthcare worker (RFDS, QH, ACYHC, Mookai Rosie);

The length of time for handover is the same for Baby Baskets one and three but double for Baby Basket two. Further, it was assumed that Baby Basket handover involves dissemination of information that is not part of regular clinic visits. This means that 100 per cent of time attributed to handover is a cost.

Aboriginal health workers are located at community clinics, or in communities nearby, so their travel time to each handover is negligible, compared to nurse or midwife who, in most cases, must travel from Cairns. However, despite the extra time for Cairns based workers to travel to communities to deliver Baby Baskets, this travel was assumed to be part of routine clinic visits and would have occurred regardless of whether or not there was a Baby Basket to deliver.

Transport costs for Baby Baskets must be borne by the program, whether that be as excess baggage on the flight with ACYHC staff, via 4WD/road transport in the dry season or via barge or air freight in the wet. A nominal $20 cost per basket is included which represents the opportunity cost of other freight that is forgone due to Baby Basket load.

If a woman receives Baby Basket one, she will also receive Baby Baskets two and three.

Women are provided food vouchers with the first Baby Basket and then a further four vouchers are provided at subsequent antenatal visits. That is, it is assumed that all women receive five vouchers. However the modelling was based on only 70 per cent of the vouchers being used. The estimate of 70 per cent utilisation was based on ACYHC’s records from 2012.

Application of monetary units

The monetary values applied to the quantity of resources used for the Baby Basket program were based on market prices with the inclusion of overheads. Market price is an appropriate proxy for the opportunity cost of the resource.[9] Market prices for labour used appropriate wage and salary scales for nurses, midwives, and Aboriginal health workers.

Results

The pathway for delivering the Baby Basket program begins with identifying eligible women (participants), preparation of the baskets, and then handover from healthcare worker to woman. A related component of the program was the provision of food vouchers to Baby Basket recipients.
Handover costs relate to the time spent by healthcare workers with the participants receiving a basket. This time is critical for engagement and includes the provision of advice to maximise the opportunity for better maternal and infant health. Figure 3 provides a simplified schematic of the steps involved in the Baby Basket program.

**Figure 3** Schematic of the steps involved in delivering the Baby Basket program

Total and average costs

The total cost of delivering the Baby Basket program for 170 participants was estimated to be $148,600, or approximately $874 per participant.

It is assumed that each participant received all three Baby Baskets and five food vouchers, of which 70 percent were utilised. Materials and ancillary expenses formed the largest single component of costs. Labour costs varied, with the second Baby Basket requiring the most labour input (see Table 9).
Table 9 Estimated cost of Baby Basket program for 170 participants*

<table>
<thead>
<tr>
<th>Stage of the Baby Basket program</th>
<th>Item</th>
<th>Value</th>
<th>Average annual program cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>BABY BASKET 1</td>
<td>Materials and ancillary costs per BB1</td>
<td>$194.35</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total materials and ancillary costs BB1</td>
<td>$33,040</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total labour costs BB1</td>
<td>$5,373</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Total cost BB1 (average year)</strong></td>
<td><strong>$38,413</strong></td>
<td></td>
</tr>
<tr>
<td>BABY BASKET 2</td>
<td>Materials and ancillary costs per BB2</td>
<td>$219.78</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total materials and ancillary costs BB2</td>
<td>$37,363</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total labour costs BB2</td>
<td>$9,773</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Total costs BB2 (average year)</strong></td>
<td><strong>$47,136</strong></td>
<td></td>
</tr>
<tr>
<td>BABY BASKET 3</td>
<td>Materials and ancillary costs per BB3</td>
<td>$197</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total materials and ancillary costs BB3</td>
<td>$33,414</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total labour costs BB3</td>
<td>$5,880</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Total costs BB3 (average year)</strong></td>
<td><strong>$39,294</strong></td>
<td></td>
</tr>
<tr>
<td>PROGRAM COSTS (Combined BB1 BB2 BB3)</td>
<td>Total materials and ancillary costs combined BB1 BB2 BB3</td>
<td>$103,816</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total labour cost combined BB1 BB2 BB3</td>
<td>$21,026</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Total Baby Basket costs</strong></td>
<td><strong>$124,842</strong></td>
<td></td>
</tr>
<tr>
<td>FOOD VOUCHERS</td>
<td>Food voucher cost</td>
<td>$40</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Total food voucher costs</strong></td>
<td><strong>$23,800</strong></td>
<td></td>
</tr>
<tr>
<td>BALANCE</td>
<td>Annual Program costs (170 participants)</td>
<td><strong>$148,642</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Per participant cost</strong></td>
<td><strong>$874.36</strong></td>
<td></td>
</tr>
</tbody>
</table>

* Assumes each participant receives all Baby Baskets and five food vouchers and utilises 70%, on average, of the vouchers

Summary of the cost study’s findings

The cost study showed that delivering the Baby Basket program to 170 participants in Cape York cost about $148,600 or approximately $874 per participant. The costing allowed for the expense of providing the baskets to remote locations and time for healthcare workers to engage with women. This time was used to encourage interaction between the women and the health service and to provide relevant information that could assist women to provide a better start in life for their baby.
Evaluating the Baby Basket program using routinely collected data

The third part of the quantitative evaluation used routinely collected data from the One21Seventy program[2]. Indicators for the evaluation were selected using a process to link the stated aims of the Baby Basket program to specific performance indicators. These indicators are reported for the combined communities covered by ACYHC and for two nearby communities that were included as control sites. The aim of this analysis was to help assess the relative effectiveness of the Baby Basket program using a set of indicators that were directly related to the aims of the program.

Methods

The initial step for this third component of the quantitative evaluation was the development of a logic model to describe the relationship between community need, the Baby Basket program, and the expected community impact that was potentially attributable to the Baby Basket program. Once identified, this pathway provided a basis for determining indicators for assessing the effectiveness of the program. The model is presented below.

The second step was to identify the specific indicators used to evaluate the Baby Basket program. This process entailed linking the aims of the Baby Basket program to specific, measureable outcomes. As this study was not able to undertake primary data collection of clinical data, routinely collected datasets were used. Specifically, the One21Seventy[2] database provided access to reports containing a range of potential indicators relevant to maternal and child health. The process for selecting indicators to evaluate the Baby Basket program was reflected in a schematic diagram and is presented below.

The available time series of One21Seventy data varied by community; however, when all ACYHC communities were combined, the data covered the period from 2008 to 2013. Note that data for intervening years for some ACYHC communities was not available. Further, the data for 2013 was still being collected by One21Seventy at the time of writing this report. One21Seventy data was obtained for two control communities: Doomadgee and Mornington Island. One21Seventy reports for these sites were provided to this study for the years 2010, 2011 and 2013.

The One21Seventy reports are based on clinical indicators and allow health centres to report on key performance indicators. The data is collected through electronic and paper-based clinical records.[10] The protocols used by One21Seventy ensure data collection is representative of the community’s clinic attending population. Therefore, the third step for this aspect of the quantitative evaluation was to enter the One21Seventy report data into Microsoft Excel for analysis. The quantitative outcomes from this step are reported as ‘proportions’ of the relevant number of
clinical record audits. The results are presented as a series of charts with short summaries interpreting the key points.

**Results**

*Community need, the Baby Basket program, and the expected community impact*

The overall logic of the Baby Basket program is that it addresses a specific, unmet, community need: that is, a need for a better start in life for Indigenous babies (see Figure 4). The Baby Basket program addresses this need by aiming to engage Indigenous women with the health system. Engagement is facilitated during the delivery of three Baby Baskets during and after pregnancy. The program attempts to improve women’s knowledge about issues that affect the growing baby such as: healthy choices around smoking, alcohol and diet. Importantly, the program also aims to encourage early and frequent attendance at antenatal and clinics and regular postnatal check-ups. Through enhanced engagement, the hypothesized impact of the Baby Basket program is better maternal health; reduced complications during and after pregnancy, an increased proportion of normal weight babies; and thriving infants. Ultimately, a healthy start to life should help reduce the gap in life expectancy between Indigenous and non-Indigenous Australians.

**Figure 4 Relationship between community need and the Baby Basket program**

*Specific indicators used to evaluate the Baby Basket program.*

The identification of indicators to evaluate the Baby Basket program was initially based on the above logic model. The set of all possible indicators was drawn from the One21Seventy reports. The process ensured a ‘line of sight’ between the aims of the Baby Basket program and the selection of indicators.
Using the above process, seven core indicators were identified. These were:

1. **Gestational age at first antenatal visit**;
2. **Number of antenatal visits**;
3. **Prevalence of women receiving health care education and brief interventions around health behaviours**;
4. **Proportion of women receiving key screening tests and treatment for wellbeing issues**;
5. **Evidence of scabies**;
6. **Iron levels**;
7. **Growth and weight gain of infants - evidence of thriving. These indicators included measures of postnatal attendance at a clinic, and the proportion of scheduled services for children aged under 1 year.**

This list provided the basis for data extraction from the One21Seventy reports. The following section presents, graphically, the result of the analysis of One21Seventy data using the above indicators.
Quantitative outcomes

The following outcomes are grouped under the headings for the seven core indicators. A short overview is presented summarising the key points for each core indicator. This is followed by charts of the indicators comparing the results for ACYHC and the control sites. Each chart contains a short interpretation of the data.

Note that there is overlap in the information contained under each of the core indicators. For example, some of the data presented under Prevalence of women receiving health care education and brief interventions around health behaviours could have also been presented under Proportion of women receiving key screening tests and treatment for health issues.

Overview of the quantitative indicators

The overriding caveat on using the quantitative indicators to evaluate the Baby Basket program is to understand the limitations of the available data. While the quality of the One21Seventy data was good, the available time series for ACYHC and the control sites was not ideal. For ACYHC data was available between 2008 and 2013 yet a longer time series that captured pre-Baby Basket years would have been preferred. Had this data been available, it would have supported an assessment of the reported trend in the selected indicators prior to 2009 which would have enabled a comparison with trends recorded in the period covered by the Baby Basket, from 2009 onward.

A further factor to consider when interpreting the data is that improved knowledge of health issues amongst participants in the Baby Basket program could, initially, increase the incidence of certain conditions. This effect is derived from knowledge being shared about symptoms that women need to recognise. An example is scabies. As more information on symptoms is provided to recipients of the Baby Basket, women become better able to recognise signs of an infestation, which appropriately leads to assistance seeking from the clinic. This process provides access to treatment but also leads to an increase in reported incidence. For this reason there may be apparent increases in incidence before the longer-term impact from preventative action is recorded. It is not possible to estimate the impact of this ‘knowledge’ effect on the data.

A major limitation for the control sites is that there was no information on the indicators before 2011. This meant it was not possible to determine whether conditions for the selected indicators in the control sites were similar to ACYHC before the Baby Basket program was introduced. Also, the available data points (2011, 2012 and 2013) for the control sites made it difficult to determine trend directions in many of the indicators.

Notwithstanding these limitations, the available data provided a quantitative viewpoint on the impact of the Baby Basket program. These indicators cover seven
major issues that were linked to the aims of the Baby Basket program. With an ideal dataset, and if the program met its aims, these indicators should record an improvement in ACYHC relative to the responses reported in the control sites. A summary of the results is provided below, more detail is provided in the charts that follow this section.

Gestational age at first antenatal visit

A key aim of the Baby Basket program is to encourage women to have earlier and more frequent antenatal visits to the clinic. The One21Seventy data indicated that, compared to the control sites, a higher proportion of antenatal visits occurred in ACYHC when the developing baby was less than 13 weeks old. The trend line for ACYHC suggests continued improvement in ACYHC; however, note that in 2012 and 2013 the results are below trend. A substantial improvement in this indicator occurred for ACYHC between 2008 and 2009 (when the Baby Basket program was introduced). For frequency of antenatal visits, ACYHC also has a more favourable result than the control sites (See Figure 6 and Figure 7).

Prevalence of women receiving health care education and brief interventions around health behaviours

The provision of advice to women showed inconsistent results: for some indicators in 2013 (antenatal education, nutrition and breastfeeding) the data suggests ACYHC has performed well compared to the control sites. However, the data suggests a lower likelihood of women being provided advice in 2013 on birth plans. Nonetheless, the trend directions for these indicators are improving (see Figure 8, Figure 9, Figure 10, Figure 11 and Figure 12).

Proportion of women receiving key screening tests and treatment for wellbeing issues

The detection of risky behaviours showed a trend increase in women who smoke during pregnancy in ACYHC and a trend decrease in women who consumed alcohol during pregnancy. For smoking, ACYHC’s results are close to those recorded by the control sites. This apparent increase in smoking during pregnancy might be the result of better clinical investigation of possible risk factors during pregnancy. The response to these ‘women at risk’ has resulted in a high delivery of brief interventions. While there are some differences between ACYHC and the control sites, overall the two are in similar positions (see Figure 13 and Figure 14).

There is a clear difference between ACYHC and the control sites with regard to alcohol consumption during pregnancy (see Figure 15 and Figure 16). In ACYHC, the likelihood of women consuming alcohol during pregnancy is in decline. In 2013 all women who placed their baby at risk by consuming alcohol during pregnancy were exposed to a brief intervention on this issue.
Screening for emotional wellbeing has shifted over time but the sharp improvement in screening in the ACYHC communities was not maintained in either 2012 or 2013 (see Figure 17).

**Evidence of scabies**

Evidence of scabies has risen in ACYHC since 2010 and is tracking at a similar level to that recorded in the control sites. The rise in this indicator may be due to increased recognition of symptoms, leading more women to seek clinical assistance (see Figure 18).

**Iron levels**

A core aim of the Baby Basket program has been to prevent low iron levels amongst expectant women. The data suggests a favourable outcome as the record of deficient iron levels is lower in ACYHC compared to the control sites (see Figure 19).

**Growth and weight gain of infants - evidence of thriving**

This indicator reported evidence of faltering growth or ‘failure to thrive’. The trend for ACYHC has clearly been improving from a peak of 26 per cent of audits in 2010 showing evidence of faltering growth to 5 per cent of audits in 2013. Note that this result may have been influenced by a procedural change between 2010 and 2013. While evidence of faltering growth had been derived from Centre for Disease Control (CDC) growth charts, ACYHC has recently changed to sourcing this information from World Health Organisation (WHO) growth charts. Evidence suggests that the shift from CDC to WHO growth charts will result in fewer children being identified as underweight and more children being identified as overweight[3, 4]. The use of WHO growth charts is recommended by the CDC.[4]

The recent reports for ACYHC are similar to the control sites (see Figure 20). Notwithstanding procedural changes, it is possible this improvement also has some association with the trend rise in postnatal presentations to clinic (similar to the control sites) and an increase in scheduled services to infants under 1 year (better than the control sites (see Figure 21 and Figure 22).
Charts of the indicators

The following charts present the available time series data from One21Seventy. Each chart contains a short interpretation of the results.

Gestational age at first antenatal visit to clinic

Figure 6 Gestational age under 13 weeks for the first antenatal visit

![Chart showing gestational age at first antenatal visit](image)

**Baby Basket aim:** Through improved engagement with mothers, encourage mothers to present earlier in pregnancy for antenatal visits (i.e., before 13 weeks).

**Interpretation:** A higher proportion of antenatal visits occur when the developing baby is under 13 weeks old in Apunipima compared to control sites. The trend line suggests improvement; however, note that 2012 and 2013 are below trend. A substantial improvement in this indicator occurred between 2008 and 2009 for Apunipima.

Source: One21Seventy audit data

Number of antenatal visits to clinic

Figure 7 Five or more antenatal visits

![Chart showing number of antenatal visits](image)

**Baby Basket aim:** Through improved engagement with mothers, encourage mothers to present more often for antenatal visits (i.e., more than 5 visits).

**Interpretation:** A higher proportional number of antenatal visits occur in Apunipima compared to control sites. The trend line suggests this proportion is relatively stable. Improvement was recorded in the control sites between 2011 and 2012 but declined to be below trend in 2013.

Source: One21Seventy audit data
Prevalence of women receiving health care education and brief interventions around health behaviours

Figure 8 Health information: Birth plans

![Graph showing the prevalence of women receiving birth plans from 2008 to 2013. The graph indicates an improvement in the proportion of women receiving birth plans in Apunipima compared to the control sites.](source: One21Seventy audit data)

Baby Basket aim: Through improved engagement with mothers, provide information that will assist a healthy start to life.

Interpretation: Although the difference is small, a higher proportion of women in the control sites received advice on birth plans. The trend in Apunipima is improving.

Figure 9 Health information: Antenatal education

![Graph showing the prevalence of women receiving antenatal education from 2008 to 2013. The graph indicates an improvement in the proportion of women receiving antenatal education in Apunipima compared to the control sites.](source: One21Seventy audit data)

Baby Basket aim: Through improved engagement with mothers, provide information that will assist a healthy start to life.

Interpretation: A higher proportion of women in Apunipima compared to the control sites received antenatal education. The trend in Apunipima is improving.

Figure 10 Health information: Advice on nutrition

![Graph showing the prevalence of women receiving advice on nutrition from 2008 to 2013. The graph indicates an improvement in the proportion of women receiving advice on nutrition in Apunipima compared to the control sites.](source: One21Seventy audit data)

Baby Basket aim: Through improved engagement with mothers, provide information that will assist a healthy start to life.

Interpretation: A higher proportion of women in Apunipima compared to the control sites received advice on nutrition. The overall trend in Apunipima is improving; however, since 2011 the proportion receiving this advice has declined.
**Figure 11 Health information: Advice on breastfeeding**

![Graph showing the proportion of women receiving advice on breastfeeding from 2008 to 2013.](image1)

**Baby Basket aim:** Through improved engagement with mothers, provide information that will assist a healthy start to life.

**Interpretation:** Until 2013, a higher proportion of women in the control sites received advice on breastfeeding. This position reversed in 2013. The trend line suggests continued improvement in Apunipima.

Source: One21Seventy audit data

**Figure 12 Health information: Advice on physical activity**

![Graph showing the proportion of women receiving advice on physical activity from 2008 to 2013.](image2)

**Baby Basket aim:** Through improved engagement with mothers, provide information that will assist a healthy start to life.

**Interpretation:** In 2013 similar proportions of mothers received advice on physical activity in Apunipima and the control sites. However, note that the overall proportions receiving this advice is low. The trend in Apunipima is improving, although the 2013 result was slightly below trend.

Source: One21Seventy audit data

**Proportion of women receiving key screening tests and treatment for health issues (smoking, alcohol and emotional wellbeing)**

**Figure 13 Women at risk - smoking during pregnancy**

![Graph showing the proportion of women smoking during pregnancy from 2008 to 2013.](image3)

**Baby Basket aim:** Through better engagement with mothers, encourage healthy choices.

**Interpretation:** Proportions of women smoking during pregnancy are similar for both Apunipima and the control sites. The trend for Apunipima is toward more women smoking during pregnancy.

Source: One21Seventy audit data
Figure 14 Women at risk from smoking who received advice on this issue

[Baby Basket aim: Through improved engagement with mothers, provide advice to those engaging in risky behaviours: smoking. Interpretation: The proportion of women who were smoking during pregnancy who received advice on this issue was similar between Apunipima and the control sites between 2011 and 2013. The trend in Apunipima has been improving; rising from about 40% of women at risk, in 2008, to between 90% and 100% of women at risk, between 2011 and 2013.]

Figure 15 Women at risk - consuming alcohol during pregnancy

[Baby Basket aim: Through better engagement with mothers, encourage healthy choices. Interpretation: Similar proportions of women consumed alcohol during pregnancy in Apunipima and the control sites. The trend for Apunipima is toward improvement (less alcohol consumed).]

Figure 16 Women at risk from alcohol during pregnancy who received advice on this issue

[Baby Basket aim: Through improved engagement with mothers, provide advice to those engaging in risky behaviour: alcohol consumption. Interpretation: The proportion of women consuming alcohol during pregnancy who received advice on this issue was higher in Apunipima compared to the control sites in 2012 and 2013. The trend in Apunipima has been improving.]
Evaluating the Baby Basket program: 2009 to 2013

Figure 17 Women receiving screening for emotional wellbeing

Evidence of scabies

Figure 18 Evidence of scabies

Iron levels

Figure 19 Iron levels
Growth and weight gain of infants - evidence of thriving. These indicators include measures of postnatal attendance at a clinic, and the proportion of scheduled services for children aged under 1 year

Figure 20 Evidence of infants and children that are not thriving

![Graph showing evidence of infants and children that are not thriving.](image)

Baby Basket aim: Through improved engagement with mothers and the health system, reduce the prevalence of infants and children who are not thriving.

Interpretation: The proportion of audits of children over 3 months and under 15 years where the child was not thriving was similar between Apunipima and the control sites. The trend for Apunipima is declining (improving).

Figure 21 Clinic visits before 3 months of age

![Graph showing clinic visits before 3 months of age.](image)

Baby Basket aim: Through improved engagement with mothers and the health system, encourage mothers to attend the clinic before the infant reaches 3 months of age.

Interpretation: The proportion of audits of children under 3 months who have a recorded visit to a clinic is similar in both Apunipima and the control sites. In Apunipima, a substantial improvement occurred between 2008 and 2009. The trend for Apunipima is rising (improving).

Figure 22 Scheduled services to children under one year

![Graph showing scheduled services to children under one year.](image)

Baby Basket aim: Through improved engagement with mothers and the health system, facilitate the provision of scheduled care to children under 1 year of age.

Interpretation: The proportion of audits of children under 1 year where the delivery of scheduled services occurred is, in 2013, higher in Apunipima than the control sites. In Apunipima, a substantial improvement occurred between 2008 and 2009. The trend for Apunipima is rising (improving).
Summary of the evaluation based on routinely collected data

This section identified important caveats about the data. While acknowledging the quality of the One21Seventy data was good, the available time series for ACYHC and the control sites was not ideal for a quantitative analysis. Further, it was identified that the activities of the Baby Basket program, in improving knowledge of health issues, could, increase the incidence of certain conditions. Notwithstanding these limitations, the available data provide a quantitative viewpoint on the impact of the Baby Basket program. Key points were:

- Compared with the control sites, in ACYHC a higher proportion of antenatal visits occur when the developing baby is less than 13 weeks old. A substantial improvement in this indicator occurred for ACYHC between 2008 and 2009 (when the Baby Basket program was introduced). This result is in keeping with a key aim of the Baby Basket program: to encourage women to have earlier and more frequent antenatal visits to the clinic.
- For frequency of antenatal visits, ACYHC also has a more favourable result than the control sites.
- The provision of advice to women showed inconsistent results: for some indicators in 2013 (antenatal education, nutrition and breastfeeding) the data suggests ACYHC performed well compared to the control sites. However, the data suggests a lower likelihood of women being provided advice in 2013 on birth plans. (Note that the results on advice provided to women based on the One21Seventy analysis did not correlate with the analysis based on data from the survey of women who received a basket.)
- The detection of risky behaviours showed a trend increase in women who smoked during pregnancy in ACYHC and a trend decrease in women who consumed alcohol during pregnancy. For smoking, ACYHC’s results are close to those recorded by the control sites. The response to these ‘women at risk’ was a high provision of brief anti-smoking interventions.
- In ACYHC the likelihood of women consuming alcohol during pregnancy was declining. All women who placed their baby at risk by consuming alcohol during pregnancy in 2013 were provided a brief intervention on this issue.
- Evidence of scabies infestation has risen in ACYHC since 2010 and is tracking at a similar level to that recorded in the control sites. The rise in this indicator may be due to increased recognition of symptoms, leading more women to seek clinical assistance.
- A core aim of the Baby Basket program has been to prevent low iron levels amongst expectant women. The data suggests a favourable outcome as the reports of deficient iron levels is lower in ACYHC compared to the control sites.
- Evidence of faltering growth amongst infants and children in ACYHC is declining from a peak of 26 per cent of audits in 2010 to 5 per cent of audits in
2013. The recent reports for ACYHC are similar to the control sites (see Figure 20). Note that it is possible this improvement is associated with a procedural change: ACYHC shifted from CDC to WHO growth charts.

Improving the framework for future quantitative evaluations of the Baby Basket program

Background literature

This section aims to provide guidance to ACYHC in the event the Baby Basket program is modified. The specific aim of this section is to suggest ways in which an evaluation framework could be designed and implemented in parallel with any changes to the Baby Basket program.

In order to inform the proposed evaluation framework for the ACYHC Baby Basket program, a brief review was conducted to investigate the current literature on evaluations of maternal and infant health programs. This review had a specific focus to: (a) provide information on published experiences of quantitative reviews of maternal and child health programs for Indigenous people and (b) recommendations on how future quantitative evaluations of the Baby Basket program might be framed.

A total of 73 articles were recovered from the electronic databases while a search of the ECU database, Australian Indigenous HealthInfo Net, and Google identified four further sources. Three key points relevant to evaluating maternal and infant health programs for Indigenous people were identified in the literature:

1. The available data for evaluating these programs is frequently poor;
2. There is a need for sound methods for conducting evaluations of these programs;
3. There are few cost studies of these programs.

Each point is discussed below.

The available data for quantitatively evaluating maternal and infant health is frequently poor

Of the 73 articles recovered, 19 were found discussing evaluations of Australian Indigenous maternal and infant care programs. This literature frequently raised the need for better quality evaluations and the collection of good quality longitudinal data to assess the impact of MIH programs on health outcomes for Indigenous women, infants and children (1-6). In fact, an audit of the national Aboriginal and Torres Strait Islander health program, New Directions: Mothers and Babies Services, revealed a paucity of data and few identified indicators, making any evaluation after seven years of implementation very difficult.[11] Common in the literature were inconsistencies
in the indicators used across studies as well as a general lack of indicators, particularly those that target Indigenous maternal and infant health. [11-14] Steenkamp et al.[14] found that while many maternal and infant health indicators exist in the literature, few were relevant to remote Indigenous maternal and infant care. They also pointed out that the ten National Core Maternity Indicators refer only to clinical care and do not address continuity of care or less tangible outcomes like acceptability of care or cultural safety, important considerations in Indigenous maternal and infant care.[13-16]

There is a need for a sound methodological approach to evaluation

While positive outcomes of Indigenous maternal and infant health programs are commonly reported in the literature, very few of these studies have a strong evidence base or employ a sound methodological approach to evaluation.[11, 17-21] Paul et al. [17] note a lack of quality intervention studies and a persistently poor evidence base in all health research for Indigenous populations in Canada, the US, Australia and New Zealand. Herceg’s review of maternal and infant programs [19] in particular highlighted the lack of quality evidence and the need for high quality evaluations of programs that provide descriptions of the frameworks, processes and implementation. In their review of the literature, Rumbold and Cunningham [20] found only 10 studies of interventions with evaluations on antenatal programs for Indigenous women. The authors noted several problems with the general consistency of findings. First, they documented a wide range of research designs, making generalisations of findings in the literature difficult. They further noted a lack of studies with random allocation of participants between control and experimental groups. For example, several studies used ‘before and after’ designs which may not account for significant general factors outside experiments. Other studies compared outcomes of participants and non-participants in interventions. Such designs may not account for the possibility that people in the later groups do not participate due to a fundamental difference with those who participate. Some of the studies also used routinely collected population health data. Such data show changes that are due, not to interventions, but to general factors that affect entire populations. Rumbold and Cunningham [20] also raised the need for good quality long-term data collection about health services and the health of the women and children using them. A recent systematic review of the literature on Indigenous maternal and infant health programs by Jongen et al. [21] also claimed that evidence and methodological rigour were lacking in the literature, making it impossible to determine the impact of specific programs on health outcomes.

There are few cost studies of maternal and child health programs

One of the few economic studies found was by Jan et al. [22], who conducted an economic evaluation of the Daruk Aboriginal community midwifery service in outer western Sydney. At the time, Daruk programs included antenatal check-ups, home visits, hospital visits and delivery. The authors compared net health sector costs for
Indigenous women receiving antenatal care in the Daruk midwifery service and Indigenous women receiving antenatal care at nearby services (e.g. Nepean Hospital). Patient data was gathered from medical records and the Midwives Data Collection, for October 1990 to December 1996. Direct health sector costs were calculated as Daruk operational costs less the associated savings for nearby midwifery services and were ($A 1997) $1,772 per client. Downstream costs concerned use of specific services by Indigenous women (e.g. length of hospital stay, antenatal visits), calculated as the cost differences incurred at the Daruk service and Nepean Hospital. Per patient, downstream costs showed a saving of $507. In total, the cost of the Daruk service was $1,265 per client. The authors described this amount as ‘modest’. The study demonstrates an approach for estimating costs through comparisons and savings with other services. Such an approach requires good co-operative relations with other services. The need to access medical records means that ethics committee approval would be needed, possibly creating delays in data collection.

In more recent literature, two cost analyses were found to have been conducted on Indigenous maternal and infant health programmes. Due to the paucity of comprehensive data (as noted above) and the small number of births in rural and remote areas, Cannon et al.[23] developed a pregnancy simulation model to construct costs based on epidemiological pregnancy data for their obstetric population. They compared pregnancies receiving adequate and inadequate care and their results show that the costs of programs which aim to increase access to antenatal care are likely to be cost effective. While this study was rigorous in its approach, the findings can only be suggestive. The authors recommend further investigation of the provision of improved antenatal care, claiming that only prospective data collection in a clinical setting could improve on their findings, something that would take considerable time to achieve.

In the second cost analysis, Gao et al.[24] conducted a retrospective and prospective cohort study to provide data for the cost analysis which compared a baseline cohort with a more recently introduced Midwifery Group Practice (MGP). The program timeline of this cost analysis was similar to that of the Baby Basket Program including the first antenatal care visit, birth, post natal care in Darwin, and in community up to six weeks after birth. The study examined the direct costs to the Department of Health to compare maternity care costs pre and post introduction of the MGP. Costs included women’s antenatal care costs in remote community and in town, antenatal hospitalisation costs and associated transport, birth costs and associated transport costs, costs of infant admission to the Special Care Nursery, postnatal care costs in communities and town, and postnatal hospitalisation costs and associated transport costs. All hospitalisation costs were based on information for Australian Refined Diagnostic Related Groups. The personnel costs for antenatal and postnatal visits were calculated using a standard working unit developed by the Northern Territory Department of Health. The costs of antenatal and postnatal visits in Darwin (baseline
cohort) and the costs of diagnostic tests were drawn from the Medicare Benefits Schedule and the cost of pharmaceuticals from the Pharmaceutical Benefits Schedule. The costs of antenatal and postnatal visits in town by the MGP team were based on the hourly costs of an MGP midwife, Aboriginal health worker, and Senior Woman. The method employed to derive the costs was particularly rigorous with cost assumptions used only to account for missing data. Even so, these assumptions drew on the opinions of expert informants, well versed in midwifery care in the region [24]. While this study was more focussed on clinical outcomes, the methodological rigour employed in terms of costing and use of retrospective and prospective data could well be used to inform future Baby Basket Program economic evaluations.

The key learnings from this brief review revealed very few economic evaluations and with general weaknesses in data collection and methodology employed for maternal and infant programs. Even recent evaluations (cost analyses) that were methodologically rigorous suffered from a lack of data. Poor data undermines the ability to undertake a systematic and rigorous evaluation. Ideally, to minimise cost, the data used for quantitative evaluations should be based on use routinely collected information. A further point from the literature was the need for a suitable study design – one that enables meaningful comparison with a control group.

**Recommended framework**

Future iterations of the Baby Basket program should be accompanied by a robust plan for evaluation. The evaluation should be developed in parallel with program development and should include:

- A statement of the aims of the program and of the evaluation;
- A statement of the hypothesised relationship between community need, the program being developed and expected outcomes from the program;
- A clear line of sight between aims of the program and selected outcome indicators;
- Guidelines for data collection – whether routinely collected or primary data collection. The guidelines should be developed with regard to minimising potential selection and measurement bias and the need to capture actual behaviour changes that are hypothesised to be related to the program;
- A recommended study design to maximise the potential to attribute ‘effect’ to the program;
- A rationale for whether economic aspects are to be included and, if so, the type of economic evaluation required (e.g. cost, cost-effectiveness or cost-benefit).

Key issues to consider in the evaluation are: study design; whether an economic component is required; how data is to be collected.
Study design

A key aspect of any quantitative study design is the incorporation of a study design that supports a control group. Experimental designs provide a good evidence-base that increases the ability to attribute an observed outcome to the effect of a given intervention. Randomised controlled trials (RCTs) are an ideal choice of design; however, the reality is that it is unlikely to be ever feasible or ethical to randomly allocate women to the Baby Basket program or a ‘no intervention’ group that would act as the control.

If the roll out of an ‘improved’ Baby Basket program was undertaken across communities a multiple baseline study design could be considered. This design would allow measures in the communities to be compared between each other with a series of pre and post measures. Due to the annual reporting of One21Seventy data, a multiple baseline design would be based on the roll out of the new program in subsequent years. The Cochrane Effective Practice and Organization of Care Group[25] endorse the multiple baseline design as an alternative methodology to randomised controlled trials for evaluating population-level programs which provide confidence in attribution of the effects postulated to be due to the intervention.

The key difference between a multiple baseline design and a simple ‘pre and post’ design is that an intervention can be introduced in communities with the start and finish points of the study staggered across sites.[26] By examining the trends in pre- and post-measures across all communities in the study, the multiple baseline design increases the level of confidence that the observed difference between pre and post measures is attributable to the intervention rather than some other explanatory factor. Note that while multiple baseline designs can increase the level of confidence that an observed outcome has some level of attribution to a particular intervention, it is not sufficient on its own to determine causality.[26] An example of a multiple baseline design is presented below in Figure 23.

Figure 23 Example of a multiple baseline study design
A further aspect of the study design is to determine whether data collection is to be retrospective or prospective. Retrospective studies use existing data to look backwards and identify factors that may have been associated with the outcome of interest. Prospective studies watch participants who have been exposed to the Baby Basket program over a specified period to determine whether they develop the outcome(s) of interest.

For some economic evaluations such as cost-benefit analysis, follow-up of participants over time is recommended. Follow-up is needed to determine the longer-term impacts on children and women that might be attributable to the Baby Basket program. A prospective study design would be desirable with the collection of data guided by a systematic approach to determining the data items to be captured.

Is an economic component required?

Increasingly in Australia, public policy relies on economic analyses to determine how to best allocate scarce health resources. The current political climate is characterised by declining state and federal government resources and rising healthcare costs. In such an environment, where treatment providers must compete for scarce resources, there is increasing pressure to demonstrate that the treatment not only achieves successful outcomes for patients but that these outcomes are cost-effective or have benefits that exceed cost. This has created a need for better data and more rigorous methods for conducting economic evaluations.[27] The objective of economic evaluation is to identify, value and compare the costs and consequences of different programs. In economic terms, what does society give up when it funds an intervention (the opportunity cost) and what does it gain (the benefit)? Once it is recognised that there is a need to conduct an economic evaluation, the first decision must be to determine which technique is the most appropriate. Three main economic evaluation techniques, each with differing purposes are: cost study, cost-effectiveness analysis and cost-benefit analysis.[28, 29]

Cost study is common to all forms of economic evaluation and involves the analysis of comparative costs of alternative treatments or health programs with consideration of:

- Perspective (i.e. a cost to whom?);
- The breadth of programs being considered;
- Which costs to include; and
- The relative magnitude of costs.
When deciding which categories to cost, it is important to remember that for an economist, cost means the sacrifice in benefits made when a particular resource is consumed.[28] These are referred to as opportunity costs or resources saved as a result of treatment. A cost study only examines the ‘cost’ side of the program; it does not consider a measure of whether the program is ‘effective’, that is, does the program do what it intends?

**Cost-effectiveness analysis** compares the relative costs of interventions for achieving health outcomes by dividing the cost by the outcome. Usually, these analyses are undertaken to compare two or more interventions. Therefore, this analytic technique considers the cost of a program against a measure of ‘effect’ which is another term for the ‘outcome’ of the program. When comparing programs using cost-effectiveness analysis, there should be a single common outcome of interest. For example, the effect of two different interventions in terms of ‘life years gained’. There is often an implicit assumption in cost-effectiveness analyses that the health effects resulting from an intervention are worthwhile and that the aim is to determine the most cost-effective way of achieving them.[28] The consequence of such an approach may be funding of a program that does not pay for itself. Such a program would not be competitive when decisions about the allocation of resources are being made.

**Cost-benefit analysis (CBA)** provides a broader measure of value than the previous techniques, because it expresses the consequences of an intervention in terms of monetary benefits, which facilitates comparison with the costs of the program. This requires the economist to translate outcomes such as disability days avoided, life years gained, medical complications avoided, quality adjusted life years (QALYS) etc. into monetary benefits, indicating the return on investment. Results are expressed either as net economic benefits (total program benefits minus total program costs) or as a benefit-cost ratio (total benefits divided by total costs). Put simply, the goal of CBA is to identify whether an intervention’s benefits exceed its costs, a positive net social benefit indicating that an intervention is worthwhile.[28, 30] Increasingly, CBA is being recognized as the ‘gold standard’ in economic evaluation for the health care sector for its ability to provide a scientific basis to aid decision making and allocation of resources, as well as its potential to include less tangible outcomes like wellbeing and impact on family and community.[27, 29-32]

*How is data to be collected?*

The literature review identified paucity of data as an impediment to quantitative evaluations of maternal and infant health programs. For this reason, it is recommended that data for the evaluation be based, as far as possible, on routinely collected data to improve the quality of evaluations, as well as minimise future cost and participant burden.
The One21Seventy data is considered to be a reliable and robust source of information for evaluations. However, the current evaluation revealed that not all communities are routinely providing the relevant data to One21Seventy for upload into the database. The limitations of One21Seventy should also be acknowledged. The data provides a good representation of clinic visiting participants, yet it may not be representative of Indigenous people living in Cape York communities who are not regular clinic attendees. For maternal programs this may not be a significant issue, but older people with chronic disease (or symptoms of chronic disease) may not be regular attendees. The source of routinely collected data should be considered in light of the program being evaluated.

It is also acknowledged that primary data collection may be necessary. If the surveys completed by women receiving the Baby Basket in the current evaluation. If this survey are to be continued, consideration should be given to potential bias that may affect the results. For example, a recipient of the Baby Basket may be unwilling to be critical of the program if the person who provided the basket is helping to complete the survey. The purpose of this report is not to provide detailed alternative methodologies for data collection, but the issue of potential bias is important and should be addressed in future evaluations. Primary data collection provides an opportunity to collect information on the effectiveness of interventions. For example, women who smoke during pregnancy are offered a brief intervention on this issue. The existing data records that the intervention (or advice) was offered but not whether it was successful in stopping recipients from smoking. With primary data collection there is an opportunity to capture this ‘effectiveness’ information. This has powerful decision-making implications for determining whether the investment into specific interventions is value-for-money.
Discussion

This section triangulates the key findings from the qualitative and quantitative studies to identify important points. Although limitations with the data for the quantitative analysis are identified in this report, the analyses provided insights about the likely effectiveness of the Baby Basket program, as delivered in ACYHC.

One of the key aims of the Baby Basket program was to encourage earlier and more frequent attendance of pregnant women at antenatal clinics. On this measure, the data shows ACYHC is doing well, and for the years 2011, 2012 and 2013, ACYHC was outperforming the control sites. The comparison between ACYHC and the control sites is only possible for these years due to the availability of data. The analysis is not sufficient to attribute causality of these positive results to the Baby Basket program. It is likely that many factors, including routine maternal health care, have contributed to the outcomes. However, the qualitative finding that engagement through the Baby Basket encouraged women to attend the clinic early for antenatal care supports a casual association. When combining the findings of the qualitative and quantitative analyses it is reasonable to conclude that the Baby Basket program has contributed to some extent to this result.

Another aspect of the Baby Basket program was to provide information to women on issues that have health and wellbeing implications for both the mother and child. These topics included smoking and alcohol consumption during pregnancy, sudden infant death syndrome (SIDS) and nutrition. The quantitative data from the survey of women suggested that there had been a substantial improvement in the provision of this information since the introduction of the Baby Basket program. Yet this survey result did not correlate with the more modest improvements recorded in the One21Seventy clinical data. Further, the qualitative data suggested issues with the consistency and content of the advice provided to women. The discrepancy in evidence may be due to the possibility that the survey of women was subject to selection, measurement and other bias. The potential for this bias must be reflected in the weight given to the survey results. The One21seventy data and the qualitative results suggest attention is needed in the provision of advice to women. Foremost, a documented protocol is needed detailing how and when advice is provided to women and clear guidelines and training on the content of that advice. This study also identified a need to evaluate the effectiveness of advice and brief interventions provided to women. Currently, the evaluation is based on whether women were provided advice or a brief intervention; not whether the advice or intervention made a difference. Therefore, on this issue, the available evidence is not sufficient to suggest the Baby Basket program has made a substantial impact on maternal and infant health.

Social and emotional wellbeing (SEWB) is an issue raised throughout the qualitative interviews; it was also reported in the quantitative analysis through the One21Seventy
data. In the qualitative analysis, women and healthcare workers reported the need for a consistent framework for attending to the SEWB issues as a pre-condition for women being able to make behavioural changes toward improved engagement with the health system and/or improved knowledge about issues that affect the growing baby. The quantitative analysis has demonstrated increased effort placed into screening women for SEWB but on this measure ACYHC is below the performance of the control sites.

There were two specific components of the Baby Basket program that targeted low iron and scabies for which One21Seventy indicators were available. Both sets of indicators suggest improvement in ACYHC but the context of these improvements needs better understanding. The Baby Basket program had a specific aim to reduce iron deficiency amongst women. A reduction in this indicator (i.e. an improvement) has been recorded in ACYHC, but this corresponds to a similar trend to in the control sites. Therefore, it is not possible to attribute this improvement to the Baby Basket program. Again, it is likely that the Baby Basket program contributed to the outcome; it is the extent of this contribution that is unknown.

For evidence of scabies, there has been an increase in the indicator (i.e. an apparent worsening). However, it is likely that the Baby Basket program contributed to increased reports of scabies because the information provided to women better enabled them to detect symptoms of infestation. While appearing to increase incidence, it also permitted an increase in treatment. This is likely to be an indicator that has a lagged effect and should continue to be monitored.

Probably the most important finding from this evaluation was the shift in the indicator representing ‘evidence of faltering growth’ amongst infants and children. If women present earlier and more frequently at antenatal clinics, and attend postnatal clinics that, in turn, allow infants to receive recommended scheduled care, it is feasible that there will be a health benefit. This benefit might be revealed by, for example, a reduction in faltering growth amongst infants and children. On examining the One21Seventy data, a reduction in faltering growth was recorded since 2010 for ACYHC. However, this finding is not substantially different from the trend recorded in the control sites. Therefore, while it is feasible and likely that the activities of the Baby Basket program contributed to this outcome, it is not possible to measure the extent of this contribution. Further, procedural changes whereby ACYHC replaced the CDC growth chart with the WHO growth chart are also likely to have had an impact on this indicator.

The qualitative study provided insight into how the Baby Basket program may have had a contribution the reduced evidence of faltering growth. It identified that by working towards an empowering family-centred approach, healthcare workers engaged and related with women and their families to provide a responsive approach. The health worker-led approach included home visiting and the provision of social
and emotional wellbeing (SEWB). Engagement was facilitated by delivery of the first basket, and built from the women’s appreciation of its utility. The process of engaging and relating underpinned efforts by healthcare workers to encourage women to attend the clinic early for antenatal care, provide education, and facilitate linkages with the clinic for improved healthcare of their children.

**Potential for transferring the Baby Basket program**

Program transfer and implementation can be measured according to the acceptability, appropriateness, feasibility, implementation cost, and potential sustainability of the program with regard to the anticipated benefits from the program. This evaluation, particularly the qualitative interviews, found that the Baby Basket program is acceptable, appropriate and appreciated in Cape York. It can be delivered for a relatively modest cost.

ACYHC has had six years of experience with the Baby Basket program and is continuing to refine its delivery. The aim of this refinement is to maximise the potential of the program to improve maternal and child health and wellbeing. The Baby Basket program was developed in partnership with health providers such as Queensland Health, RFDS, Mookai Rosie and other services. These organisations recognised the benefits of the Baby Basket program. As a result, they have been willing to implement the program throughout Cape York.

Only recently has ACYHC taken full stewardship of the program. The relatively seamless transfer to ACYHC suggests that adaption to other localities is feasible. In terms of physical resources, the baskets will be replicable in other sites. However, experience from Cape York suggests that the process of implementation (which includes the contents of the baskets) will most be effective if designed collaboratively with all stakeholders.

The sustainability of the program is likely to be high. The cost of delivering the Baby Basket program across remote communities in Cape York is relatively modest. For about $874 per participant the program provides: three baskets; up to five food vouchers and allocated time for engagement between the health worker and mother. In ACYHC the cost of providing the baskets across remote communities was diffused by delivering them via existing transport pathways – as used by healthcare workers travelling throughout the Cape. For this cost, the outcomes from this evaluation suggest benefits in terms of increased antenatal and postnatal visits to clinic, and potentially reduced incidence of faltering growth.

An issue to be considered for the transfer of the Baby Basket program is to establish – at the outset – a framework for evaluating the program. The framework should consider the specific aims of the program (these may differ from those relevant to ACYHC) and ensure that the appropriate data needed for an evaluation is collected prospectively. One of the outcomes from the evaluation reported in this document is a
spreadsheet to systematically monitor the performance of selected indicators for the Baby Basket in ACYHC. Adopting this approach at the start of a program will provide an opportunity to provide ongoing monitoring and evaluation. In turn, this facilitates improvements to be made to the program delivery if pre-determined targets are not being met.

**Conclusion**

Considering the evidence available to this study, and acknowledging the important limitations with the quantitative data, it is not possible to specifically attribute the improvements in many of the indicators examined in this report to the Baby Basket program. It is likely that a combination of factors, including routine maternal health services, have played a role. However, given the aims of the Baby Basket program, its activities and the specific focus on improving attendance at antenatal and postnatal clinics, it is both feasible and likely that the Baby Basket program has contributed to the trend improvements in these measures since 2009. The qualitative findings support this view. If the chain of events from the Baby Basket program leads to increased clinic visits, and the provision of scheduled services to infants is a component of reducing faltering growth, then the Baby Basket program is likely to have also been a contributor to this recorded outcome in ACYHC. However, this evaluation is not able to identify the extent to which the Baby Basket program contributed to this outcome.

Assuming a relationship between the Baby Basket program and the reported outcomes in antenatal and postnatal visits and the reduction in evidence of faltering growth, a cost per Baby Basket participant of about $874 appears to be a modest investment to provide babies with a better start in life.
Limitations

Qualitative analysis

The main limitations with the qualitative analysis related to challenges in accessing women who had received the Baby Basket and were willing to be interviewed. Due to resource constraints, interviews with women occurred only in Cairns and Mossman Gorge (a community about an hour’s drive north of Cairns). The women in Cairns were at least 36 weeks pregnant and may have had other priorities. Repeated attempts and arrangements to interview some women remained fruitless. Nevertheless, one of the strengths with grounded theory method is that it allows for the concurrent collection, analysis and development of theoretical models – this prevents the collection of unnecessary data once saturation is reached. Having interviewed ten women, we consider that data saturation was achieved.

Quantitative analyses

The main limitations with the quantitative analyses (survey of women receiving a Baby Basket and the analysis based on the One21Seventy data) are also focused on the data. The cost analysis was also limited by data availability. The limitations of each analysis are summarised below.

Survey data

The main limitation affecting the survey data was the potential for bias to have entered the data collection process. Selection and measurement bias could have been introduced through healthcare workers (who provided the Baby Basket to women) assisting women with the completion of the survey forms. This bias could potentially be magnified by healthcare workers entering the completed survey forms into the ACYHC database. As an example of how potential bias may have affected the results, the survey data showed that the instances of advice provided to women increased strongly over the years of the Baby Basket program. This may be an accurate report, but data from clinical records on this issue (as per One21Seventy data) do not correlate with the survey data. Future evaluations should make a concerted effort to reduce selection and measurement bias.

A further limitation is that the survey data collects valuable information on whether advice is provided to women, but it misses an opportunity to collect information on the effectiveness of providing this advice. Ultimately, improved health outcomes from this advice rely on participants changing their behaviours. The survey could be structured to capture information on whether women understood the advice or, most importantly, acted upon it.
One21Seventy data

The quality of the One21Seventy data was good; however, the available time series was not adequate for analysing and comparing pre- and post-Baby Basket trends in either ACYHC or the control sites. Also, 2013 data for some ACYHC communities is not yet uploaded. This means the 2013 results will need revision when this information becomes available.

Cost study

Much of the information used to model the cost of providing the Baby Basket program was estimated using the best available information. However, cost accounting techniques for accurate expense recording for filling and delivering the Baby Basket would assist with improved accuracy.
**Recommendations**

1. The quantitative evaluation identified an increase in women who smoke during pregnancy in ACYHC. This issue needs better understanding to explain why this result was recorded. One explanation is that better clinical engagement with women means smoking is now being identified where previously it may have been present but unidentified. However, if it reflects a trend toward smoking amongst this cohort, it is an issue in need of action.

2. ACYHC did no better than the control sites for proportions of women (a) receiving screening for SEWB or (b) who smoked cigarettes or drank alcohol during pregnancy. The quantitative and qualitative findings are consistent on this issue. Consideration could be given on an integrated approach that incorporates brief interventions on SEWB, smoking and alcohol consumption. These interventions should be assessed for effectiveness.

3. While the Baby Basket program was designed specifically as a maternal and child health intervention, the qualitative interviews raised the importance of pre-conception health. ACYHC could consider how pre-conception advice and support for men and women who wished to prevent pregnancy could be provided to the Cape York population.

4. All ACYHC communities should be encouraged to complete their One21Seventy uploads as this will assist evaluations of the Baby Basket program.

5. The quantitative spreadsheet used for analysing One21Seventy data has been provided to ACYHC. This spreadsheet should be updated with new data as it becomes available. The spreadsheet is set-up for data entry to 2016 and this can be easily extended, as required. The spreadsheet will facilitate ongoing evaluations of the Baby Basket program in ACYHC.

6. The survey provided to women who receive a Baby Basket requires modification on two fronts (a) content and (b) methods used to collect data. Content should be modified to capture behavioural changes as a result of exposure to advice and other interventions provided as part of the Baby Basket program. The methods require attention to minimise the potential for selection and measurement bias.

7. Given that the Baby Basket program is expected to be modified in the near future, this evaluation recommends: (a) any change to the program be accompanied by a plan for undertaking a prospective evaluation (b) any changes to the Baby Basket program consolidate and build upon the positive engaging and relating engendered through the current program, and (c) that any changes in the Baby Basket program be piloted.
References

13. Hancock, H., Aboriginal women's perinatal needs, experiences and maternity services: A literature review to enable considerations to be made about quality indicators. 2006, Ngaanyatjarra Health Service: Alice Springs.


Appendix 1 – Flowchart of Search Strategy

**SEARCH 1: Peer-reviewed Literature**

**Databases searched:** Informit, ProQuest (Health and Medical and Social Sciences), PubMed, Scopus, Wiley and Cinahl

Separate searches for each database using database specific subject headings and keywords:

**Search strategy:** Keywords used in title or abstract or MESH heading: (Aborigin* or Indigen* or Torres Strait Island* or oceanic ancestry group or australoid*) and (wellbeing or health) and (Australia) and (child or maternal or parent* or women* or pregnan* or infan*) and (program* or service*).

**Years searched:** 1993 – current

Search 1 = 3507 publications (after electronic removal of duplicates)

**SEARCH 2: Grey Literature**

**Websites searched:**
- Australia: Australian Indigenous Health Infonet, Lowitja Institute, National Aboriginal Community Controlled Health Organisation, National Aboriginal and Torres Strait Islander Child and Maternal Health Exemplar Site Initiative, Telethon Institute for Child Health Research, Secretariat of National Aboriginal and Islander Child Care Resource Clearinghouse, Australian Institute of Aboriginal and Torres Strait Islander Studies, Australian Government Office of Aboriginal and Torres Strait Islander Health, and the Australian Institute of Family Studies

**Search strategy:** Keywords and/or the appropriate topic headings in each website: (Aborigin* or Indigen* or Torres Strait Island* or oceanic ancestry group or australoid*) and (wellbeing or health) and (Australia) and (child or maternal or parent* or women* or pregnan* or infan*) and (program* or service*).

The search was limited to the period 1993 – current.

Search 2 = 1246 publications (including duplicates)

Searches 1 and 2 = 4753 publications (journal articles, reports, book chapters, books, fact sheets, newsletter articles)

Additional articles from hand search of reference lists of 3 reviews n = 12

**EXCLUDED**
- Duplicates =42
- Non child and/or maternal health = 837
- Non-Indigenous Australian = 1587
- Not primary health = 429
- Were not journal articles, reports or book chapters = 621
- Were reviews, discussion papers, commentaries or case reports = 984
- Child health specific = 8

Manual search of 4765 citations/abstracts

23 articles categorised by type of publication

- Program Descriptions n= 11
- Intervention Research n= 12
## Appendix 2: Aboriginal and Torres Strait Islander MCH program study characteristics

<table>
<thead>
<tr>
<th>1st author and year</th>
<th>Program/service name</th>
<th>Publication type and Study design</th>
<th>Location and Organisation Setting</th>
<th>Intervention Issue</th>
<th>Intervention Type and Components</th>
<th>Target Age</th>
<th>Outcomes or Effects</th>
<th>Study Quality (intervention studies only)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Murphey, E. et al. (2012)</td>
<td>The Aboriginal Maternal and Infant Health Service (AMIHS)</td>
<td>Journal Article Program description</td>
<td>NSW State wide Government strategy delivered through local government areas (LGA) with care provided in the community</td>
<td>Aboriginal maternal and infant health</td>
<td>Antenatal and postnatal care - Training and support for midwives and Aboriginal Health Workers</td>
<td>Aboriginal women and their babies, from conception up to 8 weeks postpartum</td>
<td>- Increased antenatal attendance - Higher birth weights - Decreased preterm births - Decreased perinatal mortality - Improved breastfeeding rates</td>
<td>N/A – Program Description</td>
</tr>
<tr>
<td>NSW Health (2005)</td>
<td>NSW Aboriginal Maternal and Infant Health Strategy (AMIHS)</td>
<td>Evaluation Report Intervention Research</td>
<td>NSW State wide Government strategy delivered through local government areas (LGA) with care provided in the community</td>
<td>Aboriginal maternal and infant health</td>
<td>Targeted antenatal/postnatal programs</td>
<td>Aboriginal women and their babies, from conception up to 8 weeks postpartum</td>
<td>- Improved antenatal attendance prior to 20 weeks gestation - Improved breastfeeding rates - Decrease in low birth weight babies - Decrease in perinatal deaths - No change in proportion of women smoking during pregnancy</td>
<td>Mixed-method; Quantitative - Weak Qualitative - Weak</td>
</tr>
<tr>
<td>Boles, C. et al. (2005)</td>
<td>The Alternative Birthing Project: Anangu Bibi</td>
<td>Conference paper Program description</td>
<td>Port Augusta and Whyalla SA – Northern and Far Northern Regional Health Service SA</td>
<td>Poor Aboriginal maternal and infant health, low antenatal attendance, low infant birth weight, high teenage pregnancy</td>
<td>Continuum-of-care model led by Aboriginal maternal and infant care workers supported by midwives, GP and obstetrician Pregnancy check ups - Assessing for risk factors and education about early warning signs of complications</td>
<td>Teenage mothers and young Aboriginal women</td>
<td>N/A</td>
<td>N/A – Program Description</td>
</tr>
</tbody>
</table>
- Shared maternity care  
- Gynaecological services  
- Sexual assault and domestic violence counselling and examinations  
- Health education  
- Transportation  
- Health worker training  
- Mobile bush clinic | Aboriginal women and children | - Increased client visits  
- Increase in women having first trimester antenatal visit  
Qualitative – Moderate |
| Jan, S. et al. (2004) | Daruk Aboriginal Medical Service Midwifery Program | Journal Article | Intervention research | Mt Druitt, Western Sydney | ACCHO – Daruk Aboriginal Medical Service | Aboriginal perinatal and maternal health | - Antenatal and postnatal care  
- Antenatal check ups  
- Hospital booking  
- Transport  
- Home visits  
- Labour support and delivery  
- Hospital visits  
- Assistance with infant feeding | Aboriginal women/mothers and their infants | - Lower gestational age at first visit  
- Higher number of antenatal visits  
- Women reported positive experiences with Daruk | Mixed-method; Holistic economic evaluation  
Quantitative - Moderate  
Qualitative – Moderate |
| Australian Indigenous Health Infonet | Healthy for Life Maternal and Child Health Program, Derbarl Yerrigan Health Service | Webpage | Program Description | Perth, WA | ACCHO – Derbarl Yerrigan Health Service | Aboriginal maternal and child health | Goals: To improve pre-pregnancy health of women, increase pre-pregnancy immunisation, parental education and support, and home-visits | Aboriginal women/mothers and children up to 5 years | N/A  
N/A – Program Description |
| Campbell, S. | Women’s Bussiness | Journal Article | Mildura, VIC | Maternity care | - Pregnancy screening  
- Antenatal and postnatal care | Aboriginal | Women attending the service were significantly | Qualitative - |
<table>
<thead>
<tr>
<th>et al. (2003)</th>
<th>Service Mildura</th>
<th>ACCHO – Mildura Aboriginal Health Service</th>
<th>Education and information - Support during labour and birth - Check-up’s</th>
<th>women in Mildura more positive about many aspects of their care than women attending other rural public maternity services</th>
<th>Strong</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australian Indigenous Health Infonet</td>
<td>Moort Boodjari Mia (Family Pregnancy House)</td>
<td>Perth, WA Mainstream community health service – North Metropolitan Health Service</td>
<td>Maternal health care</td>
<td>Indigenous women, mothers and families, during pregnancy up to 4 weeks postpartum</td>
<td>N/A</td>
</tr>
<tr>
<td>Panaretto, K. S. et al. (2007)</td>
<td>Mums and Babies Program</td>
<td>Journal Article Townsville, QLD ACCHO – Townsville Aboriginal and Islander Health Service</td>
<td>Aboriginal and Torres Strait Islander Infant and maternal health</td>
<td>Indigenous women</td>
<td>Decrease in perinatal mortality - Increase in antenatal visits - Improvements in care planning - Completion of cycle-of-care - Antenatal education</td>
</tr>
<tr>
<td>Panaretto, K. et al. (2005)</td>
<td>Mums and Babies Program</td>
<td>Journal Article Townsville, QLD ACCHO – Townsville Aboriginal and Islander Health</td>
<td>Aboriginal and Torres Strait Islander Infant and maternal health</td>
<td>Indigenous women</td>
<td>Increase in number of women attending the program who gave birth at hospital - Increase in number of antenatal visits</td>
</tr>
</tbody>
</table>

**Evaluating the Baby Basket program: 2009 to 2013**
| Service | Program description | Aboriginal child and maternal health | - An antenatal care program  
- Development and delivery of key messages health education packages for young mothers  
- Child health program: Protocolised growth monitoring for children under 5 years of age and targeted child health screening at ages 5, 10 and 14 | Aboriginal mothers and children 0-14 years | - Reduction in pre-term births |
|---|---|---|---|---|---|
| Australian Indigenous Health Infonet | Nganampa Health Council Child and Maternal Health Program | Web page | Anangu Pitjantjatjara/Yankiny tjatjara lands, SA  
ACCHO - Nganampa Health Council | | |
Intervention Research | Adelaide, SA | Joint government and community initiative | Aboriginal and Torres Strait Islander women and babies health | Framework for an integrated maternity care service for Indigenous women and their babies. Accessible and provides culturally responsive and timely maternity services | Indigenous mothers and their babies | | |
Program Description | Rockhampton, QLD | Mainstream community health service | Indigenous maternal and infant health | - Antenatal clinic  
- Midwifery model of care  
- referrals to other medical practitioners  
- home visits  
- antenatal education  
- under 5’s clinic | Indigenous mothers and children from pre-pregnancy to 5 years | | |
Intervention Research | Aboriginal communities across the Kimberley and Pilbara regions, WA | Community initiated program delivered by Aboriginal women across 5 communities. SW,SB,SC is a | Infant birth weights and child growth | - Nutritional intervention to improve birth weights and growth of infants and children  
- Nutritional assessment of infants and children  
- Counselling of mothers and carers  
- Implementation of maternal support program | Aboriginal mothers and children 0-3 years | | |

Evaluating the Baby Basket program: 2009 to 2013

Page 5
<table>
<thead>
<tr>
<th>Authors</th>
<th>Title</th>
<th>Type</th>
<th>Region</th>
<th>Key Findings</th>
<th>Design</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Intervention Research</td>
<td></td>
<td>Aboriginal women who are pregnant or of childbearing age</td>
<td></td>
</tr>
<tr>
<td>Tursan d’Espiangnet, E. et al. (2003)</td>
<td>Strong Women, Strong Babies, Strong Culture (NT)</td>
<td>Journal Article</td>
<td>NT</td>
<td>Senior women in communities helping younger women prepare for pregnancy - Antenatal care - Advice and encouragement to improve nutrition (including increase in use of bush foods) - Encouraging reduction in alcohol and tobacco consumption - Encouragement to seek medical assistance</td>
<td>Quantitative - Weak</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Intervention research</td>
<td></td>
<td>Aboriginal women who are pregnant or of childbearing age</td>
<td></td>
</tr>
<tr>
<td>Crook, L. et al. (2012)</td>
<td>Waminda Mums and Bubs Program</td>
<td>Journal Article</td>
<td>Nowra, NSW South Coast</td>
<td>Antenatal and postnatal care - Health and development information about infant care - Practical advice and assistance with breastfeeding, nutrition and parenting skills - Monitoring children’s weight, From pre-conception, to antenatal, birthing, postnatal and continuous care (lifelong care for all females and</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Program description</td>
<td></td>
<td></td>
<td>N/A – Program Description</td>
</tr>
<tr>
<td>Adams, E. et al. (2011)</td>
<td>Winnunga Nimmityjah Perinatal and infant mental health service</td>
<td>Journal Article</td>
<td>ACT</td>
<td>Perinatal and infant social and emotional wellbeing (mental health)</td>
<td>Perinatal and infant mental health service</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Australian Indigenous Health Infonet</td>
<td>Wurli Wurlinjang child and maternal/womens health program</td>
<td>Web page</td>
<td>NT – Katherine and surrounding areas</td>
<td>Child and maternal/women’s health</td>
<td>- Health promotion and education. Preventative health care - childhood immunisations - growth assessment - child health checks - education around substance misuse and nutrition in early childhood development</td>
</tr>
</tbody>
</table>

Evaluating the Baby Basket program: 2009 to 2013

Page 7
<table>
<thead>
<tr>
<th>Australian Indigenous Health Infonet</th>
<th>Boodjari Yorda (Pregnant women’s) Program</th>
<th>Web page</th>
<th>Wheat belt region, WA</th>
<th>Women’s/materna l health</th>
<th>- Antenatal and postnatal care</th>
<th>Indigenous women and their families</th>
<th>Reduction in overdue immunisations and improved nutritional status</th>
<th>N/A – Program Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australian Indigenous Health Infonet</td>
<td>Moorditj Boodjaree yorgers (maternal health)</td>
<td>Web page</td>
<td>Bentley-Armadale area, WA</td>
<td>Maternal health</td>
<td>- Antenatal and postnatal support</td>
<td>Indigenous mothers and babies up to 6 weeks postpartum</td>
<td>N/A</td>
<td>N/A – Program Description</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- Antenatal care program</td>
<td>- Earlier antenatal attendance</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- Development and delivery of Key Messages Health Education Packages for young mothers</td>
<td>- Increased antenatal attendance</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- Child health program including: childhood immunisation, protocolised growth monitoring for under 5’s, and targeted health checks at ages 5, 10 and 14</td>
<td>- Decrease in babies born with low birth weight</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Mums and Babies</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- maternal/paternal and child health, acute care, preventive care and follow-up</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- one-on-one education/health promotion (eg antenatal and postnatal health, nutrition, substance use,family violence)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- transport</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- Aboriginal and Torres Strait Islander Child and Maternal Health Program (SA)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- Townsville Mums and Babies Program (QLD)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- Durri Aboriginal Medical Service Djuli</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- ACCHO - Nganampa Health Council</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- ACCHO - Townsville Mums and Babies Program</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- Aboriginal Medical Service - Durri Aboriginal Medical Service</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- ACCHO - Nganampa Health Council</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- Information on study design and methods not provided</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- Weak</td>
<td></td>
</tr>
</tbody>
</table>
| Galban Program (NSW) | - shared antenatal care with the Townsville Hospital  
- immunisation  
- growth and developmental monitoring  
- Referral, advocacy and social support. | Djuli Galban  
- Antenatal and postnatal services  
- Brief intervention education around risk factors such as smoking and drug use during pregnancy  
- Child health services  
- Immunisation services | Djuli Galban  
- High rates of antenatal attendance prior to 20 weeks gestation  
- No significant changes in rates of pre-term births and babies with low birth-weight  
- Increased rates of childhood immunisation |