ADI

For a healthier rural PNG

Baby Bundle Project Evaluation

May 2025

PNGAus Partnership

This project was supported by the Australian Government.

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Contents

1. Executive Summary

1.1 Project overview

Papua New Guinea (PNG) has one of the highest maternal mortality ratios in the Western Pacific, with many women giving birth without skilled care due to geographic, financial, and social barriers. The Baby Bundle Pilot Project was introduced as a targeted, community-based intervention aimed at increasing the number of supervised deliveries in rural health facilities by offering an incentive—essential newborn care items—for mothers who gave birth at participating health centres.

The pilot was implemented across 12 health facilities in four provinces from August 2024 to March 2025. In addition to distributing baby bundles, the project included clinical training for community health workers (CHWs), health facility equipment upgrades, and maternal health education sessions for communities.

Objectives

- Increase the number of supervised deliveries in rural areas.
- Improve maternal and newborn health outcomes.
- Strengthen health worker capacity and facility readiness.
- Enhance uptake of preventive services like family planning and immunisation.
- Promote positive behaviour change through community engagement.

1.2 Key findings

- 546 supervised deliveries occurred at participating facilities, 9 out of 12 facilities saw an increase in supervised deliveries with 5 out of 12 facilities recording >50% increases in birth attendance.
- 215 health worker attendees received training, and 10 emergency interventions were successfully managed using new skills
- 83% of newborns received full immunisations; 43% of mothers accessed family planning services, 100% received counselling
- 85% of mothers accessed additional services such as HIV/STI testing and malaria screening
- Community outreach reached 785 people, and 98% of mothers said they would recommend facility delivery to others.
- 95% of mothers reported feeling respected and well-cared for
- Facilities that received comprehensive support saw the greatest improvements, while others struggled due to limited infrastructure, staffing shortages, and poor connectivity.

1.3 Key Challenges

Despite these successes, the pilot also encountered several challenges. Inconsistent data collection and limited monitoring and evaluation (M&E) capacity among health workers affected the accuracy and completeness of reported outcomes. Many facilities lacked staff dedicated to data collection, and tools were not always used consistently.

Geographic and transportation barriers remained a major obstacle, with many mothers forced to walk long distances or travel by boat to reach health centres. The lack of transport support, combined with poor road conditions and unpredictable weather, limited access to care, especially during emergencies.

Health workers reported being overloaded due to staffing shortages, with increased facility births stretching limited resources. Infrastructure constraints—such as a lack of wait houses, clean water, and adequate delivery space—also impacted quality of care and reduced the amount of time women could remain at the facility post-delivery.

Importantly, social determinants such as gender-based violence (GBV) played a hidden yet significant role in some negative outcomes, including stillbirths. Limited male involvement and the absence of structured GBV support systems further highlighted the need for more holistic, family-centred approaches.

A mother and newborn at Panuselu HC, Manus, alongside a gifted baby bundle.

1.4 Recommendations

To address these challenges and scale the model effectively, several key recommendations have emerged:

- Provide transport support or travel vouchers for mothers, and consider offering additional incentives for attending antenatal visits, to encourage earlier and more consistent engagement with health services.
- Narrow the project's focus to fewer facilities, allowing for deeper investment in infrastructure, clinical training, and ongoing supervision, especially in high-need, hard-to-reach areas.
- Refine monitoring and evaluation tools and digitise data collection where feasible. Expand surveys to include questions on parity, motivations for choosing facility-based care, and referral sources to better assess reach and relevance.
- Introduce father-inclusive strategies and strengthen GBV awareness through targeted education and referral pathways.
- Streamline and reduce the cost of baby bundles, while retaining the most valued items identified by mothers to maintain impact and sustainability.
- Encourage local co-investment, working with communities and provincial authorities to improve basic infrastructure such as clean water access and wait houses.

The Baby Bundle project demonstrated early success in shifting maternal behaviours, increasing facility-based births, and strengthening community trust in health services. With targeted improvements, especially in training, infrastructure, data quality, and gender-responsive programming, the model presents a scalable and sustainable strategy to reduce maternal and newborn mortality in rural PNG.

2. Introduction

2.1 Background

The maternal mortality ratio (MMR) in PNG is the highest in the Western Pacific Region, according to the World Health Organisation (WHO 2024). The sustainable development goals (SDG) were adopted by all United Nations member states in 2015. Goal 3 aims to ensure healthy lives and promote wellbeing for all at all ages. Associated targets aspire to reduce the global MMR to less than 70 per 100,000 live births by 2030 and the neonatal mortality ratio (NNMR) to 12 per 1000 live births and ensure universal access to sexual and reproductive health services.

Currently the MMR in PNG is estimated to be 145 to >500:100,000 & the Neonatal Mortality rate to be 22:1000 live births (Vallely, L et al 2024; Lokuge et al 2024). This is likely to be an underestimate given the difficulty in data collection in PNG and with 85% of the population living in rural and remote regions. The percentage of women who attend for antenatal care is low (47% attend once, 27% attend 4 times) & the percentage of women who attend a health facility for a supervised birth remains less than 40% nationally (Mola, G 2024). The morbidity and mortality for women and their babies is significantly higher when there is no skilled attendant during the labour and birth. The most dangerous time for women is the 24hours before and after the birth, accounting for 60% of maternal deaths (EMOC & PMBC 2016). The Baby Bundle Pilot Project aims to increase the number of women accessing safe birth services with a skilled attendant & thereby reducing maternal and neonatal mortality.

Previously, incentive projects, such as those conducted in Milne Bay Province and Simbu, PNG increased the number of women attending for supervised birth (Kirby et al, ANZJOG vol 55, issue 3, 2015). Further evidence provided by Professor Mola also supports this finding. Dr Kirby (2015) reported an 80% increase in women attending for supervised births and a 78% reduction in maternal deaths with the use of ‘Mother & Baby gifts’ to motivate women to attend health centres for care. Similar programs have been introduced in other low/middle income countries including Nepal, India and Cambodia with positive results.

According to the World Health Organisation (2024) all women need quality care in pregnancy and childbirth, and it is particularly important that every birth is attended by a skilled health professional. A skilled health professional can prevent, manage and treat the primary causes of maternal deaths.

In conjunction with the provision of a gift for those women who have a supervised birth in a health facility, ADI offered education/revision to staff at all the selected sites in maternal and neonatal care and emergencies. Topics for education sessions were requested by the staff and further topics identified from birth register documentation (for example – postpartum haemorrhage rates and management). There were also opportunities to conduct awareness sessions for women at antenatal clinics on danger signs for themselves and their newborns, the importance of immunisations and early exclusive breastfeeding.

2.2 Objectives of evaluation

2.2.1 To what extent did this pilot project meet its objectives?

The Baby Bundle Pilot Project largely met its intended objectives, demonstrating strong performance in key outcome areas, especially considering the short implementation period and resource limitations. While there were some challenges, particularly around data

accuracy, health facility capacity, and social determinants of health, the results indicate clear progress toward the project's aims.

Objective 1: Increase Attendance for Supervised Delivery

Achieved – with strong performance across most sites

- 546 mothers attended for supervised deliveries and received baby bundles.
- 9 of 12 health facilities (75%) saw an increase in supervised deliveries.
    - 5 facilities recorded >50% increases, with growth ranging between 67% and 204%.
    - Decreases in 3 sites were linked to already high pre-project birth attendance averages.
- Stakeholder feedback confirmed that the bundle incentive motivated women from remote communities to choose supervised delivery over village births.

The project successfully increased supervised deliveries, especially at underperforming, rural health facilities—directly aligning with its primary goal.

Objective 2: Reduce Maternal and Neonatal Mortality

Partially achieved – with early positive signs but limited by short timeframe and data quality

- 0 maternal deaths were reported during the project.
- 7 stillbirths were recorded, with several attributed to gender-based violence (GBV).
- The eNHIS system lacked consistent mortality reporting, limiting accurate national comparisons.

While overall maternal mortality was low in the pilot sites, the project's duration and data constraints limited definitive impact assessment. However, timely training and skilled care were clearly associated with improved outcomes.

Objective 3: Improve Quality of Maternal and Neonatal Care

Achieved – with improvements in staff skills, facility readiness, and patient satisfaction

- 215 attendees received training across 12 sites in emergency maternal and neonatal care.
- 10 life-threatening cases successfully managed using new skills including management of postpartum haemorrhage and emergency obstetrics e.g. breech deliveries, neonatal resuscitation, respectful maternity care, and family planning.
- 95% of mothers reported feeling respected and well-cared for.
- Facilities received essential equipment (e.g., birthing kits, neonatal resuscitation kits) and infrastructure upgrades (e.g., solar lighting, WASH).
- Several facilities undertook self-led improvements, demonstrating increased ownership and initiative.

The project significantly improved care quality and facility preparedness, contributing to safer and more dignified delivery experiences.

Objective 4: Increase Uptake of Postnatal and Preventive Services

Achieved – especially in family planning and newborn immunisation

- 43% of mothers chose to receive family planning services following birth; 100% received counselling.
- 83% of newborns received full birth doses of immunisations including BCG and HepB.
- 85% of mothers accessed additional services such as HIV/STI testing and malaria screening.
- Health workers noted increased father attendance and greater interest in postpartum health.

The project expanded access to essential postnatal services, suggesting improved long-term maternal and child health outcomes.

Objective 5: Strengthen Community Engagement and Behaviour Change
Achieved – with evidence of word-of-mouth and trust-building

- 98% of mothers said they would recommend the facility for delivery.
- 52% were first-time facility users; 35% were first-time mothers.
- 785 community members reached through 33.5 hours of education sessions.
- Mothers, CHWs, and ADI staff all cited word-of-mouth as a major driver of behaviour change.

The Baby Bundle project built strong community trust and engagement, laying a foundation for ongoing demand for supervised delivery services.

The Baby Bundle project met four out of five key objectives, with strong evidence of progress on the fifth. It demonstrated success in improving service uptake, enhancing care quality, and engaging remote communities, while highlighting areas for improvement in data systems, facility readiness, and addressing social health determinants like GBV.

ADI Project Lead conducts training in essential maternal and neonatal care at Buvussi HC, West New Britain – one of the Baby Bundle pilot project sites

2.3. Outcomes and Impact

2.3.1 What were the key successes and challenges?

Highlights:

- The Baby Bundle pilot produced meaningful early outcomes. These outcomes strongly support continued investment and strategic scale-up of the intervention. This project not only increased supervised deliveries and improved health worker skills but also expanded access to critical postnatal services, shifted community norms, and strengthened facility systems. While it is too early to determine definitive impact, the strong uptake of family planning and immunisation services indicates potential for long-term health and economic benefits at the family and community level.
- Overall, the project's early success justifies further investment, with targeted improvements in CHW training delivery, GBV prevention, and postnatal care service expansion to amplify its already significant impact. Improved attendance for supervised deliveries
- Improved health worker capacity
- Expanded postnatal and preventative services
- High maternal satisfaction
- Facility ownership and initiative

Challenges:

- Communication barriers
- Inconsistent data collection and M&E skills
- Accessibility issues for mothers
- Facility strains due to increased demand
- Limited infrastructure at HF
- Training delays and impact on outcomes

2.4 Methodology

2.4.1. Sampling Strategy

To ensure the data collected is representative, reliable and feasible the Baby Bundle Pilot Project planned selection of appropriate sites in four provinces: Manus, Western, West new Britain & New Ireland Provinces. Advice from Professor Mola was sought to guide in site selection & modified with input from local ADI provincial teams & Provincial Health Authorities (PHA). The timeframe for initiation & completion of the project was short & influenced the selection of sites.

<u>Health Facility Selection criteria:</u>

1. Skilled birth attendant – a midwife or upskilled nurse or Community health worker (CHW),
2. Water available (even tank outside labour room),
3. lighting,
4. At least 1 birth per week occurring at the facility.

Many of the facilities did not fulfill all the above criteria; however, across the 12 sites selected (4 in each province) the presence of a skilled birth attendant was essential & all sites satisfied this element. During the launch & subsequent visits to each facility by ADI & PHA staff there was an opportunity to identify areas for infrastructure improvement.

2.4.2. Data collection methods

To avoid duplication of data collection, this pilot project relied on data fed into the electronic National Health Information System (eNHIS), at the facility-level. Each month, using the data uploaded by each facility, data on antenatal care visits and supervised deliveries were monitored and used for analysis.

To supplement this, data was also collected utilising the following forms developed by ADI:

- Baby Bundle Registry Form (Appendix 2): utilised by staff at the facilities to monitor bundles distributed, and record data such as the mother's age, disability status, if it was their first time giving birth at the facility and whether they received health services in addition to postnatal care such as family planning and immunisations for their newborns. This form also prompted health workers to identify if any newborns were born with a disability.
- Survey for Mothers (Appendix 3): a voluntary survey form for mothers receiving the bundles to capture feedback on the quality of care received at the facility, and the bundles received.

Forms were collected from the facilities fortnightly to monthly (dependent on accessibility of facilities) during monitoring trips conducted by ADI staff. Following each monitoring trip ADI staff also completed reports summarising general observations, status of health facility operations and infrastructure, number of bundles remaining at facility and any additional, ad hoc training delivered to facility staff during the visit.

Additional qualitative data was captured through interviews and surveys conducted with health facility staff on their observations and experience implementing the baby bundles at their facilities.

This pilot project had a limited timeframe for planning and implementation due to funding constraints, which has also led to limited data available to demonstrate impact.

Additionally, it is noted that the eNHIS data available for each facility is often inconsistent, inaccurate and lacking contextual information, making data used to establish baselines unreliable for certain facilities.

For example, Bol Health Centre in New Ireland – it was discovered during the project that 2023 data for supervised deliveries was low due to the facility undergoing renovations which led to a significant underestimation of monthly birth numbers.

2.4.3. Evaluation Methodology

The evaluation design utilises a mix of qualitative and quantitative data obtained through specified data collection methods, triangulating multiple data sources, including project records, facility reports, and qualitative interviews with health workers, to cross-check discrepancies. Using statistical methods and thematic analysis of quantitative and qualitative methodologies to measure impact and effectiveness and understand experience and challenges. Methodologies include:

Quantitative:

- **Before and after comparison**: using eNHIS data and data collected through the ADI baby bundle registry form to compare the number of supervised deliveries and maternal deaths before and after project.
- **Cost analysis**: compare the project costs vs cost per additional supervised delivery

Qualitative:

- **Interviews of health care workers**: using semi-structured interviews of health care workers to assess the effectiveness of training health facility improvements and project implementation and impact
- **Surveys of mothers**: using ADI development survey for mothers to understand mothers' motivations and experiences at the health facilities they attended
- **Observation of health care workers**: using observation of health care workers through regular monitoring trips to determine impact of training and equipment provisions

2.4.4. Data Analysis Method

Data collection began at the project's start date. However, implementation across facilities was staggered, with start dates ranging from August to October 2024 and end dates varying between November 2024 and March 2025.

To ensure the most accurate and context-specific analysis, we examined data at each health facility according to its exact project implementation timeline. Using data from the eNHIS, we collected supervised birth data for a six-month period prior to each facility's project start to establish a baseline average of births per month (BPM).

We then identified the implementation start and end dates for each site and calculated the average BPM during this period. By comparing the pre- and post-intervention BPMs at each site, we could determine where increases in supervised deliveries occurred and to what extent. This allowed for more precise measurement of the intervention's impact, avoiding inconsistencies that might arise from applying a blanket analysis period across all facilities.

This tailored approach also ensures that each site had adequate exposure to the intervention before being assessed. It takes into account the time required for intervention activities—such as Tok Save and community health messaging—to circulate and influence maternal health-seeking behaviours. Although we initially intended to include post-project data (e.g., Q1 2025) to assess longer-term trends, this was not possible due to incomplete reporting; some facilities had submitted partial or no data for the quarter. Once complete, this data may be incorporated into future analyses to assess sustainability and ongoing impact.

By aligning the analysis with each facility's unique implementation period, we are better able to identify early trends in supervised deliveries and maternal health outcomes, while also highlighting variation in program uptake and effects across sites.

The evaluation uses the following Key Evaluation Questions to guide data analysis:

Effectiveness

- Did supervised delivery rates increase at selected health centres?
- How many mothers received Baby bundles?

- Did the project increase the number or availability of trained health workers at the selected facilities?
- Did health facilities health infrastructure and equipment improve?
- Did mothers attending for supervised delivery have other positive impacts on maternal and neonatal health?

Impact

- Did maternal and neonatal mortality rates change in the pilot facilities?
- Did health worker training improve maternal and neonatal care?
- Did mothers who received the gift incentive report increased likelihood of facility-based deliveries in future pregnancies?

Efficiency

- Was the gift incentive cost-effective in increasing supervised deliveries?
- Were resources (training, equipment, incentives) optimally used?

Sustainability

- Are the improvements in facility infrastructure, equipment, and training sustainable?
- Did the project increase the likelihood of women returning to the health facility?
- What are the perceptions of health workers and mothers on continuing the program?

Challenges & Lessons Learned

- What were the key barriers to implementation?
- What unintended effects (positive or negative) were observed?

3. Findings and analysis

3.1 Project implementation

The Baby Bundle Pilot Project commenced in July 2024. The first phase of the project involved the selection of appropriate sites in four provinces: Manus, Western, West New Britain and New Ireland Provinces. Advice from Professor Mola was sought to guide in site selection and modified with input from local ADI provincial teams and Provincial Health Authorities (PHA). The timeframe for initiation and completion of the project was short and influenced the selection of sites.

ADI provincial teams and PHA representatives participated in discussions & planning prior to the final selection of health facilities. The proposed health facilities were consulted during the process.

The contents of the baby bundle were developed in collaboration with ADI teams and PHAs, with some slight variation between the provinces. All items were sourced from local businesses. Included in each ‘baby bundle’ were items needed to care for the women & their babies in the first weeks following birth. (See Appendix 1 for list of items).

Based on observations and feedback received from initial visits to the facilities, some variations to the project were made throughout the pilot period (See 3.1.1 Project Variations).

Registry forms (Appendix 2) were developed to record the number of bundles given at each site which could be checked against the facility birth register. Analysis of the forms allowed before and after comparisons with the number of births & assess any increase.

A feedback, survey form (Appendix 3) was also developed & women were asked to complete it on the receipt of the bundle. Staff or family assisted women with literacy limitations to complete these forms. Consent was gained for photos of the women, babies & families who received a bundle.

A health worker practices neonatal resuscitation techniques during a training session at Manga, New Ireland

Due to the limited time in which to initiate and launch the pilot project some consideration was given to the accessibility of health facilities to ensure delivery of baby bundles & follow up by the ADI provincial teams. ADI and PHA staff visited each site to deliver the bundles & launch the project. At this visit, instruction was provided to facility staff on the purpose of the project, how to complete the forms, the importance of secure storage of the bundles, who should receive the bundles & communicating with ADI.

Education sessions based on staff requests & identified knowledge gaps were conducted at each site. Across all sites in the 4 provinces, more than 200 attendees received training on a variety of topics related to maternal & newborn care & gender, equality, disability & social inclusion principles (Note: health workers may have attended more than one training session).

3.1.1 Project variations

Food bundles

In similar incentive projects implemented in PNG, it was noted that there are many reasons why women do not present to a health facility for care – one of them being having no food or means of purchasing food, to sustain them during their stay at a facility before and after birth. On advice from Professor Mola, food bundles were provided to select health facilities so women could be offered refreshment following labour and birth. This was only implemented in select facilities where it was identified as a barrier for mothers, and appropriate storage and management was possible at the facility. In New Ireland for example – it was noted by the health facility staff that food availability was not an issue and requested that this not be included with the baby bundles.

Still birth bundles

During the first few weeks of implementation discussions were raised on when stillbirths occur at a facility. A separate bundle, containing appropriate items for mothers only, was developed and distributed. Three stillbirth bundles each, were initially given to each health facility to distribute when appropriate. The decision to include this separate bundle was because the women had made every effort to have a safe, supervised birth at the health facility, despite the outcome.

3.2 Health outcomes and impact

The Baby Bundle Pilot Project aimed to increase supervised deliveries, improve maternal and neonatal health outcomes, and enhance the quality of care at rural and under-resourced health facilities in Papua New Guinea. Analysis of both quantitative and qualitative data collected during implementation suggests that the project successfully met several of its key objectives and offers strong potential for scale-up and sustainability.

3.2.1. Supervised Deliveries and Service Uptake

A total of 575 mothers attended health facilities for supervised deliveries and received baby bundles across all four provinces. Of the 12 health facilities (HFs) participating:

- 9 HFs recorded an increase in supervised deliveries.
  - 5 facilities saw increases over 50%, ranging between 67% and 204%.
  - 4 facilities recorded increases below 50%.
- 3 HFs experienced a decline in supervised deliveries. However, these sites had significantly higher birth attendance averages prior to project implementation, suggesting a saturation point had been reached or that demand had already plateaued.

Table 1. Number of births per month pre/post pilot period

Location of facility	Pre-pilot data	Implementation Period Data		Post-pilot data	Increase (#)	Increase (%) (Green = HFs with >50% increase)
	Average BPM 6m prior	Total Months	Baby Bundle to Mothers	Average BPM post-BB pilot		
Manus						
Bundralis	3.1	5	23	4.6	1.5	48%
Panuselu	2.5	5	16	3.2	0.7	28%
Pelipowai	2.5	2.5	19	7.6	5.1	204%
New Ireland						
Bol	11.6	4.75	56	11.7	0.1	0.8%
Kabanut	4.3	3	29	9.6	5.3	123%
Manga	3.3	4.5	34	7.5	4.25	128%
West New Britain						
Buvussi	14.1	4.5	117	26	11.9	84%
Malalia	11	4.25	55	12.9	1.9	17%
Valoka	29.6	3.9	108	27	-2.6	-8%
Western Province						
Dome	1.5	4	10	2.5	1	67%
Matkomnai	9	5.75	45	7.8	-1.2	-13%
Rumginae	12	5.75	63	10.9	-1.1	-9%

This trend underscores the greatest impact being achieved in underperforming, rural facilities, aligning with the project's core aim of increasing safe deliveries in hard-to-reach areas.

3.2.2 Health Worker Capacity and Clinical Outcomes

A total of 215 health worker attendees participated in maternal and neonatal training across all sites – this includes health workers that may have attended a training session more than once:

Table 2. Summary of training provided

Province	# of health worker attendees	Hours of training
Manus	13	6.2 hours
New Ireland	7	5.7 hours
West New Britain	50	10 hours
Western Province	145	19 hours
Total	**215 attendees**	**40.9 hours**

Training covered over 20 clinical topics, including postpartum haemorrhage, neonatal resuscitation, respectful maternity care, emergency obstetric techniques (e.g. NASG, breech deliveries, cord management), and family planning. CHWs reported using their new knowledge in 10 life-threatening cases, demonstrating immediate, life-saving applications of the training.

Additionally, 95% of surveyed mothers reported feeling respected and cared for during their delivery experience, underscoring the positive impact of both technical and interpersonal training components (Figure 1.)

The integration training in essential maternal and neonatal care skills measurably enhanced frontline staff's ability to manage complex cases, contributing to improved patient experiences and saving lives. As demonstrated in the next section, the absence of this training yields much different results. The diverse and practical training empowered frontline workers with both technical and interpersonal competencies. This likely contributed to higher satisfaction among mothers and better emergency care outcomes.

Figure 1. Survey feedback received from mothers on the care received at the facility

3.2.3 Maternal and Neonatal Mortality

- 0 maternal deaths were reported during the implementation period.
- 3 neonatal deaths occurred, all in New Ireland Province:
    - Two occurred at Kabanut and one at Bol – both facilities where training of the project was delayed or limited. Notably, Manga, which received full training at project started, reported no neonatal deaths. In New Ireland, although training opportunities through this project were limited compared with health facilities in other provinces, there is not enough evidence to suggest that lack of training can be attributed to these neonatal deaths.
- Across all provinces 8 stillbirths were recorded, five of these were reportedly linked to domestic violence, revealing Gender-Based Violence (GBV) as a key determinant of poor maternal and neonatal outcomes.

Addressing GBV through male engagement and community education must be a central strategy in maternal health interventions moving forward.

Additionally, the absence of obstetric death and still born reporting in eNHIS data also suggests significant underreporting and reinforces the need for improved mortality surveillance.

3.2.4. Facility Equipment and Infrastructure Enhancements

Participating health facilities also received equipment tailored to their needs to support the delivery of maternal and neonatal care. This was also dependent on the supply and logistics available to provide these items during the short pilot period.

Equipment ranged from delivery beds, birthing kits, blood pressure machines, neonatal resuscitation kits (e.g. upright bag and mask, penguin suckers), infant scales and obstetrics registers. Training was provided to health workers on the use of this equipment.

Solar lights were installed in the maternity ward of Panuselu HC, Manus

Additionally, four facilities received infrastructure improvements – this included:

- Solar lighting, WASH facilities, and cold chain repairs were installed at targeted sites.
- At Malalia HC in West New Britain Province, the Baby Bundle project directly motivated administrators to repair a broken water pump (non-functional for 3 years), leading to the installation of two new running water basins in the labour ward.

These improvements increased both the functionality and safety of the facilities and fostered ownership at the community level, illustrating how incentive programs can spur self-led, sustainable change.

3.2.5. Additional Services Delivered During Supervised Deliveries

Attendance at facilities also increased access to a broader set of essential services:

- 239 mothers (43%) received family planning services. While promising, the uptake suggests room for improvement, potentially through community sensitisation on postnatal contraceptive options.
- 100% of mothers received family planning counselling post-delivery.
- 475 newborns (83%) received full birth doses of immunisations. Although this reflects strong uptake, follow-up is needed to understand reasons behind the remaining 17% - for example, if this is due to vaccine hesitancy, limited health awareness on vaccine or vaccine supply availability and storage at the health facility.
- 85% of mothers accessed additional care:
    - HIV testing: 43%
    - STI testing: 35%
    - Malaria RDT: 42%
- 50 mothers participated in education sessions covering respectful care, early neonatal care, and gender equality.

The Baby Bundle project acted as an entry point to comprehensive postnatal care, including preventive health services that enhance long-term family health outcomes. These findings show that supervised delivery creates a critical window to provide essential preventive and educational services that can improve health outcomes far beyond the point of birth.

3.2.6. Behaviour Change and Community Demand

The project saw evidence of behaviour change and increased demand:

- 98% of mothers said they would recommend the health facility to others (Figure 2)
- 52% of mothers were first-time users of the facility.
- 35% were first-time mothers, indicating early intervention success.

Additionally, 785 community members participated in 33.5 hours of awareness sessions, covering topics such as antenatal care, supervised birth, family planning, GBV, TB, and nutrition.

These indicators demonstrate a significant shift in health-seeking behaviour and trust in health systems, amplified by community outreach and word-of-mouth. They also highlight how word-of-mouth and community sessions played a key role in building demand, trust, and knowledge, factors crucial for long-term impact and scale-up.

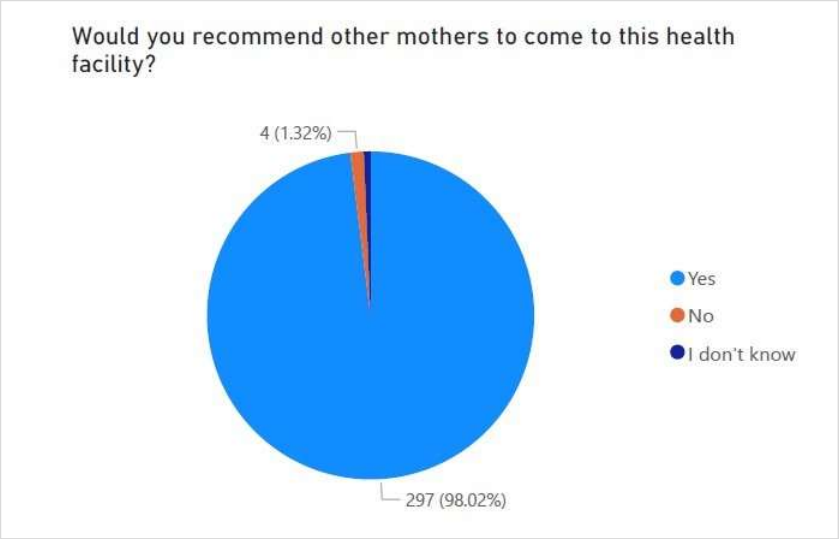

Figure 2. Feedback received from mothers' surveys on whether they would recommend the health facility to others

3.2.7. Cost-Effectiveness of the Baby Bundle Intervention

Table 3. Cost per supervised delivery, by province

Province	Cost per supervised delivery
Manus	PGK 147 / AUD $55
New Ireland	PGK 214 / AUD $81
West New Britain	PGK 162 / AUD $61
Western Province	PGK 179 / AUD $67

The cost per supervised delivery varied by province, influenced by factors such as geographical accessibility, availability of items, transportation, storage logistics, and scale of implementation. These figures demonstrate that the incentive model is relatively low-cost and feasible, even in remote settings. With most provinces achieving costs below AUD $70 per delivery, the intervention appears to be cost-effective compared to the potential healthcare costs of managing birth complications and maternal/neonatal mortality that are prevalent in village births.

3.2.8. Resource Utilisation

The project demonstrated efficient use of financial and human resources by:

- Leveraging existing health infrastructure and integrating with national systems (e.g. eNHIS).
- Distributing baby bundles based on facility needs and birth volume.
- Aligning training efforts with frontline priorities and data (e.g., managing PPH, neonatal resuscitation).
- Encouraging self-led facility improvements (e.g. water pump repairs at Malalia Health Centre), multiplying impact without additional budget.

The integration of bundle distribution with existing systems, targeted training, and community outreach maximised impact per dollar spent, illustrating efficient design and delivery even in settings with limited infrastructure.

Bundles packed by ADI and partner staff prior to distribution

3.2.9. Likelihood of Project Continuation

There is strong support for continuation of the Baby Bundle project:

100% of stakeholders interviewed expressed support for the program's continuation.

This endorsement indicates not only satisfaction with the project's immediate results but also a shared belief in its long-term value and viability.

Health workers widely reported that the program increased maternal attendance and improved the health-seeking behaviour of communities. However, 100% of CHWs surveyed noted increased pressure on already strained systems, citing staff shortages and lack of equipment to meet the growing demand. Health workers also reported difficulty with monitoring and reporting, suggesting a need for simplified or digitised tools and more M&E training. While community support is high, workload management and administrative capacity need strengthening for long-term sustainability.

3.3 Alignment with Project Goals

The Baby Bundle Pilot Project:

- Met its target of >50% increase in supervised deliveries at a majority of sites.
- Improved clinical quality through staff training and resource provision.
- Expanded access to maternal and neonatal services, including family planning and immunisation.
- Fostered community ownership and behaviour change, particularly in remote areas.
- Highlighted new areas for future work, such as male engagement, postnatal contraception access, GBV prevention, and improved maternal and neonatal death reporting systems.

The Baby Bundle project contributed to measurable improvements in maternal and newborn health outcomes and demonstrated its value as an integrated, community-sensitive approach to strengthening rural health systems. These early outcomes justify continued investment and offer clear direction for scale-up and refinement.

3.4 Project Impact

The Baby Bundle pilot produced meaningful early outcomes. These outcomes strongly support continued investment and strategic scale-up of the intervention. This project not only increased supervised deliveries and improved health worker skills but also expanded access to critical postnatal services, shifted community norms, and strengthened facility systems. While it is too early to determine definitive impact, the strong uptake of family planning and immunisation services indicates potential for long-term health and economic benefits at the family and community level.

Overall, the project's early success justifies further investment, with targeted improvements in CHW training delivery, GBV prevention, and postnatal care service expansion to amplify its already significant impact.

Table 4. Summary of project impact

Health Outcomes	Observed Impact
Maternal mortality	0 deaths reported
Neonatal outcomes	3 neonatal deaths; 7 stillbirths (linked to GBV)
Skilled Birth attendance	546 supervised deliveries; increase at 9/12 sites; >50% increase at 5/12 sites
Health Worker capacity	215 health worker attendees received training in essential maternal health and neonatal care; life-saving interventions documented
Behaviour change	98% of mothers surveyed would refer others; 52% were first-time health facility users for birth
Health system	Equipment and infrastructure upgraded; local initiative sparked
Community demand	785 community members reached through 33.5 hours of outreach
Preventive services	High family planning counselling, immunisation and disease screening update

3.5. Challenges and lessons learned

3.5.1. Challenges

Throughout the Baby Bundle Pilot Project, several challenges emerged, impacting communication, data quality, project delivery, and health outcomes:

- **Communication with health facilities:** Many remote health facilities had limited or no network connectivity, making real-time communication, resupply requests, and troubleshooting difficult. Additionally, staffing shortages at some facilities further limited consistent communication and reporting.
- **Data collection and reporting accuracy:** Health worker administrative skills varied, leading to inconsistent, incomplete, or delayed reporting into both project-specific forms and the national eNHIS system. Many reports were filled retrospectively, resulting in missing or inaccurate data. This highlighted a strong need for M&E training at project onset.
- **Accessibility of health facilities:** Mothers often faced significant challenges accessing facilities, long walks along muddy roads, river crossings, and reliance on boat transport were common barriers. Mothers and health workers alike highlighted the urgent need for transportation support to enable timely access to supervised delivery services.
- **Weather-related delays:** Seasonal rains and adverse weather frequently delayed site visits, supply distribution, and bundle restocking, further complicating project timelines and monitoring efforts.
- **Resource limitations at health facilities:** Many health facilities were understaffed and under-resourced, and the increase in facility deliveries strained the already limited workforce. Facilities often lacked wait houses for expectant mothers and had limited

beds, forcing women to arrive during active labour and leave soon after delivery, limiting the quality of postnatal care.

- **Training gaps:** Delays in conducting maternal and neonatal health training at specific sites (e.g., Kabanut HF).
- **Lack of initial community awareness:** Early project implementation showed slower uptake in areas where community education and awareness activities had not yet been conducted. This delayed behaviour change and service uptake at some sites.
- **Social determinants of health (GBV):** Several stillbirths were linked to domestic violence. This illustrates that medical interventions alone are insufficient without addressing broader societal issues like GBV and the inclusion of fathers and male partners in maternal health education and support.

3.5.2. Lessons Learned

Several important lessons emerged from the Baby Bundle Pilot Project, providing valuable insights for future design and scale-up:

- **Greatest impact in hard-to-reach areas:** Facilities with historically low service uptake experienced the largest improvements, confirming that targeting rural and underperforming health facilities is highly effective.
- **Training at project onset is essential:** Immediate delivery of comprehensive clinical training (including EMNC) is crucial. Facilities that received early training reported better outcomes and fewer complications.
- **M&E Planning and training:** Simple, user-friendly M&E tools, introduced alongside training in data collection and reporting, would improve the reliability and timeliness of future reporting efforts.
- **Scope and bundle items:** Reducing the size and cost of baby bundles while maintaining their perceived value would make the intervention more financially sustainable without compromising impact.
- **Facility development should complement incentives:** Infrastructure improvements (such as installing lighting, water supply upgrades, building wait houses) should be integrated alongside incentive distribution to maximize health outcomes.
- **Focus on fewer facilities for greater impact:** Working with a smaller number of health facilities would allow deeper investment in infrastructure, staffing support, training, and wait house construction, adopting a more holistic health system strengthening approach.
- **Flexibility and responsiveness in program design:** The mid-project addition of stillbirth bundles and food bundles demonstrated the value of responsive program design, adapting to real community needs to maintain trust and relevance.
- **Community-led change and word-of-mouth:** Community engagement through education sessions and mother-to-mother referrals was a powerful driver of project success. Empowering communities to lead information sharing ensures long-term sustainability.

- **Importance of addressing GBV and involving fathers:** Future iterations should consider integrating GBV prevention efforts and design strategies to involve fathers and male partners in antenatal, delivery, and postnatal care processes to address underlying social barriers to maternal and neonatal health.

4. Stakeholder Feedback

Feedback and input from various stakeholders were gathered throughout the Baby Bundle Pilot Project using a mix of methods, including anonymous surveys with mothers, informal interviews and surveys with health workers, discussions with PHA and faith-based provider staff, and interviews with ADI project staff. Stakeholder voices provided valuable insight into the project's effectiveness, challenges, and areas for future improvement.

4.1 Feedback from mothers

Anonymous surveys collected from mothers receiving baby bundles provided important perspectives:

- **Gratitude for the Baby Bundles:** Many mothers expressed deep appreciation for the bundles received, particularly those who were unprepared for their deliveries. Several mothers highlighted that the bundles enabled them to properly clothe and care for their newborns immediately after birth.
- **Behaviour changes towards supervised births:** Mothers shared that without the incentive; they might have delivered at home. Receiving a baby bundle and food bundle, in addition to the support and care received at the facility led to positive views of supervised births, encouraging them to seek supervised delivery.

A mother receives a bundle at Rumganie, Western Province

- **Word-of-mouth influence:** Mothers overwhelmingly expressed their desire to tell other women about the project, suggesting that community-driven promotion could further increase facility-based deliveries over time.
- **Positive health outcomes:** Some mothers reported that they experienced birth complications that were effectively managed by trained staff, reinforcing their trust in the health facility system and the importance of skilled birth attendance.
- **Additional benefits:** One mother noted she had planned on having a home delivery because of the shame associated with her personal circumstances and expressed gratitude that the baby bundle project incentivised her to come into the health facility. This added support reduced levels of shame she felt around her pregnancy and birth, indicating that supervised deliveries and the support of skilled CHWs provide additional benefits, including positive mental health outcomes.
- **Most useful baby bundle items:** Mothers noted the most useful baby bundle items included baby dish (bath); baby blanket; mothers' pants (underwear); sanitary pads; towels; lap lap; umbrella. Other items that were requested included baby wipes, baby

oil, torch/lamp and mosquito nets. This suggests that the most valued items are those which support the mother's recovery and ongoing functioning of the house as well as a few baby essentials.

> *"As a single mother, I am more than happy to receive the baby bundle. I was not prepared for my unborn baby due to personal reasons. I was fortunate because of the bundle I was able to fully cloth my baby after delivery, and avoid myself to deliver at home because of shame." New Ireland*
>
> *"Happy to receive the baby bundle as I was not prepared for my unborn baby and to deliver at the facility because my complication was managed well by a trained nurse." New Ireland*
>
> *"Happy for the project to continue next year. I am thinking of my relatives to receive the bundle next year for their delivery." WNB*

Supervised delivery, coupled with the bundle, strengthened the relationship between health facilities and the community, improved maternal mental wellbeing, and motivated further community uptake through positive word-of-mouth.

4.2 Health Worker Feedback

Surveys and informal interviews with health facility-based CHWs provided operational feedback:

- 100% of CHWs said the Baby Bundle project was a positive addition to their facility.
- Increase in service delivery:
  - 100% of CHWs commented the bundles encouraged more mothers, including from remote communities, to give birth at the facility, based on their observations.
  - 60% of CHWs observed an increase in antenatal care attendance, suggesting that incentives could be extended to antenatal check-ups.
- Family Planning and male involvement: 100% of CHWs reported increased opportunities for family planning services and noted a rise in father attendance at antenatal clinics.
- Operational Challenges:
  - All CHWs acknowledged the project increased their workload in facilities already understaffed and under-resourced.
  - Monitoring and reporting were cited as major challenges, with CHWs struggling to meet data recording expectations amid clinical duties.
- Reduced Village Births: All health workers anecdotally reported fewer home births, an indicator of success.

> "The BB project has encouraged more mothers to visit the health facility for supervised delivery. This has also decreased the number of village births. The project should continue as it increases the health facility's coverage and establishes trust and confidence between the health facility and the community. A lot of mothers who received the gifts were very thankful for the initiative." Valoka
>
> "This project also helped the health staff professionally in gaining some new skill in Emergency Maternal and Neonatal Care, which apply the upskilling teachings, and I particularly learnt alot in how to apply NASG to Post partum haemorrhage mother." Bol

The Baby Bundle project successfully shifted behaviour towards facility-based births but placed additional strain on facility resources, emphasizing the need for future investment in staffing, equipment, and simplified reporting systems.

4.3 Partner Staff Feedback (PHA and Faith-Based Providers)

Feedback from PHA and faith-based health provider staff highlighted both successes and structural challenges:

- Positive Community Impact:
  Partner staff recognised the project as building trust between health facilities and the community.
- Challenges Identified:
  - M&E challenges persisted across facilities.
  - Storage constraints at HFs and transportation barriers for mothers were common.
  - Staff recommended improving facility selection criteria by considering staff attitude, population size, security, and previous family planning program exposure.
- Recommendations:
  - Provide better induction for facility staff at project onset.
  - Expand father involvement initiatives.
  - Encourage community co-investment in improving health facilities (e.g., building wait houses, securing clean water).

"There was increased awareness and attendance where mothers who received baby bundles shared the news, which lead to more mothers coming to the health facility for deliveries. I also noticed that the Baby bundle also attracted mothers from outside the health facility catchment area, heard about the Baby Bundle and came to deliver at the health facility."

"During the distribution, I also conducted some Emergency Maternal and Neonatal Care (EMNC) training for Kabanut health staff, and I realized that rural staff, including new graduates, were not up to date with the current evidence-based practices. This highlighted the need for ongoing training to upskill rural health workers. My involvement with Australian Doctors International (ADI) provided an opportunity to teach these essential skills during the baby bundle to the staff at Kabanut Health facility and I am very thankful to have that opportunity to pass on that knowledge."

Partner staff emphasized that future project success relies on better preparation, better facility resourcing, and deeper community integration.

4.4 ADI Project Staff Feedback

ADI field staff echoed the broader stakeholder themes:

- 100% of ADI staff agreed that the Baby Bundle project had a positive effect on maternal and newborn health and should be continued.
- Key Observations:
  - M&E difficulties and inconsistent data quality were recurring challenges.
  - Staff recommended reducing the bundle size and cost while maintaining value to improve sustainability.

    - Staff advocated for fewer facilities with deeper investment per site—focusing on infrastructure improvements like solar lighting, running water, and wait house construction.
    - Greater integration of GESI (Gender Equality and Social Inclusion) efforts and the introduction of father-focused incentives were strongly recommended.
- Staff suggested engaging communities to improve facility infrastructure and build waiting houses to make facilities more welcoming and functional for mothers and families.

Staff feedback underlines the importance of scaling smartly, working with fewer facilities to deliver deeper impact, integrating gender-based strategies, and strengthening health system infrastructure for sustainability.

Stakeholder feedback was overwhelmingly positive, affirming that the Baby Bundle project increased supervised deliveries, built trust in the health system, improved maternal health service quality, and strengthened community engagement.

At the same time, stakeholders clearly identified areas for future focus:

- Better facility resourcing and staffing to meet growing demand.
- Simplified and strengthened monitoring and reporting systems.
- More focused facility selection with deeper investment per site.
- Enhanced male involvement and GBV prevention initiatives.
- Community ownership in health facility improvements to build sustainable systems.

Stakeholders unanimously support the continuation and refinement of the Baby Bundle project, seeing it as a highly impactful initiative that is well-positioned for expansion and sustainability with targeted improvements.

5. Limitations

While this evaluation provides valuable insights into the effectiveness and early impact of the Baby Bundle Pilot Project, several limitations should be acknowledged. These primarily relate to data quality, monitoring capacity, and systemic constraints within PNG's health information infrastructure. These factors affected the scope, consistency, and interpretability of findings across the pilot sites.

- **Incomplete reporting in Q1 2025**: At the time of analysis, data from Q1 2025 remained incomplete. Health facilities submitted reports at different times, with some uploading data for one or two months, and others submitting none. This variability reduced the ability to assess the project's longer-term effects and limited the strength of any trend analysis beyond Q4 2024. As such, Q1 2025 findings are treated as preliminary, and any conclusions drawn from this period should be interpreted with caution.
- **Limitations of electronic National Health Information System:** There are often inconsistencies with the data uploaded to the eNHIS, which presented a major analytical challenge for this evaluation. Facility-level discrepancies between eNHIS

records and Baby Bundle project reports were common, with some facilities reporting more or fewer births than the number of baby bundles distributed. This may be due to late or retrospective data entry, limited digital literacy, or simple time constraints among health workers. Moreover, cause-of-death data was frequently missing or incomplete, as PNG's civil registration systems remain underdeveloped, and health facilities account for only a portion of recorded deaths.

    - The underreporting of maternal deaths was especially concerning. Despite PNG having one of the highest maternal mortality rates in the Pacific region, several participating facilities reported zero maternal deaths, which likely reflects gaps in documentation rather than true absence. These data quality issues make it difficult to directly attribute observed changes in maternal and neonatal mortality to the project.

- **M&E capacity limitations**: A lack of standardised M&E training at the project's outset affected data consistency across sites. Many CHWs had limited experience in routine reporting and data handling. Coupled with high clinical workloads and staffing shortages, this resulted in retrospective or incomplete data entries in both project-specific forms and the national system. Tools such as the Baby Bundle Registry Form, while well-designed, were not always used consistently, especially during peak periods or in under-resourced facilities.
- **Bias in self-reported outcomes**: There is also the potential for reporting bias. Health workers may have felt pressure to report positive outcomes or avoid disclosing adverse events, particularly in cases where community trust and project continuity were seen as dependent on strong performance. This could have led to the underreporting of negative outcomes or overstatement of impact, especially in areas without external validation or supervisory visits.
- **Inadequate mortality data and information**: While no maternal deaths were reported at project sites, this finding must be viewed in context. Obstetric deaths and stillbirths were not consistently recorded in e-NHIS or project forms, and PNG's broader health data landscape makes it difficult to confirm whether this reflects reality or reporting gaps. The inability to reliably assess cause-specific mortality remains a critical limitation.
- **Short implementation timeframe**: The pilot's relatively short implementation period was another limiting factor. Although early gains were evident, the compressed timeframe restricted the ability to assess:
    - Sustained behavioural changes (e.g., long-term uptake of supervised deliveries or antenatal care),
    - The project's full effect on maternal and neonatal mortality, and
    - The long-term integration of improved practices into health facility workflows.

The Baby Bundle Project generated valuable early insights, but its evaluation was constrained by data system weaknesses, limited M&E capacity, and a short project window. These challenges reinforce the need for longer implementation timelines, dedicated M&E support and training, stronger facility-level supervision, and more robust health information infrastructure to accurately measure future impact.

6. Recommendations

Based on the findings of the Baby Bundle Pilot Project, several program improvements are recommended to enhance the project's impact, ensure sustainability, and better align with the needs of mothers, health workers, and the broader health system. These recommendations are organised into seven thematic areas, reflecting key domains of project implementation and stakeholder feedback.

i. Strengthen Monitoring and Evaluation

To ensure that the program's impact is accurately measured and continuously improved, future iterations should invest in strengthened monitoring and evaluation systems from the outset. This includes:

- Providing M&E training for all facility staff, not just CHWs, to improve consistency in data collection and reporting.
- Conducting routine data checks and supervision visits to identify inconsistencies early and support staff with corrections.

In addition, revising the mother's survey is essential to capture more actionable data. The tool should be expanded to include:

- Her motivations for choosing facility-based delivery,
- How she first heard about the Baby Bundle project, and
- Whether the bundle will influence future decisions to seek supervised deliveries

ii. Deepen facility-level investment and reduce scope of bundles

Future phases of the program should shift from broad coverage to focused investment. Limiting implementation to one or two health facilities per province would allow for deeper engagement and resource allocation, enabling more meaningful and measurable improvements. With a narrower focus, the project can support:

- Intensive infrastructure upgrades, including the construction or repair of wait houses, installation of solar lighting, and installation or restoration of water supply systems.
- Ongoing capacity building for all facility staff.
- More robust and consistent supervision and support visits from implementing partners.

This approach recognises that improved maternal health outcomes depend not only on incentives but also on the readiness and resilience of the health facilities themselves.

iii. Adjust bundle for sustainability

While mothers expressed appreciation for the baby bundles, future iterations could consider reducing the size and cost of the packages to improve cost-efficiency and long-term sustainability. At the same time, bundles should retain the most valued items, as identified by mothers, such as baby blankets, baby baths, sanitary pads, lap laps, towels, and mothers'

underwear, with the addition of commonly requested items such as baby oil, baby wipes, torch/lamp, and mosquito nets and

Additional adaptations could include:

- Continuation of stillbirth bundles, to acknowledge and support women who experience loss during supervised delivery.
- Continuation of food bundles, where appropriate and feasible, to address nutrition-related barriers and support postpartum recovery.
- Incentives for women to attend all antenatal checkups
- Transportation support for those most in need

iv. Integrate Gender and Social Inclusion

The project should be adapted to include strategies that actively involve fathers and address gender-based barriers to maternal health. Suggested actions include:

- Introducing couple incentives and father-focused education sessions.
- Delivering community-based GBV awareness campaigns and integrating GBV screening tools into routine care.
- Partnering with community leaders and men's groups to promote shared responsibility for pregnancy, birth, and postpartum care.

These efforts are especially critical given the observed link between gender-based violence and poor neonatal outcomes in several project sites.

v. Expand preventive health services and education

To maximise the value of each mother's contact with the health system, baby bundle distribution should expand its wider set of preventive health services to include information sessions delivered to mothers, covering topics such as:

- Recognising danger signs in pregnancy and postpartum,
- The benefits of skilled birth attendance,
- Infant nutrition and early newborn care,
- Birth spacing and family planning.

Community-based education not only improves health literacy but also reinforces behavioural change beyond the life of the project.

vi. Improve project planning and facility selection

Refinements to the site selection process are essential to ensure future success. Criteria should go beyond basic infrastructure and include:

- Facility population coverage and demand,
- Staff attitudes and readiness to participate,

- Existing relationships with PHA or faith-based providers,
- Past performance on maternal health initiatives.

Each selected facility should receive a comprehensive project induction, including training on project objectives, roles, tools, communication protocols, and accountability measures before the project commences.

vii. Build sustainability through partnership and co-investment

Long-term success requires stronger partnerships with PHAs, faith-based providers, and communities. Future efforts should explore co-investment models where communities contribute labour, materials, or oversight to infrastructure improvements, such as wait house construction or connecting facilities to clean water. Building shared ownership will ensure that improvements are maintained beyond the project timeline and create a more resilient, locally led approach to maternal health system strengthening.

The Baby Bundle Project has shown that even small incentives can lead to significant increases in supervised deliveries and access to essential services. However, future success depends on more than just the bundle. Stronger health systems, targeted facility investment, family involvement, transport support, and better data collection are critical to turning early gains into lasting change. These recommendations aim to ensure that the next phase of the project is not only impactful but also sustainable and community driven.

7. Conclusion

The Baby Bundle Pilot Project has demonstrated that a relatively simple, community-based intervention, providing essential baby bundles to mothers delivering at health facilities, can have a significant and measurable impact on maternal and newborn health outcomes in rural PNG.

Despite operating within a short implementation timeframe and under challenging logistical conditions, the project succeeded in increasing supervised deliveries, particularly at previously underperforming and remote health facilities. It also strengthened health worker capacity, improved access to essential postnatal services such as immunisations and family planning and built trust between communities and health systems. The project's effect extended beyond the immediate health service interaction, with many mothers reporting positive emotional and social outcomes, including increased confidence, reduced shame, and motivation to share their experiences with others, creating a ripple effect through word-of-mouth referrals.

Key success factors included the visible, tangible nature of the incentive; the respectful care delivered by trained staff; and the role of health promotion activities in raising community awareness. At the same time, the project revealed critical areas for improvement, particularly in data collection and reporting, facility infrastructure, and broader barriers such as transport and gender-based violence.

These findings reinforce that while incentives like the Baby Bundle can act as a catalyst, sustainable change depends on investing in the wider system: trained and supported health workers, functional and welcoming facilities, community involvement, and access to preventive and educational services throughout pregnancy and beyond.

The pilot has laid a strong foundation and presents a scalable, adaptable model for future maternal health interventions. With targeted improvements, deeper investment in fewer sites, and a stronger emphasis on gender and social inclusion, the Baby Bundle project has the potential to contribute meaningfully to reducing maternal and neonatal mortality in PNG and advancing equity in health access for women in remote communities.

Baby Bundles carried by ADI and partner staff in rural Western Province

Appendix

Appendix 1

Baby Bundle Items

Items	
1.Baby bath	11. Soap
2. Baby blanket	12. Toilet paper
3. Cloth Nappies	13. Baby hat/cap
4. Sanitary pads	13. Baby health book
5. Mothers pants	14. Baby powder
6. Lap lap/sarong x 2	15. Umbrella
7. Towels x 2(cotton)	16. Thongs
8. Baby singlet x 2	17.Queen Pads
9. Baby pants x 2	18. Bed sheet
10. Safety pins	

Appendix 2. Baby Bundle Registry Form

Baby Bundle Registry

Please record the details of mothers receiving baby bundle below. All births to also be entered into eNHIS as per usual process.

Province: _____ District Name: _____ Catchment Area: _____

Health Facility Name: _____ Health Facility Type: Health Centre /Health Sub-Centre /Aid Post

#	Date (DD/MM/YY)	Age of Mother	Parity	Mother's Village	Mother's Catchment Area	Does this mother identify as having a disability? (Y/N)	Is this the mother's first-time giving birth at the facility? (Y/N)	# of baby bundles gifted to mother	Has this mother received a food bundle? (Y/N)	Postnatal family planning received? (Y/N)	Was the baby born with a disability? (Y/N)	Has the baby received birth doses of immunisation? (Y/N)	Initials of health worker attending to mother/ birth

Appendix 3. Mothers Baby Bundle Survey

adi australian doctors international

Health Facility Name: _____ Patient #_____

ADI would like to hear about your experience giving birth at this facility and receiving the Baby Bundle. This survey is voluntary and will be kept anonymous.

1. **Was this your first time delivering at any health facility?**
   ☐ YES ☐ NO

2. **How was your experience with this facility?**

   ☐ VERY GOOD ☐ GOOD ☐ FINE ☐ NOT GOOD ☐ BAD

3. **Have you attended this facility before for an antenatal check?**
   ☐ YES - If yes, how many visits have you attended?: ☐ 1 ☐ 2 ☐ 3 ☐ 4
   ☐ NO

4. **Did you receive any other health services at this facility?**
   ☐ YES - If yes, what services did you receive?
   ○ Family planning ○ HIV testing ○ STI testing ○ Immunisations for baby
   ○ Malaria RDT Other:_____
   ☐ NO

5. **Did you feel respected and cared for at this health facility?**
   ☐ YES ☐ NO ☐ I DON'T KNOW

6. **Would you recommend other mothers to come to this facility?**
   ☐ YES ☐ NO ☐ I DON'T KNOW

7. **Are the items in this baby bundle useful for you as a mother?**
   ☐ VERY USEFUL ☐ USEFUL ☐ NOT VERY USEFUL

8. **Are the items in this baby bundle useful for you to take care of your baby?**
   ☐ VERY USEFUL ☐ USEFUL ☐ NOT VERY USEFUL

9. **As a mother, what are the 3 most useful items for you in the bundle?**
   1. 2.
   3.

10. **What are some of the items you need for the baby that are not included in the baby bundle given now?**

11. **Any other comments or feedback?**