

Maternity Waiting Homes in Papua New Guinea: A Grassroots Solution to A Health Service Delivery Problem?: Literature review.

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Introduction: Paigatasa is a remote subsistence farming community in the Eastern Highlands of Papua New Guinea (PNG). The author has been involved with community efforts to improve health since 2008 (1). In 2010, a survey of perinatal maternal and infant mortality was conducted at the community's request, using a DHS-validated questionnaire (2) through local Fore interpreters with 200 reproductive-aged women (3). The survey found a high neonatal mortality rate of 48/1,000 live births, infant mortality rate of 117/1,000 live births, and 10 sister maternal deaths (1 in 31 sisters; 4). 64% of women surveyed gave birth at home without skilled attendance (3).

Service Delivery Issue: A community obstetric emergency can result in death, as medical evacuation is unavailable and Paigatasa's nearest maternity services are a day's travel by foot and vehicle. In 2010, no district facility offered basic emergency obstetric and neonatal care (EmONC). Goroka Hospital is the sole provincial facility providing comprehensive EmONC (3), but women fear labour starting on route to hospital, and waiting in Goroka to give birth can be prohibitively expensive (3; see Appendix B). The missing health systems building block is *service delivery* (4) – i.e. accessible EmONC (5).

Figure 1.2 The dynamic architecture and interconnectedness of the health system building blocks



Intervention: Paigatasa's situation reflects that of many remote rural communities in PNG and other lower to middle income countries (LMICs). Access to maternity facilities for supervised delivery is an evidence-based SDG target for reducing maternal and neonatal mortality (6). One method of enabling access to safe delivery is the *maternity waiting home* (MWH), a boarding house situated close to a maternity facility for women in late pregnancy from distant communities (7). The PNG Ministerial Taskforce on Maternal Health listed MWHs as a potential solution to this health system access problem:

The role of maternity waiting homes and their effectiveness and acceptability in a range of different PNG cultural and geographic locations may be systematically studied and based on the findings. Guidance on minimum standards for infrastructure, location and management of the facility must be developed (8, p.35).

Study Question: Paigatasa's village committee have requested financial support for land purchase in Goroka to establish an MWH for village women. This paper reviews the literature on MWHs to determine **effectiveness, cost-benefit, acceptability/utilisation factors, sustainability, benefits/opportunities and challenges** of this intervention for Paigatasa community, and for the PNG health system in general, to answer the question: *Could maternity waiting homes be one health system solution to the problem of maternity service access and high maternal and neonatal mortality in PNG?*

Methods: A literature search employed University of Sydney Library database, Google Scholar, and the Health Systems Evidence clearinghouse (9). Search terms included: "maternity waiting home", "Papua New Guinea" and "low to middle income countries". Recent, relevant papers were selected for review. Colleagues in PNG were also contacted about current MWH facilities. Scarce research on PNG, but several studies from other LMICs, discussed MWHs, in addition to three systematic reviews, an overview and a WHO technical document (10).

Summary of Findings: MWH research was described in LMIC settings as diverse as Sub-Saharan Africa, South-East Asia and Central/South America. No published articles were found on PNG MWHs. However, two MWHs were identified, one in the Eastern Highlands, Barola Haus Mama, run by a community group with NGO support (11). This MWH is located near Henganofi town, and also offers delivery services and VHV training; no information was available on maternity outcomes. An MWH established in Milne Bay Province has reportedly assisted in increasing facility-based births and decreasing maternal deaths (12, 13).

In addition, one article surveyed another Eastern Highlands community (Unggai-Bena District) on barriers to accessing supervised facility delivery (14). Authors identified an important local cultural factor of 'blood contamination' not raised during the Paigatasa survey, that both motivated Bena women to seek facility delivery early, but deterred them closer to delivery, affecting the "second stage delay" (7). Description of other aligned cultural practices suggests relevance to Paigatasa women, but further investigation is required.

Effectiveness: No RCTs examining effectiveness of MWHs for reducing maternal/neonatal mortality in remote LMIC communities exist (15, 16, 17). Cohort studies in Ethiopia, Zimbabwe and Liberia indicate that women using MWHs were less likely to experience obstructed labour, stillbirth or perinatal death, and women with pre-existing risk factors had a halved risk of death (18, 19, 20, 21). A large annual increase in facility births was observed in response to an intervention including mother & baby gifts and establishment of an MWH in Milne Bay PNG (13). An East Timor study found that pilot MWHs were well-used by nearby communities, but did not increase remote communities' facility deliveries, due to other barriers including no knowledge of service, no community ANC/referral and high transport costs (22).

Cost-benefit: No studies have assessed cost-benefit of MWHs. A Zambian study assessed MWH users' willingness and ability to pay, and found that fees may prevent women from poor households using the service (23).

Acceptability/Use: *MWH factors* considered to increase use included: low cost/free service (22, 23, 24, 25), provision of transport, food and goods for the birth (13, 14, 15, 20, 24, 25, 26, 27),

state/cleanliness of facility (27), space for families (22), linked health services (24, 26), schemes for waiting mothers such as microcredit/income generation/handicraft training (24, 26),

Person factors considered to increase facility births/MWH use included: knowledge of MWH service (22), social pressure to use the MWH (27), women's education/literacy and household decision-making power (22, 26), fear of blood contamination of household/transport and resultant compensation costs (14), a planned birth or referral (22, 25, 26), belief in high risk of home births, high risk pregnancy, prior difficult labour, or friends who died in childbirth (14, 25, 27), coffee harvest increasing household funds (14), further distance from health facility (26), childcare arrangements (7, 24, 27), acceptance of traditional/cultural practices and common language spoken (15, 24, 28), and ability to rest prior to birth (21).

Sustainability: Literature outlined various models of governance and funding. Authors agree that a lack of sustainable program funding or comprehensive planning results in reduced MWH utilisation (22, 28, 29), and that ongoing regional government, NGO and community involvement in establishment, management, monitoring and funding sustains MWHs (26, 28, 29). Establishment of standard operating procedures, formalising indications for admission, record-keeping, and review of services contribute to sustainable MWHs (7, 10, 20, 26). Waiting women can also make contributions in kind (cleaning, gardening, sale of handicrafts, etc; 24, 28).

Benefits/Opportunities: MWHs can improve women's access to EmONC, and a range of other services including pre-delivery antenatal screening, maternal education, postnatal care including contraception, neonatal checks and immunisations, and vital registration (30), as well as reducing risk of perinatal death. Buser and Lori emphasise that neonates are more likely to benefit from proximity to comprehensive care than their mothers, as evidenced by mortality rates (15).

Provision of an MWH building alone is not enough (22), it must be a community-engaged, culturally appropriate environment with strong support from families and leaders, and funds to cover transport, food and other costs. Community ownership of a town asset is a valuable investment. Depending on demand and uptake, an MWH may also be used by women from surrounding communities, and for other remote community members requiring hospital treatment.

There is scope to complete an integrated research cycle of MWH implementation and evaluation of effectiveness, as baseline maternal and neonatal mortality data for Paigatasa community exists.

Challenges: These include engaging community women not currently accessing antenatal services (22), who prefer to deliver in a traditional way and feel they 'know what to do' (14). The current status of women in PNG can mean decisions about place of delivery and spending household funds are made primarily by other family members (14), and work/childcare responsibilities may be difficult to leave for a period of weeks (24). Barriers such as bad roads, low availability of transport, seasonal flooding, tribal fighting and escort availability may prevent women from accessing an MWH despite a desire to do so (3, 14, 29). Lack of supplies for a hospital delivery, such as nappies and bucket, or a missing antenatal card, may also cause women to feel ashamed and thus avoid facility delivery (13, 14).

The quality of evidence on the effectiveness of MWHs is not strong (7, 22, 29), presenting a potential funding barrier despite WHO and PNG government recommendations. Barriers to sustainability are numerous and will need to be individually addressed.

Finally, providing a MWH does not assure quality delivery services at the hospital. Other health system problems include staff shortages, training and attitude, supply issues and overcrowding.

Women's negative experiences of hospital services and word of mouth may discourage future hospital use (14).

The impact of one community's improved access to Goroka Hospital is unlikely to increase demand for services beyond capacity. However, it is acknowledged that this strategy implemented on a wider scale could do so. Rural birthing centres such as Okapa, Ivingoi and Lufa, currently poorly supported, need development of basic EmONC services and MWHs, to enable low risk women to safely deliver closer to home, including adequate staffing and infrastructure, training in assisted delivery methods and neonatal resuscitation, and the provision of necessary equipment (3).

Conclusion: Paigatasa and its Australian supporters are small actors in the global health field. However, a model of grassroots initiative to test a potentially broad-scale intervention in PNG's unique setting is provided, with potential to synergise with provincial government health, other NGO and research partners. Various models may suit other PNG settings, depending on availability of staffing and funding, population size targeted for the service, and local acceptability factors.

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Appendix A: Reported Barriers to Facility Delivery, Paigatasa 2010 (3).

In addition, barriers exist to women choosing to wait in Goroka or another town and deliver at a health centre or hospital. Reported reasons from women who have given birth at home in the last three years (since Jan 2007, n=45) include:

- Unavailability of accommodation in Goroka
- Children, gardens and other responsibilities to tend to at home
- Lack of funds and transport to travel to health centre
- Dangers of travel to health centre / no escort for journey
- Preference to give birth at home in traditional way / dissatisfaction with health care
- Parents-in-law insisting on a home birth.

Women from outlying villages were less likely to give birth in a health facility than women from Paiga (73% vs. 50%), and therefore less likely to have a trained birth attendant present at the delivery. However, similar reasons were given when women did choose to deliver at home, regardless of location.

Table 21: Reasons for Birthing at Home	Paiga	Outliers	Total*	Percent
Own wish	2 (14%)	0	2	3%
Parents or husband insist	0	0	0	-
In-laws insist	0	3 (9%)	3	6%
No transport	0	2 (6%)	2	4%
No road	0	0	0	-
No money	5 (35%)	13 (39%)	18	38%
Health facility too far	6 (42%)	14 (42%)	20	43%
Only male health workers	0	0	0	-
Other (not safe to travel, nowhere to stay, etc)	3 (21%)	6 (18%)	9	19%
Total home/<i>smallhaus</i> deliveries, last 3 years	14/28 (50%)	33/45 (73%)	47/73**	64%

*More than one response possible. **One stillbirth included in these figures.

Appendix B: 7.3 EmONC signal functions – survey results by facility (3).

Table 23: EmONC signal functions	Goroka General Hospital	Okapa Health Centre	Henagaru Health Sub- Centre	Ivingoi Health Sub- Centre	Paigatasa Clinic	Amuraisa Aid Post
Basic:						
1. Parenteral antibiotics	✓	✓	✓	✓	✓	✓
2. Uterotonic drugs	✓	✓	✓	✓	X	X
3. Parenteral magnesium sulphate	✓	✓	✓	✓	X	X
4. Manual placental removal	✓	✓	✓	✓	✓	X
5. Removal of retained products	✓	X	X	X	X	X
6. Assisted vaginal delivery	✓	X	X	X	X	X
7. Basic neonatal resuscitation	✓	X	✓	X	X*	X
Comprehensive:	Goroka	Okapa	Henagaru	Ivingoi	Paigatasa	Amuraisa
8. Obstetric surgery	✓	X	X	X	X	X
9. Blood transfusion	✓	X	X	X	X	X
10. Newborn catheterisation	✓	X	X	X	X	X
11. Newborn intubation	✓	X	X	X	X	X

*Bag & mask recently donated to Paigatasa Clinic, but CHW not yet trained in neonatal resuscitation.

Appendix C: Goroka General Hospital

GGH is a secondary referral facility, has a total of 350 beds and three theatres, and serves a provincial population of 5-600,000. The O&G ward has 60 maternity/gynaecology beds, and the delivery room has 6 beds, providing care for an average of 12 deliveries per day. The department is staffed by one registered obstetrician/gynaecologist, 6 medical trainees, 17 midwives, and 7 nurses. The outpatient antenatal clinic sees around 150 patients per day, and offers specialised care for HIV+ mothers. Outpatient facilities also include a family planning clinic and well baby clinic.

Highlights of service provision include adherence to partogram use in delivery, good access to relevant Standard Treatment Manuals, other guidelines and protocols, a 24-hour ambulance service, and regular in-house training, analysis and discussion of service delivery data. Post-abortion care is also available, and family planning methods are free.

Due to the high patient-to-staff ratio, a 6-week postpartum visit is not routinely offered to mothers and their newborns. Women and infants with perinatal complications are kept in hospital until safe to discharge, and may be asked to attend outpatients for a postpartum check. Anti-D is not used.

Issues as raised by staff include intermittent shortages of important supplies, medicines and equipment. A blood bag shortage had led to a maternal death in 2009. In February 2010, the hospital had run out of Foley catheters, blood glucose and haemoglobin testing strips and chlorhexidine surgical hand wash, and had no working pulse oximeter. One neonatal laryngoscope was shared between the nursery and theatres, and medical officers were sharing stethoscopes. The Family Planning Clinic had no Depo-Provera injections or contraceptive pills.

Record-keeping of patient care is hampered by staff workloads, and a lack of training and computerisation. Supervisory visits to the ward from higher levels of the health department are rare.

Patients pay a K10 flat rate for delivery (AU\$4.10), and an operation fee if required (K8-K30, depending on the procedure). Patients' families are asked to donate blood before a Caesarian section takes place. Patients also purchase soap, toilet paper, pads and tissues as required, but are not asked to purchase medicines or other supplies.

Appendix D: PAIGA

PAIGA, or Peoples of Australasia for Innovation and Growth Abroad, is an Australian-based not-for-profit organisation incorporated in 2008. PAIGA works with the rural communities of Paigatasa and South Gimi in remote Okapa District, Eastern Highlands Province, Papua New Guinea, on projects to improve community health, education and local women's incomes. For more information, visit our website: www.paiga.org.au, and Facebook page: <https://www.facebook.com/PAIGA-367834730009/>.