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1. Maternity Waiting Homes in Southern Lao PDR: The Unique ‘Silk Home’

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2. Abstract and Keywords

Abstract
The concept of maternity waiting homes (MWH) has a long history spanning over 100 years (WHO, 1996). The research reported here was conducted in the Thateng District of Sekong Province in southern Lao PDR to establish whether the MWH concept would be affordable, accessible, and most importantly acceptable, as a strategy to improve maternal outcomes in the remote communities of Thateng with a high proportion of the population from ethnic minority groups. The research suggested that there were major barriers to minority ethnic groups using existing maternal health services (reflected in very low usage of trained birth attendants and hospitals and clinics) in Thateng. Unless MWHs are adapted to overcome these potential barriers, such initiatives will suffer the same fate as existing maternal facilities. Consequently, the Lao iteration of the concept, as operationalized in the Silk Homes project in southern Lao PDR, is unique in combining maternal and infant health services with opportunities for micro credit and income generating activities and allowing non harmful traditional practices to co-exist alongside modern medical protocols. These innovative approaches to the MWH concept address the major economic, social and cultural barriers to usage of safe birthing options in remote communities of southern Lao PDR.

Keywords
maternal health
maternity waiting homes
barriers to health care
Lao PDR
3. Text

Introduction: the Problem

Reports on Lao PDR’s progress towards meeting the Millennium Development Goal 5 (MDG 5) on maternal mortality suggest that some headway has been made since 1990 (Government of Lao PDR, 2004). However, the country still has one of the highest Maternal Mortality Ratios in the Western Pacific Region (Tulloch/Ausaid, 2005; WHO, 2006). The 2005 estimates vary from 410 per 100,000 live births in the official Lao statistics to 660 per 100,000 live births adjusted by estimates of unreported maternal deaths (UNICEF, 2006). The lifetime risk of maternal death has been estimated as 1 in 33 in Lao PDR (UNICEF, 2006). The key distal causes have been identified as malaria, eclampsia, malnutrition, high parity, early parity and low usage of health services. The main proximal causes of death are obstructed labour, sepsis and postpartum haemorrhage (Government of Lao PDR, 2004). These upstream and downstream factors are especially problematic in rural and remote communities such as Thateng where estimates of MMR are more than double the national average (AbouZahr, 1996; Government of Lao PDR, 2004; Population Reference Bureau, 2007). In particular Attapeu, Sekong and Saravan have been singled out as the 3 economically most disadvantaged provinces with the poorest health outcomes on all indicators.

As in most developing countries, official statistics are likely to represent only the tip of the MMR iceberg as many parts of the country are too remote for data on maternal and infant deaths to be systematically gathered and reported. Data on levels of maternal morbidity, chronic disability and compromised objective conditions of quality of life, resulting from pregnancy and childbirth complications, are even less reliable. Lao PDR ‘is currently not on track to meet target 6, of the 2015 Millennium Development Goal (MDG) 5 on maternal mortality (UN Millennium Project, 2002), which is to reduce by three quarters, between 1990 and 2015, the maternal mortality ratio’ (Eckermann, 2006). Furthermore, the infrastructure is not in place to measure other indicators of maternal and child health such as morbidity levels, quality of life and satisfaction with existing maternal and child health services.

The Lao government has established 3 sets of indicators to measure progress on target 6 of MDG 5. These indicators are: MMR, proportion of births attended by skilled health personnel and contraceptive prevalence rate (Government of Lao PDR, 2004). Currently, Lao PDR is well short of the 2015 target on two indicators, namely MMR (2015 target of <185) and proportion of births attended by skilled health personnel (17% in 1999 against the 2015 target of 80%). Given the dramatic increase in contraceptive prevalence rates in the last decade of the twentieth century (13% in 1990 to 32% in 2000) it could meet, or even exceed, the third 2015 indicator target of 55% on contraceptive prevalence rates (Eckermann, 2006). However, in the more remote parts of Lao PDR, including many districts within Attepu, Sekong and Saravan, even the target on this indicator will not be met by 2015.

The factors which have been identified as contributing to the decrease in Lao PDR’s official MMR, from 750 deaths per 100,000 live births in 1990 to 530 deaths per 100,000 live births in 2000 and 410 in 2005, are prevention strategies such as improved family planning access,

Modern medical strategies for improving maternal health outcomes have been embraced by the Lao government into their maternal and child health planning and programmes and on the whole these have been well accepted by urban Lao populations (Government of Lao PDR & UN, 2004). The striking increase in official contraceptive prevalence rates has impacted on fertility rates and eventually on MMR in urban areas (Tulloch/Ausaid, 2005). ‘However, more clinical interventionist strategies, such as attendance at births by skilled personnel have not been a crucial part of this decline given that the percentage of births attended by skilled personnel increased by only 3% between 1994 and 1999 (14% to 17%), well short of the 2015 MDG target of 80%. The Lao government and international agencies agree that to come anywhere near meeting the MDG target for MMR in 2015 of less than 185 deaths per 100,000 live births a major impetus is needed to increase attendance at births by skilled personnel (Government of Lao PDR & UN, 2004: 35)” (Eckermann, 2006).

Given the major geographic barriers to access to health services for villages in remote parts of Lao PDR, emergency outreach programmes by land transport are out of the question. Many villages are cut off from the rest of the country for weeks on end during the rainy season. The costs of providing air access by helicopter are prohibitive and often villages are clinging to hillsides with no flat areas for a landing pad. Remote skilled advice is currently not available in most villages because of lack of mobile network coverage and satellite connections and villages have neither the necessary equipment nor the infrastructure to support any remote obstetric advice. The only viable option that is currently available for remote communities is maternity waiting homes where women can be transported close to essential and emergency obstetric care, if it is needed, at a time when the roads are open and it is still comfortable for them to travel. In the rainy season this may mean women travelling to the maternity waiting home several weeks before the expected delivery date.

Thus the researchers, in collaboration with the Lao Ministry of Health and the Silk Homes Project, conducted a study to establish the viability of establishing a Lao version of the maternity waiting home concept in the poor southern provinces of Lao which have a high proportion of ethnic minority groups.

**Objective and Aims**

Maternity Waiting Homes (MWH) have been shown to be an effective form of intervention to improve maternal and infant outcomes in pregnancy and childbirth in many settings where access to hospitals and community health facilities is limited (WHO, 1996; Eckermann, 2006). The overall objectives of this research were to:

a) ascertain whether the reported success of maternity waiting homes could be replicated in remote southern Lao PDR where maternal and infant mortality ratios are estimated to be several times the national average (Government of Lao PDR, 2004) and, over the long term, 

b) reduce maternal and infant mortality and morbidity and improve the quality of life of remote communities in the south of the country.

The specific aims of the research were to:
1. identify the potential barriers to usage of MWHs and other health services in one district of a remote province of southern Lao PDR where there are a large number of ethnic minority communities

2. establish what adaptations to the previous models of the MWH would be needed to overcome these potential barriers.

**Methods**
The researchers adopted a triangulated strategy (Bryman, 2008) to answer the research questions. The sample consisted of 18 of the 54 villages (33.33%) in the Thateng District of the Province of Sekong. Official epidemiological data on reproductive health outcomes in Thateng District (Sekong province) were critically analysed. These were compared with statistical and qualitative data gathered in the villages using focus groups and individual interviews with men and women villagers, traditional birth attendants, midwives (in village health centres) and village health committee members. Thus quantitative and qualitative data were combined to get a more in-depth picture of maternal and infant health outcomes as well as assessments by participants of the affordability, accessibility and acceptability of existing health services. WHO (2001) and World Medical Association (2004) ethical protocols were followed in seeking verbal informed consent from participants, many of whom were not literate. The data were analysed using thematic coding to elicit key themes of evaluation of existing services and proposals for increasing acceptability for future initiatives.

The researchers systematically gathered baseline demographic, reproductive health and transport data and qualitative data on 26 questions in semi-structured interviews and focus group discussions with villagers, village chiefs (nai bans), village committees, traditional birth attendants, doctors, nurses, midwives, hospital administrators, Lao Women’s Union representatives and village voluntary health workers. Interpreters were used to assist communication and where the interpreter did not understand the local language (such as Oy, Alak or Ta Oi) the nai ban acted as interpreter from the local language to Lao. Each visit lasted from 90 minutes to 2 hours.

**Results**

*a) Population characteristics*

Thateng has a total population of 27,539 (49% men and 51% women) divided into 4,807 families and 54 villages. The average family size is 5.73. Ethnic minority groups (Katu, Ta Oi, Alak, Nye, Taleang, Xui, Laven) make up 98% of the population and Lao Loom are less than 2% of the total. It is estimated that there are approximately 6,200 women of reproductive age (15-49 years) in the Thateng district and the expected number of pregnancies per year is just under 1,000 (Lao Ministry of Health 2005).

The total population of the 18 villages we surveyed was 7,876 (966 families) and the individual villages varied from 146 individuals (made up of 25 families) in BanTakeo Kau to 1,339 in BanTong Vai (with 219 families). In terms of ethnic composition 7 of the 18 villages were exclusively Katu, 5 were exclusively Alak, 2 were Ta Oi, one Taleang
and the rest were mixed (Katu/Ta Oi/Alak/Kalum/Xuay/Laven/Taleang with some Lao Loom). The religion of most of the villages was animist with only 1 village being predominantly Buddhist (Ban Kapue). Estimated numbers of women in the reproductive age group (15-49 years) varied from 34 in Ban Takeo Kau to 308 in Ban Tong Vai with a total of 1,816 across the 18 villages. However, many women reported getting married at 13 and having their first child by the time they were 14 so the pool of women who are potential users of the MWHs is probably greater than the estimates.

b) Births and Deliveries
There was a total of 326 babies born in the 18 villages over the previous 12 months. As expected the largest village had the most births (Ban Tong Vai 57) but some villages had very high fertility rates. For example Ban Kokphung Mai with a total estimated 88 women of reproductive age had 26 births in the previous 12 months. Similarly Ban Lik (114 in reproductive age) had 30 births suggesting a very low contraceptive prevalence rate in these villages. 302 (92%) of the 326 births occurred in the village. 218 of the village births were assisted by TBAs, husbands or family members. 78 were delivered in the village with the assistance of a midwife. The majority of the midwife assisted village births (57) came from Tong Vai where there are 3 resident midwives at the village Souksala (health centre). Only 34 hospital births were recorded across the 18 villages which is approximately 10% of the births. 22 of the births were referred on to the Provincial Hospital because of complications. There was a surprising pattern in Ban Paleng Neua, a Ta Oi village, where 13 of the 16 births over the previous 12 months occurred in hospital. Twin babies died in the village in September 2005 so women have been very cautious since then. Probably as a result of this incident, there have been a large number of outreach programmes targeting this village in the past year so the risks of village childbirth have been emphasized and acted upon by villagers.

c) Maternal deaths
There was only 1 maternal death across the 18 villages in the previous 12 months. The death occurred in Paleng Tai only 8 kilometres (90 mins walk or 30 minutes by tok tok tractor) from the Thateng District Hospital. Villagers reported that the birth had been ‘normal’ but the woman, who was only 23 and having her second child, grew weak over a period of 7 hours after the birth and was unable to urinate so they put her into a tok tok to take her to the hospital. Tragically she died on the way to the hospital so the villagers turned the tok tok around and took her body back to the village for a traditional burial. During the time of mourning no one is allowed in or out of the village for 5 days so her body was buried before any autopsy, or assessment of the possible cause of death, could be done. Her symptoms were suggestive of internal haemorrhage or damage to the kidneys as a result of the birth but the mystery of her unexpected death, she would have been regarded as a low risk patient, went to the grave with her. This case points to the impossibility of accurate risk assessment and the need to protect all pregnant women from possible unexpected emergencies.

Most villages reported that it was a few years since there had been a maternal death.

d) Infant Deaths.
The story for infant deaths was quite different. Most villages reported some infant deaths over the past 12 months. The total across 18 villages was 31. Ban Tong Yau (29 kms from the District Hospital on a road impassable in the rainy season) recorded 6 and Ban Lik (11 kms from the District Hospital) 5. Most died within weeks of birth from malaria, diarrhoea or pneumonia. Most women with more than 4 children reported that some had died. In one case a woman who had given birth to 14 children had only 6 still alive.

e) Family Planning
Despite an expressed ideal family of 3 children in most villages, there was a very low contraceptive prevalence rate of 25% across the 18 villages (454 of 1816 reproductive age women) but some significant variations between villages. Ban Paleng Neua had the highest contraceptive prevalence rate with 30 of 56 reproductive age women (53.6%) using contraception which is very close to the MDG target on contraception for Lao in 2015. By contrast in Ban Takeo Kau only 1 woman out of 34 was using contraception, in Ban Kokphung Mai only 3 out of 88, and in Tong Yau less than 20% of reproductive age women use contraception. Men very rarely take responsibility for contraception and condom use is not acceptable to most men. Some men feared they would become impotent or homosexual if they had a vasectomy. A few men said they would gladly undergo a vasectomy but the procedure is not provided in the province or district and would entail an expensive trip to Pakse or Vientiane, or even Thailand.

Most women who are using contraception use injectables. The second most common method is the contraceptive pill and very few have tubal ligations. There were no women in the study who used intra-uterine devices (IUDs) and hospital and clinic staff appeared reluctant to recommend and to insert IUDs. The main reasons women were not using contraception were: the cost and inconvenience of attending clinics, husbands not supporting use of contraception, and a significant number said they had adverse reactions to the pill and to injectables so they stopped using them. The adverse reactions included headaches, dizziness, nausea, bloating, weight gain and ‘weakness’ and ‘tiredness’. Some feared they would ‘get cancer’ from ingesting, or being injected with, artificial chemicals. Most women said that decisions about family size were made jointly but that this issue was not discussed much. A few women said that their husbands made all the decisions in the family including decisions about contraception.

f) Geographic Barriers
The villages ranged from 3 to 29 kilometres from the District Hospital (DH). The time taken to walk to the DH varied from 30 minutes to 8 hours. The time by quickest available transport (usually tok tok tractor) varied from 15 minutes to 6 hours or in the case of 6 villages, no access in the rainy season. In the case of the 2 most distant villages, Ban Tong Kong and Ban Tong Yau, 4 rivers need to be crossed to get to the DH and the road between the rivers is extremely dangerous and slippery even in the dry season. In the rainy season the current in the rivers is so strong that villagers cannot even swim across.

The tok tok tractor is a very primitive and uncomfortable form of transport but in most villages it is a better alternative than motorbikes to transport pregnant women. The costs of transfer to the DH by tok tok tractor varies from 1,000 kip (USS.10) for villages very
close to the DH to 150,000 kip (US$1.50) for the villages 29 kilometres away. These costs just cover the petrol, not the lost labour for the driver who may have to spend 16 hours getting to and from the DH to deliver women to the MWH.

g) **Traditional practices**

Most women in the villages preferred to give birth in the traditional position. This involved squatting or kneeling on their haunches holding onto a rope suspended from a tree or beam or grasping a pole or plank of wood. In all of the Katu villages women still gave birth outside of the house or under the house without their husbands. They believe that it is bad luck to contaminate the family house with blood so men will often build a small hut away from the house or in the jungle and leave the women to deal with the birthing process. Once bleeding stops and all has been cleaned the women and new baby can return to the house. This practice is gradually changing with some Katu women reporting that their husbands attended the birth and helped them, although the woman giving birth cut the umbilical cord. In some cases women gave birth alone but in most cases TBAs or family members attended the birth.

In Ban Takeo Kau we met a 45 year old woman who had given birth to 12 children on her own under the house on the dirt. She cut the cords with bamboo and moved back to the house once bleeding had stopped each time. Of those 12 babies, 4 died at birth. Her youngest child is 3 years old and she is still menstruating but not using contraception.

In virtually all villages a newly cut piece of bamboo was used to cut the cord. Where knives were used to cut the cord they were rarely sterilized beforehand. A few TBAs who had received some training cleaned the knife with alcohol before using it. Those women who had hospital births felt uncomfortable about the Western birthing position and said that it caused them some fears and embarrassment but they were able to tolerate the discomfort for their own, and their baby’s, safety. However, given the choice they would have preferred to use the traditional birthing position.

All women who gave birth in the village ‘smoked’ the baby and themselves for 3-14 days after giving birth. They mainly used a charcoal fire beside the bed. The heat aspect of the ‘smoking’ process seemed to be more important than the smoke itself. When asked if they would accept a smokeless source of heat in place of a charcoal fire, most women said ‘yes’.

There are very few dietary restrictions or taboos during pregnancy but for one month after the birth women tend to avoid oily meats such as duck and pork and fried foods and use mainly chicken, vegetables, sticky rice and ‘dry foods’. However, they drink copious amounts of hot water and avoid cold water for washing.

h) **Social and cultural barriers**

Many women do not remember the date of their last period so are unsure about the expected due date of their babies. Without ultrasound equipment at the hospitals, even hospital and clinic staff cannot give accurate estimates of the due date. This provides a major challenge for the MWHs.
Some women’s experiences of the health system were unfavourable, especially in the case of minority ethnic groups being patronized or treated badly by health staff, and it has made them sceptical about using alternatives such as the MWH. By contrast some women’s experiences of the health system have been very positive and, given no economic or geographical constraints, they would gladly move closer to skilled care for birthing.

If given a preference, all women expressed the desire to give birth in the traditional position with as much privacy as is possible. They would like their own foods, including the facilities to cook their own foods, to have a fire (or source of heat) provided after the birth and a soul calling ceremony should they need a caesarean.

The issue of different ethnic groups co-habiting in the MWHs, and sharing cooking and bathroom facilities, was raised but no villagers saw this as a problem as long as they had their own rooms to which to retire.

Most women said they did not like to sleep alone for fear that the spirits would put spells on them during the nights so expressed the desire to have family members stay with them at the MWH.

i) Economic Barriers
The main economic barriers to women using the existing health system involve the cost of services and drugs, the cost of transport to and from health facilities and lost labour and production during absences from the village for themselves and their families when they visit.

The average yearly income per household varied from 100,000 kip (US$10) to 10 million kip (US$1,000). Those at the lower end of the scale do not have the funds to pay upfront for transport, even if it were reimbursed at a later stage, so economic barriers are the key factors limiting their capacity to use the MWHs. The incentive of gifts on arrival and money earning opportunities at the MWH cannot override the problem of upfront transport costs.

j) Micro credit and Handicraft Opportunities
Most women expressed a keen interest in learning new handicraft skills should they use the MWH but there was a clash with the traditional practice of slowing down during late pregnancy and after giving birth. Many women said that pregnancy and birthing were the only times when women’s relief from hard physical labour was sanctioned by the community (especially their husbands), so most looked forward to a well earned rest. One woman said “How can I even get close to a loom with this big belly?”. The MWH should offer a variety of handicraft options to cater for women with differing needs.

In every village, women with entrepreneurial potential emerged as prime candidates for micro credit. In Ban Nong Buosai, a woman showed us her very productive and extensive vegetable garden. She said she would like to access micro credit to expand this enterprise and to start a pig farm.
k) Data Problems
There were large discrepancies between official statistics on maternal and infant health outcomes and the data gathered in the research. For example for one district (covering 9 villages) the official statistics reported 24 births in the past 12 months yet the researchers counted over 120 infants in only 7 of those villages, all of whom had been born in the village in the last 12 months.

The use of maternal and infant mortality as the only indicators of health outcomes is problematic. Even though the MMR in the southern provinces of Lao PDR is unacceptably high, maternal mortality is a rare event (we only came across 1 maternal death over the past 12 months in the 18 villages surveyed). However, many women hinted at morbidity, chronic disability and quality of life problems during pregnancy and after giving birth. Many women in the villages still have their first pregnancy at the age of 14 years. Given that their bodies are not fully mature, the chances of fistula post birth are quite high yet giving birth in the village with no post natal skilled care can mean that the problem is ignored and the women can be ostracized in the community. It is important that the project collect data on maternal and infant morbidity and disabling conditions associated with pregnancy and birthing.

Quality of life indicators, such as the PWI (Personal Wellbeing Index) which has been shown to be cross-culturally applicable (Cummins, 2003), would also give a fuller picture of whether the MWHs have been effective in improving women’s and children’s lives. Both the objective conditions of their lives and their subjective experience of life need to be measured.

l) Suggestions for making the MWH Acceptable
1. privacy in birthing process,
2. traditional birthing position to be used,
3. other traditional practices e.g. ‘smoking’ of baby and mother after birth to be respected
4. respect from health staff,
5. direct costs of hospital and health centre services and pharmaceuticals to be borne by the Project,
6. indirect costs of transport and lost labour while attending health services to be compensated for
7. more contraceptive options especially when women report side effects- women often cease using modern contraceptive or revert to traditional unreliable methods
8. consideration of alternative ‘safe’ delivery methods when villages are not accessible to outreach teams or SH usage during the rainy season, especially in the case of unexpected and/or premature births
9. alternative child care arrangements given that often very young children, both boys and girls, are left to care for their younger siblings for many hours while the parents are in the fields. These children are thus denied access to education.
10. training in handicrafts, possibly paying older women in the village with experience and skills to train younger women.
Conclusions
As the Silk Homes are being built in 2007-8 (one in each of the 17 districts of Sekong, Saravan and Attepu), the management committees of the Thateng Silk Home are taking on board the findings of the research and have developed a format which attempts to deal with all of the implications of the findings. Given that the Silk Homes have only been operating for a matter of months it would be premature to assess at this stage the impact on MMR, IMR, maternal and infant morbidity and quality of life of the populations that they serve. However, surveys of the many women who are potential clients of the facilities of the Silk Homes say they want to use the Silk Homes because they perceive the Silk Homes as ‘free’ and ‘safe’.

The Silk Homes need to be perceived by villages as affordable, accessible and acceptable. Economic and geographic barriers to usage have been addressed through resources and technology but social and cultural barriers to usage require major attitudinal training and flexibility on behalf of all Silk Home Project and hospital staff, including researchers, service providers, administrators and management committees. Proactive measures are needed to actively encourage women to come to the facilities and to constantly monitor and evaluate if the Silk Homes are meeting the needs of villagers in the catchment areas. The Silk Homes, and the provincial hospitals adjacent to them, are aiming to be user-friendly, especially women-friendly, and welcoming to minority ethnic groups. It is vital that the SH Project be seen as a capacity building project which supports communities to develop independence and sustainability, rather than as a handout centre which disempowers individuals and communities and makes them dependent on the government, NGOs or international agencies for ongoing aid.

However, The Silk Homes must also serve the needs of the health officials and other stakeholders. At times these needs are contradictory and require diplomatic juggling to resolve. One prime example is birthing position. Staff at the provincial and district hospitals have been trained only in the Western birthing position (with the woman lying down on a delivery table, with or without stirrups). They are thus comfortable with this birthing position. It involves minimum bending, and maximum control and access for staff. However, most women from the villages in Thateng feel very uncomfortable about this birthing position. They do not feel that they are in control of the birth (especially if their feet are tied into stirrups), they are embarrassed at exposing their genitals to anyone who enters the room and their traditional practices regarding cutting the cord and disposing of the placenta cannot be observed. In the hospital their food choices are limited and they have no control over the cooking process. They are denied the ‘smoking’ ritual and other ceremonies traditionally applied to major transitions in people’s lives. A bit of imagination and creative arrangement is resolving these two seemingly contradictory perspectives. Negotiations between health staff and villagers are happening before the SHs open. They are democratic with health staff listening attentively to what villagers have to say and taking on board their fears and concerns. Villagers too are being informed of the constraints of hospitals and clinics. The need for antisepsis and sterile environments to stop infection is being stressed.

Overriding all these concerns is the biggest challenge for the project – the lack of reliable
and accurate baseline data. The SHs are collecting their own data and keeping systematic records of clients' health status. These data are being analysed on a regular basis so that there is continuous quality control of the facilities and functioning of the project. Local staff in the provinces and districts are receiving training to undertake this regular monitoring and regular evaluation process.

Women’s expressed needs can be met or negotiated in several ways.
1. **privacy**: screening and other means to ensure privacy before, during and after the birth are being instituted at the SHs. The staff assure women that only one person will conduct pelvic examinations and that should be a female doctor, nurse or midwife if one is available.
2. **Uncomplicated births** are being conducted in the SH using the traditional birthing position. If complications arise alternative arrangements are negotiated between the woman and the doctor, nurse or midwife.
3. ‘Smoking’ the mother and baby is being catered for but in a controlled environment where plenty of hydration is provided. Alternative sources of heat, such as a heat lamps, are being offered at the SHs but women still prefer the traditional fire. Dietary restrictions which are not harmful to the mother or child are being respected. Women are encouraged to prepare their own food and remain in control of their diet.
4. **Intensive training in interpersonal skills** is provided for the SH staff to avoid disrespectful and bad treatment.
5. **All medical and pharmaceutical costs** are being covered.
6. **The costs of transport** can be problematic because, even if women are reimbursed, they must pay the upfront costs. To solve this problem, the nai ban in each village are being provided with an audited fund which can be distributed to women for upfront transport costs to the SH.
7. **The issue of women giving up on contraceptives** because of side effects still needs urgent attention. Contraceptive pills with varying dosages of oestrogen and progesterone need to be available and the IUD is currently under-utilized in all 3 provinces. Doctors in the Provincial hospitals must also be trained in conducting vasectomies and tubal ligations. Women who have had more than 6 babies should be prime candidates for tubal ligation for themselves or vasectomies for their husbands. As Sweet (2005) reports from the Lao rural women’s project: men are quite keen on the idea of having ‘more sex without more babies’.
8. **Provision of portable ‘birthing kits’** to each village for emergency deliveries when access to the SH or outreach facilities is not possible. The kit includes a plastic sheet, sterilizing solution for the knife or bamboo used to cut the cord, quick drying antiseptic solution to apply to the cut umbilical cord, basic delivery equipment, and detailed instructions on how to minimize haemorrhage etc. The village health volunteer is given a short training session on emergency delivery and takes charge of the kit which is stored in a place accessible at all times. Training emphasizes that the kit is only for use in emergencies and that it cannot serve as a regular aid to birthing when other safer methods of delivery were possible.
9. **The long term solution** to the problem of young children missing school while they care for their younger siblings is to have 100% contraceptive prevalence such that families can be planned. However, in the short term several strategies are being explored.
with villagers. These might include using grandparents to run a crèche in the villages thus freeing siblings from the responsibility of childcare. Grandparents are often used in this capacity for individual children and there is no reason why this could not be systematically organized for children without grandparents to care for them. The crèche could also be used as an educational centre for young children to learn about nutrition, cooking etc. from the older generation. This would be an opportunity for capacity building of older men and women who can no longer work in the fields.

10. Training for handicrafts is provided in the SH but also in the villages. In several villages, older women said they had extensive experience and skills which they would like to pass down to younger women. If these women could be provided with some funds to compensate for their absence from the coffee or peanut plantations and rice fields while undertaking training classes, they would feel empowered and could create a culture of handicraft confidence in the villages. Alternatively, those who are no longer able to work in the fields may consider providing training in more sedentary occupations such as handicrafts.

Thus it does seem possible to design a maternity waiting home which minimizes the economic, social and cultural barriers which have traditionally kept women away from medical health facilities in Lao PDR. Women can go to the Silk Home confident that all measures will be taken to ensure that the birth of their baby is safe, that they will receive social, economic and respectful support, they will be in control of the position of birthing and the practices following birth (food choices, family support, heating rituals) and that they learn new skills to improve their income earning potential. The growing acceptability of Silk Homes among the ethnic minority groups of southern Lao PDR who have traditionally shunned health services, is expected in the long term to lead to reduced MMR, IMR, maternal and infant morbidity and disability as well as improved economic circumstances and quality of life for the villagers.

Post script
Usage statistics are available for May 2007-March 2008. Since opening in mid May 2007, the Thateng Silk Home has averaged about 9 women staying per month. 86 women have used the facility in its first 10 months of operation and there have so far been 78 deliveries. All mothers and babies have survived and no morbidity has been reported. Along with immunization and extended postnatal care for their babies, all women have been provided with nutrition and baby care training, handicraft training and have had an opportunity to earn an income while staying at the Silk Home. All have been given information and opportunities for micro credit initiatives some of whom have embraced these opportunities. The researchers will report findings systematically as the sample sizes become large enough to warrant statistical analysis.

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