A feasibility study of the Community Health Initiative for Maternal and Child Health in Myanmar

Ministry of Health, Myanmar
World Health Organization (WHO)
Health Intervention and Technology Assessment Program (HITAP)

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PREFACE

The Maternal Mortality Report (2005) developed by the WHO, UNICEF, the UNFPA and the World Bank presented that the estimated number of all maternal deaths in developing countries has increased to 99% due to major causes such as bleeding, infections, and hypertensive disorders in pregnancy. According to the United Nations Millennium Development Goals (MDGs) endorsed in September 2000 by 191 member states, an agenda concerning maternal and child health has been adopted as one of the eight goals to be achieved by 2015. The declaration shows the concern among members to ensure the well-being of mothers and newborns before, during, and after pregnancy.

In Myanmar, it has also been found that the underutilisation of essential health services for Maternal and Child Health (MCH) results in high infant and maternal mortality in the country. In response, 'this feasibility study, is one of the initial steps to developing health financing options for improving MCH services as part of the collaboration among the WHO to Myanmar, WHO-SEARO and the Ministry of Health, Myanmar. The Health Intervention and Technology Assessment Program (HITAP) with its expertise in program evaluation was invited to take part as an academic consultant with a long-term commitment to conduct a 4-year research and development initiative funded by the Global Alliance for Vaccines and Immunization (GAVI), Health System Strengthening (HSS) for Myanmar.

As shown in this report, the series of three study visits in May, August 2010 and March 2011 shows the efforts and contribution of the aforementioned stakeholders. The HITAP team believes that the new initiative under the close relationship successfully sets a good example of working in developing country settings and that its knowledge and results could be beneficially transfer to other countries in the region.

HITAP team

CONTENT

The **first** mission: A well-designed protocol for the Community Health Initiative

By Health Intervention and Technology Assessment Program (HITAP)

May 2010

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Contents

Abbreviations

ANC	=	Antenatal care
AMWs	=	Auxiliary midwives
CHI	=	Community Health Initiative for Maternal and Child Health
CT	=	Cash transfer
CCT	=	Conditional cash transfer
CSGs	=	Community Support Groups
EPI	=	Expanded Programme for Immunisation
FGD	=	Focus group discussion
GAVI	=	Global Alliance for Vaccines and Immunization
HITAP	=	Health Intervention and Technology Assessment Program
HSS	=	Health System Strengthening
MCH	=	Maternal and child health
MoH	=	Ministry of Health
NGO	=	Nongovernmental organisation
MCWA	=	Maternal and Child Welfare Association
PNC	=	Postnatal care
SEARO	=	South-East Asia Region Office
TBAs	=	Traditional birth attendants
THC	=	Township Health Committee
VHC	=	Village Health Committee
WHO	=	World Health Organization

1
Introduction

The Union of Myanmar is the largest country in mainland South-East Asia with a population of 57.5 million. It has a pluralistic mix of public and private healthcare systems. Although the Ministry of Health (MoH) is the main organisation responsible for healthcare provision, 70-80% of health service expenditure is now absorbed by the households. This prompts the need to develop a stronger health financing system that reduces the portion of out-of-pocket expenses and, at the same time, improves accessibility to health services among the population. One of underutilised essential health services is that of maternal and child health (MCH). This results in high infant and maternal mortality in the country with rates of 59.7 and 2.55 per 1,000 live births, respectively.

This is a report from the consultant team of the Health Intervention and Technology Assessment Program (HITAP) in collaboration with Myanmar's MoH officers, and experts from the World Health Organization (WHO), Myanmar and the South-East Asian Region Office (SEARO). These parties jointly conducted a feasibility study concerning new health financing options with the goal to improve MCH services. This feasibility study was carried out during the period May 11-14, 2010 and its results will contribute to the 4-year research and development initiative funded by the Global Alliance for Vaccines and Immunization (GAVI), Health System Strengthening (HSS) for Myanmar.

The next part of this report presents the objectives and scope of the feasibility study for the new health financial option, hereafter the Community Health Initiative for Maternal and Child Health (CHI), as agreed by the MoH and WHO in the previous consultations. Then, it describes the first mission's activities and achievements. The report ends with the proposed future plan.

2
Objectives and scope of work

The main objective of the feasibility study is to devise a comprehensive plan for the CHI that is ready for piloting and implementation under the GAVI-HSS. The objective is achieved by three missions. First, it is necessary to develop a well-designed protocol for the CHI that is technically and financially feasible, acceptable among stakeholders, and also relevant to the country context.

Second, it is essential to assess budgetary requirements for the newly designed CHI which accounts for different levels of health facilities and characteristics of each township, and to explore key parameters that are important for the monitoring and evaluation of the CHI. Third, it is to estimate the potential costs and health outcomes from the future implementation of the CHI, and devise systems and mechanisms for future monitoring and evaluation of the CHI. The last can be only done through the use of the decision analytic model.

This report reveals the results of the consultancy work done for the first mission in development of the protocol for the CHI and that the developed protocol was used to assess technical and financial feasibility, and acceptability among stakeholders in the central and township levels.

3
First mission activities

In order to develop the protocol for the CHI, **diagram 1** describes all processes required. These processes were completed in the first mission. It started with the literature review focusing on demand side financing for MCH services in developing settings. The review included articles published in international academic journals as well as gray literature e.g. research reports. This review was done by the HITAP team during the months April-May, 2010. Results from the review were presented to the MoH officers and WHO experts during the field visit to Myanmar from May 11-12, 2010 (see below timetable for the field visit in **table 1**). The presentation of results from the review followed extensive discussion on the possible protocol for the CHI in Myanmar.

After having the first draft of the CHI protocol, a series of stakeholders' consultations were conducted at the township hospitals in Le We and Tatkone. The stakeholders included members of Township Health Committee (THC), township medical officers, midwives and pregnant women. This is to ensure that the proposed protocol is feasible and relevant to the local context. In some circumstances, it may necessary to conduct a small scale community survey to get information that can be useful for further study design e.g. sample site calculations. All information gathered from the stakeholders' consultation was then used to redesign the protocol.

Diagram 1 Describing processes of protocol development

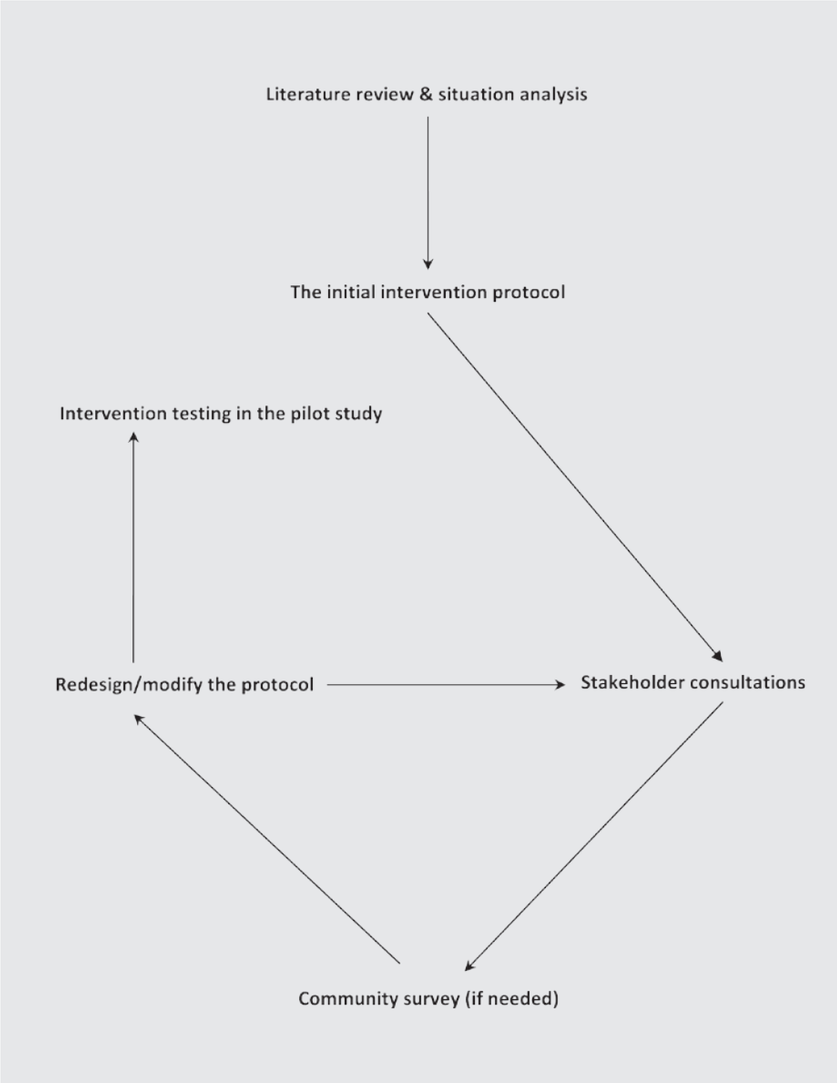


Table 1 Timetable for the first mission

Date	Activities	Remarks
May 11	Learning international experiences for the use of demand-side financing in health esp. MCH	From the literature review done by the consultant team
May 12	Reviewing WHO antenatal care model and comparing with the MCH services in Myanmar, which will be relevant to design the protocol for CHI	Standard MCH services in Myanmar (see **table 3**), proposed protocol for CHI (see **figure 1**)
May 13-14	Visiting Le We and Tatkone townships to review current situations, assessing the feasibility of the proposed protocol and summarising the findings asserted with the plan for next steps of the feasibility study	

3.1 Learning from international experiences

Consumer-led-demand side financing[1] was defined as a "transfer of purchasing power to specified groups for defined goods and services". Voucher and cash transfer, as a demand side financing method, are used in healthcare and education to, at the same time, decrease barriers and increase service accessibility. Public policies use demand side financing in order to:

- Enlarging the scale of target population by including low-income people;
- Changing behaviors of patients/consumers;
- Encouraging free services between providers and voucher holders.

The characteristics of demand side financing or voucher schemes should cover four key components as follows:

- Subsidising the budget to specific groups with a high need for services and/or financial barriers;
- Offering specific goods to the clients at the contacted facilities so the clients can obtain the service from many facilities;
- Promoting the facilities to improve the quality of the services by consumers, thus the contacted facilities should not have a monopoly, and,
- Limiting the reimbursement rate to providers in order to provide services.

[1] Ensor T. Consumer-led-demand side financing for health and education: an international review. Oxford Policy Management.2003.

The essential factors of utilising a voucher scheme in a developing country context are:

- Risk groups or vulnerable groups which are low in service utilisation should be clearly identified. In addition, the benefit package should be predictable and simple.
- Due to the fact that target populations have less accessibility towards services, the use of vouchers will encourage the purchasing power of voucher holders, especially for decreasing financial burden, in order to access health services.
- Voucher logistics, voucher values, voucher utilisation and also the quality of services are considered as being more significant than financial facilities.
- Essential services of the voucher scheme should be subsequently introduced in the national health insurance.

Table 2 Demand side financing maternal and child health in three selected countries

Items	Nepal[2]	Bangladesh[3]	Cambodia[4]
Target population	Reproductive-aged women with two or fewer children (does not explicitly target the poor)	Pregnant women in poorest districts defined by Ministry of Health and Family Welfare	Poor pregnant women defined by predefined questionnaire and eligibility criteria
Benefit packages	Delivery care	■ Three ANC, delivery care (include c-section and delivery manage-ment) and PNC ■ Transportation costs	■ Three ANC, delivery care (include c-section and delivery management) and PNC ■ Child vaccination ■ Transportation costs
Incentives for target population	1,000 NRS or 15.6 USD	■ Free MCH services and transportation subsidisation	■ Free MCH services and transportation subsidisation
Incentives for health facilities	Fee for service in providing care	■ Fixed rate of payment for MCH services	■ Fee for service in MCH services
Incentives for health professionals	300 NRS or 4.7 USD per delivery	■ Cash incentives for some services e.g. ANC, delivery and c-section	12.5 USD for each live birth attended in a referral hospital and 15 USD in health centre
Voucher Distributors	Providers	Skilled birth attendants and other primary level health workers during ANC checks	Health personnel at districts and NGOs
Measured outcomes	Number of pregnant women delivered by healthcare workers (No impact on neonatal mortality)	Coverage and utilisation of MCH care.	Number of pregnant women attending ANC PNC and vaccination

ANC: Antenatal care, PNC: Postnatal care

[2] Powell-Jackson T, Neupane BD, Tiwari S, Tumbahangphe K, Manandhar D, Costello AM. The impact of nepal's national incentive programme to promote safe delivery in the district of Makwanpur. Adv Health Econ Health Serv Res.2009;21:221-49.

[3] Schmidt JO, Ensor T, Hossain A, Khan S. Vouchers as demand side financing instruments for health care: A review of the Bangladesh maternal voucher scheme. Health Policy.2010 Feb 4.

[4] Ir P, Horemans D, Souk N, Van Damme W. Using targeted vouchers and health equity funds to improve access to skilled birth attendants for poor women: a case study in three rural health districts in Cambodia. BMC Pregnancy Childbirth.10:1.

Conditional cash transfer/voucher's advantages

- Pregnant women could get free care and some money to pay for such burdens as transportation costs.
- Pregnant women felt safer when delivering at health centres.
- Pregnant women can be sure that their child could get vaccinated immediately after the delivery.

Conditional cash transfer/voucher's disadvantages

- The voucher distribution was done by the providers, and so receivers need to attend health facilities. However, women who rarely go to the health centre are unable to obtain the CCT and vouchers
- Lowly-educated pregnant women, who are an important target in the demand side financing approach, faced difficulties in filling in the application.
- The incentive, provided for health facilities, might induce unnecessary services such as Caesarean sections, which are offered at a higher rate than normal delivery.
- The low costs of reimbursement were not able to motivate private providers or healthcare professionals' willingness to provide services.

3.2 MCH services in Myanmar

WHO's antenatal care model consists of four ANC visits, delivery and one PNC visit. Considering ANC, there are 16 basic practices that are recommended.[5] Generally, it was found that 12 MCH services in Myanmar have routinely met the WHO guidelines. The rest of the services, including pelvic examination, rapid syphilis test, hemoglobin test, blood typing and Rh test, are provided in some cases, depending on the physician's recommendations.

Apart from the guidelines, there are also some extra services that are offered to pregnant women. In order to prevent some particularly undesirable problems during the pregnancy, vitamin B1 is supplied at the 8th month of gestation. Also, during the 2nd and 3rd ANC visits, mebendazole is given, to prevent anemia.

Regarding PNC, Myanmar offers services which are similar to the WHO guidelines. However, in terms of the number of visits, healthcare workers in Myanmar have more frequent visits (average 4 times within 6 weeks) than the WHO recommendation.

[5] World Health Organization, Department of Reproductive Health and Research. WHO antenatal care randomized trial. Manual for the implementation of the new model. World Health Organization.Geneva.2002.

Table 3 Standard MCH services in Myanmar

Items	Routine practice	Given for some cases	Not provided at all	Note
General information (personal, medical, obstetric history, fetal movement)	✓			
Clinical examination (e.g. signs of anemia, heart and lung auscultation)	✓			
Ob. exam: gestational age estimation, uterine height	✓			
Blood pressure	✓			
Urine test (for bacteriuria and proteinuria)	✓			Only proteinuria
Fe/Folic acid supplementation	✓			
Recommendation for emergencies/hotline for emergencies	✓			
Maternal weight/height	✓			
Fetal heart sound	✓			
Tetanus toxoid	✓			
Instructions for delivery/ plan for birth	✓			
Recommendations for lactation/contraception	✓			
Mebendazole*	✓			2nd and 3rd visit
Vitamin B1*	✓			8th month of pregnancy and after the delivery
Detection of symptomatic STIs**	✓			
Detection of breech presentation and referral for external cephalic version	✓			By clinical examination Ultrasound
Pelvic exam		✓		Only ANC with ob-gyn specialists and midwives will consider in some special cases
Rapid syphilis test**		✓		In particular project townships, especially in high risk group

Items	Routine practice	Given for some cases	Not provided at all	Note
Hemoglobin test		✓		In particular project townships, especially in high risk group
Blood type and Rh		✓		

* According to WHO antenatal model, Myanmar additionally includes the items as ones of services.
** Rapid syphilis test and detection of symptomatic STIs are considered separately in Myanmar.

3.3 Preliminary Community Health Initiative Model

Learning from international experiences and discussions with MoH officers on the MCH services and health system in Myanmar, the model was comprehensively developed. Basically, the CHI, supported by GAVI-HSS, is considered as a financial mechanism empowering voucher holder's decisions towards seeking MCH care.

The vouchers would be distributed to reproductive or pregnant women by Village Health Committee (VHC) or other appropriate distributors. The benefit packages include 4 ANC visits, delivery, PNC visits and transportation, food and lodging. Pregnant women with the vouchers will receive free services form healthcare professionals such as midwives or medical officers. In a sense, women can choose either to deliver at home or at health centres. In cases where the pregnant women choose to deliver at the health centre, the transportation, food, and lodging burden will be subsidised by providing cash. The vouchers, which are handed to health providers, will be able to be exchanged for money from the MoH (see **figure 1**).

This is the outline model before conducting the group discussion in townships with different stakeholders including the THC, medical practitioners, reproductive women, etc. There are also some more points that need to be discussed further about possibilities and other comments in order to develop a well-designed protocol for CHI that is technically and financially feasible, acceptable among stakeholders, and also relevant to the country context.

Figure 1 Preliminary Community Health Initiative Model

3.4 Field visit to Le We and Tatkone, May 13-14, 2010

Eight sessions of focus group discussion (FGD) were convened with the aim of reviewing the current situation regarding MCH services in 2 study townships, namely Le We and Tatkone, and also explore the opinions of local stakeholders on the feasibility of introducing the CHI in these areas. Following a conceptual framework for feasibility analysis, 3 sets of questions were developed, in advance, for health care providers, representatives from community authorities and volunteers, and pregnant women and mothers who are the potential beneficiaries of the CHI (see **figure 1**).

Conducted in Myanmar's language by 2 moderators who were MoH officers, the FGD involved 44 participants as followed:

Table 4 Participants of focus group discussion

Category	Number of participants	
	Le We	Tatkone
1. Members of THC and Community Support Groups (CSGs)	7	8
2. Township Medical Officers, MCH Medical Officers and nurses	4	4
3. Midwives	5	5
4. Pregnant women and mothers	6	5

The discussion among FGD participants in all sessions was simultaneously translated into English by other groups of MoH officers. The researchers took note on the obtained information which then was analysed in accordance with particular elements in the conceptual framework. Key findings were presented and discussed in a meeting attended by MoH officers, the WHO Representative to Myanmar and WHO-SEARO experts on May 14, 2010.

3.4.1 Findings and discussions

A) Maternal and child health problems

Not only medical officers and midwives but also health volunteers were aware of MCH problems, especially maternal and infant deaths in the study townships. In the discussion, the magnitude and attributing factors of such problems in Le We were illustrated. As pointed out by a midwife, one mother in her catchment area died of post-partum hemorrhage. Other delivery complications were also mentioned by other midwives. It was asserted that most of the maternal fatality cases resided in remote villages, and obtained delivery care from traditional birth attendants (TBAs). Meanwhile, malnutrition, low birth weight, heat stroke and infectious diseases such as diarrhea and pneumonia were mentioned as causes of deaths in infants.

B) Current situations concerning MCH services

- **Resource shortages**

Taking into account the current demands for MCH services, available resources are inadequate in delivering quality care in the two study townships. Workforce shortages were recognised by most participants in the FGD. They argued that, in particular, midwives alone could not shoulder the entire work burden. It was found that some midwives were responsible for caring pregnant women and mothers in as many as 5 to 11 villages, while they accepted that at their full capacity, they could address the needs in 3 villages at the maximum. This is in line with the suggestion of medical officers who argued that, to deliver quality care, one midwife should take care of women in only a single village. In remote and hard-to-reach areas, this problem seems to be serious, as people rely on delivery care given by unskilled birth attendants including auxiliary midwives (AMWs) and TBAs. It cannot be ignored however, that AMWs and TBAs play a crucial role in providing care to pregnant women, since they reside in the community, while midwives are normally based in MCH clinics. Although in practice, midwives spend most of their time, on average 4 out of 5 working days per week, traveling to visit women and children in villages, some areas are not well covered for comprehensive quality care, owing to the vast demands and commuting difficulties.

Besides the shortages of health personnel, the FGD participants highlighted the inadequacy of medicines, diagnostic reagents, medical and surgical equipment and other supplies at all levels of service provision. Midwives and medical officers maintained in the discussion that there were severe shortages of Clean Delivery Kits. In addition, in most instances essential medicines such as antibiotics were not adequately supplied in MCH clinics, so that clients needed to pay out of pocket to get these medicines from private pharmacies. In Le We township hospital, only two surgical sets and one operating theatre were available and were used not only for caesarean sections, but also for other types of operation. Given that the demands for MCH

care are rising after the inauguration of the CHI, well-planned investments in equipment, pharmaceuticals and disposable materials are vital.

- **Out of pocket payments for MCH services**
  Currently, MCH care providers in particular categories are paid, voluntarily by their clients, at different rates. For one delivery case, medical officers get approximately 10,000 Kyats and midwives get 5,000 to 10,000 Kyats. Meanwhile, AMWs may obtain as much as 5,000 Kyats if they and midwives jointly deliver the service. Midwives also get around 500 Kyats for each antenatal care (ANC) provision. As maintained by FGD participants, these payments are voluntarily offered, either in cash or in kind, by the clients to reflect their gratitude to the providers. Furthermore, women who live in remote and villages, when traveling to seek care in MCH clinics and township hospitals, have to shoulder the costs of transportation, meals and accommodation for themselves and accompanying persons. The magnitude of these non-health care costs depends on the distance between their residences and the health premises.

- **Traditional birth attendants**
  In the Myanmar context, TBAs play an important part in providing MCH services, especially delivery care. Approximately 70% of pregnant women in study townships give birth with TBAs. In some villages, the number of TBAs offsets the AMWs'. Following the FGD, people, in particular those residing in rural areas seeking delivery care from TBAs rather than from midwives and AMWs, since TBAs get along well with pregnant women and their family, and also provide many services, besides delivery care, including washing, cleaning, and taking care of children and the newborn during the first week after delivery. Most TBAs are older than AMWs, and this makes some people believe that they are more experienced than AMWs and even midwives. Nevertheless, it is evident that a significant fraction of maternal death cases are associated with obtaining care from TBAs.

c) The Community Health Initiative

- **Program feasibility, and anticipated challenges and benefits**
  In the opinions of stakeholders in both study townships, the introduction of CHI is possible. This initiative would be beneficial in overcoming financial barriers faced by women in need of MCH services, and result in an increased number of deliveries with skilled birth attendants. At the same time, the FGD participants anticipated several challenges which would become explicit 2 to 3 months after the CHI inauguration. Representatives from community authorities and volunteers and healthcare workers maintained that they would provide support to activities carried out under the initiative. These included carrying out public relations campaigns regarding the CHI mechanisms, related benefits and expected health outcomes.

- **Voucher distributors**
  In the draft CHI protocol developed in consultation with MoH officials and WHO experts, there was uncertainty regarding who should be responsible for distributing vouchers to the target population in this scheme. Most FGD participants recommended that this task might involve CSGs, VHC, Ten-Household Leaders and other local authorities. As also suggested in the discussion, policemen and monks might be

alternatives in some areas. In this connection, the researchers argued that the choices of voucher distributors should be context specific, and that this task should not be monopolised by any single organisation. It should be noted that convenient stores and groceries were raised as possible voucher distributors in Le We; however, these options were not endorsed by the participants since it was considered that shop owners tended not to be effective distributors of vouchers as they usually focused on their business interests.

- **Solutions to the workforce shortages**

  One of the current impediments in providing MCH care in the two study townships involves the inadequate number of midwives. Given the increasing demands for MCH services under the CHI, the shortages need to be addressed before the reform begins. An effective solution is the production and retention of midwives. However, it will take some time to introduce these measures and acquire any significant extension of human resource availability. In this respect, temporary, immediate interventions are needed. Strengthening the capacity of AMWs in order that they could replace midwives in MCH care provision was considered, but not adopted by key stakeholders including the MoH officers. This was because this measure contradicted the policy to increase the number of deliveries with skilled birth attendants. Task shifting was recommended instead: AMWs should be trained to carry out postnatal care provisioning, as that would allow midwives to spend more time on ANC and delivery services.

It has been anticipated that as a consequence of CHI introduction, the number of pregnant women who choose to give birth with midwives will increase, and TBAs will become the 'loser'. Some suggested that similar to AMWs, TBAs may be trained to carry out some sorts of assistive work for health personnel. This could, to a certain extent, reduce resistance to the CHI and also ease the service burdens shouldered by midwives. A team approach among the three cadres of workforces was recommended.

- **Financial incentives for health providers**

  Financial subsidisation for MCH services through the CHI aims to overcome existing barriers to quality care provided by health personnel. However, voluntary payments arranged by households for delivery care was described in the FGD as a tradition, which would continue, despite the CHI establishment. Another point to be considered is whether and how the financial incentives should be given to AMWs. As argued by key informants, this group of MCH providers might be offended if they were not paid appropriately.

- **Traveling costs**

  As mentioned earlier, apart from out of pocket payments to MCH care providers, traveling costs are crucial barriers to the services at MCH clinics and hospitals. For women who reside in remote and hard-to-reach areas, traveling to health facilities incurs a substantial financial burden. As FGD participants pointed out, the CHI really needs to cover the costs of transportation, food and lodging not only for the women in need of MCH care, but also for accompanying persons. Regarding this, the researchers consider that reimbursement

of such payments should be carried out at the points of service. This is because, as shown in existing literature, the delay in reimbursement might impede a voucher scheme introduction in some settings, since it discourages beneficiaries from seeking care or services which are identified as essential.

- **Civil society organisation as a provider?**
  In Tatkone, the FGD participants argued that MCH clinics run by a nongovernmental organisation (NGO), the Maternal and Child Welfare Association (MCWA) were well equipped with health personnel and medical instruments. These providers might help to address the increasing demands for MCH services under the CHI. However, a consultation with MoH officials on May 14, 2010 indicated that including MCWA clinics as MCH service providers in this scheme might not be feasible as these NGO-supported clinics existed in only a limited number of townships.

- **Potential exploitation of vouchers**
  One of the major concerns regarding the introduction of the CHI is regarding the potential abuse of the vouchers or corruption: some MCH care providers may buy or freely get vouchers from beneficiaries of the initiative and get them reimbursed from the MoH, without providing any services. In this matter, community leaders and volunteers maintained that pregnant women and health workers would abuse the system, since this deceiving practice was regarded as a sin according to Buddhist teachings. In spite of this argument, MoH officers and the researchers agree that there is a need for an auditing system to ensure the transparency and efficiency of the CHI. Such a system can be introduced through systematic reviews of existing antenatal registries and hospital medical records.

- **Coordination between the three components of the GAVI-HSS**
  Provided that the GAVI-HSS comprises three major elements, including the reforms of financing, human resources and infrastructure, the researchers consider that in achieving the ultimate goals of health system strengthening and improved health of the population, these components should not operate separately, but need to be linked with each other. To illustrate, in the light of midwives shortages, the CHI as a means of financing management would not be effective in the absence of adequate numbers of midwives and other auxiliary personnel. Therefore, joint development and introduction of projects/ programs under the three elements are indispensable.

4
Protocol adjustment based on findings from FGD in Le We and Tatkone

This section summarises results from the wrap up session on May 14, 2010, where the HITAP team, together with MoH officers and WHO-SEARO experts, held a discussion based on comments and suggestions from the FGD of the two townships. **Table 5** presents characteristics of each key component for the CHI model in Myanmar.

Table 5 Community Health Initiative Model

Key components	GAVI-HSS financing	Notes
Target population	All pregnant women in particular catchment areas	Self-selection (high income women are likely to seek care from private providers or non-governmental providers outside the township)
Benefit packages	■ ANC and delivery both at health facilities and home ■ PNC, including newborn care ■ Direct non-medical costs; transportation, food, accompanying persons?	Childhood vaccination is responsible by national EPI. Care for children under 5 may be considered later, but not included in the current phase of CHI.

Key components	GAVI-HSS financing	Notes
Type of facilities (Public or Private)	Public providers	The reasons for excluding private providers; 1. If the private providers are included, strong incentives need to be provided, and it will be costly. 2. Good connection between public and CSGs ➡ comprehensive care 3. Adequate resource allocation from GAVI-HSS, supporting public health providers to improve all essential services including MCH. We also exclude non-profit private providers because there is no financial mechanism for government to finance services provided by non-governmental providers.
Incentive for health facilities	Benefit package indentified will be fully covered either by the government current budget or GAVI-HSS to ensure that health facilities have no additional financial burden	
Incentives for health professional	Financial incentive	■ Sustainability after the GAVI-HSS ■ Pay per performance is not practical in government system?

Key components	GAVI-HSS financing	Notes
Distributors of vouchers	Village Health Committee	Possible options; ■ health assistants ■ community leaders ■ Buddhist monk accompanying persons ■ Traditional healers
Communication strategies	■ Awareness campaigns ■ Posters ■ Pamphlets	
Administration and transaction	GAVI-HSS ➡ WHO ➡ MoH ➡ Townships	
Mechanisms for ensuring the quality of MCH services	Supervisory team at the township level	
Measured outcomes	■ Utilisation rate ■ Maternal and infant mortality ■ Out of pocket spending	
Auditing mechanisms	Such a system can be introduced through systematic reviews of existing antenatal registries and hospital medical records.	

5
Plan for the second mission

The first mission was completed with the presentations of the drafted protocol for the CHI and results from qualitative analysis on the practical and technical feasibility of the protocol as described above. All parties were satisfied with the achievement and were willing to move forward in developing a plan for the implementation of the CHI under the GAVI-HSS program.

According to the second objective of this feasibility study the second mission is planned to provide training support for local staff in order to allow them to conduct a costing study with the aim of estimating budgetary requirements for the CHI, and also to explore key parameters that are important for the monitoring and evaluation of the CHI. **Table 6** reveals the tentative agenda for training and other activities of the second mission. The costing training will be organised in the first two days with particular attention paid to the cost assessment at the community level where the majority of MCH services are expected to be provided by midwives under the CHI. Then, tools and materials (including costing questionnaires) developed during the training will be tested in the community by trainees in the third day of the mission and the results from the field testing will subsequently be discussed in the morning of the fourth day.

Table 6 Tentative agenda for the second mission

Time	Day 1	Day 2	Day 3		Day 4
9.00-12.00	Concept and practice of healthcare costing in the community settings	Data collection in practice	Field testing in community	Model validation with MoH officers	Discussion of findings from field testing
12.00-13.00	Lunch	Lunch	Lunch		Lunch
13.00-16.30	Tool developme nt for costing study	Data analysis and presentation	Field testing in community	Expert consultation meeting for identifying and verifying parameters in the decision analytic model	Wrap up session and planning for next step

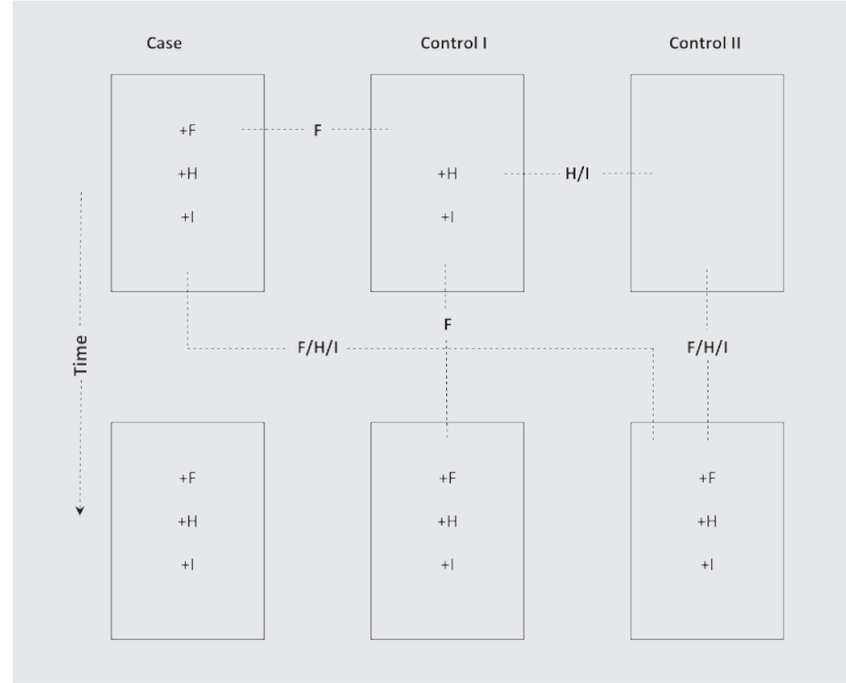
Meanwhile, two expert consultation meetings will be organised on the third day of the mission to verify a decision analytic model developed by the consultation team prior to the second mission. The model is to assess the potential costs and health outcomes of the CHI, if it is implemented in the township. It is expected that the results of this decision analysis will be presented at the last (third) mission of the feasibility study. The decision analysis is very important because its results are not only to inform decision makers on the justifications of the CHI, especially in terms of 'value of money', but also to provide information on the scope, approach and set of parameters that will be useful for future monitoring and evaluation of the CHI.

With consultations among MoH officers, WHO experts and the HITAP team, the second mission is scheduled at the end of June or early August 2010. The participants of the costing training include a core researcher team from the Department of Health Planning, 1-2 academics from Schools of Public Health, and 4-6 midwives from the two selected townships where the CHI will be introduced in the first year of the GAVI-HSS program. The HITAP team will be the course instructors with support from Public Health Administrators from WHO, Myanmar.

For the expert consultation meetings, the first session will be conducted with 4-5 MoH officers who are responsible for the CHI development and supervision of the MCH services at the central level. This session is to present the model to MoH officers and make sure that the model addresses all important points presented in the local context. For the second session the experts include 2-3 obstetricians and 2-3 midwives. Invited obstetricians and midwives will be asked to review input parameters used in the model to ensure that they are relevant to the Myanmar setting.

Lastly, it is suggested that the MoH officers start looking at the two townships for the pilot study in the first year of the GAVI-HSS program. Based on a prior agreement that the pilot study will be conducted using the pair-matched case and the control experimental study approach (see **diagram 2**), it is necessary that each of the two selected townships has another two comparable townships that are similar in terms of population status, health and economic infrastructures, geographical location etc. However, the two selected townships do not necessarily need to be equivalent. MoH officers will be responsible for selecting the two townships and inviting local healthcare workers to join the training before the second mission starts.

Diagram 2 A pair-matched case and control approach



Each box represents each selected township
F: implementation of health financial intervention
H: implementation of human resource development
I: implementation of health infrastructure development
--- F---: evaluation of effectiveness (impact) of health financial intervention
--- H/I-: evaluation of effectiveness (impact) of human resource and health infrastructure development
--- F/H/I: evaluation of effectiveness (impact) of health financial intervention plus human resource and health infrastructure development

Appendix 1

Demand side financing in healthcare

Health Intervention and Technology Assessment Program

Demand side financing for health

Health Intervention and Technology Assessment Program

Outlines

- What is demand side financing?
- Pros and Cons of cash transfer and voucher scheme
- Characteristics of voucher
- Scope for vouchers in health in resource-limited settings
- Methods of literature review
- Demand side financing used for disease prevention and health promotion
- Demand side financing for curative care
- Demand side financing for maternal and child health in three selected countries

Health Intervention and Technology Assessment Program

Demand-side financing

- Definition "transfer of purchasing power to specified groups for defined goods and services"
- Objectives of demand-side financing
  - Changing behaviors of patients/consumers
  - Promoting competition between providers and choice for consumers
  - Targeting low-income and other vulnerable people
- Vouchers and cash transfer (CT) employed for transferring the purchasing power.

Health Intervention and Technology Assessment Program

Pros & Cons

	Pros	Cons
CT	- Liquid asset	-Easier to corrupt
Voucher	- Direct to target	-Exchange to specific goods or services at contracted settings
	- Easier to monitor and evaluate	- Increased transaction costs

Health Intervention and Technology Assessment Program

Characteristics of vouchers

- Grant to consumers, based on personal or household characteristics by exchanging specific goods and services
- Intermediate choice- consumers may shop around between facilities for a specified good.
- Supplier competition
- Declining marginal rate of reimbursement

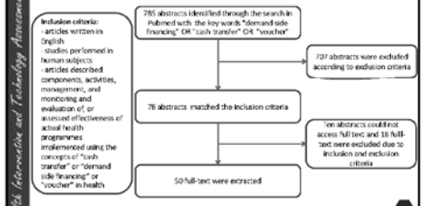
Health Intervention and Technology Assessment Program

Scope for vouchers in health in resource-limited settings

- Vouchers for predictable and simple service packages
- Vouchers placing purchasing power and information to targeted population
- Development of new structures
- Vouchers for insurance

Health Intervention and Technology Assessment Program

Methods of literature review



Health Intervention and Technology Assessment Program

Demand side financing used for disease prevention and health promotion

Services	Benefits obtained through of CCT or Voucher scheme	Country
Health and education services	Cash transfer to household to income (17-80%) by monthly or bimonthly	Mexico, Nicaragua
Nutrition supplement	Orange juice delivered directly to households with pregnant women	Wales
SRH	Consultation, follow-up visit for advice/counselling, contraception, treatment STI or reproductive tract infection, pregnancy test and/or antenatal care	Nicaragua
ITN	Discounted prices of ITN	Ghana, Tanzania
Maternal & child health	Free services, plus transportation cost supplementation, plus other incentives	Nepal, Bangladesh and Cambodia

CCT= Conditional cash transfer, SRH = Sexual reproductive health, ITN = insecticide treated net

Health Intervention and Technology Assessment Program

Health Intervention and Technology Assessment Program

Demand side financing for curative care

Services	Benefits obtained through of CCT or Voucher scheme	Country
STI	Free services	Nicaragua
Treatment of drug dependent	Transportation, health care service, merchandize by research assistant, merchandise catalog, or gift certificates to local merchants, meals in restaurants, training purchases in department, book shops and beauty services Note: (perceived benefit of using the services is zero or even negative)	US
Smoking Quit	N/A	US
Health technology and general services for elderly	personal care aid, companion, respite case services, adaptive or assistive technology, transportation, home modification, and media, supplies, durable medical equipment, and consumable care goods not normally financed by Medicare	US

CCT= Conditional cash transfer, STI= Sexually transmitted infections

Health Intervention and Technology Assessment Program

Used of voucher or CCT

- Free care and some money to pay for transportation costs
- Felt safer when delivering at health centers
- Child get vaccine immediately after the delivery

Health Intervention and Technology Assessment Program

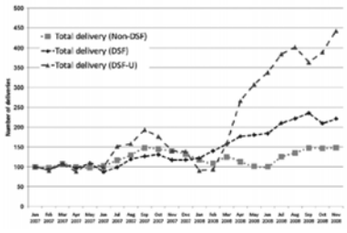
Unused of voucher or CCT

- Residing far away from health centres- not sure that voucher benefit cover special transportation
- Some doubted the midwife's availability at night for delivery.
- Nobody would look after house and take care of children
- Dissatisfaction with health centre services and staffs

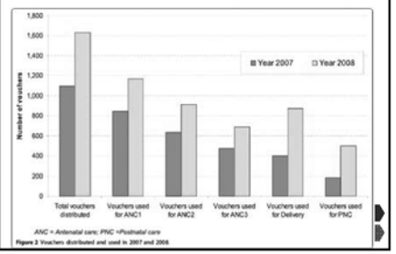
Maternal and child care

	Nepal	Bangladesh	Cambodia
Distributors	Providers	Skilled birth attendants and other primary level health workers during ANC checks	Health personnel at districts and NGOs
Measured outcomes	Number of pregnant women delivered by health care workers (No impact on neonatal mortality)	Coverage and utilization of MCH care.	Number of pregnant women attending ANC PNC and vaccination
Impact of the programmes	- Increased delivery in a government health facility and skilled birth attendance - Only two-fifth of eligible women received the CCT after child birth.		

Results of Bangladesh's program



Results of Cambodia's program



Problems of CCT and voucher scheme

- Distributed by provider- subjects who got CCT or voucher are most likely to attend health facilities
- Women with some education got CCT more than low education because of document filling.
- Increasing of unnecessary c-section
- Low costs of reimbursement did not motivate private providers

Used of voucher or CCT

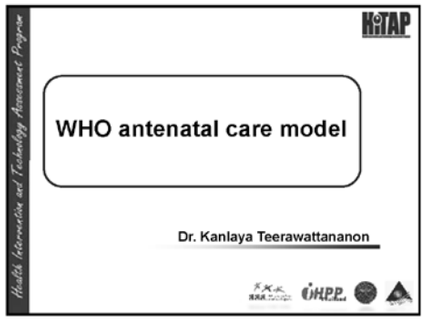
- Free care and some money to pay for transportation costs
- Felt safer when delivering at health centers
- Child get vaccine immediately after the delivery

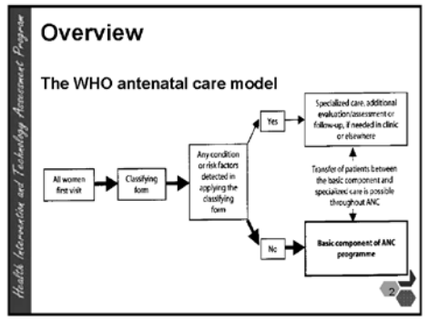
Unused of voucher or CCT

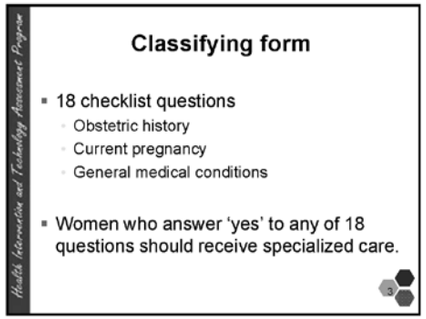
- Residing far away from health centres- not sure that voucher benefit cover special transportation
- Some doubted the midwife's availability at night for delivery.
- Nobody would look after house and take care of children
- Dissatisfaction with health centre services and staffs

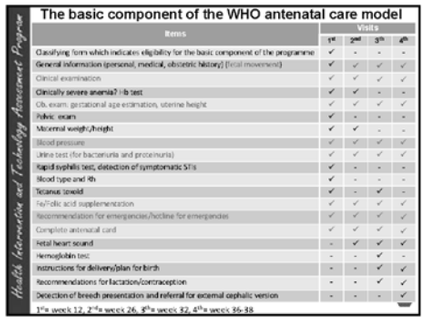
Appendix 2

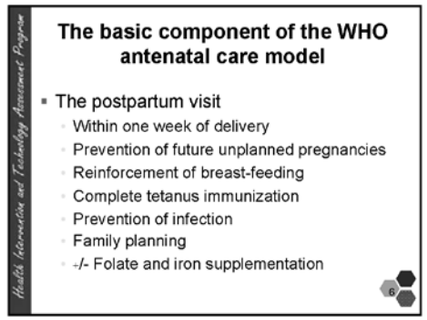
WHO antenatal care model











Appendix 3

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The **second** mission: Estimating the budget required for implementing the Community Health Innitiative

By Health Intervention and Technology Assessment Program (HITAP)

August 2010

Contents

Abbreviation

ANC	=	Antenatal care
AMWs	=	Auxiliary midwives
CHI	=	Community Health Initiative for Maternal and Child Health
GAVI	=	Global Alliance for Vaccines and Immunization
HITAP	=	Health Intervention and Technology Assessment Program
HSS	=	Health System Strengthening
LHVs	=	Lady Health Visitors
MCH	=	Maternal and child health
MoH	=	Ministry of Health
MWs	=	Midwives
SEARO	=	WHO of the South-East Asia Region Office
TBAs	=	Traditional Birth Attendants
THCs	=	Township Health Committees
VHCs	=	Village Health Committees
WHO	=	World Health Organization

1
Introduction

The Union of Myanmar is the largest country in mainland South-east Asia with a population of 57.5 million. It has a pluralistic mix of public and private healthcare systems. Although the Ministry of Health (MoH) is the main organisation responsible for healthcare provision, 70-80% of health service expenditure is now absorbed by the households. This prompts the need to develop a stronger health financing system that reduces the portion of out-of-pocket expenses and, at the same time, improves accessibility to health services among the population. One underutilised essential health service is maternal and child health (MCH). This results in high infant and maternal mortality in the country, with rates of 59.7 and 2.55 per 1,000 live births, respectively.

Because of this situation, Myanmar's MoH, the World Health Organization (WHO) and the Health Intervention and Technology Assessment Program (HITAP) of Thailand have proposed the development of a new health financial option to improve MCH services in Myanmar. This new initiative will contribute to the 4-year research and development program funded by the Global Alliance for Vaccines and Immunization (GAVI), Health System Strengthening (HSS) for Myanmar. It is proposed that three missions will be completed by Myanmar's MoH, the WHO and HITAP within a period of six months.

The first mission, which is to develop a well-designed protocol for CHI that is technically and financially feasible, acceptable among stakeholders, and also relevant to the country context, was completed by the team in May 2010. This proposal is for the second mission, and aims to assess the budgetary requirements for the newly designed Community Health Initiative (CHI). This initiative takes into account both the different levels of health facilities and the characteristics of each township, and explores key parameters that are important for the monitoring and evaluation of the CHI. The last mission aims to estimate the potential cost and health outcomes from the future implementation of the CHI, and devise systems and mechanisms for the future monitoring and evaluation of the CHI through the use of the decision analytic model.

2
Objectives and scope of work

As a by-product of the first mission of the feasibility study (May 2010), a well-designed protocol for the CHI was developed by a collaboration of Myanmar's MoH officers, experts from the WHO of Myanmar and the WHO of the South East Asian Region office (SEARO), and the consultant team from HITAP. After allowing for the country context, the CHI protocol was validated among stakeholders in the health system, including members of Township Health Committees (THCs), township medical officers, midwives (MWs), members of Village Health Committees (VHCs) and other community support groups, pregnant women and mothers.

During the second mission, the newly designed CHI was put into the next step, which is to estimate the budget required for implementing the CHI at the township level as well as to design systems for the monitoring and evaluation of the impact of the CHI.

3
Second mission activities

The second mission began with cost analysis training which was run by the consultation team for MoH's staff, in order to enable local staff to conduct a costing study for estimating the budget requirements for the CHI. The cost analysis training was organised with particular attention paid to cost assessment at community level where the majority of Maternal and Child Health (MCH) services are expected to be delivered by MWs. Then, the questionnaires that were developed during the training were tested in the community by the consultation team and MoH staff. The preliminary findings from the field testing were used to subsequently fine tune the questionnaires (see **diagram 1**).

Diagram 1 Describing process of development of questionnaires

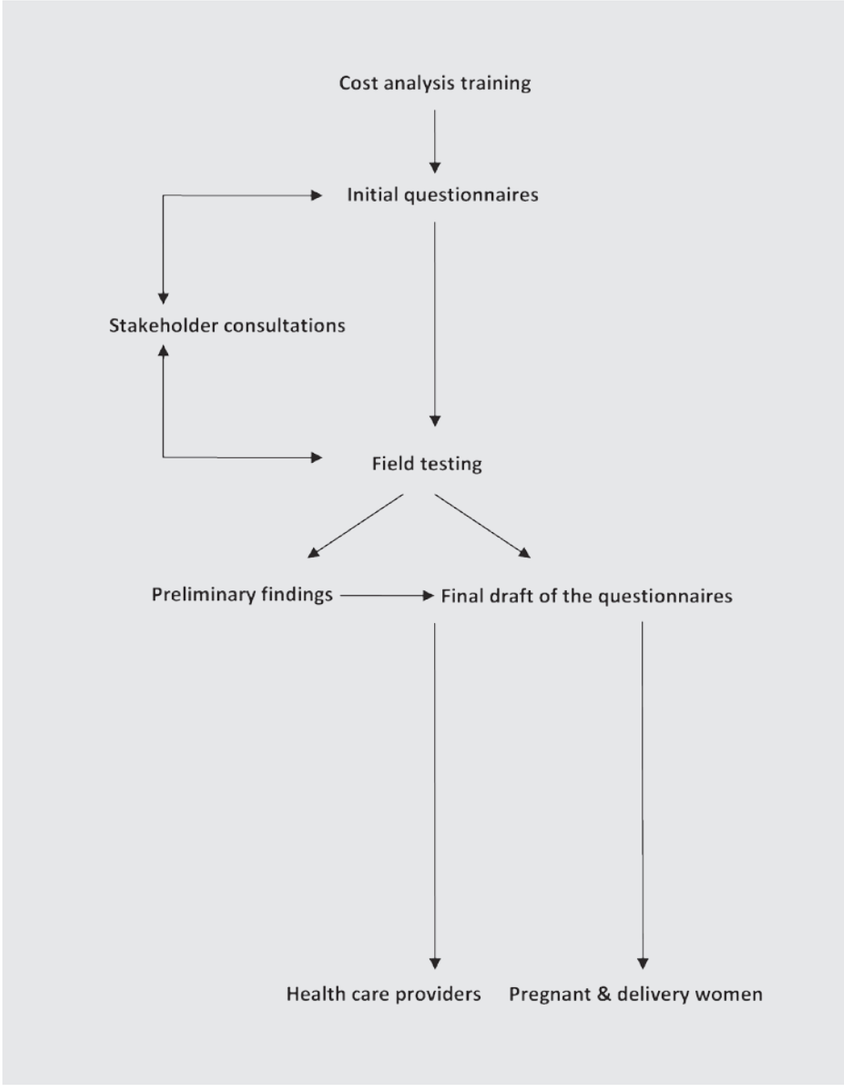


Table 1 Timetable for activities

Date	Activities	Remarks
August 2	Conducted cost analysis training in order to construct initial questionnaires Exercise I: Identification of labour costs, material costs and capital costs of Antenatal Care (ANC) visits and delivery Exercise II: Measurement and valuation of identified resources as listed from exercise I	 Exercise I (see **appendix 1**) Exercise II (see **appendix 2**)
August 3	Validated the initial questionnaires compiled to the country context	The purpose of the questionnaire validation is to adjust the forms to be relevant and user-friendly
August 4	Visited Le We township hospital, Alar station hospital, and Thet ka chin sub-centre in order to test the questionnaires	
August 5	Presented preliminary findings from field testing and made a final draft of the questionnaires i. e. ANC & delivery costing questionnaires for health providers, and patient questionnaires (for pregnant women and delivery cases in community) (see **appendix** 3-6). The plan for next steps was also discussed.	

3.1 Costing Analysis Training

The two-day costing analysis training was organised by the consultation team and resource staff from MoH i.e. U Htay Win, Deputy Director General, Department of Health Planning and Dr. San San Aye, Director (Planning), Department of Health Planning. The training aimed to provide basic information to MoH staff (see name list in **appendix 7**) on conducting a costing study and they, with support from the consultants, constructed the first version of questionnaires.

The lecture on cost analysis provided the basic concept and practical approaches to costing. The three steps of cost analysis; identification, measurement and valuation, were introduced and followed by cost classification according to inputs and relationship to health services. Input costs include labour costs, material costs, and capital costs. Meanwhile, the relationship to health services divided costs into four categories which are direct medical costs, direct non-medical costs, indirect medical costs, and intangible costs.

Two exercises were given in order to create initial cost questionnaires which would later be used for the field test with health providers and women in the community. The first exercise was the identification of activities and resources used to provide MCH services by MWs in sub-centres. The second exercise mainly focused on the measurement and valuation of those identified resources listed from the previous exercise.

After the exercise sessions of the first day, 3 sets of questionnaires were developed. These included (i) ANC costing questionnaire, (ii) delivery costing questionnaire, and (iii) patient questionnaire. The ANC and delivery costing questionnaires were drafted for self-administration by health staff, those eligible for this were MWs, nurses, and medical doctors. The patient questionnaire was designed for face-to-face interviews with (1) pregnant women who received ANC provided by Traditional Birth Attendants (TBAs), Auxiliary Midwives (AMWs), MWs, Lady Health Visitors (LHVs), staff nurses, trained nurses, and medical doctors, and (2) mothers who just delivered babies with MWs, nurses, and medical doctors.

For the second day's activities, three drafted questionnaires were reviewed and adjusted upon the local context, relevancy, and sequences by the same group of participants attending the first day's training. At the end of the day, a plan for questionnaire testing in Le We township at three different health facilities namely its township hospital, Alar station hospital and Thet ka chin sub-centre was made. It was expected that at hospital level at least 1 health staff, who provides ANC and delivery services; 1 pregnant woman and another mother, who just gave birth within 30 days, would be interviewed. The same quota was applied for the sub-centre health facility but this time 2 pregnant women and 2 women who gave birth within 30 days would be the targeted respondents.

3.2 Field testing of data collections forms

The working team was divided into 3 groups for field testing at township hospital, station hospital and sub-centre. Each group consisted of 2 members from the consultation team and 2-3 MoH staff (see **table 2**). The purpose of this activity was to use the developed questionnaires in order to assess whether they were relevant to the real context and if they were user-friendly. Problems and difficulties that occurred during this field testing were noted to improve the quality of future questionnaires.

Table 2 Respondents of field testing categorised by levels of health facilities

	Health facilities			
	Le We township hospital	Alar station hospital	Thet ka chin sub-centre	Total respondents
Health Professional				
Medical doctors	2	-	-	2
Staff nurses	2	1	-	3
Trained nurses	2	-	-	2
Lady Health Visitor	-	1	-	1
Midwives	8	-	1	9
Patient Cases				
ANC	1	1	2	4
Delivery	1	1	2	4
				25

During the interviews with respondents which were conducted by MoH staff using the local language, the consultation team observed the flow of interviews, time spent, as well as non-verbal reactions from both interviewers and interviewees. Any issues, that interrupted the flow of interviews, were noted on the spot and brought into later discussions.

After completing the field testing, the MoH staff and consultants gathered together at the MoH office to discuss the results of the interviews. As a result, it was agreed to separate the patient questionnaire into two sets of which one is for pregnant women and another for women who already gave birth. Furthermore, re-ordering of existing questions, adding more answer choices and new questions were made to help improve the quality of the questionnaires. The analysis of data obtained from the field testing and the preparation of presentations of the preliminary results were also done by the consultation team.

3.3 Presenting final drafts of questionnaires and the preliminary findings

The preliminary findings analysed by the consultants were presented at the beginning of the fourth day. Given the small sample size, the results provided a rough picture of the costing analysis to make plans for further steps of data collection. The details of the preliminary results are given in the subsequent section.

4
Findings from questionnaire testing

The three sets of questionnaire were tested with 18 health staff, 1 auxiliary midwife and 8 village women in Le We township. It was found that the ANC costing questionnaire and delivery costing questionnaire were well-understandable by medical doctors, nurses, LHVs and MWs.

The only problem found from using the ANC and delivery costing questionnaires was that it was difficult to ask for the percentage contribution of ANC and delivery services of each health staff. The original version asked interviewees to estimate a percentage time contributed to ANC and delivery services, respectively, and most interviewees involved in the questionnaire expressed difficulty in making that estimate. Rather than asking for the percentage time contributed to each MCH service, the new versions of these questionnaires asked interviewees to provide evidence of working hours per month spent on ANC and delivery services provision, and their total working hours per month, respectively. The proportion of working hours spent on the MCH service compared to total working hours of each individual health staff can be used to determine total labour costs for each MCH activity. It was also agreed among MoH staff and the HITAP team that labour costs of those non-governmental health workers, i.e. AMWs, will not be included in this costing study because it was not feasible to interview them and even if they agreed to be interviewed, it was found in the field test that they were very reluctant to give information regarding their personal income.

Furthermore, the field test identified the need to divide the patient questionnaire into two sets i.e. the patient questionnaire for ANC cases and the patient questionnaire for delivery cases. This is to ensure that the interviewers and interviewees will not get confused with the sequence of the patient questionnaire that contained a lot of skip sequencing. Also, there were a number of suggestions to modify the patient questionnaire, especially on the answer choices to make them more relevant to the local context.

The questionnaire testing revealed that all questionnaires were of good length. Most of the interviews using the patient questionnaire could be finished within 30 minutes while the ANC and delivery costing questionnaires required a longer time, approximately 1 hour for each questionnaire, to be completed. This is because it involved many health staff to complete the questionnaire, and it contained sensitive questions, especially in part #2 which asked for information regarding their personal income including voluntary contributions from pregnant women given to health staff. It was suggested that this part of the questionnaire should be put in a closed envelope for each individual health worker and that it would be submitted directly to the MoH staff at the central level in the real data collection.

5
Preliminary findings of results from questionnaire testing

Figure 1 Unit costs of 1st and subsequence ANC services

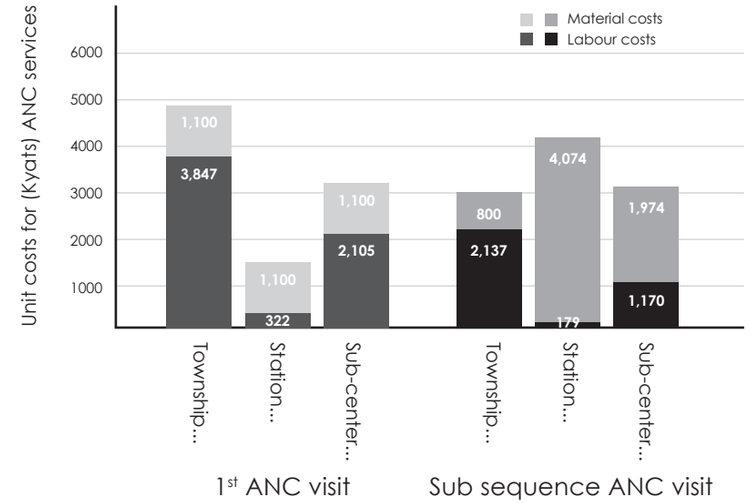
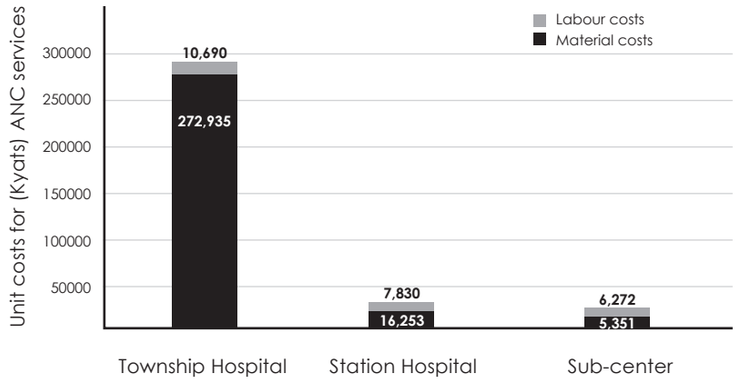


Figure 1 illustrates the estimated unit costs of the first and subsequent ANC services offered at a township hospital, a station hospital and a sub-centre in Le We township. The unit cost of ANC services was the highest for the first ANC in the township hospital with approximately 4,900 Kyats, followed by the unit costs of subsequent ANC in the station hospital (4,200 Kyats) and the unit cost of the first ANC in the sub-centre (3,200 Kyats). It can be seen that labour cost is a major part of the total unit costs across health facilities except at the station hospital.

Figure 2 demonstrates that the unit cost of normal delivery was the highest in the township hospital (approximately 280,000 Kyats). The unit cost of delivery in the township hospital was dominated by labour costs which accounts for more than 90 percent of the total cost. This is because there were many high levels of professional staff with high salaries in the township hospital.

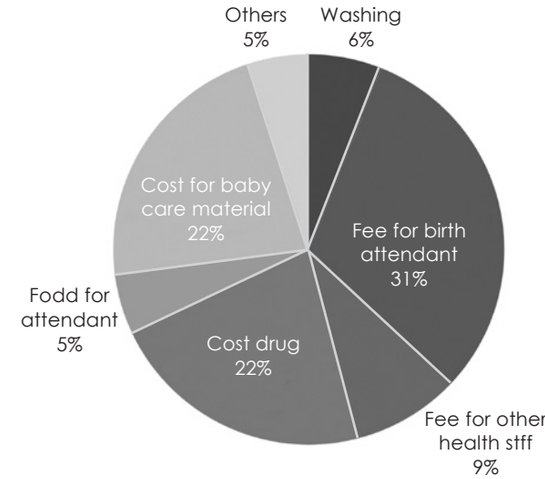
Figure 2 Unit costs delivery services



For results of the patient questionnaire, there were 8 respondents of which half of them were ANC cases and delivery cases. Mean respondent age was 32 years old (ranging from 23-47 years). They had 3 children on average. Seven out of eight mothers experienced home delivery at least once. Six of those having previous delivery chose the place to delivery by themselves, but one delivery case was decided by her husband. From four recent delivery cases, three gave birth at home and there is one woman who delivered her first baby at a one thousand-bedded hospital due to referral.

Women who had previous deliveries paid approximately 99,000 Kyats which is similar to their monthly average income. This figure was adjusted according to inflation rates (over time). Four current delivery cases spent around 78,000 Kyats.

Figure 3 Cost components of household expenditure on ANC and delivery

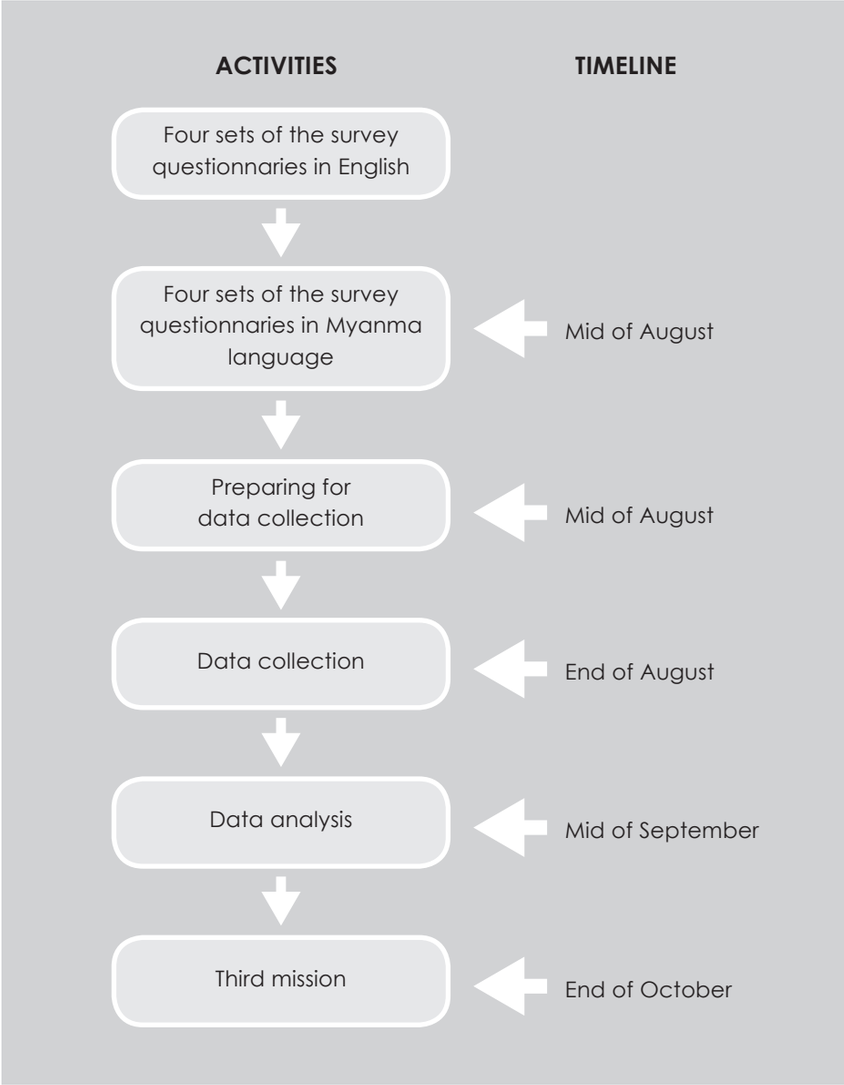


This pie chart (**figure 3**) shows the percentage share on household out-of-pocket expenditure of four delivery women. For those who recently delivered at home, paid out-of-their pockets a total of around 78,300 Kyats. There are three costs drivers. Fee for birth attendants and other health staff accounted for 40%. Cost of baby care materials attributed 22% which was equal to the cost of drugs. Fees on other items such as food for attendants, laundry and others are less than 10% each.

6
Plan for data collection

From the final wrap up session of the second mission, a work plan was agreed among the MoH and HITAP team. The completed English questionnaires will be translated into the Myanmar language. The questionnaire will then be used for interviewing healthcare providers and patients in selected townships. In mid August, selected sites and potential questionnaire respondents will be contacted and venues will be arranged for data collection by the end of August. It is expected that the data collection will last for 3 weeks and the data gathered from the survey will be key-in and analysed by both MoH staff and the HITAP team. This activity is expected to be carried out in September 2010. Then the third mission will be followed. The entire process is illustrated in **figure 4**.

Figure 4 Activities and timeline



6.1 Study design

A pair-matched case and control approach was employed. Three townships i.e. Yedashae, Tatkone, and Daik-U were proposed as study areas. **Figure 5** shows the pair-matched case and control approach employed in the selected study areas. The first township will be assigned as a case site where the voucher scheme will be implemented at the beginning of the pilot study. Meanwhile, Tatkone Township will be the first control area (control I) where the voucher scheme will be implemented in the second and third years. Lastly, the third township- Daik-U will be the second control area (control II) where there will be no scheme applied.

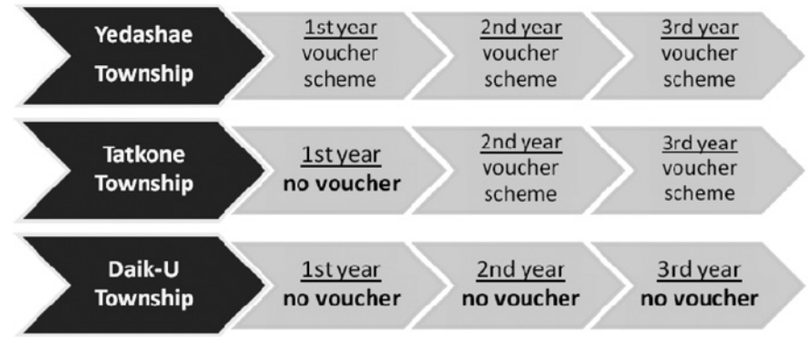


Figure 5 Pair-matched case and control approach

The selected township similarities and differences in major factors i.e. population, health facilities, basic infrastructures, and geographical locations (**table 3**).

Table 3 Basic information of the three studied townships

	Studied townships		
	Yedashae	**Tatkone**	**Daik-U**
Total population	189,019	237,084	213,137
Distance from Nay Pyi Taw (miles)	40	40	100
Area (km^2)	2,618	2,561	1,287
Name of province	Bago (East)	Mandalay	Bago (East)
Number of wards/villages	6/302	5/224	10/187
Total delivery (2009)	4,053	4,243	6,518
ANC coverage	74.0	69.5	84.5
Socioeconomic status	N/A	N/A	N/A
Number of health facilities:			
▪ Township hospitals	25-beded hospital	25-beded hospital	25-beded hospital
▪ MCH centres	1	1	1
▪ Station hospitals	2	1	2
▪ Rural Health Centres	4	6	5
▪ Sub-centres	24	24	28

Regarding the methods of data collection, healthcare professionals and patients in these townships will be interviewed with the ANC and Delivery costing questionnaires. To illustrate, all healthcare professionals, who are providing ANC and delivery services at sub-centres, station hospitals and township hospitals in the townships, will fill in the 'ANC questionnaire' and the 'Delivery questionnaire' by themselves. Subsequently, completed ANC and delivery questionnaires will be returned to the MoH. Meanwhile, patients who have received ANC and delivery services will be invited to participate in a face-to-face interview by MoH officers. There are two questionnaires available for these two groups. The first questionnaire was designed for those who are pregnant while the second one is for those who recently delivered babies (not more than 30 days).

Table 4 Costing questionnaires, target groups, and types of questionnaires

Costing questionnaires				
Samples	**Providers**		**Patients**	
	Township hospitals/Station hospitals/ MCH centres/Rural Health Centres/ Sub-centres		Pregnant women	
Type of questionnaires	**Q1: ANC**	**Q2: Delivery**	**Q3: Patient ANC**	**Q4: Patient Delivery**
Types of survey	Self-administrative	Self-administrative	Face-to-face interview	Face-to-face interview

6.2 Sample size in provider and patient groups

For health providers, 8-9 sub-centres will be randomly selected as study areas while all RCHs, station hospitals, MCH centres, and township hospitals of each township will be chosen (**table 5**).

Table 5 Actual sample populations included in this study divided by groups and categories

Number of samples included in this study			
Townships	**Yedashae**	**Tatkone**	**Daik-U**
Providers			
■ Sub-centres	8	8	9
■ Rural Health Centres	4	6	5
■ Station hospitals	2	1	2
■ MCH centres	1	1	1
■ Township hospitals	1	1	1
Patients			
■ Pregnant women	96	96	96
■ New mothers	48	48	48

Concerning a survey in patient group, the number of samples was calculated from the prevalence of pregnant women and delivery cases in each township. Prevalence of pregnant women and delivery cases are calculated by the following formula:

Prevalence = Incidence x Average Duration

As illustrated in **table 6**, estimated the point prevalence of pregnancy in one week are 624 (4,053 x 8/12) persons, 653 persons and 1,003 persons, in Yedashae, Tatkone, and Daik-U, respectively. Whereas, estimated point prevalence of delivery cases in one month are 337 (4,053 x 1/12=354) persons, 354 persons, 543 persons in Yedashae, Tatkone, and Daik-U, respectively. Approximately one third of both groups (200 pregnant women and 100 new mothers) should be interviewed; however, due to resource constraints, it was suggested that the samples can be reduced proportionally to around 100 pregnant women and 50 new mothers from each township.

Table 6 Estimated point prevalence of pregnant and delivery women in three selected twonships

Number of samples from sample size calculation (persons)			
Townships	**Yedashae**	**Tatkone**	**Daik-U**
Estimated point prevalence of pregnancy in one week	624	653	1,003
Estimated point prevalence of delivery in one month	338	354	543

According to the new sample population estimation, total number of samples in the patient group is estimated at 432 women from three townships, of which 288 are pregnant while 144 are women who gave birth not more than 30 days (new mothers) as shown at the end of **table 5**.

6.3 Questionnaires survey in patient group

In order to complete the patient questionnaires survey, the MoH planned to form three survey teams and each team will consist of three MoH officers. Each team will visit one of selected studied townships. In each township, 48 villages will be randomly selected for this patient survey. According to a pre-testing survey, it can be estimated that one staff can conduct 6 interviews (4 pregnant cases and 2 delivery cases) from two villages per day. Thus, each team will need 8 working days to complete the mission. In summary, one interviewer will conduct 6 interviews per one day from 2 villages.

Table 7 Data collection plan for each township

Day	Villages/ team	Villages/ interviewer	Interviewees/ day/village		Interviewee/ interviewer		Total interviewees/ team/township	
			Pregnant	Delivery	Pregnant	Delivery	Pregnant	Delivery
Day 1	6	2	2	1	4	2	12	6
Day 2	6	2	2	1	4	2	12	6
Day 3	6	2	2	1	4	2	12	6
Day 4	6	2	2	1	4	2	12	6
Day 5	6	2	2	1	4	2	12	6
Day 6	6	2	2	1	4	2	12	6
Day 7	6	2	2	1	4	2	12	6
Day 8	6	2	2	1	4	2	12	6
Total	**48**				**32**	**16**	**96**	**48**
Grand total					**48**		**144**	

6.4 Other data collection related issues

In order to facilitate the target population recruitment, sub-centres will work together as focal points for announcing information about the survey. The MoH will contact MWs from sub-centres in selected townships and inform them of the plan. However, it was agreed among the research teams that interviews should not be arranged at the sub-centres because the interviewees may be reluctant to provide some sensitive information. The MoH has been asked to keep records of the villages participating in this survey as it is planned that these villages will be used again for the survey after the implantation of the MCH voucher scheme. Subsequent to the data collection, an analysis[1] of survey data will be carried out in October before the third mission will be put into action.

[1] Regarding data analysis activity, there are two possible options, namely (1) the MoH staff of Myanmar travel to Thailand to work with HITAP team on data analysis, and (2) the collected data would be delivered to HITAP for analysis. The first option is more preferable as it would facilitate capacity building purpose. Either alternative, tentative timeline of last week of October or first week of November would be applied.

7
Plan for the third mission

The objectives of the third mission are to present results from the feasibility study in order to get comments and feedback from decision makers and stakeholders regarding the proposed plan for the MCH voucher scheme. The mission also includes drafting a detailed plan for the next step of the pilot study in selected townships. Expected outcomes from this mission are: final recommendations for the voucher scheme implementation, including an appropriate figure for the subsidy required for the scheme, and the development of a plan for pilot study implementation.

Capacity building and participatory principles are employed in this third mission, and this is illustrated in all activities in the proposed tentative agenda, revealed in table 8. The main objectives are: (1) to exchange knowledge, particularly concerning the analytical model used in this study between the MoH staff and HITAP (2) to organise stakeholders meetings to obtain comments and suggestions as well as to gain support from them, and (3) to develop a plan for a future pilot study.

Table 8 Tentative agenda and expected outcomes for the third mission

Day	Time	Agenda	Expected outcomes
1	09.00-12.00	HITAP team presents results and analytical model to the MoH staff	1. To share findings and provide training on decision analytical models to local staff 2. Plan for stakeholders meetings
	13.00-16.30	Plan for stakeholders meeting	
2	09.00-12.00	Present results to stakeholders: health professionals	3. Suggestions and recommendations of the study results and further actions
	13.00-16.30	Present results to stakeholders: decision makers	
3	09.00-12.00	Analyse results obtained from stakeholders meetings	4. The feasibility study report revision
	13.00-16.30	Discussion sessions to come up with final agreements on the final results (accommodated with stakeholders concerns)	
4	09.00-12.00	Developing protocol for pilot study	5. Plan for the pilot study 6. Guidelines for implementation
	13.00-16.30	Wrap up session and planning for the next step	

Appendix

Appendix 1

Exercise I: Identification labour costs, material costs and capital costs of Antenatal Care (ANC) visits and delivery

Exercise I: To determine economic costs of 'ANC' what resources should be identified ?

Type of cost	Resources
Direct medical costs	Physical exam, Clinical exam, Ob. exam, Pelvic exam, Laboratory tests, Drugs/supplementation, Recommendations/Instructions, etc.
Direct non-medical costs	Cost of transportation, food, hotel, informal care cost
Indirect costs	Productivity loss due to work day leave of both pregnancy woman and their relatives

Appendix 2

Exercise II: Measurement and valuation of identified resources as listed from the exercise I

Exercise II: Describe methodologies for estimate cost of ANC

Identification	Measurement	Valuation
Direct medical cost ■ general exam ■ Ob exam ■ drug ■ procedures and tests	Source of data ■ hosp databases ■ chart review ■ data collection form	■ direct measurement by microcosting method ■ drug cost
Direct non-medical cost ■ food, travel, hotel ■ caregiver	■ Questionnaires	■ Price
Indirect non-medical cost ■ work day leave	■ Questionnaires	■ day leave x income/day

Appendix 3

ANC costing questionnaire

developed by Ministry of Health, Union of Myanmar and Health Intervention and Technology Assessment Program (HITAP) with the supported by World Health Organization

Introduction to interviewers: This questionnaire provides you a guide for cost analysis for the Community Health Initiative for maternal and child health services. The costs of maternal care refer to the value of resources used for ante-natal care and normal delivery in sub-centre, rural health centre, station hospital and township hospital. This questionnaire consists of 5 sections. **Section one** is general information. **Section two** is labour cost. **Section three** is material cost for individual pregnant woman. **Section four** is the transportation cost.

This questionnaire was designed for self-administration by health professionals i.e. **midwives, nurses, and medical doctors who** are providing **normal ANC** services in sub-centre, rural health centre, station hospital and township hospital in selected townships.

Please try to answer every question. If you are not sure or cannot remember the exact details, please give the best answer you can.

Structure of this questionnaire

Section 1. General Information
Section 2. Labour Cost
Section 3. Material cost for individual pregnant woman
Section 4. Transportation cost

Position of Staff who completed this form:.....

Completion date.....

Section 1. General Information

1. Identification	
1.1 Type and name of health facility (specify)	o Sub-centre..... o Rural health centre..... o Station hospital..... o MCH centre..... o Township hospital.....
1.2 Name of township	.....
2. ANC service provision	
2.1 In average, how many ANC visits **(including home ANC)** offered by this health facility in one month?	.....Visits
2.2 In average, how many **first ANC visits (including home ANC)** offered by this health facility in one month?	.....Visits

Section 2. Labour cost

Instruction: This section contains data regarding individual incomes. Individual staff is asked to complete sub-questionnaires by themselves. Once they finished, the sub-questionnaires should be sealed and returned together with this questionnaire to a coordinator.

No.	Please list all staff working in this health facility who are involved in ANC services (e.g. midwife1, midwife2, LHV1, doctor1, doctor2)	Please "✓" when the section 2 of individual questionnaire was completed and returned
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		

Section 2. Labour cost (individual)

Instruction: This questionnaire is a part of an **ANC costing questionnaire.** It aims to collect data of individual health professional income which will be used to calculate total cost of **ANC service**. Please try to answer every question. If you are not sure or cannot remember the exact details, please give the best answer you can. After completing this form, please put it in an envelope and return to our coordinator. Your information will be kept confidentially.

2.1 Your Position	2.2 Name of township
.....	.....
2.3 Type and name of health facility (specify)	
o Sub-centre..... o Rural health centre..... o Station hospital.....	o MCH centre..... o Township hospital.....
Income per month in Kyats, if <u>NO</u> income for that category, place "0"	
2.4 Your salaries	
.....Kyats	
2.5 Your fringe benefit in cash including voluntary contribution by households	
.....Kyats	
2.6 Your other benefits in kind (please value how much it in cash)	
.....Kyats	

2.7 Your additional incomes including incomes from extra work e.g. private clinic, drug store, grocery store, etc. (please specify the sources)	
.....Kyats Sources of additional incomes.....	
2.8 In average, how many **ANC services** you provide in one month?	
.....cases	
2.9 In average, how long does it take for each **ANC visit**?	
1st ANC visit:.....hours .....minutes	**subsequent ANC visit:**.....hours.....minutes

Section 3. Material cost for individual pregnant woman

No. of items	Material used	Amount of material used per one ANC visit				Unit cost (per piece) If the government or other agencies support for free, place 'N/A' (Kyats)	Total (Kyats)
		1st visit	2nd visit	3rd visit	4th visit		
1	IEC materials (information education communication)						
2	Urine test strip						
3	Gloves						
4	Home based maternal record						
5	HCG strip						
6	Syringe, needle						
7	Spirit and cotton						
8	CDK (Clean delivery kit)						
9	Iron folate						
10	Vitamin B1						
11	Mebendazole						
12	Tetanus toxoid vaccine						
13	VDRL test						
14	Retro test (PMCT)						
15	Blood group test						
16	Urine test (protein and sugar)						
17	Other (specify)						
18	Other (specify)						
19	Other (specify)						
20	Other (specify)						

Section 4. Transportation cost

In case of health facility own the vehicle, please specify details of vehicle in the below table.

In case of health facility have not owned the vehicle, then finish the completion of questionnaire.

No of items	Type of vehicles used for ANC services in this health facility	Amount	Purchasing (Kyats)	Year of purchasing (19XX)	Cost of petrol for that vehicle for one month (Kyats)	% of time spent on ANC; services
1						
2						
3						
4						
5						

Appendix 4

Delivery costing questionnaire

developed by Ministry of Health, Union of Myanmar and Health Intervention and Technology Assessment Program (HITAP) with the supported by World Health Organization

Introduction: This questionnaire provides you a guide for cost analysis for the Community Health Initiative for maternal and child health services. The costs of maternal care refer to the value of resources used for ante-natal care and normal delivery in sub-centre, rural health centre, station hospital and township hospital. This questionnaire consists of 5 sections. **Section one** is general information. **Section two** is labour cost. **Section three** is material cost for individual pregnant woman. **Section four** is transportation cost.

This questionnaire was designed for self-administration by health professionals i.e. **midwives, nurses, and medical doctors who** are providing **normal delivery** care in sub-centre, rural health centre, station hospital and township hospital in selected townships.

Please try to answer every question. If you are not sure or cannot remember the exact details, please give the best answer you can.

Structure of this questionnaire

Section 5. General Information
Section 6. Labour Cost
Section 7. Material cost for individual pregnant woman
Section 8. Transportation cost

Position of Staff who completed this form:.....
Completion date.....

Section 1. General information

1. Identification	
1.1 Type and name of health facility (specify)	o Sub-centre..... o Rural health centre..... o Station hospital..... o MCH centre..... o Township hospital.....
1.2 Name of township	
2. Delivery service provision	
In average, how many **normal delivery** cases **(including home delivery)** offered by this health facility in one month?	.....Cases

Section 2. Labour cost

Instruction: This section contains data regarding individual incomes. Individual staff is asked to complete sub-questionnaires by themselves. Once they finished, the sub-questionnaires should be sealed and returned to a coordinator.

No.	Please list all staff working in this health facility who are involved in delivery services(e.g. midwife1, midwife2, LHV1, doctor1, doctor2)	Please "✓" when the section 2 of individual questionnaire was completed and returned
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		

Section 2. Labour cost (individual)

Instruction: This questionnaire is a part of a **delivery costing questionnaire**. It aims to collect data of individual health professional income which will be used to calculate total cost of **delivery service**. Please try to answer every question. If you are not sure or cannot remember the exact details, please give the best answer you can. After completing this form, please put it in an envelope and return to our coordinator. Your information will be kept confidentially.

2.1 Your Position	2.2 Name of township
.....	.....
2.2 Type and name of health facility (specify)	
o Sub-centre..... o Rural health centre..... o Station hospital.....	o MCH centre..... o Township hospital.....
Income per month in Kyats, if <u>NO</u> income for that category, place "0"	
2.4 Your salaries	
.....Kyats	
2.5 Your fringe benefit in cash including voluntary contribution by households	
.....Kyats	
2.6 Your other benefits in kind (please value how much it in cash)	
.....Kyats	

2.7 Your additional incomes including incomes from extra work e.g. private clinic, drug store, grocery store, etc. (please specify the sources)
.....Kyats Sources of additional incomes.....
2.9 In average, how many **normal deliveries** you provide in one month?
.....cases
2.10 In average, how long does it take for one **normal delivery?**
.....minutes

Section 3. Material cost for individual pregnant woman

No of items	Material used	Amount of material used per one normal delivery service	Unit cost (per piece) if the government or other agencies support for free, place "N/A" (Kyats)	Total (Kyats)
1	Drip set			
2	Blood set			
3	NSS, D/S			
4	Misoprostol			
5	Cannula			
6	INJ Magnesium Sulfate ($MgSO_4$)			
7	INJ oxytocin			
8	CDK (cleaning delivery kit e.g. apron, clog)			
9	Catgut			
10	Needle			
11	Simple catheter			
12	Vitamin B1 for mother			
13	Vitamin A for mother			
14	Suction tube for baby care			
15	Urine test (protein and sugar)			
16	Betadine Solution			
17	Retro test (PMCT)			
18	Blood group test			
19	Ferrous Sulfate ($FeSO_4$)			
20	Vitamin C			
21	Other (specify).....			
22	Other (specify).....			
23	Other (specify).....			
24	Other (specify).....			
25	Other (specify).....			

Section 4. Transportation cost

In case of health facility own the vehicle, please specify details of vehicle in the below table

In case of health facility have not owned the vehicle, then finish the completion of questionnaire

No of items	Type of vehicles used for delivery services in this health facility	Amount	Purchasing (Kyats)	Year of purchasing (19XX)	Cost of petrol for that vehicle for one month (Kyats)	% of time spent on delivery service
1						
2						
3						
4						

Appendix 5

Patient questionnaire (ANC)

developed by Ministry of Health, Union of Myanmar and Health Intervention and Technology Assessment Program (HITAP) with the supported by World Health Organization

Instructions for interviewers

This questionnaire was designed for face-to-face interviews with the following target populations, namely

- Every pregnant women in the village

Instructions for respondents (interviewers, please read the below texts)

We would like to ask a few questions about your experiences and expenses related to pregnancy and child delivery. Please try to answer every question. If you are not sure or cannot remember the exact details, please give the best answer you can. The information that you provide will be kept confidentially. You are able to interrupt with questions or abort the interview at anytime.

Structure of this questionnaire

Section 1. Details of previous pregnancy and labour Details of this
Section 2. Financial and time costs associated with the current pregnancy
Section 3. Financial and time costs associated with ANC home care
Section 4. Future plan for delivery
Section 5. Household Characteristics

Interviewer's name..... Interview date...../...../.....	Village name..... Township name.....

Section 1. Details of previous pregnancy and labour

			Code
1.1 Before this current pregnancy, had you ever delivered babies?			
o Yes. How many? (excluding this current pregnancy).....	o No **(go to section 2)**		
1.2 When was your <u>previous delivery</u>?			
.....years ago			
1.3 For the last delivery, who provided you ANC services? (choose multiple choices, if appropriate)			
o Medical doctor	o Nurse	o Lady Health Visitor	
o Midwife	o Auxiliary midwife	o Traditional Birth Attendant	
o Others (specify).....			
1.4 Where did your <u>previous delivery</u> take place?			
o Township hospital	o MCH centre	o Station hospital	
o Rural health centre	o Sub-centre	o Home	
o Others (specify).....			
1.5 Who provided you your <u>last delivery service</u>? **(choose multiple choices, if appropriate)**			
o Medical doctor	o Nurse	o Lady Health Visitor	
o Midwife	o Auxiliary midwife	o Traditional Birth Attendant	
o Others (specify).....			

1.6 What was the type of delivery in your last delivery?			
o Normal virginal delivery	o Assisted virginal delivery e.g. forceps or vacuum extraction	o Caesarian section	
1.7 What was the main reason concerning the place you choose for <u>previous delivery</u> **(choose the most appropriate one)?**			
o Affordable costs	o Night time	o Rainy season	
o Accept payment in kind/ flexible payment	o Distance/ lack of transport	o Reputation of health facility/ safety reasons	
o Prefers home environment	o Privacy	o No complications	
o Approved by family	o Attendant was known to woman, friend or family member	o Advice from other persons (specify)	
o Convenient for yourself and accompanying person	o Having good experiences before	o Others (specify)	
1.8 Who was the one that made this decision of where to deliver?			
o Yourself	o Your husband	o Mother-in-law	
o Your own parents	o Others (specify).....		
1.9 Following these below items, how much did it cost for your <u>last delivery</u>?			
1. To get there (Round trip)		.....Kyats	
2. To receive care		.....Kyats	
3. Others (specify).....		.....Kyats	

Section 2. Financial and time costs associated with the current pregnancy

2.1 Please give gestation period			
.....months			
2.2 For this current pregnancy, have you had ANC services?			
o Yes, please give gestation period when receiving the first ANC .....months			
o No **(go to 2.14)**			
2.3 For the current pregnancy, where did you have your ANC services? **(choose multiple choices, if appropriate)**			
o Township hospital	o MCH centre	o Station hospital	
o Rural health centre	o Sub-centre	o Home	
o Others (specify).....			
2.4 For the current pregnancy, who provided you ANC services? **(choose multiple choices if appropriate)**			
o Medical doctor	o Nurses	o Lady Health Visitor	
o Midwife	o Auxiliary midwife	o Traditional Birth Attendant	
o Others (specify).....			
2.5 For the current pregnancy, where did your most recent ANC services take place? **(choose the most appropriate one)**			
o Township hospital	o MCH centre	o Station hospital	
o Rural health centre	o Sub-centre	o Home (**go to section 3**)	
o Others (specify).....			

2.6 How did you get to the facility of your most recent ANC services/ What kind of transportation?			
o Walking	o Trishaw	o Bicycle	
o Tuk tuk/Htaw la gyi	o Bus	o Motorbike	
o Taxi	o Car	o Stretcher	
o Chair/Bed	o Bullock cart	o Others (specify).....	
2.7 How long did it take for one way travel for your recent ANC services?			
.....days.....hours.....minutes			
2.8 How much did it cost for one way travel for your most recent ANC services? **(if the respondent get to health facility by walk, skip this question)**			
.....Kyats			
2.9 Were there any accompanying person(s) for your most recent ANC services? **(choose multiple choices if appropriate)**			
o None	o Your husband	o Your Children	
o Your own parents	o Your Mother-in-law/ Father-in-law	o Others (specify).....	
2.10 How long did they stay with you for your most recent ANC services? **(include only a stay to provide help not just visiting)**			
.....person-days.....person-hours*			
2.11 Did they lose any income by staying with you for your most recent ANC?			
o Yes (if any of them lost income)		o No **(go to section 2.13)**	
2.12 Approximately how much money did they lose in total?			
.....Kyats			

2.13 Following these below items, how much did it cost for your most recent ANC? **(put 'N/A' if do not know)**			
1. To get there (Round trip)		.....Kyats	
2. To receive care		.....Kyats	
3. Others (specify).....		.....Kyats	
2.14 What is the main reason you have decided not to have ANC services for this current pregnancy?			
o Early gestation period	o Unaffordable costs	o Far away from health facilities	
o No need/not important	o Others (specify).....		

If you receive your ANC services at health facilities, go to section 4

* Persons-days/person-hours is the sum of hours/days of each person accompanying pregnant women (e.g. if there are 2 people and each of them spent 4 hours each with pregnant women, then it will be in total 8 person-hours)

Section 3. Financial and time costs associated with ANC home care

3.1 If you called* a birth attendant for your current ANC, Could you **estimate the travelling time for person(s) sending to call the birth attendant** spent in round trip? **(excluding waiting time)**
.....days.....hours.....minutes
3.2 How long did the birth attendant stay in your home from the time of her arrival to the time of departure?
.....days.....hours.....minutes

* If you sent someone to call or tell health professional to your home, please count the time since sending those out.

3.3 Following these below items, how much did it cost for your ANC home care services? **(put 'N/A' if do not know)**	
1. To receive care	.....Kyats
2. Others (specify).....	.....Kyats

Section 4 Future plan for delivery

4.1 Where do you plan to have your baby delivered?			
o Township hospital	o MCH centre	o Station hospital	
o Rural health centre	o Sub-centre	o Home	
o Others (specify).....			
4.2 What is the main reason concerning the place you choose? **(choose the most appropriate one)**			
o Affordable costs	o Night time	o Rainy season	
o Accept payment in kind/ flexible payment	o Distance/ lack of transport	o Reputation of health facility/ safety reasons	
o Prefers home environment	o Privacy	o No complications	
o Approved by family	o Attendant was known to woman, friend or family member	o Advice from other persons (specify)	
o Convenient for yourself and accompanying person	o Having good experiences before	o Others (specify)	

4.3 How much do you <u>expect</u> to pay for <u>ANC and delivery</u> for this current pregnancy?		
.....Kyats		
4.4 Do you find it difficult to raise money for this current pregnancy (ANC and delivery)?		
o Yes	o No **(go to section 5)**	
4.5 Do you use (or plan to use) any of the following methods to pay for <u>this current pregnancy</u> (ANC and delivery)? **(choose multiple choices if appropriate and put 'N/A' if do not know the amount of money raised)**		
Source of money	**Amount of money raised**	
o Use, sell or pledge assets:		
o Land	.....Kyats	
o Crops	.....Kyats	
o Livestock	.....Kyats	
o Savings	.....Kyats	
o Forego essential food consumption	.....Kyats	
o Forego investment in other essential area (e.g. education, preventive health, business or farming input)	.....Kyats	
o Gifts or charity	.....Kyats	
o Pay by installment/Partial repayment	.....Kyats	
o Community financing scheme or loan fund	.....Kyats	
o Borrowed the money	.....Kyats	
o Costs covered by hospital exemption scheme	.....Kyats	
o Costs covered by NGO scheme (give name)	.....Kyats	

Section 5 Household Characteristics

5.1 Name of respondent..... 5.2 Age.....years old			
5.3 How many people in your household*?			
.....			
5.4 What education standard did you pass in school? **(choose the most appropriate one)**			
.....standard	o Did not attend education	o Attended non-formal education	
5.5 Are there any of these following items in your dwelling?			
Items	**Yes**	**No**	
Electricity	o	o	
A radio	o	o	
A television	o	o	
A bicycle	o	o	
A telephone	o	o	
A motorcycle	o	o	
A car or truck	o	o	
Owning house	o	o	
Owning farmland	o	o	

* Note to interviewer: defined as people living under this 'roof' for at least 15 days out of the past year, and share you foods; and contribute to, or share in, a common resource pool and children and economically inactive.

5.6 What is the principal type of toilet facility used by members of your household? **(choose multiple choices if appropriate)** Pictures of sample are shown			
o Flush toilet	o Uses a pan as a latrine		
o Pit latrine	o Bush, field as latrine		
5.7 What type of fuel does your household mainly use for cooking? (choose the most appropriate one)			
o Electricity	o LPG/natural gas	o Biogas	
o Kerosene	o Coal/lignite	o Charcoal	
o Firewood/straw	o Dung	o Others (specify).....	
5.8 Monthly family income.....Kyats			

Appendix 6

Patient questionnaire (Delivery)

developed by Ministry of Health, Union of Myanmar and Health Intervention and Technology Assessment Program (HITAP) with the supported by World Health Organization

Instructions for interviewers

This questionnaire was designed for face-to-face interviews with the following target populations, namely

- Women who just delivered babies (less than 30 days) with midwives, Lady Health Visitors, nurses, and/or medical doctors.

Instructions for respondents (interviewers, please read the below texts)

We would like to ask a few questions about your experiences and expenses related to pregnancy and child delivery. Please try to answer every question. If you are not sure or cannot remember the exact details, please give the best answer you can. The information that you provide will be kept confidentially. You are able to interrupt with questions or abort the interview at anytime.

Structure of this questionnaire

Section 1. Details of previous pregnancy and labour
Section 2. Details of this recent delivery
Section 3. Financial and time costs associated with a home care
Section 4. Financing of the costs of care
Section 5. Plan for future pregnancy and delivery
Section 6. Household characteristics

Interviewer's name..... Interview date...../...../.....	Village name..... Township name.....

Section 1. Details of previous pregnancy and labour

			Code
1.1 Before this new child, had you ever delivered babies before?			
o Yes. How many? (excluding this new child).....		o No **(go to section 2)**	
1.2 When was your <u>previous delivery</u>?			
.....years ago			
1.3 For the previous delivery, who provided you <u>ANC services</u>? **(choose multiple choices, if appropriate)**			
o Medical doctor	o Nurse	o Lady Health Visitor	
o Midwife	o Auxiliary midwife	o Traditional Birth Attendant	
o Others (specify).....			
1.4 For the previous delivery, who provided you <u>delivery services</u>? **(choose multiple choices, if appropriate)**			
o Medical doctor	o Nurse	o Lady Health Visitor	
o Midwife	o Auxiliary midwife	o Traditional Birth Attendant	
o Others (specify).....			
1.5 Where did your <u>previous delivery</u> take place?			
o Township hospital	o MCH centre	o Station hospital	
o Rural health centre	o Sub-centre	o Home	
o Others (specify).....			

1.6 What was the main reason concerning the place you choose for previous delivery **(choose the most appropriate one)?**			
o Affordable costs	o Night time	o Rainy season	
o Accept payment in kind/flexible payment	o Distance/ lack of transport	o Reputation of health facility/ safety reasons	
o Prefers home environment	o Privacy	o No complica-tions	
o Approved by family	o Attendant was known to woman, friend or family member	o Advice from other persons (specify).....	
o Convenient for yourself and accompanying person	o Having good experiences before	o Others (specify)	
1.7 Who made this decision of where to deliver?			
o Yourself	o Your husband	Mother-in-law	
o Your own parents	o Others (specify).....		
1.8 Following these below items, how much did it cost for your last pregnancy?			
1. To get there (Round trip)		.....Kyats	
2. To receive care		.....Kyats	
3. Others (specify).....		.....Kyats	

Section 2. Details of this recent delivery

2.1 How old is your new child?			
.....days old			
2.2 Where did your recent delivery take place?			
o Township hospital	o MCH centre	o Station hospital	
o Rural health centre	o Sub-centre	o Home	
o Others (specify).....			
2.3 Who provided you delivery services? **(choose multiple choices, if appropriate)**			
o Medical doctor	o Nurse	o Lady Health Visitor	
o Midwife	o Auxiliary midwife	o Traditional Birth Attendant	
o Others (specify).....			
2.4 What was the main reason concerning the place you choose for receiving this service? **(choose the most appropriate one)**			
o Affordable costs	o Night time	o Rainy season	
o Accept payment in kind/flexible payment	o Distance/ lack of transport	o Reputation of health facility/safety reasons	
o Prefers home environment	o Privacy	o No complications	
o Approved by family	o Attendant was known to woman, friend or family member	o Advice from other persons (specify).....	
o Convenient for yourself and accompanying person	o Having good experiences before	o Others (specify).....	

2.5 Who made this decision of where to deliver?			
o Yourself	o Your husband	o Mother-in-law	
o Your own parents	o Others (specify).....		

If this delivery taking place at home (go to section 3), otherwise ask these following questions

2.6 How did you get to the facility for your recent delivery/ What kind of transportation?			
o Walking	o Trishaw	o Bicycle	
o Tuk tuk/Htaw la gyi	o Bus	o Motorbike	
o Taxi	o Car	o Stretcher	
o Chair/Bed	o Bullock cart	o Others (specify).....	
2.7 How long did it take for one way travel?			
.....days.....hours			
2.8 How much did it cost for one way travel? **(If the respondent get to the health facility by walk, skip this question)**			
.....Kyats			
2.9 How long did you spend in the facility of your recent delivery? **(estimating time from arrival to departure)**			
.....days.....hours.....minutes			
2.10 Were there anyone accompanying you during the delivery period? (choose multiple choices, if appropriate)			
o None	o Your Husband	o Your Children	
o Your own parents	o Your Mother-in-law/ Father-in-law	o Others (specify).....	

2.11 How long did they stay with you? **(include only a stay to provide help not just visiting)**		
.....person-days.....person-hours		
2.12 Did they lose any income by accompanying/staying with you?		
o Yes (if any of them lost their income)	o No **(go to 2.14)**	
2.13 Approximately, how much money did they lose in total?		
.....Kyats		
2.14 Did you have to pay for anything for this recent delivery?		
o Yes	o No **(go to section 4)**	
2.15 How much did you pay for the recent delivery in total?		
.....Kyats		
2.16 How much did you pay for each item? **(tick and provide information on relevant items)**		
Items	**Expenses**	
o Registration fee	.....Kyats	
o Fee to health professional	.....Kyats	
o Gift to any members of staff (estimate value in Kyat)	.....Kyats	
o Cost of drugs/supplies purchased inside hospital (specify name if know).....	.....Kyats	
o Cost of drugs/supplies purchased outside hospital (specify name, if know).....	.....Kyats	
o Cost of lab test/x-ray	.....Kyats	
o Accommodation (self)-specify type.....	.....Kyats	
o Accommodation (companion/s)-specify type.....	.....Kyats	

o Foods	.....Kyats	
o Washing clothes or cleaning	.....Kyats	
o Purchase of materials to care baby after delivery	.....Kyats	
o Others (specify).....	.....Kyats	

Section 3. Financial and time costs associated with a home care

3.1 If you called* a birth attendant for this recent delivery, could you **estimate the travelling time for person(s) sending to call the birth attendant** in round trip? **(excluding waiting time)**			
.....days.....hours.....minutes			
3.2 How long did the birth attendant stay in your home from the time of her arrival to the time of departure?			
.....days.....hours.....minutes			
3.3 Were there anyone accompanying you during the delivery period? **(choose multiple choices, if appropriate)**			
o None	o Your husband	o Your children	
o Your own parents	o Your mother-in-law/ father-in-law	o Others (specify).....	
3.4 How long did they stay with you? **(include only a stay to provide help not just visiting)**			
.....days.....hours			

* If you sent someone to call a birth attendant to your home, please count the time since sending those persons out.

3.5 Did they lose any income by accompanying/staying with you?		
o Yes (if any of them lost income)	o No **(go to 3.7)**	
3.6 Approximately, how much money did they lose in total?		
.....Kyats		
3.7 Did you have to pay for anything for this recent delivery?		
o Yes	o No	
3.8 How much did you pay for this recent delivery in total?		
.....Kyats		
3.9 How much did you pay for each item? **(tick and provide information on relevant items)**		
Items	**Expenses**	
o Fee to birth attendant (LHV, midwife, auxiliary midwife, TBA)	.....Kyats	
o Fee to anyone else (specify).....	.....Kyats	
o Gifts to birth attendant (estimate value in Kyat)	.....Kyats	
o Cost of drugs and/or supplies purchased from birth attendant (specify name, if know).....	.....Kyats	
o Cost of drugs and/or supplies purchased from medicine shop (specify name, if know).....	.....Kyats	
o Food provided to birth attendant	.....Kyats	
o Clean delivery kit	.....Kyats	
o Purchase of material to care baby immediately after delivery	.....Kyats	
o Other cost (specify).....	.....Kyats	

Section 4. Financing of the costs of care

4.1 Did you find it difficult to raise money to pay for this recent delivery service?		
o Yes	o No **(go to section 5)**	
4.2 Did you use any of the following methods to pay for the care this time? **(choose multiple choices, if appropriate)**		
Sources of money	**Amount of money raised**	
o Use, sell or pledge assets:		
o Land	.....Kyats	
o Crops	.....Kyats	
o Livestock	.....Kyats	
o Savings	.....Kyats	
o Forego essential food consumption	.....Kyats	
o Forego investment in other essential area (e.g. education, preventive health, business or farming input)	.....Kyats	
o Gifts or charity	.....Kyats	
o Pay by installment/partial repayment	.....Kyats	
o Community financing scheme or loan fund	.....Kyats	
o Borrowed the money **(go to 4.3)**	.....Kyats	
o Costs covered by hospital exemption scheme	.....Kyats	
o Costs covered by NGO scheme (give name).....	.....Kyats	

If not borrowing the money, then go to section 5

4.3 For those who borrowed money – please complete all cells that correspond							
Source of money	**Amount of money raised**	**Does the money need to be paid back?**	**When should the money be repaid? (month and year)**	**Were there any interest rate, per month?**	**Did the loan carry any additional payment (e.g. labour, in-kind)?**	**How much did the interest and additional payment cost?**	
Friends/ Relatives	.....	o Yes o No	.....	o Yes o No	o Yes o No	.....	
Moneylenders	.....	o Yes o No	.....	o Yes o No	o Yes o No	.....	
NGOs	.....	o Yes o No	.....	o Yes o No	o Yes o No	.....	
Landlords	.....	o Yes o No	.....	o Yes o No	o Yes o No	.....	
Community financing scheme/loan fund	.....	o Yes o No	.....	o Yes o No	o Yes o No	.....	
Others (specify)	.....	o Yes o No	.....	o Yes o No	o Yes o No	.....	

4.4 How will you repay this borrowed money? **(choose multiple choices, if appropriate)**			
o Savings	o Gifts, charity	o Forego essential food consumption	
o Fore go investment in other essential areas (e.g. education, preventive health, business or farming inputs)	o Use, sell or pledge assets: o Land o Crops o Livestock	o Labour (e.g. working in moneylender's farm in return)	
o Others (specify).....			

Section 5. Plan for future pregnancy and delivery

5.1 Do you plan to have children in the future?			
o Yes	o No **(go to 5.5)**		
5.2 When do you plan to have children?			
In next.....years			
5.3 Where would you choose to deliver your next child?			
o Township hospital	o MCH centre	o Station hospital	
o Rural health centre	o Sub-centre	o Home	
o Others (specify).....			
5.4 Who would you choose to deliver your next child with?			
o Medical doctor	o Nurse	o Lady Health Visitor	
o Midwife	o Auxiliary midwife	o Traditional Birth Attendant	
o Others (specify).....			

After completing 5.4, go to section 6

5.5 Where would you advice your relatives/friends to deliver their babies?			
o Township hospital	o Station hospital	o Rural health centre	
o Sub-centre	o Home	o Others (specify).....	

Section 6. Household characteristics

6.1 Name of respondent..... 6.2 Age.....years old	
6.3 How many people in your household*?	
.....	
6.4 What educational standard did you pass in school? **(choose the most appropriate one)**	

.....standard	o Did not attend education	o Attended non-formal education	

6.5 Are there any of these following items in your dwelling? **(choose multiple choices, if appropriate)**			
Items	**Yes**	**No**	
Electricity	o	o	
A radio	o	o	
A television	o	o	
A bicycle	o	o	
A telephone	o	o	
A motorcycle	o	o	

A car or truck	o	o	
Owning house	o	o	
Owning farmland	o	o	
6.6 What is the principal type of toilet facility used by members of your household? **(choose multiple choices if appropriate)**			
o Flush toilet	o Uses a pan as a latrine		
o Pit latrine	o Bush, field as latrine		
6.7 What type of fuel does your household mainly use for cooking? **(choose the most appropriate one)**			
o Electricity	o LPG/natural gas	o Biogas	
o Kerosene	o Coal/lignite	o Charcoal	
o Firewood/straw	o Dung	o Others (specify)	
6.8 Monthly family income.....Kyats			

Appendix 7
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Appendix 8
Cost Analysis

Cost Analysis

2 August 2010

What's cost?

Cost is value of resources used to produce goods or services.

Accounting vs Economic Cost

- Accounting cost is the historical money spends for resources required to produce interventions (acquisition price).
- Economic cost is taking account of opportunity cost
  - Value of resources if they were used for another productive purposes
  - Includes accounting and "non-accounting" costs
    - volunteer time, donated materials, donated space, etc.

Type of costs by inputs

Labour costs are salaries and wages, including other expenses for personnel.	Salaries, wages, fringe benefit, overtime, bonuses, etc.
Material costs are cost of materials used in studied period as direct inputs into activities. They last less than one year, and they are purchased regularly.	Medical materials, office materials, utilities (tap water, electricity, telephone)
Capital costs are cost of using fixed assets (building, durable equipment) or assets that last more than one year.	Depreciation of building, durable equipment

Type of costs

divided by relationship to health care

- **Direct Costs**
  - Value of all goods, services, and other resources that are consumed in services provision
  - Direct medical costs: Costs of goods and services that are directly provided by the health care system
  - Direct non-medical costs: Costs of goods and services used for health care that are not directly provided by the health care system
- **Indirect Costs**
  - Productivity gains or losses related to illness or death
- **Intangible costs**
  - Monetary value of pain, suffering, distress etc. associated with treatments

3 steps in cost analysis

- **Identification** of resource used to deliver the service
- **Measurement** of resource utilization
- **Valuation** or attaching monetary value to resource use

Identification

of resource used to deliver the service

What costs should be included in cost calculation?

Type	Inclusion
1. Direct medical costs	✓
2. Direct non- medical costs	✓
3. Indirect costs	✓
4. Intangible costs	✖

Ref: Weinstein et al 1996; Drummond et al 1997

Cost Identification

- To identify **all** relevant resource items
- Requires knowledge about resources needed to perform the program
- * Tip: expert panel review may be useful for this step
- It is reasonable to leave out some resource items from further analysis

" ease of measurement should not be the initial criterion for identification" Gold et al 1996

Exercise 1

Measurement

of resource utilization

Time horizon

- **Retrospectively**
  - databases, chart review
  - household surveys
- **Prospectively**
  - data collection forms
  - cost diary

How to measure the quantity of resource used

Labour costs	Time counting or % distribution on each activities
Material costs	The number of material used for each activities
Capital costs	- Time counting or % distribution on each activities (equipment) - % operating area for each activities (building)

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Valuation

attaching monetary value to resource used

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How to put monetary value in

- **Direct measurement**
  - Gross or top-down approach
  - Micro-costing or bottom-up approach
- **Valuing productivity costs**
  - Human capital approach
  - Willingness to pay (WTP)

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Gross or top-down costing

- estimate cost at the department level
- total cost / volume of service use
- **advantages :** feasible, cheaper, faster than bottom-up approach and more comprehensive
- **disadvantages :** lack of details, less accuracy
- e.g. average cost / diem, average cost / visit, average cost / prescription

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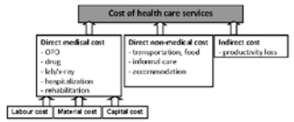
Micro or bottom-up costing

- measure all resources used for producing each services
- end up with the total summation



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Depreciation calculation

- Buildings and durable equipment are lasting over one year so depreciation cost will be used instead of acquisition price.
- Fixed assets which are older than their working life will not be accounted for depreciation cost. (20 yr for buildings, 5 yr for equipment)

$$Depreciation\ cost = \frac{Present\ value}{\frac{[1-(1+r)^{-n}]}{r}}$$ Annuity factor

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Depreciation calculation

Acquisition price = 2,000 million Kyats

Present value = 2,000 x 966.75 /100 = 19,335 million Kyats

2000 — 2010

Interest rate (r) = 3%
Working life (n) = 20 yr
Purchase year = 2000
Cost calculating year = 2010

$$Depreciation\ cost = \frac{19{,}335}{\frac{[1-(1+0.03)^{-20}]}{0.03}}$$

$$= \frac{19{,}335}{14.88} = 1{,}299 \text{ Million Kyats / yr}$$

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Exercise 2

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... Thank you ...

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The **third** mission: healthcare evaluation- an economic model

By Health Intervention and Technology Assessment Program (HITAP)

March 2011

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We are truly grateful to Dr. Phone Myint, U Htay Win, Dr. Nilar Tin, Dr. Ko Ko Naing, and Dr. San San Aye for their leadership and wisdom in supporting all three missions in this programme. Our sincere thanks also go to the Ministry of Health officers who collected the answers to the questionnaire surveys and handled the data entry after the completion of the second mission as well as organising and facilitating the preparation for the discussion in the third mission. The Ministry of Health officers together with the health professionals at the township levels proved to be valuable resources of knowledge and ideas contributing to the completion of this report. Their comments and suggestions were particularly helpful and greatly appreciated. In addition, we would like to thank World Health Organization (WHO) experts Dr. Magareta Skold and Dr. Alaka Singh, who initiated this study and offered valuable advice and relentless support throughout. This mission would not have been accomplished without the kind assistance from the many individuals and organisations mentioned above. Finally, we wish to acknowledge the financial support from the ThaiHealth Promotion Foundation.

Contents

Abbreviations

ANC	=	Antenatal Care
AMW	=	Auxiliary midwife
CHI	=	Community Health Initiative for Maternal and Child Health
DSF	=	Demand side financing
Ed	=	Price elasticity of demand
GAVI	=	Global Alliance for Vaccines and Immunization
GDP	=	Gross Domestic Product
HCG	=	Human Chorionic Gonadotrophin
HITAP	=	Health Intervention and Technology Assessment Program
HIV	=	Human Immunodeficiency Virus
HSS	=	Health System Strengthening
ICER	=	Incremental Cost-Effectiveness Ratio
LHV	=	Lady Health Visitor
MCH	=	Maternal and child health
MoH	=	Ministry of Health
MW	=	Midwife
PMCT	=	Prevention of Mother to Child HIV Transmission
PNC	=	Postnatal Care
PPP	=	Purchasing Power Parity
SEARO	=	South-East Asia Region Office of World Health Organization
TBA	=	Traditional Birth Attendant
TH	=	Township Hospital
THC	=	Township Health Committee
VHC	=	Village Health Committee
WHO	=	World Health Organization
RHC	=	Rural Health Centre
SBA	=	Skilled Birth Attendant
SH	=	Station Hospital
SC	=	Sub Centre
UNICEF	=	United Nations Children's Fund

1
Introduction

The Union of Myanmar is the largest country in mainland South-East Asia with a total population of 57.5 million. It has a pluralistic mix of public and private healthcare systems. Although the Ministry of Health (MoH) is the main organisation responsible for healthcare provision, 70-80% of health service expenditure is now absorbed by individual households. This prompts the need to develop a stronger financial system for healthcare that reduces the portion of out-of-pocket expenses and, at the same time, improves accessibility to health services among the population. One of the underutilised essential healthcare services is of maternal and child health (MCH). This results in high infant and maternal mortality in the country, with rates of 59.7 and 2.55 per 1,000 live births, respectively.

Because of this situation, Myanmar's MoH, the World Health Organization (WHO), and the Health Intervention and Technology Assessment Program (HITAP) of Thailand have jointly proposed the development of a new financial option for healthcare to improve MCH services in Myanmar. This initiative will contribute to the 4-year research and development programme funded by the Global Alliance for Vaccines and Immunization (GAVI), Health System Strengthening (HSS). It was proposed that three missions would be completed by Myanmar's MoH, WHO and HITAP within 10 months.

The first mission, which was to develop a well-designed protocol for Community Health Initiative (CHI) that is technically and financially feasible, acceptable among all stakeholders, and also relevant to the country context, was completed by the team in May 2010. The second mission, performed in August 2010, aimed to assess the current situation of the MCH services and budgetary requirements for the newly designed CHI. The initiative ends with the third mission, a well-designed community survey and costing study for different health facilities in two townships.

This current report is the product of the third mission conducted in March 2011 with the aim of estimating the potential costs and health outcomes for the future implementation of the CHI through the use of the decision analytic models. It is expected that the results of this report can be used to devise systems and mechanisms for the monitoring and evaluation of the CHI.

2
Objectives and scope of work

As a by-product of the first mission of the feasibility study, a well-designed protocol for the CHI was developed and verified by key stakeholders in the health system, including Myanmar's MoH officers, health professionals, community leaders, pregnant women and new mothers. During the second mission, the newly designed CHI was taken to the next step with the attainment of the community survey and costing study. Three sets of questionnaires for pregnant women, new mothers and healthcare providers were developed to assess the current utilisation and unit costs of MCH services at different health facilities in two selected townships, namely Yedashe and Tatkone. The questionnaires were translated into the local language and used in the survey carried out by MoH staff between October and November 2010. Subsequently, the collected data were analysed and used as input parameters in the decision analytic models during the third mission. After the economic results were presented to the relevant stakeholders in Myanmar in order to perform data verification and validation, the results were then discussed to formulate a plan for the pilot implementation.

3
Third mission activities

During March 14-16 2011, the preliminary results of the costing study and analytical models were presented to MoH staff on the first day for model and data validation. The results of the community survey on MCH service utilisations were then presented to MoH staff in the morning session of the second day. The economic results including estimated costs and outcomes of the CHI were presented to decision makers, medical doctors, and midwives (MWs) from the two townships as well as international experts from WHO and the United Nations Children's Fund (UNICEF) during the afternoon session. The future plan was discussed on the third day. (Details of meeting attendants can be found in the **Appendix**)

Table 1 Timetable for the third mission

Date	Activities	Participants
March 14	Presented preliminary findings, verified model parameters and budget requirements	HITAP and MoH staff
March 15	Morning session: Presented preliminary findings and verified community survey results: patient and provider questionnaires	HITAP and MoH staff
	Afternoon session: Presented results to stakeholders	HITAP and MoH staff and relevant stakeholders including decision makers, health professionals, and experts from WHO and UNICEF
March 16	Discussed the future plan	HITAP and MoH staff, WHO and UNICEF experts

3.1 The community surveys

The survey methods

The samples consisted of: i) every pregnant woman in the villages of the selected townships, ii) every new mother who had just delivered her child within the previous 45 days, and iii) healthcare providers providing ANC and delivery services (see **table 2**). The last group includes medical doctors, MWs, and nurses at sub-centres (SCs), station hospitals (SHs), maternal and child health centres (MCHs), and township hospitals (THs).

MoH staff selected samples by the systematically randomised sampling of villages from the selected townships. A total of 25 villages from Yedashe and Tatkone were selected. With the support of health professionals working at the SC in each village, the trained MoH staff interviewed all eligible pregnant women and new mothers who gave consent. All health professionals who provide ANC and delivery services at the aforementioned health facilities in the two townships were asked to complete the self-administrative costing questionnaires. Data entry and analysis were performed by MoH and HITAP staff. The results of the surveys are presented in detail in the table below.

Table 2 Community survey methods

	Eligible women	Health providers
Study design	Surveys in 2 townships: Yedashe and Tatkone (Sept. 2010 › Nov. 2010)	
Study population	■ ANC: Every pregnant women ■ Delivery: New mothers	Skilled Birth Attendants 1. MWs 2. LHV 3. Nurses 4. Medical doctors
Sampling & Samples	■ Systematic random sampling (focal point = sub-centre) ■ ANC service: 215 samples Delivery service sample: 97 samples	Systematic random sampling (focal point = sub-centre)
Data collection methods	Face-to-face interviews using preset questionnaires	Self-administrative questionnaire
Data analysis	Descriptive statistical analysis	Descriptive statistical analysis

Table 3 illustrates the main characteristics of the community surveys which include the information of 215 pregnant women and 97 new mothers. Age, education, family income, percentage of those living in their own houses, and average number of members living in a house are similar among pregnant women and new mothers.

Table 3 Patient questionnaire respondents

	Pregnant women	New mothers
No. of samples	215	97
Township ■ Tatkone ■ Yedashe	 102 113	 46 51
Age	Mean = 28 yrs. old	Mean = 29 yrs. old
No. of people in house	Mean = 4	Mean = 5
Educational Level	5% Never 51% Primary 24% Middle 14% High school 6% University	16% Never 40% Primary 28% Middle 13% High school 3% University
Monthly Family income	Median = 50,000 Kyats	Median = 60,000 Kyats
Owning house	95%	92%

Table 4 describes health facilities selected for the costing study in the two townships. Seventeen health facilities completed the costing questionnaires.

Table 4 Costing questionnaire respondents for health providers

Types of health facilities	No. of health facilities	
	Tatkone	Yedashe
Township Hospital	1	1
Maternal and Child Health centre	1	1
Station Hospital	1	2
Sub-Centres	5	5
Total	8	9

Patient characteristics

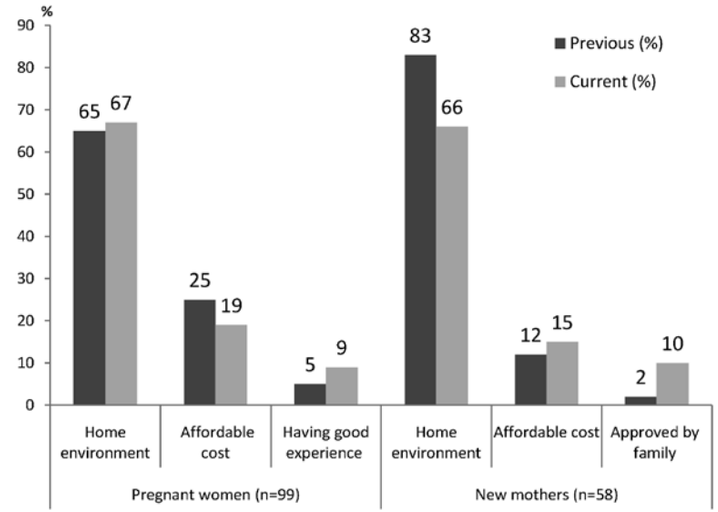
Table 5 compares the utilisation of ANC and delivery services for previous and current pregnancies among pregnant women and new mothers. The rate of ANC and delivery by SBAs in the previous pregnancies of currently pregnant women and new mothers are similar at 73% and 50% respectively. The ANC rate is quite high for the current pregnancy of pregnant women, which may reflect the selection bias of the samples. Delivery at home is the most preferable choice for pregnant women and new mothers for both previous and the current pregnancies.

Table 5 Percentages of pregnant women and new mothers utilising MCH services by type of provider and level of facility

	Pregnant women (N=215)		**New mothers** (N=97)	
	Previous pregnancy (%)	**Current** pregnancy (%)	**Previou** delivery (%)	**Current** delivery (%))
ANC providers				
■ Skilled birth attendant	**73**	**96**	**73**	NA
■ Non-skilled birth attendant	27	4	25	
■ No ANC	NA	NA	2	
Place of ANC				
■ MCH centres	NA	5	NA	NA
■ Rural Health Centres		4		
■ Sub Centres		**73**		
■ Home		18		
Delivery providers				
■ Skilled birth attendant	**52**	-	49	**68**
■ Non-skilled birth attendant	48		**51**	32
Place of delivery		(plan)		
■ Township Hospitals	12	8	4	5
■ Station Hospitals	2	4	2	4
■ Sub Centres	6	14	7	7
■ Home	**80**	**73**	**85**	**82**
■ Others	0	1	2	2

Figure 1 shows the main reasons for respondents having children delivered at home. It reveals that most pregnant women and new mothers felt comfortable delivering at home given the home environment. It is followed by reason that delivery at home offers an affordable cost. 'Having good experience' and 'Being approved by family members' were the third most popular reasons given by pregnant women and new mothers, respectively.

Figure 1 Reasons given by pregnant women and new mothers for delivering at home



Figures 2 and **3** show the main reasons why pregnant women and new mothers had their children delivered at health facilities, including SCs, MCH centres, SHs and THs. The first reason was the reputation of the health facilities. For pregnant women, their medical condition also affected the decision to deliver at health facilities. For new mothers, having a good personal relationship with health professionals was another main reason.

Figure 2 Reasons given by pregnant women for delivering at health facilities

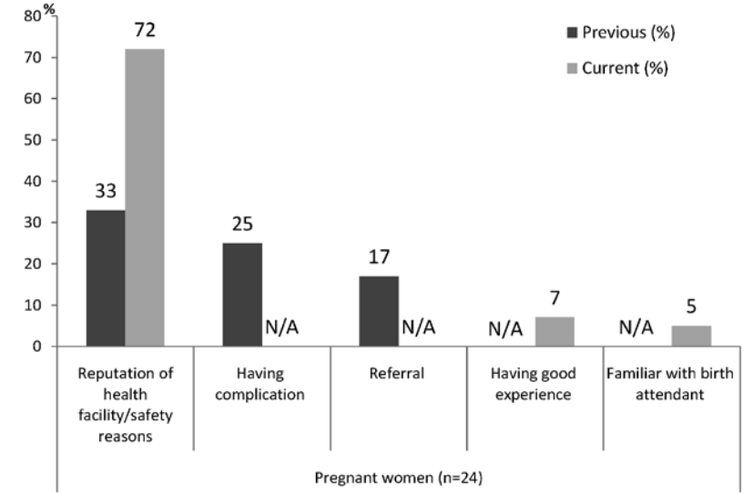


Figure 3 Reasons given by new mothers for delivering at health facilities

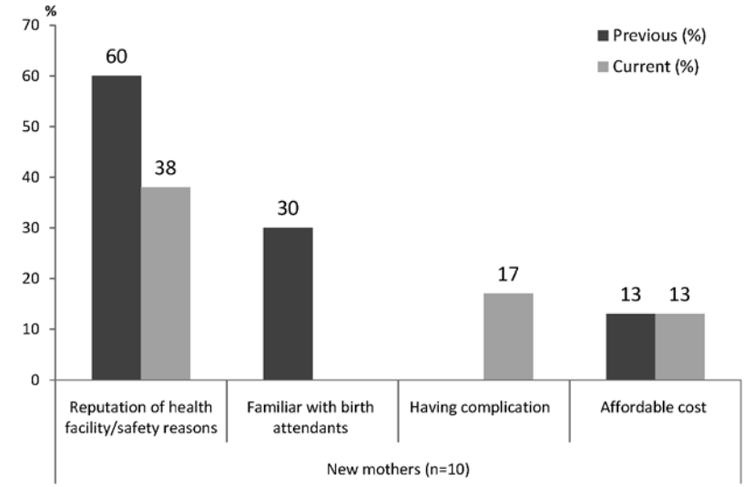


Figure 4 shows the reasons given by pregnant women for not having ANC by SBA. It is noteworthy that almost half of the respondents indicated that receiving ANC by SBA was not needed or important, followed by perceiving that the pregnancy was still in an early stage.

Figure 4 Reasons given by pregnant women for not having ANC by SBA

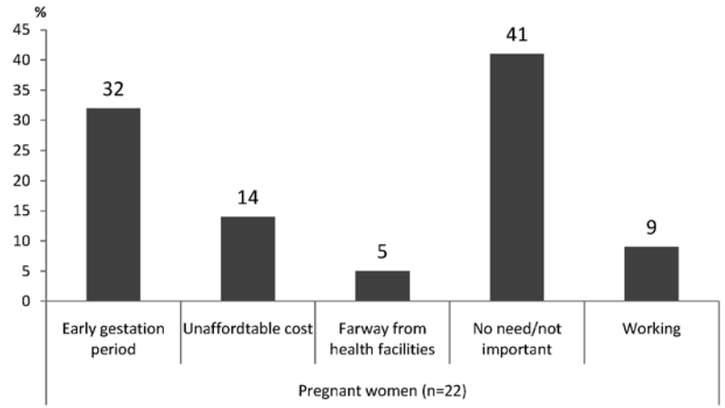
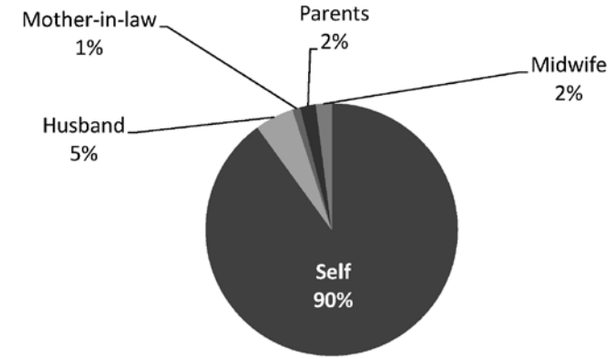


Figure 5 depicts key persons who make the decision regarding the place of delivery. Most pregnant women and new mothers indicated that they made the decision themselves (90%), followed by their husband (5%), parents (2%), MWs (2%), and mother-in-law (1%).

Figure 5 Key persons who make the decision regarding the place of delivery given by pregnant women and new mothers



Household expenditures for MCH services

Table 6 shows household expenditures for MCH services collected from community surveys. Direct medical cost, e.g. cost of ANC; registration fee; fee of health professionals; cost of drugs and supplies; direct non-medical costs, i.e. cost for transportation, food and accommodation, washing clothes and cleaning house; and indirect costs, i.e. productivity loss, are higher for services provided at health facilities than at home. For example, the total household expenditure of ANC by SBAs at health facilities is 2,102 Kyats, while the total expenditure of ANC by SBAs at home is 863 Kyats. The total expenditure of ANC by non-SBAs (1,167 Kyats) is considerable higher than the ANC by SBA at home. It is noted that the total household expenditure of delivery by non-SBAs (28,222 Kyats) is lower than for delivery by SBAs at home (32,259 Kyats). This is mainly because the professional fee of skilled birth attendant is higher than the fee of non-SBAs.

Table 6 Average household expenditures for ANC and delivery at health facilities and at home (Kyats)

	Health facilities (SE)	Home (SE)
ANC by skilled birth attendant		
Cost of ANC	1,140 (197)	436 (160)
Transportation cost	427 (67)	427 (67)
Productivity loss	535 (137)	N/A
Total	2,102	863
ANC by non-skilled birth attendant		
Cost of ANC	N/A	500 (387)
Transportation cost	N/A	667 (494)
Total	N/A	1,167
Delivery by skilled birth attendant		
Register fee	56 (25)	N/A
Fee of health professionals	15,167 (4,647)	13,344 (1,227)
Fee of anyone else	N/A	1,148 (345)
Gift for staff	944 (659)	577 (226)
Cost of drugs/supplies purchased inside hospital	7,778 (2,049)	833 (560)
Cost of drugs/supplies purchased outside hospital	1,167 (860)	2,021 (616)
Accommodation for mother	1,694 (668)	N/A
Accommodation for accompanying person(s)	1,389 (1,389)	N/A
Food	11,278 (3,647)	565 (226)
Washing clothes or cleansing	828 (364)	N/A
Transportation cost	11,389 (2,926)	N/A
Productivity loss	15,689 (4,624)	13,579 (2,815)
Total	67,379	32,259
Delivery by non-skilled birth attendant		
Fee of birth attendants	N/A	9,097 (1,022)
Fee of anyone else	N/A	1,435 (608)
Gift for staff	N/A	335 (152)
Cost of drugs/supplies purchased inside hospital	N/A	581 (490)
Cost of drugs/supplies purchased outside hospital	N/A	661 (240)
Clean delivery kit	N/A	129 (129)
Food	N/A	903 (644)
Productivity loss	N/A	15,081 (3,074)
Total	N/A	28,222

Given the substantial amount of money that households need to pay for ANC and delivery services as indicated in **table 6, figures 6 and 7** indicate that the majority of pregnant women (66%) and new mothers (70%) found difficulties in raising funds to cover these costs. It can be seen that 43% and 31% needed to borrow money from others to pay for ANC and delivery services, respectively (see **table7**).

Figure 6 Pregnant women who have difficulties in raising money

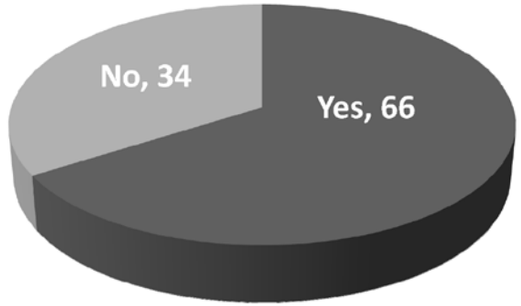


Figure 7 New mothers who have difficulties in raising money

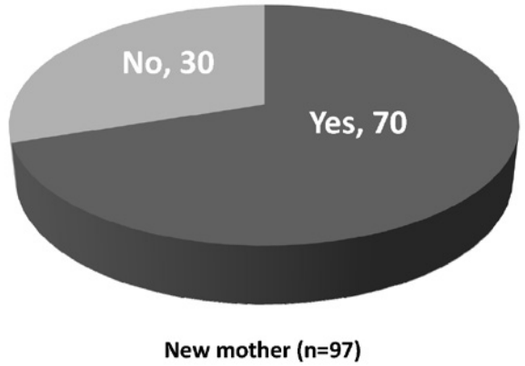


Table 7 Methods of raising money

Antenatal care		Delivery	
Borrowed money	43%	Borrowed money	31%
Forego essential food consumption	18%	Sell or pledge gold	14%
Sell or pledge crops	13%	Forego essential food consumption	13%

The bar chart (**figure 8**) shows the relationship between the level of education and the decision to choose service providers for the delivery. The results indicate that the higher the level of education, the more likely the respondents are to choose delivery by SBAs. **Figure 9** presents that the higher the amount of family income, the more likely the respondents are to deliver at health facilities.

Figure 8 Types of delivery providers chosen by new mothers classified by levels of education

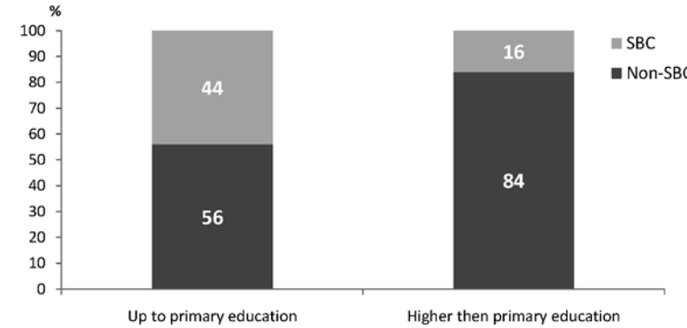


Figure 9 Types of places for delivery chosen by pregnant women classified by household income

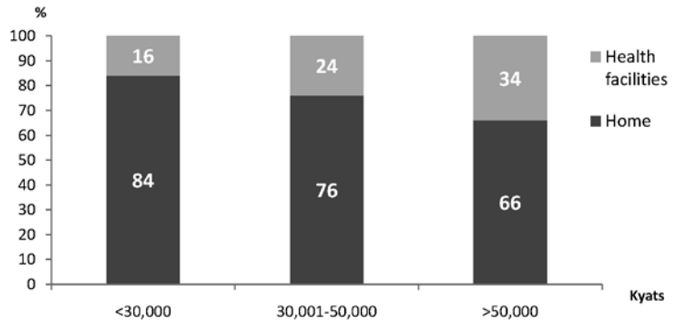
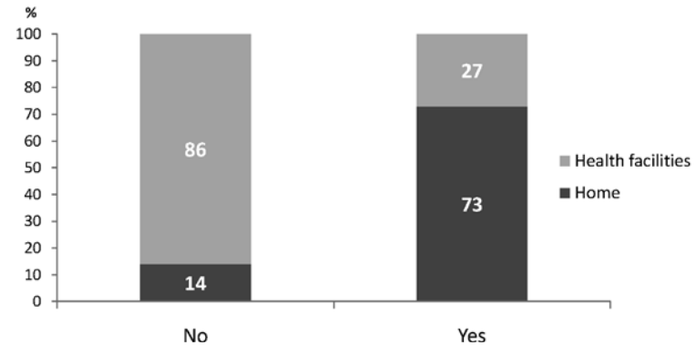


Figure 10 shows that women with experience of pregnancy (73%) are more likely than women without experience of pregnancy (14%) to choose ANC at home.

Figure 10 Types of places for ANC chosen by new mothers classified by history of prior pregnancy



Unit cost of ANC and delivery at health facilities

For calculating direct medical costs for ANC and delivery, disposable materials such as urine test strips and Human Chorionic Gonadotrophin (HCG) strips, as well as other materials such as home based maternal records and educational pamphlets were included and shown in **tables 8** and **9**. Labour cost includes salary, fringe benefit, and additional income such as income received from private practices. However, capital costs, e.g. building cost and cost of machines, were not included because most of these were used for longer than 20 and 5 years, respectively.

Table 8 Material costs for ANC

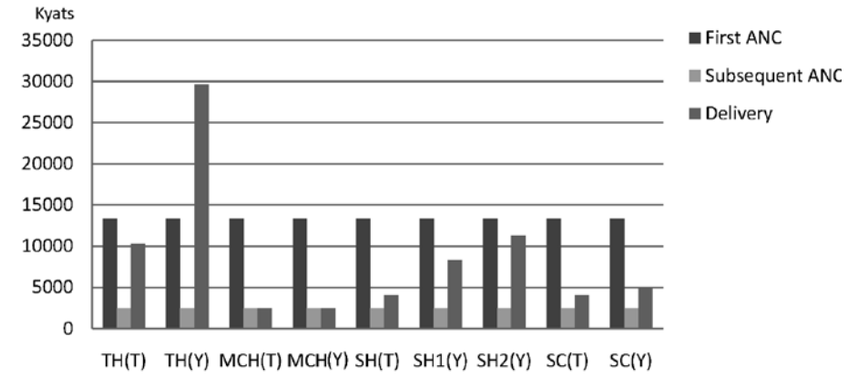
Materials	1st ANC	2nd ANC	3rd ANC	4th ANC	Remarks
IEC materials	1,500	-	-	-	Focus group
Urine test strip	1,000	-	-	-	Expert
Home based maternal record	200	-	-	-	Focus group
HCG strip	173	-	-	-	Questionnaire
Iron folate	900	-	-	-	Focus group
Tetanus toxoid vaccine	1,500	1,500	-	-	Expert
VDRL test	1,000	-	-	-	Questionnaire
Retro test (PMCT)	3,300	-	-	-	Questionnaire
Blood group test	833	-	-	-	Questionnaire
Urine test (protein and sugar)	1,250	-	-	-	Questionnaire
Gloves, Syringe, needle, spirit and cotton	1,200	-	-	-	Questionnaire
Iron folate	-	900	900	-	Questionnaire
Mebendazole	-	-	200	200	Questionnaire
Vitamin B1	-	-	-	100	Focus group
Total cost	12,856	5,400	1,100	300	

Table 9 Material costs for delivery

Materials	Min	Max	Remark
Drip set	150	1,000	Questionnaire
Blood set	500	500	Questionnaire
Intravenous fluid	350	1,800	Questionnaire
Cannula	300	500	Questionnaire
Injection oxytocin	30	1,000	Questionnaire
Catgut	500	2,000	Questionnaire
Needle	100	500	Questionnaire
Simple catheter	150	1,000	Questionnaire
Vitamin B1 for mother	96	240	Questionnaire
Suction tube for baby care	500	800	Questionnaire
Betadine solution	300	7,500	Questionnaire
Urine test (protein and sugar)	1,250	1,250	Questionnaire
Retro test (PMCT)	3,600	3,600	Questionnaire
Blood group test	200	500	Questionnaire
Vitamin C	36	900	Questionnaire
Oral analgesic+anti-inflammatory drug	30	940	Questionnaire
Oral antibiotic drug	300	4,125	Questionnaire
Glove+antiseptic+cotton	1,100	7,000	Questionnaire

Costs of ANC were divided into two categories: unit cost of first ANC and unit cost of subsequent ANC. The results shown in **figure 11** indicate that the materials required for first ANC are more costly than for delivery and subsequent ANC in most health facilities, except in the township hospital in Yedashe. This can be explained by the fact that during the first ANC visit, pregnant women undertake several blood and urine tests, and also receive medication and a tetanus toxoid vaccine. Material costs for first and subsequent ANC are quite similar across health facilities but material costs for delivery are varied.

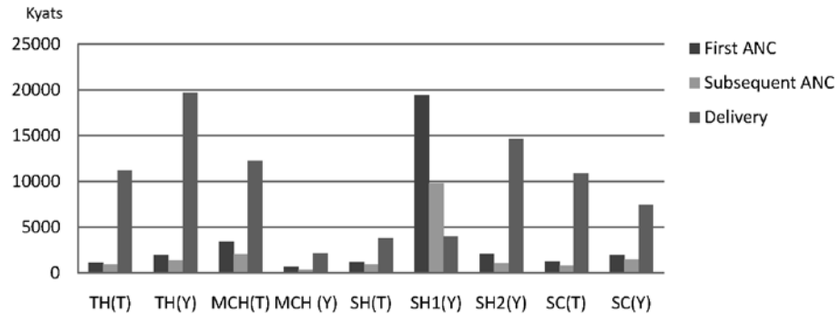
Figure 11 Material costs of ANC, subsequent ANC and delivery in Kyats classified by health facilities



TH(T) = Township hospital in Tatkone, TH(Y) = Township hospital in Yedashe, MCH(T) = Maternal and Child Health Centre in Tatkone, MCH(Y) = Maternal and Child Health Centre in Yedashe, SH(T) = Station Hospital in Tatkone, SH(Y) = Station Hospital in Yedaseh, SC(T) = Sub-centre in Tatkone, SC(Y) = Sub-centre in Yedashe.

Figure 12 presents the differences of labour costs for ANC and delivery across health facilities in two townships. Labour costs for delivery are much higher than first and subsequent ANC in most health facilities, except in one of the station hospitals in Yedashe.

Figure 12 Labour costs of ANC, subsequent ANC and delivery in Kyats classified by health facilities



TH(T) = Township hospital in Tatkone, TH(Y) = Township hospital in Yedashe, MCH(T) = Maternal and Child Health Centre in Tatkone, MCH(Y) = Maternal and Child Health Centre in Yedashe, SH(T) = Station Hospital in Tatkone, SH(Y) = Station Hospital in Yedaseh, SC(T) = Sub-centre in Tatkone, SC(Y) = Sub-centre in Yedashe.

Figure 13 illustrates that the average unit cost of the first ANC is approximately 17,900 Kyats, whereas the unit cost of subsequent ANC is 4,100 Kyats. The unit cost of delivery is 17,100 Kyats.

Figure 13 Unit cost of ANC, subsequent ANC and delivery in Kyats

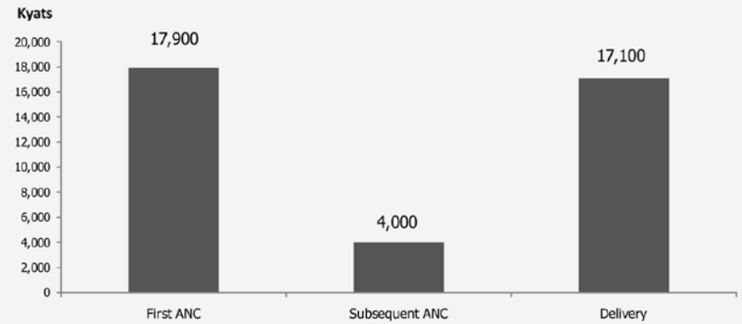
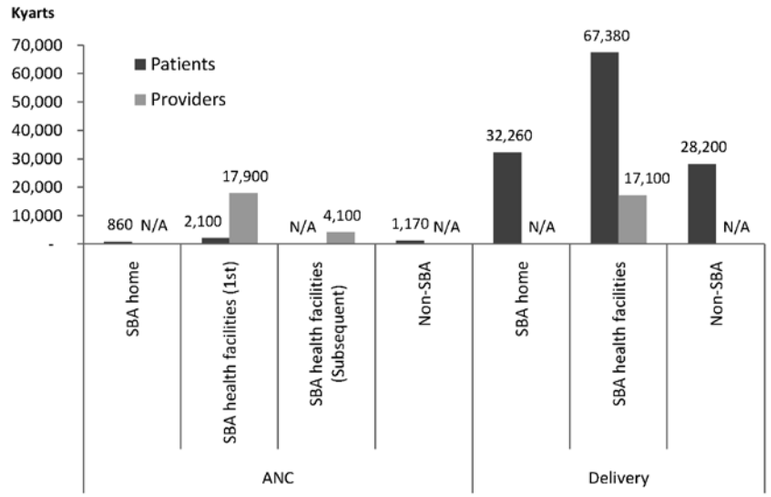


Figure 14 shows that providers pay more for ANC than households. It also reveals that the unit cost of ANC is the highest for the first ANC by SBAs at health facilities, followed by subsequent ANC by SBAs at health facilities. Households pay much more than providers for delivery services at all types of facilities. Unit cost of delivery is the highest for services provided at health facilities by SBAs, followed by SBAs at home.

Figure 14 Comparing unit costs of ANC (first and subsequent times) and delivery classified by patient and provider perspectives



Discussions

This exercise provides valuable information about the costs of ANC and delivery shouldered by providers and households. The information helps explain why and how unit costs of ANC and delivery differ across types of providers and health facilities. This information can be useful for the economic modelling in the next section.

It is important to note that these results have some limitations. First, help in identifying respondents was provided by health staff from SCs, and this could lead to the selection bias of samples. It can be seen from the results that our survey samples had a higher rate of ANC than the national average. Myanmar health statistics indicate that the national average of ANC is 56%[1] compared to 73% in our study. It is likely that hard-to-reach individuals in the community who would not receive ANC and delivery services are unlikely to be included in the study.

Second, given the constraints of resources and time, the study includes a relatively small sample size, which may not be a true representation of the whole population in these two selected townships. Third, although service quality is of major concern by all parties and often related to resources used and costs, this costing exercise did not take service quality into account.

3.2 Economic Evaluation of CHI

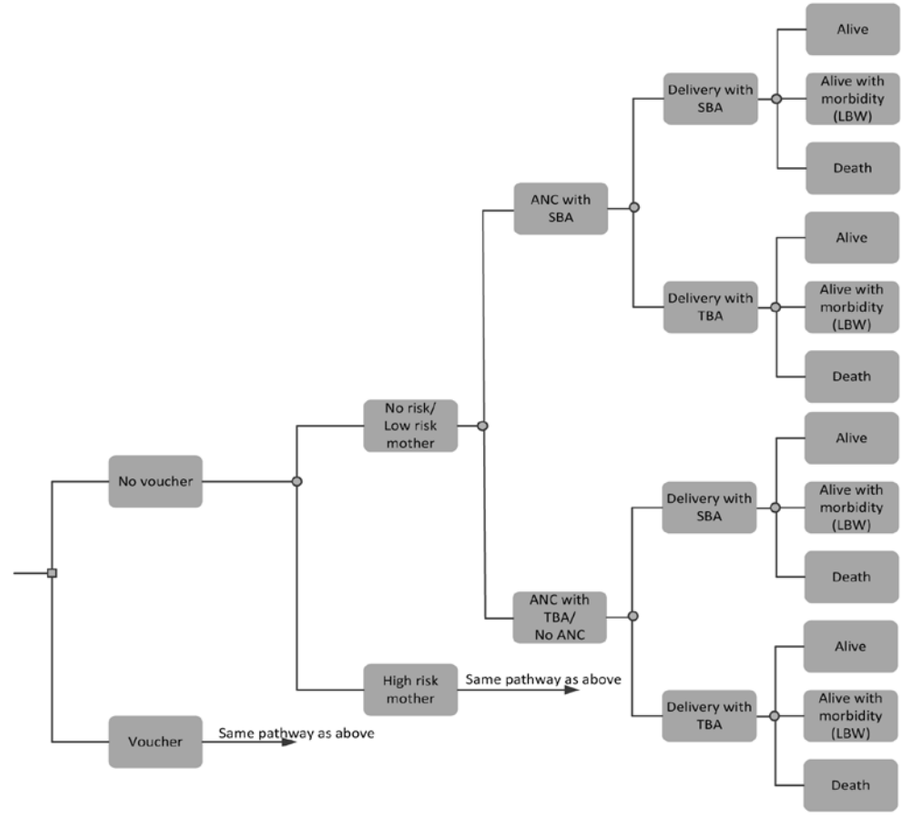
Model and design

An analytical model was constructed in Microsoft Excel' 2007 to estimate the costs and outcomes of the CHI (See **Appendix**). **Figure 15** illustrates the decision tree for predicting the costs and consequences of the CHI compared to the current practice in Myanmar. The square node represents a decision point where the choice is whether or not the CHI exists. The circular nodes represent possible events such as pregnant women with low and high risks of developing pregnancy complications. The decision tree distinguishes the different possibilities of having different types of maternal and child outcomes, i.e. healthy, with maternal/fatal morbidity, and maternal/fatal death, among women receiving ANC and delivery by SBAs or TBAs. At the end, the different health expenditures between the CHI and current practice can be estimated against the differences of outcomes in terms of numbers of newborn lives saved, numbers of mothers' lives saved, and total lives-years saved, the so-called incremental cost-effectiveness ratio (ICER).

ICER = Cost of having CHI voucher scheme › Cost of current MCH services
Total life-year from CHI voucher scheme - Total life-year from current MCH services

[1] Department of Health, Ministry of Health, Myanmar, Women and Child Health Development Project. Nationwide cause specific maternal mortality survey in Myanmar in 2004-2005., 2005.

Figure 15 A decision tree for the economic evaluation of the CHI
LBW; Low Birth Weight



Model inputs

The model input parameters were taken from Myanmar health reports, data collected from the two abovementioned townships, and reviews of international literature. For the third approach, we purposively selected data from the most similar settings, e.g. countries in the South East Asia region or low-income countries. In addition, an expert consultation meeting was conducted to validate the model parameters. All parameters are presented in **table 10**.

Epidemiological data

The community survey identified 73% and 51% of pregnant women as having ANC and delivery by SBAs, respectively. Myanmar's Annual Public Health Statistics in 2008[2] report the maternal mortality rate, neonatal mortality rate and low birth weight rate at 3.16[1], 16.13, and 150 per 1,000 live births[2], respectively. However, statistics for the maternal morbidity rate were not available in the report and MoH experts agreed to assume that the rate is approximately 10 times higher than the maternal mortality rate.

Relative Risks and Odd Ratios

Majoko et al (2005) reported the proportion of high-risk pregnancies to be 15% of the total[3]. Complications during the antenatal period were found to be a significant factor increasing the risk of maternal death (OR = 9.30; 95% CI 7.70-11.16)[4] and the risk of maternal morbidity (RR=1.82)[3]. In addition, high-risk pregnancy increases the risk of perinatal death (RR=1.56; 95%CI 0.98-2.49) and low birth weight (RR=1.97; 95% CI 1.50-2.58) compared to low-risk pregnancy[3].

It is expected that ANC and care during delivery by SBAs can minimise the risk of mortality and morbidity for both mother and child. The effectiveness of ANC by SBAs was calculated from a nationwide survey in 2004-2005[1]. The relative risk of maternal mortality when having ANC by non-SBAs is 1.18. The relative risk of maternal morbidity was assumed equal to maternal mortality, based on MoH expert opinions. From a USA national survey, low-risk pregnant women who received inadequate ANC had a higher neonatal mortality rate than those receiving adequate ANC (RR=1.42; 95%CI 1.39-1.46)[5]. The risk of having low birth weight infants was assumed to be two times higher than for pregnant women having ANC by SBAs.

The relative risk of maternal mortality when delivery is conducted by a non-SBA is 1.94[1]. The relative risk of maternal morbidity was assumed to be similar to maternal mortality. Lawoyin et al. (2010) found that the level of neonatal mortality among pregnant women who delivered by non-SBAs was higher than among those who delivered by SBAs (RR=2.7; 95% CI 1.1-6.4).[6]

2 Ministry of Health. Annual Public Health Statistics Report (2008).2010
3 Majoko F, Nystrom L, Munjanja S, Mason E, Lindmark G. Does maternity care improve pregnancy outcomes in women with previous complications? A study from Zimbabwe. Trop Doct.2005; 35(4): 195-8.
4 Gupta SD, Khanna A, Gupta R, Sharma NK, Sharma ND. Maternal mortality ratio and predictors of maternal deaths in selected desert districts in Rajasthan a community-based survey and case control study. Women's Health Issues.2010 ;20(1):80-5.
5 Chen XK, Wen SW, Yang Q, Walker MC. Adequacy of prenatal care and neonatal mortality in infants born to mothers with and without antenatal high-risk conditions. Aust N Z J Obstet Gynaecol.2007; 47(2):122-7.
6 Lawoyin TO, Onadeko MO, Asekun-Olarimoye EO. Neonatal mortality and perinatal risk factors in rural South-western Nigeria: a community-based prospective study. West Afr J Med.2010; 29(1):19-23.

Table 10 Parameters used in the analysis

Parameters	Mean	Reference
Epidemiological data		
Probability of seeking ANC	0.73	community surveys
Probability of delivery with SBAs	0.51	community surveys
Maternal mortality rate	3.16 per 1,000 live births	1
Maternal morbidity rate	31.6 per 1,000 live births	Consensus d erived from an expert consultation meeting
Neonatal mortality rate	16.13 per 1,000 live births	1
Low birth weight infant	150 per 1,000 live births	1
Relative risk		
Probability of high-risk pregnancy	0.15	3
Odd ratio of maternal mortality, high-risk	9.3	4
Relative risk of maternal morbidity, any complications	1.82	3
Relative risk of perinatal death, high risk	1.56	3
Relative risk of low birth weight, high-risk	1.97	3
Relative risk of maternal mortality, ANC with non-SBAs	1.13	1
Relative risk of maternal morbidity, ANC with non-SBAs	1.13	Assumed to be equal to maternal mortality
Relative risk of neonatal mortality, inadequate ANC	1.42	5
Relative risk of low-birth weight infants, ANC with non-SBAs	2.0	Consensus d erived from an expert consultation meeting
Relative risk of maternal mortality, deliver with non-SBAs	1.94	1
Relative risk of maternal morbidity, deliver with non-SBAs	1.94	Assumed to be equal to maternal mortality
Relative risk of neonatal mortality, deliver with non-SBAs	2.7	6
Outcome measure		
Life expectancy at birth	54.40	10
Life expectancy of pregnant women (28 years of age)	42.80	10

Programme costs

Table 11 shows the cost parameters used in this analysis. The cost data were mainly obtained from community surveys using both a provider questionnaire in the case of direct medical costs, and a patient questionnaire in the case of direct non-medical costs and indirect medical costs, except for the cost of treating maternal complications, which was identified from the emergency obstetric report 2008[7]. Because of a lack of local information, the cost of hospitalisation for low-birth weight infants was retrieved from standard costing from the Thai health system[8]. The cost was converted to Kyats using Purchasing Power Parity (PPP) into the current year (2010)[9].

[7] Department of Health, Department of Medical Research (Lower Myanmar), United Nations Children's Fund. Assessment of Emergency Obstetric Care in Myanmar. 2010.
[8] Riewpaiboon A. Standard cost lists for health technology assessment. Health Intervention and Technology Assessment Program. 2011.
[9] International Monetary Fund (IMF). Available at http://www.imf.org/

Table 11 Total costs used in this analysis

Type of costs	Amount (Kyats)
The total cost for ANC with SBA	32,123
The total cost for ANC with non-SBA	1,167
The total cost for delivery with SBA	51,972
The total cost for delivery with non-SBA	28,223
The total cost of treating maternal complications	127,396
The total cost of hospitalisation for low-birth weight infants	146,975

Outcome measures

The figures for life expectancy at birth and life expectancy for pregnant women were obtained from the Myanmar life table developed by WHO[10]. The life expectancy at birth was reported at 54.40 years. From the community surveys, the average age of pregnant women was 28 years. This indicated the average life expectancy of pregnant women of 42.80 years (obtained from the WHO's life table). Regarding the limited data, the Thai burden of diseases project[11] indicates that the life expectancy of low birth weight infants was shorter than of normal birth weight infants by approximately 0.05 years, and the life expectancy of women with maternal morbidity was 0.01 years shorter than of mothers without maternal morbidity.

[10] Global Health Observatory Database. Country Statistics. Available at http://www.who.int/gho/en/

[11] Burden of disease work group. Burden of disease and injuries in Thai B.E.2547. Bureau of Policy and Strategy. Ministry of Public Health. Nonthaburi.2550.

Effectiveness of CHI

A study on the demand changed, in terms of the price elasticity of demand (Ed)[12], for child health services as a result of the introduction of the demand side financing (DSF) in Nepal varied from 0.2-0.4[13]. In this study, the most conservative assumption was used by indicating that the Ed is equal to 0.2. This means that if the price shouldered by household reduced by 1%, then the demand for ANC and delivery with SBAs will increase by 0.2%.

Results

a) Programme cost and expected service utilisation

Using the societal viewpoint the incremental cost of introducing CHI voucher compared to the current situation is 94,630 Kyats. This cost does not only include the cost of ANC and delivery but also treatment of maternal and infant complications. It also reflects the probability of pregnant women adhered to CHI voucher. Based on our community surveys, households currently pay a big part of the above cost, approximately 87,652 Kyats per one pregnancy and delivery. If the CHI aims to cover all costs incurred to household during ANC and delivery (100% cost recovery of CHI voucher), the voucher needs to be at a value of 87,652 Kyats. This means that pregnant woman was fully subsidised by the CHI programme. However, it could be possible that the CHI may be willing to partially subsidise the total cost for

[12] The price elasticity of demand is a measure of use in economic terms to show the responsiveness of the quantity demanded of a good or service to change in its price. It can be calculated using the following formula:

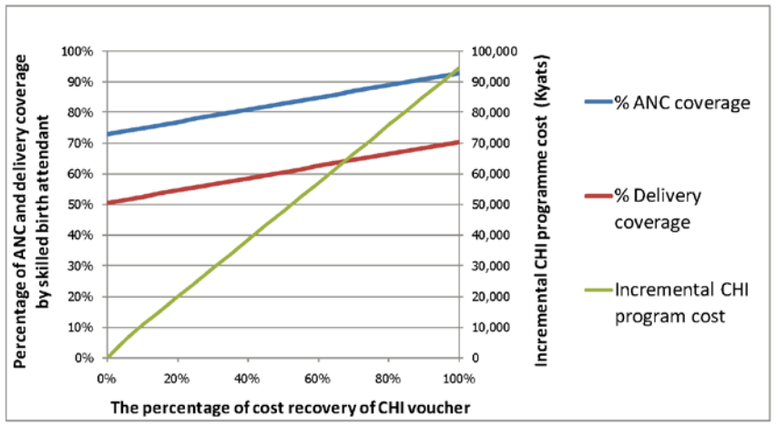
$$Ed = \frac{\text{\% change in ANC (or delivery) received from SBA}}{\text{\% change in price}}$$

[13] Ensor T. Cost sharing system for alleviating financial barriers to delivery care: Review of the proposed scheme. Support to Safe Motherhood Programme, Nepal. 2005.

ANC and delivery and that the value of the voucher will be less than 87,652 Kyats. The information on Ed in **figure 16** shows the relationship between the percentage of cost recovery of the CHI voucher and the percent coverage of ANC and delivery services.

At the current situation with no subsidisation from CHI, the coverage of ANC and delivery by SBAs is 73 % and 51 %, respectively. Once the value of CHI increases, the coverage of ANC and delivery also increases. In the situation where full subsidisation from CHI occurs, the maximum coverage of ANC and delivery by SBAs are at 93% and 71%, respectively.

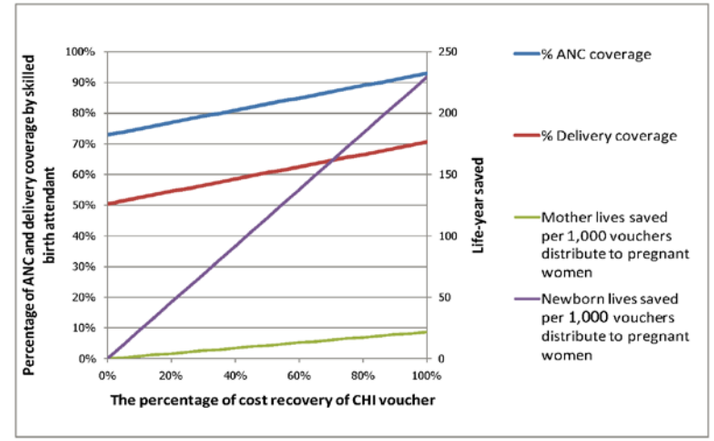
Figure 16 The incremental CHI programme cost by varying the percentage of voucher recovery



b) Health outcomes

Figure 17 replicates **figure 16** but with added information about additional mothers' lives saved and newborn lives saved per 1,000 vouchers distributed to pregnant women. The additional lives saved of mothers and newborn reach their maximum at 22 and 229 lives, respectively, if the full cost recovery of vouchers is observed.

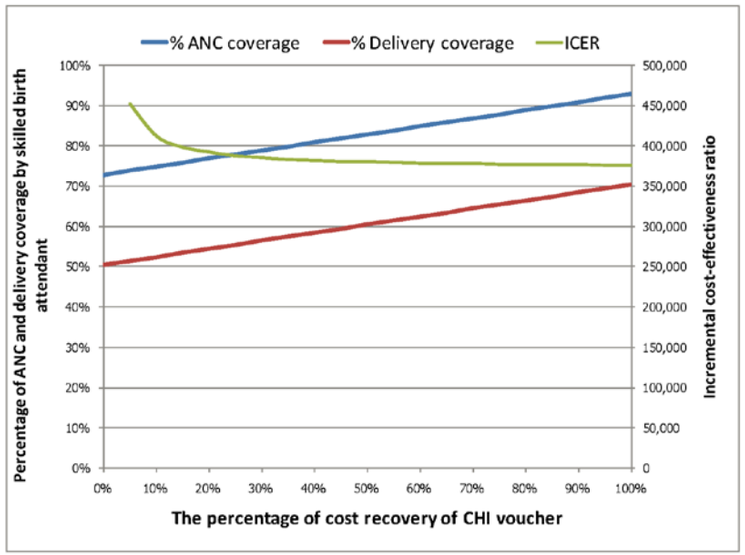
Figure 17 Health outcomes from CHI by varying the percentage of cost recovery of CHI voucher



c) Incremental cost-effectiveness ratio

The ICER of the CHI ranges from 376,548 to 452,110 Kyats (see **figure 18**), depending on the cost recovery of the CHI voucher. The lowest ICER can be observed at the right hand side of the graph where the cost recovery of the voucher is 100% and the coverage of ANC and delivery by SBAs reach their peaks. However, the ICER line is not linear and its slope is steep at the left hand side of the line where the cost recovery is low. The slope plateaus when the cost recovery is high.

Figure 18 Incremental cost-effectiveness ratio of the CHI varying the percentage of voucher recovery



Discussions

This section indicates that the ICER of CHI ranges from 376,548 to 452,110 Kyats, from which it can be considered that CHI is cost-effective when providing at least 15% of cost recovery of CHI voucher given that the national Gross Domestic Product (GDP) per capita in Myanmar is 413,800 Kyats. In addition, the analysis (see **figure 18**) suggests that the cost recovery of vouchers should be around 30-40% in order to gain the maximum efficiency if there is a severe limitation of resources to provide full cost subsidisation.

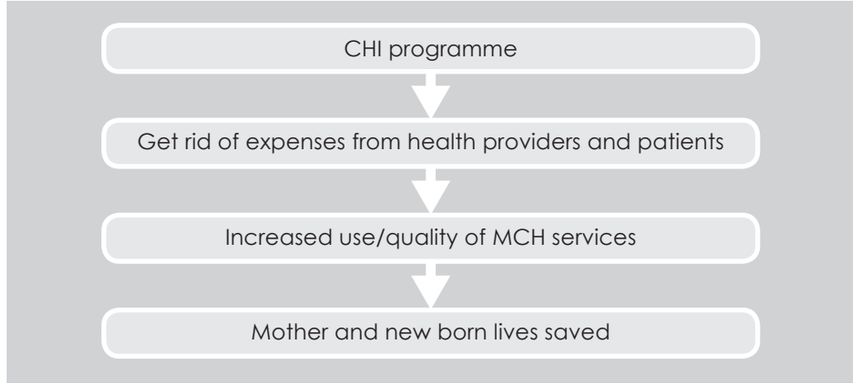
However, the results of this study need to be used with caution as the study had some limitations. Firstly, this study assumed there to be equal mortality from delivery by SBAs at home and health facilities. Secondly, because of the lack of information about Ed on CHI vouchers in Myanmar, the study borrowed the information from Nepal. Thus, future investigation of the parameters in Myanmar is recommended. Lastly, this study did not take into account any uncertainty surrounding the input parameters used in the model although an uncertainty analysis is strongly recommended by international methodological guidelines for conducting health economic evaluations[14]. It is expected that an extensive uncertainty analysis will be performed shortly after completion of the third mission.

[14] Drummond MF et al. Methods for the economic evaluation of health care programmes. Third edition. Oxford University Press. 2005

4
Conclusions

The CHI programme seems to be feasible and has good potential to be implemented in Myanmar with the aims of increasing the service utilisation of ANC and delivery by SBAs, especially for poor households. Demand side financing under CHI also expects to get rid of any provider fee and other household expenses related to the use of MCH services. If pregnant women have free choices to use CHI vouchers at any health facilities and there are enough incentives for providers to offer the services to voucher holders, it will promote the quality of MCH services. **Diagram 1** depicts the likely effect of the CHI programme.

Diagram 1 Potential of the CHI programme



Based on the information gathered and analysed from three missions, the CHI programme should be implemented as follows:

a) Target population

Learning from international experience, demand side financing works well when the vouchers are freely distributed to all pregnant women, although this approach may be more costly than distributing vouchers to specific populations (e.g. the poor or vulnerable groups). However, it was found in Bangladesh that it was very difficult to develop appropriate criteria for the selection of a target population and the criteria could prohibit the use of vouchers by the target population. For example, filling in an application as a process for dividing the rich and the poor leaves lowly-educated pregnant women (who are the real target of the voucher) with difficulties. Another reason to support the universal access of vouchers is that there will be a self-selection for high-income pregnant women holding the vouchers but who will seek care from private providers.

b) Voucher distributors

The focus group discussion conducted during the first mission revealed that voucher distributors should not be monopolised by any single individuals or organisations, but should allow all relevant stakeholders, including local authorities, Village Health Committees (VHCs), Community Support Groups (CSGs), traditional healers, policemen, and monks, to be able to distribute the vouchers to the target population. The exact distribution channels depend on context specifics. That is to say that some distributors may work well in a particular community while some others may not.

c) The package

The benefit packages include 4 ANC visits, delivery at health facilities or home, postnatal care (PNC) visits and transportation, food and lodging. Pregnant women with the vouchers will receive free services form healthcare professionals such as midwives or medical officers. Given the shortage of available human resources, task shifting was recommended. Specifically, it was suggested that AMWs should be trained to carry out postnatal care provisioning, because that would allow midwives to spend more time on ANC and delivery services.

d) Incentives for health facilities and health professionals

Financial subsidisation for MCH services through the CHI aims to overcome existing barriers to quality care provided by health personnel. In addition, it was found during the study that voluntary payments arranged by households for delivery care, which was described as a tradition, should continue, despite the CHI establishment. It was not clear, however, whether and how the financial incentives should be given to AMWs.

e) Communication strategies

Communication is essential to promote the use of CHI. By raising the awareness of the public, persuasive campaigns using public figures or opinion leaders are recommended. Possible media channels, such as posters, pamphlets, community radio and newsletters in the local language, depend on the community context. In addition, analysis of community survey data shows that, mostly, women are the ones who make the decision regarding where to have ANC or delivery. Therefore, the messages should be understandable by and delivered to pregnant women.

f) Human resource development

It is suggested that human resource development for both MoH staff at central level, who will manage the CHI programme, and health professionals at the peripheral level, who will deliver services, needs to be given priority. It is understood that the HSS-GAVI will support the capacity building of doctors and midwives. Thus, the proposed training program below will be offered to MoH staff at the central level in order to develop a plan for the public communication of the CHI through a "health communication workshop", and strengthen the monitoring and evaluation system once the programme is implemented through "Programme evaluation and Economic modelling".

5
Plan for the next steps

Table 12 Possible timeline 2011

Activity	Participatory group	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Next phase
Budget released	HSS-GAVI	✓									
Discussion over the preparation of the implementation	MoH/WHO (Working group)		✓								
Capacity building	ThaiHealth/ MoH/ HITAP				✓						
Preparation for pilot study	MoH/WHO/HITAP			✓	✓	✓	✓	✓	✓	✓	
Implementation	MoH/WHO/HITAP										✓

Capacity building activities for MoH staff

The consultant team completed the first phase of the feasibility study of the CHI. As for the next phrase, administrative management in terms of reimbursement, financial, monitoring and evaluation systems should be planned before conducting the pilot implementation in one selected township; it will be divided into 2 phrases as follows:

1st Phrase[15]: 1-6 months for learning the current situation by building up human capacities and preparing for administrative management

2nd Phrase: 7-12 months for implementing CHI in one pilot township

The consultant team recommends building up human capacities by organising two parallel trainings: **6.1) Programme evaluation and Economic modelling, and 6.2) Health communication** (see **table 13**).

6.1 Program evaluation including economic evaluation takes the first two days for introduction to the concepts and tools. The course is aimed at decision makers, health professionals and other MoH staff who have no background in health economics. **Economic modelling** provides hands-on experience in conducting model-based economic evaluation. It will take 3 days in parallel with 2.3. The economic modelling training will focus on the evaluation of the HSS-GAVI program in particular.

6.2 Health Communication includes 3 days training, focusing on social marketing and communication strategies for promoting the use of the vouchers. Apart from the HITAP communication team, HITAP will invite experts from Thailand, Bangladesh and Myanmar to be the lecturers.

[15] MoH and WHO will be discussing the preparation of the implementation during the first six months in close consultation with HITAP.

Table 13 Tentative training course

Tentative training course	Main proposes	Group of people
The first two days		
■ Program evaluation	Introductory session to Programme evaluation including economic evaluation	Decision makers, health professionals and other MoH staff (approximately 10 attendants)
Two days ***(Parallel sessions)***		
■ Economic modelling	Hands-on workshop for conducting a model using excel to analyse economic results	Researchers (approximately 10 attendants)
■ Health communication	Workshop for participants to understand the importance of mass communication and to develop a systematic way to convey the message to Myanmar people	MoH staff and other stakeholders who will be involved in the CHI programme. (approximately 15 attendants)
The last day **Discussion & conclusion**		

Appendix 1

Community survey samples catagorised by township

Township	Sub centre	Village
Yadeshe	Padauk Khin	Gyoepinthar The-kaw Htan kone Pho Chan kone Za Loat Kyi
	Khin Tan Gyi	Kyan Za Nwe Sai Tamau Lay Pauk Chaung Kyaut Chaung Nat Yae Twin
	Aung Chan Thar	Bayine Kone Nyaungbin Thar Pho Kyar Nyo Inn Pat Lat Ta Khwe Kye
	Thar Ga Ya	In-diee Kan Gyee Tae Kone Chaung Zaut Tone Khaung
	Kyun Pin Su	Si Pin Thar Dawn Kya Pyine Taung Nat Taung Kye No Sai
Total	5	25

Township	Sub centre	Village
Tat Kone	Sin Thae	TaTar Oo Sin Thae Kin Poun Tan(East) Kin Poun Tan(West) Chone Gyi
	Htone Bo	Htone Bo Ma Yoe Kone Da Hat Taw Tha Lin Kone Kaywl Le Pin
	Gyae Pin	Gyae Pin Pauk Pin Thar Shwe Oo Dawn Nyaung Pin Thar Shar Taw
	Gyoepinthar	Shar Taw Ai Pyaw Ywar Yae Twin Phyu Ma Kyee Pin Ohn Shit Kone
	Naung Thinkhar	Naung Thinkhar Ywar Thit Kyaung Su Tatar Oo Byaing Inn
Total	**5**	**25**

Appendix 2
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